

**The use of numbers by journalists in the coverage of crises: a
study of seven humanitarian emergencies in the UK press**

Brendan T. Lawson

Submitted in accordance with the requirements for the degree of Doctor of
Philosophy

The University of Leeds
School of Media and Communication

September 2020

The candidate confirms that the work submitted is his own and that appropriate credit has been given where reference has been made to the work of others.

This copy has been supplied on the understanding that it is not copyright material and that no quotation from the thesis may be published without proper acknowledgement.

The right of Brendan Lawson to be identified as Author of his work has been asserted by him in accordance with the Copyright, Designs and Patents Act 1988.

© 2020 The University of Leeds and Brendan T. Lawson

Acknowledgements

I would not be doing this PhD if it weren't for the hard work of my supervisor, Jairo Lugo-Ocando, who helped developed my initial ideas and secure funding for me to realise my dream. You continued to provide inspiration and encouragement in the two years you were based in Leeds and, even more importantly, in your two years working from Qatar. Working alongside Jairo, I'd like to extend my thanks to Chris Paterson. Your methodical and insightful comments across these four years have pushed me to become a better writer and more accomplished academic. Finally, I owe a great debt to Chris Anderson who stepped in as my secondary supervisor with no hesitation. Your wealth of experience on all things quantitative have helped sew the red thread through my thesis.

Beyond academia, I'm deeply grateful to my family for all their support. To my Dad, thanks for being my very own soccer Mum, relentlessly supporting me on a journey that I was often unsure about. To my Mum, your unwavering support of everything I choose to do is a constant inspiration. To Tasha and Olly, thanks for charging such a fair price for room and board in a home away from home.

Finally, and most importantly, I want to express my deepest gratitude for the unconditional love and support of my smart and beautiful partner, Katie. In a PhD that looked at the meaning of numbers, you gave meaning to the PhD. Without you, all of this would seem rather pointless.

Abstract

Numbers are used across the communication of humanitarian crises to identify the scale of suffering, to refer to the causes of emergencies and to outline the solutions provided by the international community. But these numbers do not operate in an apolitical, scientific capacity; instead, they are intimately linked to notions of power and governance. Therefore, it is important to understand how those communicating quantitative information engage with these numbers. The use of numbers by journalists working for UK news media organisations is the focus of this thesis.

My research design centres on seven humanitarian crises that occurred during 2017: Manus Island detention centre, Hurricane Irma, La Puebla earthquake, NHS winter crisis, Rohingya refugee crisis, conflict in Yemen and the South Sudan famine. These emergencies are analysed through a mixed-methods process that involved five stages. First, a content analysis of a corpus of 978 articles on humanitarian crises. Second, a focused thematic analysis of specific articles. Third, a case study approach to place certain stories within an information flow. Fourth, the analysis of publicly accessible interviews with journalists who use numbers. Fifth, the collection and analysis of semi-structured interviews with journalists who authored at least one article in my corpus.

My findings outline that the use of numbers is widespread across news coverage of humanitarian crises. There was a stark difference, however, between the way the domestic “humanitarian crisis” (the NHS winter crisis) was covered compared to the six international crises. My textual analysis highlighted how those covering international crises often used the numbers they received from humanitarian sources uncritically. In doing so, reporters often legitimised the interventionist policies put

forward by these statistical sources – facilitating humanitarian governance. Those that covered the NHS winter crisis, on the other hand, were more likely to derive statistics from publicly accessible databases. These statistics were often used to criticise the NHS and the government, pointing to significant problems within the health service. In this context, more emphasis is placed on the concept of “open-book governance” where the logics of the database, and the power of certain institutions to manipulate these databases, is of primary concern.

These findings make three clear contributions to scholarship. First, the thesis provides a nuanced and comprehensive insight to journalists’ use of numbers. Second, it emphasises the need to examine quantitative governance through its communication. Third, my findings emphasise the role that numbers have in meaning-making. Taken together, this thesis offers important theoretical and empirical insights into the communication of numbers during humanitarian crises.

Table of contents

Acknowledgements	3
Abstract	4
List of figures and tables	10
1. Introduction	13
Connecting journalism and humanitarianism	18
Overview of thesis.....	19
Contribution to scholarship (i): Journalism and numbers	22
Contribution to scholarship (ii): Critical quantification.....	27
Contribution to scholarship (iii): Numbers as meaning.....	32
Structure of thesis	35
2. Quantification of the social world.....	37
Introduction	37
Metrological realism of humanitarian crisis numbers	37
Uncertainty of humanitarian crisis statistics	39
The quantification of the social, normalised	42
Statistics	42
Big data	45
Measurement and science	47
Mechanical objectivity	52
Quantification and power	53
Conclusion	56
3. Quantification and humanitarian governance	58
Introduction	58
Global and humanitarian governance	58
Quantification	61
Legitimising intervention	62
Famine and the IPC.....	64
Evidence-based action	66
Quantification as trust	68
Global governance through discourse	70
Integration of communication to humanitarian practice.....	72

Communicating inaccurate or misleading numbers	73
Importance of discursive exposure in a competitive humanitarian sector	76
News media reliance on INGOs: content, access and narratives	79
17 years a refugee	82
Conclusion	84
4. Journalism and numbers	86
Introduction	86
The state of numbers in journalism	86
Explanation 1: Lack of technical skills, confidence and time	91
Explanation 2: There is not time to check numbers	93
Explanation 3: Numbers and credibility	94
Objectivity and accuracy	94
Numerical knowledge and accuracy	96
Verifying numbers and hiding behind sources	98
Explanation 4: Creating news and telling stories.....	102
News values and news structures	102
Telling news stories	105
Conclusion	113
5. Research design	116
Introduction	116
Developing my corpus and case studies.....	118
Pilot corpus: digital news, archives, search terms and identifying case studies	118
Introducing the seven case studies.....	123
Returning to my corpus: news articles on these seven crises	130
Methods	133
Method (i): Quantitative content analysis	133
Method (ii): Thematic analysis	143
Method (iii): Case studies	144
Method (iv): Publicly available interviews	147
Method (v): Semi-structured Interviews	148
Limitations of my research design	152
Conclusion	154
6. Content analysis and thematic analysis	155
Introduction	155

Frequency of statistics	155
Framing crises with statistics	157
Regression: problem, cause and solution	158
Problems of using statistics in this way.....	162
Frequency of challenges to numbers	164
How non-contested statistics were presented	165
Challenges were context-dependent	166
The problem of not challenging numbers.....	169
Differences in news media outlets	170
Regression: what influences the coverage by different news outlets?	171
Does the label of “tabloid” apply?	179
Domestic crisis vs. international crises	182
Conclusion	185
7. Case studies	188
Introduction	188
A typical example of international crisis coverage: reporting “suspected cases of cholera” in Yemen.....	189
Challenging the statistic (i): accuracy	191
Challenging statistic (ii): validity	194
Let cholera spread but focus on saving lives	196
An exceptional example of international crisis coverage: restrictions on overseas aid during Hurricane Irma	199
British overseas territories	199
A call for change: OECD aid rule changes	201
Bucking the trend: NHS leaked data	205
“Leaked data” and media coverage	206
Verification of “leaked data”	209
Affect on information policy.....	211
Conclusion	215
8. Interviews	218
Introduction	218
Publicly accessible interviews	219
Data journalism: the now and the future of journalism	219
Advantages of data journalism (i): realism.....	221
Advantages of data journalism (ii): storytelling	224
Limitations: Quantitative context.....	226

Non-data journalists	227
Laying the foundations for my semi-structured interviews	230
International crisis journalists using statistics.....	231
Institutions and actors	234
Databases	244
Why do journalists rely on sources and not check numbers?	245
Relating my findings to “strategic rituals”	253
NHS winter crisis journalists using data	257
Technical expertise.....	258
Why is data trusted over statistics provided by an institution?	261
Interrogating data.....	263
Journalists structured by data	265
Conclusion	269
9. Conclusion	271
Introduction	271
Comparing international and domestic crises	272
SRQ1: Importance of numbers	272
SRQ2: Journalistic practice.....	274
SRQ3: Management of crises	276
What does this say about quantification, crises, communication and power?.....	278
What can this say about better quantitative journalism?	283
Further research and limitations.....	285
Concluding remarks	287
Bibliography	289
Appendices	316
Appendix 1	316
Appendix 2	317
Appendix 3.....	318
Appendix 4.....	319
Appendix 5.....	322
Appendix 6.....	324
Appendix 7.....	325

List of tables

TABLE 1: REGRESSION MODEL. NOTES: ODDS RATIOS DISPLAYED (EXP(B)), 95% CI IN PARENTHESES, PSEUDO R2 IS NAGELKERKE'S R2, DF IS DEGREES OF FREEDOM, X2 IS CHI-SQUARED, ***P<0.001, **P<0.05, *P<0.1	160
TABLE 2: REGRESSION MODEL. NOTES: ODDS RATIOS DISPLAYED (EXP(B)), 95% CI IN PARENTHESES, PSEUDO R2 IS NAGELKERKE'S R2, DF IS DEGREES OF FREEDOM, X2 IS CHI-SQUARED, ***P<0.001, **P<0.05, *P<0.1	173
TABLE 3: REGRESSION MODEL. NOTES: ODDS RATIOS DISPLAYED (EXP(B)), 95% CI IN PARENTHESES, PSEUDO R2 IS NAGELKERKE'S R2, DF IS DEGREES OF FREEDOM, X2 IS CHI-SQUARED, ***P<0.001, **P<0.05, *P<0.1	177

List of figures

FIGURE 1: DISTRIBUTION OF ARTICLES BY *MEDIA OUTLET	132
FIGURE 2: ARTICLES BY *FREQUENCY OF STATISTIC.....	156
FIGURE 3: ARTICLES BY *MOST USED STATISTICAL FRAME.....	157
FIGURE 4: CROSS-TABULATION *STATISTICAL CHALLENGE BY *CRISIS I.D.	167
FIGURE 5: CROSS-TABULATION OF *STATISTICAL CHALLENGES BY *MEDIA OUTLET	175
FIGURE 6: CROSS-TABULATION *NHS CRISIS OR NOT BY *TYPE OF STATISTIC	184

Preface

“He tried to put together in his mind what he knew about the disease. Figures drifted through his head and he thought that the thirty or so great plagues recorded in history had caused nearly a hundred million deaths. But what are a hundred million deaths? When one has fought a war, one hardly knows anymore what a dead person is. And if a dead man has no significance unless one has seen him dead, a hundred million bodies spread through history are just a mist drifting through the imagination.”

Albert Camus (1913-1960),
The Plague, 2009[1947], p.31

“You can explain it to me a million times, I still won’t get it.”

Jack,
Ashton-in-Makerfield

List of abbreviations

AIDS	Acquired Immune Deficiency Syndrome
ANC	African National Congress
API	Application Program Interface
ATP	Association of Tennis Players
BBC	British Broadcasting Corporation
BVI	British Virgin Islands
CA	Content Analysis
CAAC	Children and Armed Conflict
CAAT	Campaign Against Arms Trade
CBS	Columbia Broadcasting System
CFR	Case Fatality Rate
CI	Confidence Interval
CNN	Cable News Network
DAC	Development Assistance Committee
DEC	Disaster Emergency Committee
DGC	Department of Global Communications
DJ	Data Journalism
DPI	Department of Public Information
DRC	Democratic Republic of Congo
DRG	diagnostic-related groups
DTC	Diarrhoea Treatment Center
EGIH	Economics, Government, Infrastructure and Humanitarian Operations
ESRC	Economic and Social Research Council
FAO	Food and Agriculture Organisation
FOI	Freedom of Information
FSAU	Food Security Analysis Unit
GAM	Global Acute Malnutrition
GDP	Gross Domestic Product
GNI	Gross National Income
GNP	Gross National Product
HIV	human immunodeficiency viruses
HTML	Hypertext Markup Language
IASC	Inter-Agency Standing Committee
IC	International Community
ICIJ	International Consortium of Investigative Journalists
IDP	Internally Displaced People
IEA	Institution of Economic Affairs
IMF	International Monetary Fund
INGO	International Non-Government Organisation
IO	International Organisation
IOM	International Organisation for Migration
IPC	Integrated Phase Classification
KALPHA	Krippendorff's ALPHA
MRFM	Men and Religious Forward Movement
MSF	Médecins Sans Frontières

NATO	North Atlantic Treaty Organisation
NBC	National Broadcasting Company
NCJ	National Council for the Training of Journalists
NGO	Non-government Organisation
NHS	National Health Service
NYT	New York Times
OCHA	Office for the Coordination of Humanitarian Affairs
OCV	Oral Cholera Vaccines
ODA	Overseas Development Aid
OECD	Organisation for Economic Cooperation and Development
OFCOM	The Office of Communications
OHCHR	Office of the United Nations High Commissioner for Human Rights
ONS	Office of National Statistics
OPEL	Operational Pressures Escalation Levels
OPG	Open-Book Governance
PNG	Papa New Guinea
PR	Public Relations
PRI	Public Radio International
R2P	Responsibility to Protect
RTP	Portuguese Public Service Television
SAIRR	The South African Institute of Race Relations
SAM	Severe Acute Malnutrition
SLC	Saudi-led Coalition
SPSS	Statistical Package for the Social Sciences
STS	Science and Technology Studies
TIP	Traffic in Persons
TVPA	Trafficking Victims Protection Act
UK	United Kingdom
UN	United Nations
UNDP	United Nations Development Programme
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNOCHA	United Nations Organisation for the Coordination of Humanitarian Affairs
US	United States
USA	United States of America
USAID	United States of American International Development
USD	United States Dollars
WASH	Water Sanitation and Hygiene
WFP	World Food Programme
WHO	World Health Organisation

Chapter 1. Introduction

Each year the United Nations' Children and Armed Conflict (CAAC) release their report on grave violations committed against children. The six "grave violations" include: killing and maiming of children, recruitment or use of children as child soldiers, sexual violence against children, abduction of children, attacks against schools or hospitals and denial of humanitarian access for children. Nation-states, proto-states and terrorist organisations are placed on the UN CAAC blacklist if they commit any of the above six offences. The aim of the list is to "name and shame" parties as well as pressuring international bodies to implement economic sanctions and restrictions on arms trade with the offending parties.

On 2nd June 2016, the UN CAAC announced that the Saudi-led Coalition (SLC) were to be placed on their blacklist for killing or maiming 1,177 children in Yemen during 2015 (Children and Armed Conflict, 2016). The inclusion of such an economically and politically powerful nation-state was picked up by a number of news media outlets and forced the issue into international public discourse (Dearden, 2016; Moore, 2016). The Saudi Arabia government reacted angrily to their inclusion in the report, arguing that the numbers were "wildly exaggerated" (Reuters, 2016). After these public objections, Ban Ki-moon (The UN Secretary-General) said that he was revising the report to "review jointly the cases and numbers cited in the text," in order to "reflect the highest standards of accuracy possible." So, only four days after the release of the report, Ban Ki-moon temporarily removed the SLC from the list whilst a joint investigation into the numbers of child casualties could take place (UN News, 2016b).

But it emerged that accuracy was not the only factor that led to the removal of the SLC from the list. According to diplomatic sources, Saudi Arabia and other Muslim countries in the Middle East threatened to 'cut Palestinian aid and funds to other UN programs'

unless they were removed from the list (Reuters, 2016). This was later confirmed by Ban Ki-moon himself. At a press conference, he explained that he had to “consider the very real prospect that millions of other children would suffer grievously if, as was suggested to me, countries would defund many U.N. programs. Children already at risk in Palestine, South Sudan, Syria, Yemen, and so many other places would fall further into despair” (Emmons and Jilani, 2016).

International non-governmental organisations (INGOs) were outraged at how the United Nations capitulated to the demands of Saudi Arabia. Twenty organisations - including the Human Rights Watch - published a joint letter asking for the coalition to be put back on the “list of shame” (Human Rights Watch, 2016). Largely led by the anger of international non-governmental organisations (INGOs), the story gained considerable traction within the news media (Black, 2016). Referring to the decision by the UN, Public Radio International (PRI) explained that “Amnesty International called it “blatant pandering” and warned that the UN was in danger of becoming “part of the problem rather than the solution”” (McGrath, 2016). Whilst the prominent Pakistani news organisation, ARY News, quoted the deputy director of Human Rights Watch: “as this list gives way to political manipulation, it loses its credibility and taints the secretary-general’s legacy on human rights” (AFP, 2016).

Nevertheless, Ban Ki-moon confirmed, on 2nd August 2016, that their exclusion was permanent (UN News, 2016a). One year later, before the publication of the next annual report, Save the Children and Watchlist published their own report on two types of grave violations committed by the coalition in Yemen. They referred to the bombing of 23 schools and hospitals, and the extensive killing or injuring of children.¹ The findings, they argued, “sets out the case for listing the Saudi-Arabia led Coalition” in

¹ The report provides a wide range of estimates regarding the number of children killed.

the CAAC report (Save The Children and Watchlist, 2017). Importantly, these two sets of findings were two of the six grave violations listed by the CAAC report itself. In effect, the INGOs were saying: by your own rules, you are compelled to place the SLC on the list.

When the UN brought out their report in August 2017, the pressure seemed to have worked. The SLC were included on the blacklist due to the killing and maiming of 683 children and the bombing of 28 schools and 10 hospitals (UN Secretary General, 2017). Upon closer inspection, however, it was clear that the UN had made concessions to the SLC. Within the report, the SLC were praised for a reduction in the bombings of schools (compared to 2015) and the impact of preventative and protective measures to reduce child casualties (UN Secretary General, 2017). Such commendations were previously unheard of in these reports and, according to Amnesty International (2017), unfounded too.

This example reflects the way the humanitarian sector has become increasingly quantified (Merry, 2016: 3; Cooley, 2015). There have been “over 160 ‘global performance indicators’, with more than 8 new ratings added on average per year since 1999” (Bhuta et al., 2018: 5). In this way, some have argued that quantification has become one of the defining logics of modern humanitarianism (Merry, 2016; Merry et al., 2015).

The UN’s CAAC report can be considered part of this sector-wide push towards quantifying humanitarian crises and human rights. It also encapsulates the logic of these metrics: identifying an issue (children and armed conflict), creating a set of definitions and categories (the six grave violations), measuring the frequency or scale of these categories (e.g. the number of hospitals and schools destroyed) and using this information to push for policy changes, financial support or advocacy campaigns

(the black list). Therefore, this process of quantification can be conceptualised as the way the humanitarian community attempt to manage and govern crises. The implementation of this quantitative governance, however, is highly politicised. Again, we can observe this from the example above. On the one hand, you have the SLC, the accused, who argue the scale of the problem has been wildly exaggerated. They applied diplomat pressure on the UN to take them off the list, and are successful in doing so. Whilst on the other hand, you have the international humanitarian community, the accusers, who argue the opposite. For them, the scale of these atrocities is considerable and accurate enough for Saudi Arabia to be included on the list. Therefore, whilst it is tempting to argue that it was the new evidence by Save the Children and Watchlist on child casualties that caused the United Nations to revise their decision, this is overly simplistic. In fact, the political pressures from Saudi Arabia on the United Nations was also a key determining factor in taking them off the list in 2016 and why there were caveats to their inclusion in 2017. In this way, humanitarian numbers function within a deeply political space and thus are deeply politicised.

Connecting journalism and humanitarianism

This example provides the rationale for why I am conducting this research and points towards the way quantification, crises, communication and power are interconnected. To explore this relationship, I focus on the role of the news media in the UK. In doing so, I take a similar approach to Matt Powers' book *NGOs as Newsmakers: the changing landscape of international news*. He focuses on the strategies adopted by increasingly well-resourced humanitarian organisations to gain discursive exposure in both traditional news outlets and through direct communication, via social media and their own websites. My thesis looks at the same intersection between NGOs and the

media but focuses on the news media as the primary site of analysis. More specifically, I focus on the journalists that these well-established online news outlets employ (either as a member of staff or as a freelancer) and the stories they produce about humanitarian emergencies. We can conceptualise these journalists as falling into two categories, as put forward by Bunce et al. (2019): journalism as humanitarianism – a form of advocacy journalism – or journalism *about* humanitarianism – a more descriptive account of events, places and people.

In doing so, we can see the connection between humanitarian intervention and journalism. This is most explicitly observed when journalists push for a particular type of intervention (journalism as humanitarianism) but can also occur in more descriptive accounts of crises where journalists frame emergencies in particular ways that legitimise specific interventionist policies (journalism *about* humanitarianism). I pay particular attention to the use of numbers. Not only how journalists think about numbers and how they use quantitative information in their reporting, but how these numbers can legitimise specific forms of intervention by powerful humanitarian actors and institutions. In taking such a focus, I engage not only with the realm of data journalism but also with the much broader church of journalists who use statistics, targets, indicators and metrics in their reporting.

Overview of thesis

My research begins by constructing a theoretical framework that looks at the quantification of the social world, the way quantification relates to governance and how journalists relate to numbers. I then explore how journalists use quantitative information in their reporting of seven humanitarian crises during 2017, setting their work in relation to wider issues of power within the humanitarian sector. To do so, I

adopt a mixed-methods research design that examines texts and interviews with journalists through a quantitative and qualitative approach.

My findings highlighted how numbers are widely used by journalists when covering humanitarian crises yet are rarely engaged with critically. When journalists *do* challenge statistics they *do not* provide a direct technical critique of a number. Instead, they are more likely to report on competing statistical claims from trusted sources. To decide which source is trustworthy, reporters constantly engage in the hierarchisation of institutions and actors that produce and communicate figures. In doing so, journalists rely on the trustworthiness of the source to *stand in* for the credibility of the number.

Given that taking facts at face value conflicts with basic tenets of journalism (Kovach and Rosenstiel, 2007), how can this practice be explained? A lack of technical skills and confidence in dealing with quantitative information definitely plays a part. But perhaps more significantly, numbers are not challenged because they underpin journalistic claims to objectivity, accuracy and truthfulness. Quantitative information is often used to lend credibility to journalists' articles. Given that these numbers are rarely checked, however, journalists also protect themselves through the hierarchy of trustworthy numerical sources. If a number is proved to be inaccurate, they can point to their source and say "well they are considered trustworthy and we only quoted them". In this way, journalist protect themselves from "flak" (Tuchman, 1972). I argue that this use of numbers can be understood as *quantification as strategic ritual*.

This process affords a large degree of power to journalists' sources, observed in the manifestation of specific quantitative-constructions of crises that legitimise interventionist humanitarian policies. More often than not, these interventionist policies are proposed and managed by the same set of organisations that produce and

communicate the quantitative information: The United Nations (UN), (other) supranational organisations and large International Non-Government Organisations (INGOs).

The coverage of the NHS winter crisis, one of seven humanitarian crises examined, provides a counter-point to the narrative presented above. This case study was selected as the British Red Cross (2017) declared a “humanitarian crisis” within the NHS on 6th January. The importance of this crisis, how it relates to existing discourses of “humanitarian emergencies” and how it sits in relation to the six other international crises selected, will be explored further in *Chapter 5. Research Design*.

In covering the NHS winter crisis, quantitatively adept journalists would use publicly accessible databases to provide clear counter-institutional narratives during the health crisis in the United Kingdom. At first glance, this provides a clear case for those championing data journalism. But as my concluding chapter highlights, the use of open-data by journalists is not the nirvana that many expected it to be. Power is still exerted, but in a different way. The underlying logics of the database often structure what journalists can and cannot do in their reporting. These logics are managed by the NHS and the incumbent government as they control the production of these datasets. Given that these are the two organisations that journalists critique when using this data, we can observe that the organisations controlling the production of data exert the most amount of power in this discursive struggle, followed by the data itself with its capacity to structure narratives and then the journalist. Such a position stands at odds with much of the data-utopian narratives from within and outside academia.²

² I am drawing on earlier work on digital and technological utopianism, to underpin the logic of data utopian as a narrative that emphasises the way data can pave the way towards a utopic journalism and society as a whole. This notion can be observed in the work of [Scott, M. 2015. Distant Suffering Online:](#)

These findings make novel contributions to existing scholarly work in three main ways. The notion of *quantification as strategic ritual*, bringing together explanations based on statistical literacy and the hierarchisation of numerical sources, provides a more comprehensive account of journalists' use of numbers than that offered by the current literature. Whilst this model fits best with journalists using statistics, my findings from the NHS winter crisis highlight the way data journalism is not the answer to the problems observed in reporters' use of statistics. In doing so, I counter some of the optimism from those researching and theorising about data journalism. Building on this contribution, my findings also contribute to the field of critical quantification. Most importantly, I highlight how quantification and governance need to be placed within a broader framework of communication. It is through their communication that data gains meaning, allowing for this data to exert the power that is well documented in the literature on critical quantification. This concept of "meaning" is my third contribution. Throughout my thesis, I highlight how numbers are interlinked with both scientific meaning, in the form of credibility and legitimacy, and symbolic meaning through rhetoric and framing.

Contribution to scholarship (i): Journalism and numbers

Academic research on how journalists use numbers in their reporting can be split into two groups. First, there are those concerned with how journalists use statistics. This body of work consistently argues that journalists use statistics uncritically in their reporting. In doing so, they allow their sources to dictate the quantitative-narrative

the unfortunate irony of cyber-utopian narratives. *International Communication Gazette*. **77**(7), pp.637-653, Brandão, R.F. 2019. Challenging Data-Driven Journalism. *Journalism Practice*. **13**(8), pp.927-930.

about the phenomenon being covered. To remedy this, much of the literature emphasises the need for better technical training of journalists and a greater awareness of how numbers can structure discourses (Ahmad, 2016; Lugo-Ocando and Nguyen, 2017; Lugo-Ocando and Nguyen, 2015; Maier, 2003; Maier, 2002).

Second, there is a more contemporary body of work that is concerned with data journalism. Research highlights how data journalists often use large datasets to skillfully tell quantitatively based news stories. Often this relies on a great degree of technical expertise in back-end (data scraping, data mining, data analysis) and front-end (data visualisations, data interactions) data practices. In general, research emphasises how this reporting is better at holding power to account by providing counter-points to official narratives and exposing nefarious or problematic issues (Coddington, 2015a; Anderson, C.W., 2018; Stalph, 2018; Cushion et al., 2017).

My findings largely corroborate the findings of this existing literature. I highlight how journalists covering humanitarian crises use a large amount of *statistics* in their reporting yet generally do not challenge the numbers they use (Lugo-Ocando and Nguyen, 2017; Ahmad, 2016). This means that their sources, often large humanitarian organisations, are afforded a large degree of power to quantitatively construct emergencies in particular ways. This allows these institutions to effectively govern crises. But not all of the reporting I examined was based on statistics, the NHS winter crisis mainly involved the use of publicly accessible data by quantitatively adept journalists. Access to these databases allowed journalists to conduct more insightful and counter-institutional discourses that were generally better at holding power to account.

My analysis does contain novel insights into the way journalists use numbers in their reporting. Whilst existing work clearly demonstrates that journalists generally use

statistics uncritically, it often provides vague explanations as to *why* this is the case. Generally, the following argument is made: journalists have poor technical skills and low confidence in using numbers so they are more likely to treat numbers as unquestionable objective facts, especially when this quantitative information comes from powerful, trustworthy sources.

My interviews provide a more detailed explanatory framework. To ensure that the numbers being used in reporting were trustworthy, journalists talked about relying on the trustworthiness of their sources. In order to decide which sources to trust and which to not trust, they constantly engaged in the hierarchisation of numerical sources. The position of a source within this hierarchy was based on three factors: the track-record of the organisation, the level of advocacy that sources engaged in and the journalists' own experience "on the ground" with that source. Ranked above the most trusted institution or actor were databases, coveted sets of quantitative information that could tap into the "reality" of the issue.

Why did journalists rely on this hierarchy of trusted sources instead of checking the numbers they used? In my interviews, two predominant explanations emerged. The first was largely concerned with numerical literacy. Journalists identified that they and their colleagues have poor numerical skills so did not feel like they could interrogate the numbers they were presented with. Such an explanation is central to the existing literature, emphasising that journalists do not check numbers because they *cannot* check numbers (Lugo-Ocando and Nguyen, 2015). The second explanation focuses on the way numbers relate to the profession of journalism itself. In essence, journalists do not challenge statistics because this quantitative information underpins the very nature of journalism. This was expressed along three lines: one, journalists explained that numbers were key to the genre and format of news itself as it provided an overview

of the crisis that could be set in relation to individual and anecdotal explanations; two, interviewees explained how numbers helped to ground journalistic work within a scientifically orientated process that could tap into an ontologically objective reality; three, reporters argued that trustworthy numerical sources protected them from criticism as they could defer to these respected actors or institutions if the number used was proved to be misleading, unreliable or invalid.

I bring these three explanations together into the concept quantification as strategic ritual. This idea emphasises the way quantification allows journalists to say “we are a scientific profession bound by scientific rigour” *and* “we can provide stories about issues that harbour both the quantified mass and the individualised sufferer.” But this process also involves the constant hierarchisation of sources to ensure that journalists are protected from criticism in case the number being used, almost always not checked by the reporter, is incorrect or misleading. In this way, *quantification as strategic ritual* is an extension of Tuchman’s (1972) “objectivity as strategic ritual” and Shapiro et al.’s (2013) “verification as strategic ritual.”

Stepping away from my interviews, a regression model conducted on the findings from my content analysis highlighted how tabloid news outlets (The Mirror and The Mail) used numbers more similarly than their non-tabloid counterparts (The Guardian, The Telegraph and the BBC). Coverage from a tabloid was more likely when the article was longer, there was a statistic in the headline, the framing was either causation or problem, the predominant statistic in the article was about nature, when the crisis was a natural one and when statistics were not challenged. In some respects, this conforms to the prevailing logics of tabloidization: a focus on natural disasters over man-made ones and a lack of critical interrogation of quantitative information (Skovsgaard, 2014; Otto et al., 2016; Davies, N., 2009). But these findings also show that the tabloid-

broadsheet model does not map perfectly onto the coverage of humanitarian crisis statistics. The connection between longer articles, more statistics and statistics in the headlines of articles runs counter to ideas that tabloids produce shorter stories that uses “simpler” language.

Perhaps more important than the three contributions highlighted above, my work looks at the way numbers relate to “power” in the reporting of humanitarian crises. This can be observed in the way quantitative discourses legitimise certain interventionist policies by large institutions and the role that these large institutions have in shaping these narratives as journalists’ sources. These findings largely corroborate the existing literature within journalism studies (Lugo-Ocando and Brandão, 2016; Lugo-Ocando and Nguyen, 2017). But my work extends beyond literature on the communication of statistics and is also concerned with data. Through the example of the NHS winter crisis, my concluding chapter discusses where power lies between journalists, sources and data. It argues that open-data is not the journalistic nirvana touted by many within the profession and academia. If the organisations being held to account are also producing the data being used, the data can be altered and changed in ways that deflect quantitative-based criticism. This finding places my work within contemporary discussions around the merits and challenges of data journalism (Anderson, C.W., 2018; Lewis, N. et al., 2020; Gray and Bounegru, 2019). In touching on journalism, data and power, my findings also relate to literature on quantification as a *technique* of governance. To explore how my findings add to this discussion, they need to be set within the context of another body of literature: Critical Quantification.

Contribution to scholarship (ii): Critical quantification

The literature on critical quantification can be split into two sections: knowledge and power. It was a critical approach to numerical knowledge that emerged first. At the start of the second half of the 20th century, the idea that the social must be subjected to statistical analysis began to be challenged. In *The Sociological Imagination*, C. Wright Mills (1959: 55) provided a evisceration of what he called “abstract empiricism” within sociology. He argued that much of the quantitative work within sociology provided an account of social reality where “the details, no matter how numerous, do not convince us of anything worth having convictions about” (Mills, C., 1959: 57). Based on this premise, subsequent work began to examine how numerical knowledge was produced by experts and institutions. Kitsuse and Cicourel (1963) identified the highly contingent nature of official statistics. They argued that attention should not be paid towards whether official statistics encapsulated “deviant behaviour” or not. Instead, those looking at these numbers should examine how these statistics were created (Kitsuse and Cicourel, 1963: 131-134). They argued that researchers and academics should focus on how organisations arrived at definitions for phenomena, how people are then processed according to these categories and how the whole dynamic is influenced by “family organisations, role inconsistencies or situational “pressures”” (Kitsuse and Cicourel, 1963: 135).

This early work was followed by a somewhat sparse collection of research that mainly focused on the history of *probability* and *chance* in the Western world (Gigerenzer et al., 1989; Hacking, 1975). It was only in the late 1980s and early 1990s that this field developed a sense of coherence, spearheaded by a focus on *statistics* (Porter, 1995; Porter, 1986; Desrosières, 1998; Desrosières, 1991; Alonso and Starr, 1987). This body of work detailed the history of statistics in late 18th and early 19th century Europe,

traced its rise in Western society and mapped the contemporary significance of numbers in politics, economics, culture, academia and so on.

Whilst most of this literature above does set the production of numerical knowledge in relation to prevailing power structures, the attention is not normally on the way quantification exerts and facilitates power.³ The first comprehensive account was conducted by Michel Foucault (1984) in his Paris lectures (1978/79). He argued that modern states governed, in part, through quantification. Foucault explained that governments place the people they govern within a bureaucratic structure that allows them to count, aggregate and analyse populations. More often than not, this means states are directing their efforts towards managing rates, indicators and metrics rather than individual people. For example, when modern states attempt to control crime they do not look to eliminate criminal behaviour altogether, they aim to keep the rate of criminal activity acceptably low. Since his work in the late 1970s, this relationship between quantification, governance and the state was developed in the aforementioned work of Desrosières (1998) who paired the rise of statistics with early proto-bureaucratic nation-states in Western Europe. At the same time, work in critical accountancy and critical auditing provided detail and nuance to the way bureaucracy served to quantitatively govern populations (Miller, P., 2001; Miller, P. and Hopwood, 1994).

The work on humanitarian quantification is largely structured by these two strands of inquiry. There is research regarding the technical problems in producing quantitative knowledge during emergencies. These include the administration of surveys, the counting of refugee populations and macro-level demographic statistics (Crisp, 1999; Jerven, 2013; Randall et al., 2011; Neal, 2012). *Chapter 7*. provides three numerical

³ Theodore Porter's "mechanical objectivity" is the main exception to the rule.

cases that adds specific examples to this literature. The first example highlights the difficulty in producing accurate statistics during the cholera epidemic in Yemen. The second highlights the way definitions and categories that underpinned economic classifications could be altered by pressure from powerful nation-states.

The third numerical case examined was from an emergency that occurred in a highly bureaucratic healthcare system. Therefore, this example is one that would normally not be included in a body of work that normally examines international development in the Global South. But it does provide a pertinent counter-point. It highlights the way comprehensive, publicly accessible quantitative knowledge can be produced when an emergency occurs within a sector that is already highly quantified. That is not to say there are no technical concerns. The leaking of NHS data meant the conversation centred on the reliability of these quantitative reports that had not been put through verification processes. The subsequent change in information policy that meant this data was published much sooner also highlights the way that technical improvements in the timeliness of data often rests on political will rather than an inability to do so.

Stepping away from *knowledge* towards *power*, there is a much larger body of work that takes a distinctly Foucauldian approach to quantification and humanitarian governance. Early literature was primarily concerned with the way refugee statistics were used to govern and manage refugee populations (Harrell-Bond, 1998; Harrell-Bond et al., 1992). Since the avalanche of indexes, metrics, matrixes and rankings in the humanitarian sector during the 21st century, the scope of quantification and power has expanded. This work is far more widely encompassing than its predecessors, highlighting the way that numbers facilitate and exert power across the practices, institutions and discourses of humanitarian emergencies, human rights and

international development (Merry, 2016; Merry et al., 2015; Rottenburg and Merry, 2015; Philipsen, 2015).

Most work that looks at quantification as a technique of governance does not consider the discursive element. I argue that quantification must be understood in the discursive structure that it is communicated within. This approach draws inspiration from Theodore Porter's iconic book *Trust in Numbers*. According to Porter, quantitative information should be seen as "strategies of communication" that take the form of "numbers, graphs and formulas" (Porter, 1995: viii). The discursive-quantitative governance can be observed most obviously when organisations exaggerate or downplay numbers. In *Chapter 7.*, my first case study highlights the way the United Nations and INGOs emphasised the large scale of the cholera outbreak in Yemen. Whilst the number of suspected cases was extraordinarily large, the number of people dying from cholera as a percentage of suspected cases were extraordinarily low. These institutions emphasised one statistic rather than another and, in doing so, drew more attention to the crisis. But this quantitative-discursive governance also functioned in more banal ways. My content analysis highlighted how numbers were often used to frame emergencies as *problems* concerning *populations*. Emphasising this *population problem* was then linked to the implementation of certain interventionist humanitarian solutions. Furthermore, my second case study in *Chapter 7.* draws attention towards the way quantification structures international aid flows depending on macro-economic classification systems.

As with the section on knowledge, the case of the NHS provides an exception to the way power functions. Given that numbers are primarily derived from publicly accessible databases, how does the source of this information exert power? This is primarily discussed in my conclusion, centring on the notion of open-book governance

(Clarke, A. and Francoli, 2017; Margetts and Dunleavy, 2013; Dunleavy, P. and Margetts, 2010; Dunleavy, P. et al., 2006). My findings highlight how the National Health Service uses open data as a way to convey trust through transparency and to structure discussions about the health service in terms of the definitions and categories that underpin the logic of the database. A comparison between humanitarian governance and open-book governance allows for a fruitful understanding of how statistics and data relate to power during emergencies. Across both types of governance, discourse operates in an instrumental, or at least directed, fashion. But the significance of discourse stretches beyond instrumental forms of communication. In fact, I argue that it is this discursive structure that gives meaning and significance to quantification itself. In other words, numbers need to be rendered “meaningful” in order to exist within the social world.

In taking such an approach, my approach to the idea of “discourse” can be understood at a fundamental level as “a group of statements which provide a language for talking about a particular topic at a particular historical moment” (Hall, 1997: 44). Given my focus is upon governance, I lean towards Foucauldian notions of how discourse structures ideas, practices, institutions and actors within the discourse (Foucault, 1972; Laclau, 1990). But as Anderson (2018) explains, this concept often lacks a material understanding of how discourse functions. My focus on literature concerning quantification from Science and Technology Studies (STS), outlined above, attempts to tackle this issue through its focus on the material element of numbers. In doing so, my work will be guided by an appreciation of the material, even if it is primarily concerned with the discursive.

Contribution to scholarship (iii): Numbers as meaning

The contributions to critical quantification and journalism studies rest on the idea that numbers create, maintain and alter “meaning”. Literature on the relationship between numbers and meaning tends to be instrumental, either using specific numbers to elicit responses from participants or as strategic forms of communication (Slovic, 2007; Slovic, 2012; Slovic and Slovic, 2015). It is far less common for numbers to relate to vague notions of “meaning” that are open-ended, unbounded and elusive. This is largely because discourse, linguistics, narrative, representation, rhetoric and other studies of meaning-making are traditionally concerned with qualitative information. As Espeland (2015: 56) argues, quantification is often aimed towards “the erasure of narratives: the systematic removal of the persons, places and trajectories of the people being evaluated by the indicator and the people doing the evaluation.” In this way, numbers are all too often approached as anti-meaning rather than deeply meaningful. This is certainly the case when we consider how people have researched the representation of humanitarian crises.

This literature generally focuses on the qualitative - e.g. narratives, images, videos, and sound (Boltanski, 1999; Cohen, Stanley, 2001; Chouliaraki, 2006). When numbers *are* discussed, their ability to create meaning is tied into the amalgamation of suffering. Most commonly, this approach treats numbers as morally deleterious forms of representation. Drawing on the earlier work on Hannah Arendt (1990), the literature argues that numbers serve to turn individual, relatable suffering into an un-relatable suffering mass (Joye, 2009; Chouliaraki, 2006).

However, there is work from within journalism studies that focuses on the meaningful nature of numbers. These mainly concern the relationship between numbers and concepts of trust, legitimacy and credibility. It has been shown that in news reporting,

journalists use “certainty markers” when reporting numbers. These include doubt extinguishers, such as “never stopped”, “clear” or “plain”, and doubt minimisers, such as “overwhelming evidence” or “trouncing earlier records” (Van Witsen, 2019: 10-12). This practice is often linked to the way reporters attempt to present themselves as objective or accurate professionals (Roeh and Feldman, 1984). The way numbers afford credibility to those communicating them, has also been documented in relation to a range of topics from justifying Fascist rule in Italy (Prevost, 2009) to racially geared social programmes (Zuberi, 2001).

My findings support these accounts of numbers and meaning. I find that journalists used numbers to convey a scientific-style accuracy in their work that underpinned their credibility as a reporter. Such is the power of numbers to operate in such a capacity that journalists could rely on the certainty of numbers without actually checking the veracity of that quantitative information. But outside the profession of journalism, numbers also functioned to legitimise interventionist policies by humanitarian actors and institutions. Quantitative depictions of humanitarian phenomena were so revered in public discourse and across the international community that even misleading narratives could legitimise certain policies.

Whilst numbers are readily associated with these types of scientific-style meaning, an area that receives less attention in the literature is the non-metrological symbolism of numbers. The way quantitative information functions in this capacity actually has a longer history in Western thought than its scientific counterpart. Numerology, the branch of knowledge that looks at the occult significance of numbers, has long been concerned with quantitative expression in religious texts (Johnstone, 1990). In contemporary discourse, numbers operate in a similar capacity. In their analysis of a 5 million-word corpus of conversations recorded across the UK and Ireland, McCarthy

and Carter (2004) examined the use of hyperbole in everyday discussions. They found that *dozen*, *zillions*, *millions*, *hundreds* and *thousands* were often used to exaggerate for effect or emphasis (McCarthy and Carter, 2004: 179).

To appreciate how meaning functions in highly quantitative sectors, we can use Espeland's (2015) case study of educational rankings in prestigious U.S. West Coast law schools. Through interviews with different Deans, Espeland highlights the way numbers creating meaning: "they evoke narratives, stories about what the indicators mean, what are their virtues or limitations, who should use them to what effect, their promises and their failings" (Espeland, 2015: 65). Some Deans chose to develop these stories, whilst others were forced to because the quantitative information was so symbolic. One Dean explained poor educational rankings by referring to the innovative nature of the school, a quality that would take time to be accepted by the legal industry and, in the meantime, would negatively affect their rankings (Espeland, 2015: 69). Importantly, Espeland (2015: 71-72) also emphasises the lack of fixity to these narratives. Just as meaning is not static, number-based meaning changes over time. My findings highlight how more attention needs to be paid towards the non-metrological symbolism of numbers. In *Chapter 6.*, my content analysis is used to sketch out a broad picture of how statistics are used to "frame" crises, with my thematic analysis used to provide specific examples of each frame. This highlights the prevalence of using numbers to position a crisis as a "problem" that is often associated with "population" statistics. Placing such emphasis on the human aspect of humanitarian crises comes at the expense of other frames (causation and solution) and other types of statistics (nature, economics, humanitarian operations, infrastructure, and so on).

Moving beyond a framing analysis, *Chapter 7* presents three numerical cases that each have a numbers-based narrative. In a similar vein to the Espeland (2015) article above, this chapter takes one numerical moment and traces the discourses it is structured by, emerging from, actively shaping and constantly creating. In doing so, the power of numbers to create, change, develop and alter meaning emphasises the need to look at meaning and numbers beyond the micro-textual level (e.g. rhetorical analysis, framing analysis). This is perhaps most starkly evident during my interviews with journalists in *Chapter 8*. Whilst most of the conversation regarding numbers was associated with a metrological symbolism, reporters did emphasise the way numbers were key to the genre of news itself. For these journalists, numbers were key to providing an overview of an issue that could be set in relation to the more anecdotal, experiential and personal.

Structure of thesis

The thesis is split into three theoretical chapters, a chapter dedicated to research design, three empirical chapters and a concluding chapter. The first theoretical chapter provides a broad overview of how quantification of the social world has become ubiquitous and normalised in contemporary Western society. The second theoretical chapter approaches this form of quantification as a form of governance that renders those governing legitimate and legitimises their specific interventionist policies. Key to this quantitative governance is an emphasis upon the discursive. The final theoretical chapter examines this discursive governance through the lens of the news media – presenting four intersecting explanations as to why reporters often uncritically reproduce quantitative narratives and thereby facilitate this type of governance.

This theoretical framework underpins the logics of my fifth chapter concerning research design. I outline how I examine news media coverage of seven crises during 2017, adopting five different quantitative and qualitative methods that cover textual analyses and human-based research. The following three empirical chapters are structured by the methods adopted. *Chapter 6.* outlines the findings from my content analysis and thematic analysis to identify broad trends in the way statistics are used by journalists in their coverage of humanitarian crises. *Chapter 7.* uses these findings to examine three particularly pertinent, and representative, numerical examples from my corpus. The themes from these two text-based chapters are then developed in the final empirical chapter that uses publicly available interviews and interviews conducted by this author with those covering humanitarian crises.

In the final chapter, the theoretical chapters are compared to the empirical chapters to develop an argument about how numbers are communicated during humanitarian crises. This final section is structured by the distinction between domestic and international crises that emerged from my work.

Chapter 2. Quantification of the social world

Introduction

In *Chapter 2.*, I examine the way quantitative knowledge about humanitarian crises is often afforded more prestige than its qualitative counterpart. Despite being presented as objective truth, there are a range of technical issues with the reliability, validity and accuracy of these numbers. To explain why numbers are continually treated as immutable facts despite this uncertainty, I present a set of interrelated explanations. I begin by arguing that quantifying the social world has become increasingly normalised over the past 200 years. This is rooted in a much older association between measurement and numbers that became established within Western thought during the mathematisation of science from the 1600s onwards. But a philosophical notion of objectivity only takes us so far, especially in the 21st century. Numbers are considered objective because of the procedural and rule-based nature of modern mathematics and modern science. Stepping away from knowledge production, we can also observe the vested interest large nation-states have in preserving the objectivity of numbers so they can be wielded to govern people. In bringing together somewhat disparate literature, this theoretical framework lays the groundwork for the next two chapters.

Metrological realism of humanitarian crisis numbers

Within the humanitarian sector, numbers are most often treated as scientific facts that tap into an objective ontological reality. This has been most comprehensively demonstrated by Sally Merry (2016) in her book *The Seductions of Quantification*. She argues that global indicators, covering sexual violence to economic prosperity, are “presented as unambiguous and objective” because they “are grounded in the

certainty of numbers". In this way, indicators "act to produce a truth about the world" (Merry, 2016: 5).

This discourse of numerical certainty has been identified across different parts of the humanitarian sector, from people trafficking (Merry, 2016) to conflict (Eramian, 2019) and international development (Fukuda-Parr and McNeill, 2019; Fioramonti, 2014; Lugo-Ocando and Nguyen, 2017). Such a conception of numbers is encapsulated by Desrosières (2001: 348) when he talks of "metrological realism". This viewpoint holds that "computed moments (averages, variances, correlations) have a substance that reflects an underlying macrosocial reality, revealed by those computations".

Despite being presented as objective facts, these humanitarian numbers are far from certain. Merry highlights this tension in her analysis of the annual Traffic in Persons (TIP) Report. Produced by the U.S. State Department, the TIP Reports are principally concerned with quantifying the number of people trafficked across the world. This data is converted into a classification system that categorises nation-states into tiers of compliance. The index ranges from governments who full comply with the minimum standards of the Trafficking Victims Protection Act (TVPA) of 2000 (tier 1) through to countries who do not full comply and are not making any significant efforts to do so (tier 3). In this way, "the *TIP Reports* examine numbers of victims, numbers of prosecutions, and numbers of convictions as a way to gain certainty about a problem" (Merry, 2016: 138). But Merry argues that such an act of quantification is far from certain. In fact, trafficked people is an incredibly difficult phenomena to measure given the size and nature of population flows and the contestation over the definition of trafficking itself (Merry, 2016: 138). This case is indicative of wider problems in the quantification of the humanitarian sector.

Uncertainty of humanitarian crisis statistics

Those conducting quantitative humanitarian research often face definitional problems concerning the phenomena they are attempting to measure and analyse. This poses a considerable problem to quantitative research, which requires standardised definitions to function. Such a problem is evident when we consider the idea of “household”. This term is used extensively in humanitarian crisis surveys, most notably when researchers conduct 90-day retrospective mortality surveys to determine the mortality rate of population.⁴ In these surveys, the heads of “households” are asked to recall how many of their family members have died in the previous 90 days from the administration of the survey.⁵

Along with other methodological problems, Randall et al (2011: 217-218) explain that the main methodological issue of these surveys centres on how to define “household”.⁶ In the West, the idea of the household is fairly standardised: a monogamous nuclear family that includes children, parents and, in some cases, grandparents living in the same house. However, across much of sub-Saharan Africa, for example, the concept of household varies widely with non-monogamous relationships (e.g. polygamy), large extended families, communitarian notions of living and multiple physical manifestations of “households.” Despite such contrasting definitions, the 1980s witnessed the international demographic community seeking a standardised definition of “household” to aid data collection (Randall et al., 2011: 217-218). In favouring

⁴ These surveys are used in a variety of settings, including in the Integrated Phase Classification for food insecurity.

⁵ Once a representative sample size has been collected, these results are processed and extrapolated across the total population that the samples represent. IPC Global Partners. 2012. *IPC. Technical Manual Version 2.0: Evidence and Standards for Better Food Security Decisions*. Rome: FAO.

⁶ Whilst at a fundamental level, the administration of a survey on death entails a series of problems around inaccuracy given the psychological and cultural dimensions of such a sensitive topic, Randall, S., Coast, E. and Leone, T. 2011. Cultural constructions of the concept of household in sample surveys. *Population Studies*. **65**(2), pp.217-229.

commensurability over suitability, the survey results are often inaccurate and unreliable. Given that some people are members of more than one household, there is often double counting when survey administrators count the size of the household in question. Furthermore, in polygamous communities, males can be the head of multiple households. This means that one individual can provide responses for two or more households, skewing the data.

Crisp (1999: 4) highlighted similar problems with refugee statistics in the 1990s. He explains that the term “refugee” was defined in multiple ways. The 1951 UN Refugee Convention used refugee “to describe those people who are outside of their own country and unable to return to it because they have a ‘well-founded fear of persecution there.’” This is the definition adopted by most developed nations. Those in the “developing” world (mainly Africa, Central and South America), however, broadened this definition. Through the Organisation of African Unity Refugee Convention and the Cartagena Declaration, they expanded the term for refugees “to include people who have sought refuge in other countries as a result of aggression, occupation, generalized violence and events seriously disturbing public order.” When researchers came to do research on refugee populations, they would select either the first or the second interpretation. The narrower conception would exclude certain populations that were included in the broader definition, making it hard to compare between different pieces of research.

But there are not just problems at a conceptual level, logistics often pose considerable problems too. Crisp (1999: 6-8) explains that low resources and insufficient labour means that counting large populations is operationally extremely challenging. This difficulty can be observed when administrators attempt to count the number of people in a refugee camp. Harrell-Bond (1992: 211-212) provides a two-point explanation as

to why refugee camp populations are so hard to quantify. First, she explains that “refugee survival usually depends on mobility, either for employment, households dependent on remittances, and for more basic forms of self-sufficiency which involve living off the land - all of which resist census taking.” Second, refugees will manipulate assistance systems. For example, “false registration of family members who are temporarily or permanently missing is common.” Whilst the rise of new digital technology has gone some way to increase levels of accuracy (Jacobsen, 2017), the counting of populations during humanitarian emergencies remains a non-exact science.

Taking these criticisms into account, we should be wary of humanitarian crisis numbers. At best, they should be treated as complex and uncertain quantitative descriptions of the phenomena they enumerate. At worst, the humanitarian data produced should be considered guesstimates (Jerven, 2013). Those within the international humanitarian community have recognised the uncertainty surrounding numbers from as early as the 1980s

Writing in 1985, for example, Gaim Kibreab pointed out that “there is a cloud of uncertainty and unreliability surrounding African refugee statistics” (G. Kibreab, 1985: 10). Six years later, a report issued by the US State Department’s Bureau for Refugee Programs noted that “counting refugees is at best an approximate science.” [(US Department of State, 1991: 85)] And a recently-published International Labour Office volume on the collection of international migration statistics observes that “much of the information available on refugees and persons in need of protection is tentative at best.”⁸ [(Bilsborrow et al., 1997: 227)] (Crisp, 1999: 4).

Despite the well documented issues in using humanitarian crisis numbers, they are still widely used as revealing a pre-existing social reality. Why does quantification hold such a privileged position within the humanitarian sector? To answer this question, we must situate quantitative expressions of crises within the wider context of quantifying the social world. In particular, how the quantification of the social world has become normalised in the 21st century.

The quantification of the social, normalised

It has become somewhat normal for the messy social world of human activity to be counted, aggregated and analysed. From our current vantage point, it is easy to argue that quantification is as natural as the activities that we take part in: to browse social media seems to go hand-in-hand with being specifically targeted with advertisements; running for the pleasure of exercise is not readily separated from the distance ran, the time it took, the kilometre split or the heart rate; whilst learning about a particular topic in a formal setting is bound by a language of marks, grades and class rankings. The integral nature of quantification to the social world, however, is a story that begins in earnest around 200 years ago with the rise of statistics.

Statistics

Statistics emerged in the early 19th century alongside the proto-bureaucratic nation-states in Western Europe (Desrosières, 1998: 10). As governments increased the amount of information they collected on their citizens, culminating in comprehensive censuses, they increasingly worked with statisticians to analyse the data. This partnership was geared specifically towards statistically identifying social problems and providing state-led reforms to remedy them (Porter, 2003: 238). In fact, the work

of early statistics was almost inseparable from the nation-state. This is evident in the word itself: statistic is derived from the German *statistika*, which itself is derived from a combination of Italian and New Latin terms for “the state”.

As states adopted statistics as a way to govern their citizens, more and more of the social world was quantified. The work of Adolphe Quetelet (1796-1874) typified the expansion of statistics during the middle of the 19th century. Working alongside the French state, he argued that perceived random individual action - such as crime, marriage and suicides - could be understood as regular (and therefore predictable) when one amalgamated all of these individual actions (Desrosières, 1998: 10). The differences at an individual level were erased at the level of “society” as variation gave way to what Quetelet called *l’homme moyen* (the average man) (Porter, 2003: 241). He went on to link these social averages (of crime, marriage, suicides and so on) to causal factors, such as “nutrition, schooling, religion, and laws” (Porter, 2003: 241). In this way, social behaviours, and the things that caused them, were increasingly framed within statistical laws of regularity (Lazarsfeld, 1961: 297).

After Quetelet’s seminal work, more aspects of the social world were quantified using the logic of statistics, including literacy, voting and newspaper circulation. These numbers made up new substantive fields of statistics: “educational statistics, political statistics, social statistics, and so on” (Lazarsfeld, 1961: 310). Such was the proliferation of numbers from 1830 to 1860 that many refer to this era as the “avalanche of statistics” (Hacking, 1990). It was during this so-called avalanche that it became increasingly normal to refer to social phenomena as numerical entities. But the practice of *statistics* itself during this period was not the *statistics* that we know today.

During the 19th century, statistics was specifically concerned with quantifying the social world (e.g. suicide rates, marriages etc.). It was only at the turn of the 20th century that statistics became applied mathematics: a quantitative methodological tool that could be applied to a range of phenomena from economics to psychology (Porter, 2003: 238). As the discipline developed during the early 1900s, it built on the existing understandings of averages, probability and causality to include methodological and conceptual tools that became foundational to modern statistics. These include the bell curve, the chi-squared test for independence, Student's t-test and Fisher's null-hypothesis (Porter, 2003: 242-248). During this period, statistics as an applied mathematics was being used extensively to the study of the social world. In fact, statistics came to define what is now called the "social sciences" during the 20th century. Porter (2003: 239) explains that from the 1930s to the 1970s "statistical analysis became almost mandatory for empirical or experimental research through social science, with the partial exception of ethnographic and clinical work".

Whilst the quantitative hegemony was challenged during the second half of the 20th century (Mills, C., 1959; Desrosières, 1998; Hacking, 1975), it did very little to displace the idea that numbers can reveal something fundamental about the social world.⁷ In fact, technological developments during the 1990s rejuvenated the authority of numbers to describe the social world. The increased processing power of ever-smaller computer systems, combined with the rise of the Internet, facilitated a distinctly modern form of quantifying the social world: *big data*.

⁷ There is a more detailed discussion regarding the challenges to numbers and science from the 1950s onwards in the Introduction.

Big data

As Southall et al. (2019: 1) explain, we now “often talk about ‘data’ produced by data scientists, not ‘statistics’ produced by statisticians.” Whereas traditional statistical methods were based on probability and sampling, data science requires “a familiarity with computer programming, often accessing live ‘data feeds’ by ‘APIs’ [application programming interface]” and using “machine learning models” rather than testing hypotheses. Much of this methodological shift relies on the scale of digital data available. The proliferation of digital technologies from the 1990s means that “a growing number of organisations retain digital data on millions of persons and their moments, and much of social life is mediated by technology that retains a digital record of every action” (McFarland et al., 2016: 15). With such a wealth of data, representative samples give way to totalising quantitative accounts of digital activity.

Just as the early statisticians could provide descriptive accounts of people based on comprehensive census information, data scientists can now analyse complete commercial data based on all the interactions between buyers and sellers. In this way, the transition from statistics to data is also a story of a shift from public to private institutions. If statistics was predicated on large-scale information collection by the state, then 21st century quantitative analysis is based on masses of data collected by large technology companies, such as Facebook, Amazon, Google and Apple (Mills, A., 2018: 592).

The scale of predominantly commercial data collection has had a profound impact on the way society is quantified. Personal technology provides access to social behaviours that were previously practiced but were not recorded so extensively. If we take exercise as an example, for much of the 20th century social scientists would fill in surveys about exercise based on their observations of different activities or through

discussions with participants. This would often mean that the scale of social science analysis was limited. The rise of modern digital technology, however, allows for the recording of the location, distance and time of millions of individuals' exercise routines across the world.⁸ Furthermore, a range of information is also collected on the individual experience of these activities: the biological effect, through heart rates and VO2 calculations, and more experiential data made up of survey feedback per activity, sharing of activities on social media, and so on (Till, 2014; Ajana, 2017). But digital technology also means that *new* social behaviours and activities are created and recorded. Most notably, social media and email have created new forms of text and image-based communication that are often linked to internet-specific forms of commercialism: online expressions are collected, aggregated and used for advertising products to specific cohorts of potential customers.

In this context, the rise of data has been touted by many as marking a shift in our understandings of the social world. Some have suggested that the very notion of “theory” to comprehend the social world is redundant (Anderson, C., 2008). Instead, big data presents a “universe comprised essentially of information” that offers us a complete explanation of society (Mayer-Schönberger and Cukier, 2013: 96). This big data discourse has injected new life into the metrological realism paradigm introduced at the start of this chapter. In effect, big data has seemingly made the social world more understandable as a quantitative entity than ever before. But the slow creep of social quantification is only a partial explanation to why numbers are treated as objective truths.

Metrological realism relies on a more fundamental mathematical logic of measurement (Flegg, 2002). Metrology reveals the size, weight, temperature, and so on, of

⁸ For examples of such applications, see Strava or Map My Run.

macrosocial reality in terms of different *units*. These units are expressed numerically: 10 square feet, 1,000 kilograms, 40 degrees Celsius and so on. It is from these units that more complex mathematical practices can function: average sizes, variances in the weight of objects, correlations between weight and size, regressions examining the effect of different gases on temperature, etc. To understand how such a concept of measurement has become common-sense, we must return to Ancient Greece and the birth of “measurement” as we know it.

Measurement and science

Euclid, writing in the late 4th century BC, detailed the relationship between objects in terms of their size – a concept we now call “ratio”.⁹ In other words, he outlined how certain objects can be compared to other objects through a size ratio. For example, one line may be twice the length of another line so the ratio between the two would be 2:1.¹⁰ Under this logic, any of the same objects could be set in relation to one another: one object was either smaller, larger or the same size as another object. Euclid extended this notion of ratio to units of measurement. In his iconic three-line equation, he explains

The class of all $n|m$ such that $mL1 < nL2$

The class of all $n|m$ such that $mL1 = nL2$

The class of all $n|m$ such that $mL1 > nL2$

⁹ The work of Euclid is vast, even within geometry, so only the relevant aspects are considered here.

¹⁰ Euclid is not considered the first to develop these ideas yet did combine these existing ideas into the book *Elements* that was preserved and copied into modern European culture.

In this equation, n and m stand for different units of measurement expressed as whole numbers (a number without fractions) and $L1$ and $L2$ refer to two different lengths. Using the logic of ratios, he proves that an object of length $L1$ could be larger, smaller or equal to an object of length $L2$ depending on the value of n or m . This relationship makes more sense if we ascribe arbitrary values to n and m .

The class of all $\frac{2}{3}$ such that $2L1 < 3L2$

The class of all $\frac{2}{3}$ such that $2L1 = 3L2$

The class of all $\frac{2}{3}$ such that $2L1 > 3L2$

In developing such an equation, Euclid creates a direct relationship between size and unit of measurement. As Michell (2003: 518-519) explains “the significance of Euclid’s achievement is profound” because he lays bare what numbers actually are

If whole numbers are understood as relations between a magnitude and a multiple of that magnitude...then ratios, as generalizations of the measure relation, may be understood as generalizations of whole numbers (i.e. as real numbers). As relations between magnitudes, numbers are understood to be as real as the magnitudes themselves. (Michell, 2003: 519).

Under this view, numbers are not generated or constructed in the act of measurement. Instead, measurements are only ever an estimate of the true, naturally occurring number. It is hard to overstate the importance of such a notion. Without this concept, almost all modern forms of quantification would appear nonsensical. The fact that such a conception of numbers is treated as common-sense largely owes to the widespread adoption of mathematics in the natural sciences. In fact, it was Euclid’s three equations that helped to elevate mathematics as the primary logic of modern science.

When Galileo was developing the way distance was related to time in the 17th century, he relied on “only a single theory” (Mertz, 1980: 236): “the theory of proportionality of general magnitudes...found in the Fifth Book of Euclid’s *Elements*”. This mathematical proof was pivotal to Galileo’s discovery that distance of free fall is proportional to the square root of time fell (Michell, 2003: 518-519). In a pre-Euclidean world, measuring two different types of objects and equating these measurements with each other would not be possible. But with Euclid’s notion of measurement, Galileo could set time and distance in relation to one another. Galileo’s work was part of a broader shift in the 1600s towards the *mathematisation of natural science*.

The origins of this movement began in the “mathematical sciences of astronomy and mechanics, where quantification already held a strong position” (Jongsma, 2001: 163). At the start of the 1600s, Kepler developed his two laws of astronomy: that planets did not orbit the sun in a circular motion (it was elliptical) and they did not have a uniform velocity. Both laws were articulated and proven through mathematics (Caspar and Hellman, 1959). At a more conceptual level, Galileo used mathematics to document, and argue for, the certainty of mathematics (Drake, 1957). He asserted that “the essential and necessary properties of material things are the primary mathematical qualities of number, size, shape and speed” (Jongsma, 2001: 166-169).

Their work was followed by perhaps *the* most influential quantitative scientist of the era: Isaac Newton. Before Newton, scientists mainly worked in the “qualitative experimental areas of natural philosophy, such as chemistry and natural history.” His work “in the classical sciences of optics, mechanics, and astronomy made deep connections between quantitative features of phenomena and the way the universe worked” (Jongsma, 2001: 177). In *Philosophiæ Naturalis Principia Mathematica*, perhaps the most seminal work of modern science, he established a new mode of

mathematising natural science (Westfall, 1980). Whereas Kepler and Galileo used numbers as “an ontological or epistemological position”, Newton treated it as an “operational stance” (Jongsma, 2001: 178-180). That is, mathematics became the language and logic of scientific research.

After Newton’s work, “analysis (quantitative experimentation, involving measurements, leading to appropriate inductive generalizations) and synthesis (logical deduction from accepted principles, using mathematical theories, concepts, and techniques designed for the purpose) became full partners in the scientific process” (Jongsma, 2001: 180). Such was the connection between science and mathematics in the 18th century that “mixed sciences were still as much a part of mathematics as they were of physical science” (Jongsma, 2001: 184). Areas that did not immediately lend themselves to mathematics, such as electricity, magnetism, heat and chemistry, remained experimental in the first half of the 18th century. By the end of the century, however, scientists were defining and measuring different quantities associated with them, “using instruments designed for the task, and in some cases had begun to formulate mathematical theories for them” (Jongsma, 2001: 185). By the beginning of the 1800s, mathematics had cemented its place at the centre of science (Dear, 1995). Numbers continued to occupy this position through the 19th and 20th centuries.¹¹ In the 21st century, science almost always rests on mathematics to record, calculate and communicate scientific research (Porter, 1995). In this way, contemporary science and numbers are practically inseparable (Stigler, 1986: 2).

This means that alongside the fundamental notion of metrological realism, numbers are also associated with the certainty and objectivity of the scientific empiricism. This conception of science emerged during the Age of Enlightenment in the 18th century. It

¹¹ The intricacies of the relationship between science and numbers will not be discussed here.

was during this period that Europe and North America witnessed a bifurcation of *reason* into *rational* and *irrational*. Rational reason was underpinned by scientific and technical forms of knowledge. Whereas irrational reason was everything that the rational was not, including magic, quackery, religion and emotion. It was *rational reason* that gained validity and predominance across European society (Feenberg, 2011: 865). As Dijkzeul et al. (2013: S16) explain, Enlightenment-inspired philosophers and social reformers “emphasised the crucial role of empirical observation and establishing evidence in developing theory and gaining knowledge, as well as in deciding among different arguments or, more pragmatically, between what works and what does not.”

In a society still dominated by these notions of objectivity, rationality and empiricism, science is often revered as the pinnacle of human knowledge. It rests on the idea that through objective investigation, individuals can find out truths about the world around them. These objective truths form the basis of scientific theories that explain how the world works. If subsequent findings are incongruous with a theory, then it is modified or abandoned in favour of a new theory that explains the world in a way that matches with current scientific knowledge (Roy, 1993).

This projects modern science “as a universal, value-free system of knowledge which has displaced all other belief and knowledge systems by its universality and value-neutrality, and by the logic of its method arrived at objective claims about nature” (Shiva, 1998: 162). Whilst the objectivity of the sciences has been consistently challenged (Kuhn, 1970; Davis, P.J. and Hersh, 1986), the power of this narrative is firmly rooted within contemporary Western society. This is most explicitly evident in the way scientific knowledge, almost always expressed numerically, is privileged over un-scientific, non-institutional and often localised forms of qualitative knowledge.

Vandana Shiva (1998) maps out this relationship in her account of international development.

Mechanical objectivity

But the notion of an absolute objective reality is a position that has become increasingly disputed and, for many, untenable (Rorty, R., 1999; Rorty, R, 1991; Spohn, 2002; Daston and Galison, 2007). In this context, science gains a sense of objectivity through *procedure*. Theodore Porter argues that this procedural objectivity is key to understanding why we continue to trust in numbers and numbers-based scientific research when absolute notions of objectivity are repeatedly challenged. He explains that numbers are considered “objective”, and therefore trustworthy, because they emerge from a standardised, scientific procedure. When a researcher uses numbers in their research, they adhere to the globally accepted rules of mathematics that dictate clear right and wrong ways for things to be measured and analysed. In doing so, the subjectivity of the researcher is erased from the research they produce. This is replaced by “mechanical objectivity” (Porter, 1995: 3-4).¹² Porter compares this process to the rule of law. The “objective” treatment of people in the legislative system rests upon those within the legal system (judges, lawyers and police officers) following the rules and guidelines of the institution. In this context, “objectivity means the rule of law not men” (Porter, 1995: 74).

But mechanical objectivity does not just afford objectivity to scientific research, it also affords it a considerable amount of power. A mathematically expressed piece of knowledge has a distinctly universal capacity. These facts, produced in a specific

¹² Porter does recognise that full adherence to these rules is impossible, referring to the role of “tacit knowledge” in scientific research as pointed out by Polanyi (1958).

context, can be conveyed across the entire world as a spatially and temporally unbounded piece of knowledge. For example, a scientifically valid experiment regarding agricultural productivity of sorghum can be conducted in a laboratory in California and be legitimately presented as a blueprint for farming techniques in Mali to local farmers, aid workers, state officials, humanitarian organisations, international organisations and the wider international community.

For Latour (1986: 29), this function of numbers is the locus of scientific power: the way “distant or foreign places and times” can be “gathered into one place in a form that allows all the places and times to be presented at once.”¹³ Porter refers to this “power of numbers” as a “technology of distance”. In this way, numerically expressed knowledge, and those institutions that produce and communicate it, exert a considerable amount of power. This touches upon a wider set of literature that relates quantification to governance.

Quantification and power

In his famous Paris lectures on space, knowledge and power, Michel Foucault (1984) argued that quantification was a *technique* of a distinctly modern form of governance. Beginning with the rise of statistics and modern bureaucracies in the early 19th century, modern states began to manage land and people in a distinctly quantitative manner. Instead of directly managing their citizen’s lives, governments quantified their subjects, developed a set of indicators and rates and then sought to manage these metrics. Such a technique of governance can be observed today. To keep law and order, for example, governments do not look to eliminate criminal behaviour completely; instead,

¹³ Latour refers to the different ways scientific research is inscribed and how these inscriptions then function to communicate the findings of science. Whilst these are not exclusively numbers, most of the inscriptions he refers to are numerically based (Reference needed).

they keep crime rates acceptably low by devising education policies, developing social welfare strategies, funding police forces, supporting the legal system, and so on. As long as the rates stay low, the state is in control of crime. Foucault calls this type of governance *security*. This notion of quantification being a *technique* of government was developed through the 1990s and into the 2000s (Porter, 1995; Desrosières, 1998; Hacking, 1990; Scott, J.C., 1999; Star and Bowker, 1999).

But quantification does not just function as a *technique* of governance, it also serves to make institutions and actors trusted and legitimate. The connection between quantification and trust manifested in the rise of auditing and accountancy practices in mid-to-late 20th century (Espeland and Sauder, 2007: 5). These technical tasks were an attempt to establish the trustworthiness of public institutions and their legitimacy within society (Porter, 1995). This was closely tied with the emerging neo-liberal logic that emphasised the need for states to be efficient with their spending and to account for the returns on their investments. The success of these practices can be observed in the proliferation of indexes, rankings and a whole host of other metrics within European and North American public institutions from the 1970s (Power, 1994). In fact, some refer to this era as the “second avalanche of numbers” (Kurunmaki et al., 2016).¹⁴ By the 21st century, auditing has become a very popular method to convey accountability and transparency, further entrenching quantification within public institutions (Power, 1994).

The dual capacity of numbers to govern phenomena and be trusted to govern phenomena can be observed within the shift towards “digital-era governance (DEG)” of the 21st century (Dunleavy, P. et al., 2006). This new mode of governance placed

¹⁴ The first “avalanche of numbers” occurring between 1830s-1860s with the rise of statistics and the European bureaucratic state.

“digital technologies at the centre of bureaucracy, and in doing so, reinstated government-citizen data flows” (Clarke, A. and Margetts, 2014: 396). Dunleavy and Margetts (2013: 1-2) go on to argue that a “second wave” of DEG can be observed from 2010 onwards, spurred by the rise in social media and the pressures of austerity on public services. A key part of DEG was the collection and use of data by public bodies, more commonly referred to as *big data*. This data is changing the way that governments research, prioritise and manage public services (Redden, 2018; Bertot et al., 2014; Kitchin, 2014; Redden, 2015; Dunleavy, P, 2016). In his examination of Singapore’s open data project, Stevens argues that open data affects the way that social issues are managed. As Stevens (2019) explains

These apps offer deeply technocratic responses to existing social and political problems. They belong to an imagined future in which information technologies — especially data — will solve social problems.

Often the data provided fits within conventional modes of understanding these social problems. For example, the transport data made available focused “almost entirely on trains, buses and especially cars” whereas there was “little or no data” about “alternative modes of transportation.” In this way, data often supports existing modes of governance rather than disrupting them (Kitchin, 2014). But another key aspect of digital-era governance is the “transition to full open-book governance [OPG] instead of previously very limited or partial “freedom of information” regimes” (Dunleavy, P. and Margetts, 2010: 4). OPG now rests on “a general expectation that all government information will be online in accessible formats and capable of detailed scrutiny.” This can lead to intense criticism of the government, but also engenders trust through

transparency (Bertot et al., 2010; Bannister, F and Connolly, 2014).¹⁵ In their analysis of policy documents from France, Italy, Spain and the United Kingdom De Blasio and Selva (2016: 227) identify this discourse of open government that stresses “innovation and openness in the sense of an enhanced transparency”. Whilst the association between open data and transparency has been challenged, the discursive link between the two is well cemented within public discourse.

The way numbers function as a *technique* of governance aimed towards the management of people and as a device to convey trust and credibility make them very important tools for modern nation-states. Institutions and actors using numbers to wield power have a vested interest in maintaining their legitimate position to describe the social world. In this way, “statistical knowledge is often viewed as non-political by its creators and users” so it generally “flies under the radar of social and political analysis” (Merry, 2016: 5). Fukuda-Parr (2019: 10-11) argues that this makes indicators, indexes and metrics “particularly mischievous because the agendas of the actors involved are obscured behind the veil of an objective and technical choice.”

Conclusion

Taken as a whole, the way we trust numbers to say something about the social world is incredibly complex. It rests on a historic notion of *measurement*, a process of using units to uncover an objective ontological truth. The widespread adoption of this concept of measurement in the sciences during the 17th century, and the subsequent mathematisation of the sciences in the 18th and 19th centuries, cemented *measurement* within Western episteme. In this context, the process of quantifying the

¹⁵ Dunleavy and Margetts Dunleavy, P. and Margetts, H.Z. 2010. The Second Wave of Digital Era Governance. In: *APSA 2010 Annual Meeting Paper*. point towards the highly disruptive and successful case study of the UK MP expenses scandal in 2009.

social world from the early 1800s did not seem as bizarre as it could have 200 years earlier. The site of quantification had changed but the logic had not: if plant behaviour could be measured, why could human behaviour not be?

But a philosophical belief in an objective reality is a position that fewer and fewer people maintain in the 21st century. Therefore, Porter's notion of mechanic objectivity, the construction of objectivity through scientific procedure, provides a more contemporary explanation of our continued trust in quantitative information. This was certainly the operating logic behind the proliferation of auditing and accountancy practices across public institutions in the second half of the 20th century. Not only was this to pursue trustworthiness, but increased quantification aided in the governance of people. Such is the centrality of numbers to the power of modern states that governments and quantification are not readily parsed. Such a relationship means quantification is further entrenched within society as many of those in positions of power have a vested interest in maintaining the epistemological and ontological certainty of numbers. It is from the point of *power* that this chapter departs into the next.

Chapter 3. Quantification and humanitarian governance

Introduction

In *Chapter 3.*, I apply Foucault's coupling of quantification and power to the humanitarian sector. I develop the existing notion of humanitarian governance by focusing specifically on the way numbers function as a *technique* of governance: quantitatively structuring humanitarian crises in a way that affords power to the large humanitarian organisations that produce these numbers, namely the United Nations. But quantification also operates to confer trust and credibility on the people and organisations that use them. This is evident within the humanitarian sector when we consider the rise of evidence-based action, accountancy and auditing practices. Both forms of quantitative power are underpinned by a discursive system that allows these numbers to be communicated. Most often, this involves humanitarian institutions using journalists to gain discursive exposure. But this relationship is not one-way: the news media also rely on these organisations for content. This symbiotic relationship often results in numbers being reproduced by journalists uncritically, facilitating the quantitative governance of crises.

Global and humanitarian governance

This notion of "governance", and related terms such as "governmentality", emerged most coherently in the work of Michel Foucault (1991). For Foucault, governmentality meant three things. First, an "ensemble formed by institutions, procedures, analyses and reflections, calculations, and tactics that allow the exercise of this very specific, albeit very complex, power that has the population as its target, political economy as its major form of knowledge, and apparatuses of security as its essential technical

instrument.” Second, the line of force that has led “government” to surpass sovereignty and disciplinary powers and implement a set of governmental “apparatuses” and series of “knowledges”. Third, how “the state of justice of the Middle Ages became the administrative state in the fifteenth and sixteenth centuries and was gradually “governmentalized”” (Foucault, 1991: 102-103). The concept of governmentality has been critiqued, developed and adopted within a range of disciplines, including international relations (Scott, D., 2005; Elden, 2007; Watts, 2003).

The concept of “global governance” emerged in the 1990s as a way to explain how transnational problems and risks were managed in a post-Soviet era (Rosenau, 1995). Weiss and Thakur (2010) explain that global governance refers to “the sum of laws, norms, policies, and institutions that define, constitute, and mediate relations among citizens, society, market, and the state in the international arena”. The primary goal of this assemblage is to “bring more predictability, stability and order to transboundary problems” (Weiss and Thakur, 2010: 6). In this way, global governance deals with one of *the* defining features of modernity: “risk” (Beck, 1992; Giddens and Pierson, 1998). To understand how humanitarian problems are managed, literature have increasingly adopted the notion of “humanitarian governance” (Barnett, 2013; Dijkzeul and Sandvik, 2019; Fassin, 2007; Jacobsen and Fast, 2019). Whereas global governance looks at a broad spectrum of transboundary risks, humanitarian governance specifically examines the management of humanitarian-related problems. Leaning heavily on the work of Foucault (1991: 100), humanitarian governance is defined as the administration of groups of humans “in the name of a higher moral principle that sees the preservation of life and the alleviation of suffering as the highest value of action” (Fassin, 2007: 151). The principal organising structure for humanitarian

governance is the United Nations system, bringing together a whole host of actors and institutions to dictate action, formulate policies and develop legal frameworks.

The United Nations system is comprised of three components. There are 192 United Nations states that are brought together under the collective of the “united nations”. Each country’s membership is formalised through representatives to the United Nations and the attendance of nation-state leaders at world conferences and meetings. The bureaucratic and operational function of the United Nations is conducted by a series of individuals who form the international civil service. These include the Secretary-General of the United Nations through to UN staff operating in the field. UN staff often work in partnership with the third component of the UN: non-state actors working within non-governmental organisations (NGOs) (Weiss and Thakur, 2010: 7). Humanitarian emergencies are addressed by the UN through the management of these three components.

This was particularly evident in the 2004 Indian Ocean earthquake and tsunami. Weiss and Thakur (2010: 24) explain that “through its Office for the Coordination of Humanitarian Affairs (UNOCHA)” the United Nations “orchestrated the relief effort across the twelve affected countries”. The crisis was effectively managed by UNOCHA’s “cluster approach” that split the emergency into different sectors, such as “health”, “food and security” and “water, sanitation and hygiene”. The needs of each sector were evaluated, different humanitarian actors and institutions were assigned roles within each cluster, depending on their expertise, and provided with the required amount of resources to conduct their tasks. The UNOCHA’s success in managing the crisis in Indonesia led to the formalisation of the “cluster approach” in 2005. During contemporary crises, the cluster approach is used by UNOCHA to effectively manage nation-states, INGOs, NGOs, local actors and other United Nations departments. For

example, camp coordination and camp management is led by the UN High Commissioner for Refugees (UNHCR) for conflict internally displaced people (IDPs) and the International Organisation for Migration (IOM) for disaster situations (OCHA, 2019).

Quantification

Integral to almost every aspect of the UNOCHA's management of crises is quantification. During the 2004 Indian Ocean earthquake and tsunami, UNOCHA determined the scale and nature of the humanitarian emergency by quantifying the number of people who had died, how many people needed emergency medical care, the risk of disease spreading through the affected population, whether people faced a food shortage, and so on. These needs were categorised and amalgamated into specific clusters and the solutions to each cluster were determined by the problems they presented. The financial requirements for implementing these solutions related directly to appeals for monetary support that were split into the different clusters created. Furthermore, the success or failure of each cluster was judged according to a quantitative criteria for assessment (UNICEF, 2006). In this way, numbers now function at each stage of a crisis. As Jacobsen and Fast (2019: S161) explain

This includes data, first, to assess needs, then to develop baselines and identify indicators, to regularly monitor project progress, and eventually to assess and evaluate outcomes and the 'success' of projects, whether measured against project goals or impact indicators (i.e., what is the impact of the project on the people or situation). These data, in turn, become the basis for reports to donors, their constituents, and representatives, often elected officials and the general public in donor countries.

In this way, we can approach quantification as a “technique” of humanitarian governance (Foucault, 1984). The primary function being its ability to legitimise specific types of intervention during crises.

Legitimising intervention

Intervention is absolutely essential to the management of an emergency as it allows the United Nations, INGOs, states and local actors to provide the necessary solutions to deal with a humanitarian emergency (Dijkzeul and Sandvik, 2019: 85). The concept of “humanitarian intervention” emerged in the 1990s as part of the “new world order” that emerged after the collapse of the Soviet Union, the end of the Cold War, and outbreaks of intra-state armed conflicts across the world (Gierycz, 2010: 111).

Early humanitarian interventionism was often military. The first cases of military intervention came in 1992 with the crises in Somalia and Bosnia. Both attempts highlighted the “complexity of military interventions and the inability of the United Nations and other members of the international community (IC) to stop the violence and effectively protect civilians” (Gierycz, 2010: 111). Nevertheless, this practice continued through the 1990s, culminating in the North Atlantic Treaty Organisation (NATO) bombing of Kosovo in 1999.

Criticism of military intervention led to its reconceptualization in the 2000s, with sovereignty of a nation being reframed through the Responsibility to Protect (R2P) global political commitment. Intervention, under these guidelines, could occur to prevent genocide, war crimes, crimes against humanity or ethnic cleansing (Olsson, 2015: 430). In this context, scholars expanded their scope of “intervention” beyond strict judicial or military forms to include a range of activities from “capacity-building endeavours” (Jacobsen, 2017) and “crisis management” (Andersson and Weigand,

2015; Harrison, G., 2010). In doing so, there is a recognition that intervention has “become increasingly polysemic and vague” and it now refers to

Different types of endeavours (coercive, non-coercive, ‘interventions on invitation’); involving a wide array of policy sectors (cultural, economic, military, legal etc.); seeing the engagement of a diverse set of ‘interveners’ (states, international organizations, NGOs etc.) as well as ‘targets’ (states, ‘crises’, civil wars, populations etc.). In sum, the concept is used to describe an extremely heterogeneous set of practices ranging from all-out war, in which case it serves as a euphemism, to the provision of humanitarian aid. (Olsson, 2015: 429)

Common to all the different types of intervention is the need for a legitimate rationale. Most often, this involves the construction of the “humanitarian problem” that necessitates humanitarian intervention. In almost every case, the humanitarian problem is quantitatively constructed.

If we take “emergency” as an example, the term is now used to emphasise the “unpredictability, abnormality, and brevity” of problematic events that “carries the corollary that response – intervention – is necessary” (Calhoun, 2010: 55). The definition of emergency is underpinned by numbers. When the humanitarian sector talks of “emergency”, they are most often referring to the Inter-Agency Standing Committee (IASC) tiered system of emergencies. The IASC quantitatively measures the severity of a crisis and places it within one of three levels. If the emergency is judged to be a Level 3 (L3), a system-wide response is triggered. In this context, Allison (2014) argues that quantification is the “foundation upon which the edifice of

humanitarian intervention rests.”¹⁶ But quantification does not just emphasise the need for *any* solution.

The way an emergency is quantified often legitimises *specific types* of intervention and determines *who is able* to provide them. Therefore, “the underlying discourses of humanitarianism themselves constitute the actors of humanitarianism” (Barnett, 2013: 382). In this respect, those producing and communicating numbers during humanitarian crises hold an immense amount of power to govern crises by legitimating interventions (Jacobsen and Fast, 2019: 162; Dorling and Simpson, 1999; Porter, 1995; Barnett, 2013). Such a dynamic is particularly evident when we consider food insecurity and the application of the Integrated Phase Classification (IPC) system.

Famine and the IPC

Before the 21st century, the existence of a “famine” was not defined by strict quantitative classification. Instead, it was a discursively contested phenomena that relied on what Mamdani (2007) would call the “politics of naming” – a contested, highly political label to attach to certain food crises and not others (Franks, S., 2006; Harrison, P. and Palmer, 1986). Contemporary food insecurities, however, are judged by a quantitatively based classification system called the IPC.¹⁷

Falling under the United Nations’ department of Food and Agriculture Organisation (FAO), the IPC classifies food insecurity into five levels: (1) minimal, (2) stressed, (3) crisis, (4) emergency and (5) famine. A famine can only be declared if the population area satisfies three criterions: 2 deaths per 10,000 per day¹⁸, 30% have global acute malnutrition (GAM) and 20% of households face extreme lack of food (IPC Global

¹⁶ That is not to say that the problem of the crisis is immaterial or fictional but rather to emphasise how crises are constructed quantitatively as a “problem” to be “solved” by the international community.

¹⁷ The IPC was created in 2008 by FEWSNET.

¹⁸ England and Wales experienced, on average, ~0.26 deaths per 10,000 per day in 2016.

Partners, 2012). It has a temporal aspect too: it provides information on the *current* situation as well as making projections about *future* conditions.

This act of measuring has made famines appear more “understandable” than ever. Quantification has cemented the idea that famine is “an externally quantifiable change of state among populations” (de Waal, 2005: 17-18). One of the reasons for the success of the IPC is that it quantitatively incorporates strands of food security research. The long-standing concept of famine being starvation unto death is converted into two predominant statistics: malnutrition (starvation) and mortality rates or total casualties (death). Whilst the more contemporary work of Amartya Sen (1986), which emphasises “access” to food instead of food production, is converted into indicator of households struggling to access food. In this way, even elusive, open-ended concepts, such as “coping strategies” have been quantified by social scientists (Rahmato, 1987).¹⁹

This comprehensive classification system was the defining rationale of humanitarian intervention during the two most recent famines in Somalia (2011) and South Sudan (2017). In both cases, the international community pointed towards the existence of famine (as defined by the IPC) as a legitimate reason for intervention by a United Nations'-managed relief effort (Maxwell and Fitzpatrick, 2012; OCHA, 2017). This technocratic approach allowed famine to be detached from its embeddedness within a set of historically specific and locally based economic and political processes (Hendrie, 1997: 63).

By treating famine as a quantifiable malfunction, rather than a human experience, it was dealt with in a similarly technical way (de Waal, 2005: 31). A series of experts -

¹⁹ This is not to say that the IPC is without its problems; they will be explored in 2.2. Journalists and numbers.

demographers, physicians and agricultural statisticians – were deployed to provide a technocrat solution to a technical malfunction (de Waal, 2005: 18). These humanitarian actors from nation-states, NGOs and United Nations departments were then centrally managed by UNOCHA (Stupart and Strelitz, 2016).

Evidence-based action

Numbers have not always occupied such a central role within the humanitarian sector. Referring to refugee statistics, Crisp (1999: 15) explains that

[P]rior to the 1990s, UNHCR's capacity and commitment in the area of refugee statistics was by any standard weak. Statistics were collected at the country level, but this function was undertaken in an unsystematic manner and with little supervision from headquarters.

Research suggests that the rise of the quantitative within the humanitarian sector was partly to address the failings of the international community during the Rwandan Genocide (1994). INGOs and the UN system were too slow to react to the impending atrocities, failing to intervene in the conflict that reportedly killed between 600,000 to 800,000 people (Verpoorten, 2005: 357).²⁰ The fallout of this genocide pushed the humanitarian sector to re-think its approach and practices. Emerging from this deliberation was an increased emphasis on “evidence-based action”: the identification of a severe problem, methodically collecting and analysing relevant data, drawing a clear conclusion, planning a suitable course of action and implementing it (Dijkzeul et al., 2013: S1).

²⁰ No conclusive death tolls exist for the Rwandan genocide. This estimation is based on an extrapolation of data from Gikongoro prefecture.

Whilst “evidence” can be qualitative, the 21st century witnessed an increased trend towards quantitative research (Leeuw, 2012: 1). This means that “evidence” is often synonymous with big data, empirical data and quantitative analysis (Dijkzeul et al., 2013: 3). Such is the importance of quantitative evidence in contemporary humanitarian practice that entire organisations exist to just provide humanitarian actors and institutions “reliable, up-to-date evidence on interventions that might be considered in the context of natural disasters and other major healthcare emergencies...based on knowledge from systematic reviews” (Evidence Aid, 2019). This act of quantification has become easier as digital technologies have enabled the more comprehensive, faster and more sophisticated practices of data collection “from biometric data (Jacobsen, 2017) to data collected in support of the ‘project cycle’” (Jacobsen and Fast, 2019: S161). In turn, technology has prioritised quantitative data over its qualitative counterparts. As Jacobsen and Fast (2019: S162) argue

Quantitative data are easier to collect on mobile devices and faster to aggregate, in contrast to the richer, contextual data that often take longer to collect and analyse. In this way humanitarian technologies create new domains of ‘humanitarian expertise’, requiring internet or mobile connectivity, the ability to use and adapt technologies for humanitarian purposes, as well data collection, analysis, and visualisation (Fast and Waugaman, 2016).

But it was not evidence-based action alone that spearheaded quantification within the humanitarian sector. During the last decade of the 20th century, the humanitarian sector and the United Nations system became increasingly subjected to market-based logics, the drive for transparency and the need for accountability (Halliday and Carruthers, 2005; Dijkzeul and Sandvik, 2019: S99-S100). Alongside evidence-based

action, this resulted in the adoption of two important processes: accounting and auditing (Dijkzeul et al., 2013: S4).

Quantification as trust

Just as “evidence” is often numerically expressed, mathematics was the underpinning logic of auditing and accountancy. To conduct auditing practices, humanitarian organisations now produce and collect a range of documents. These include:

Programme and project proposals, needs assessments, monitoring and evaluation reports, data from health and nutrition management information systems, consolidated appeals, financial tracking overviews, and audits, as well as regular overviews (Dijkzeul et al., 2013: S4).

Whilst most of these documents have qualitative elements – interviews, non-numerical evaluations, feedback from appeals etc. – they are generally centred on quantitative information. Programme proposals include the cost of implementing particular projects, needs assessments will quantify the population *in need*, health and nutrition data is compiled of measurements, classifications, aggregations and analysis, whilst financial tracking overviews rely on the accounting of logic of documenting how much money comes in, where it comes from and how it is spent. As Espeland and Sauder (2007: 2) explain

Where accountability once included many different practices, making institutions accountable now usually means making them “auditable,” which often involves devising [quantitative] indicators to measure performance (Power 1997; Strathern 1996, 2000).

For Dijkzeul and Sandvik (2019: S101), evidence-based action, accountancy and auditing can be grouped together into “rationalisation processes” that centre around the logic of quantification. These rationalisation processes are strategic exercises by humanitarian organisations to convey neutrality, accountability and efficiency. In this view, the rise of quantification in the humanitarian sector during the 1990s was deliberately aimed at clawing back the neutrality they had lost during the military humanitarianism of the late 20th century (Chouliaraki, 2013: 13-15). This process can be compared to the way European and North American public institutions adopted quantitative logics during the 1970s, as documented in *Chapter 2*.

But these processes were not just important during the 1990s, their strategic power can be observed within the contemporary humanitarian sector (Sandvik and Jacobsen, 2016). The importance of accountancy and auditing can be identified in the way that the news media will often conduct investigative work into the accountability of charities. In 2015, for example, ProPublica conducted an in-depth analysis of the American Red Cross. They found that the Red Cross had raised half a billion USD for Haiti yet had only built six homes (Elliott and Sullivan, 2015). The subsequent media coverage levelled a critique at the Red Cross over its inability to transfer plans and financial support into material action. But it also pointed towards the potential problems in trusting humanitarian organisations to audit and account themselves.

The strategic nature of rationalisation processes is also evident when we consider “evidence-based action.” The shift towards ever-increasing levels of quantitative evidence has changed the role of the “expert” within the humanitarian sector. Before the 1990s, trust in the experience-based opinions of experts was commonplace. These experts were gradually replaced by new quantitative experts that could practise auditing, deploy accountancy and conduct numerically based research (Barnett, 2013:

392). In the 21st century, notions of “best practice” and “expert opinion” are considered opaque, subjective and contingent rationale for action. On the other hand, “evidence” is systematic, transparent and actionable, allowing humanitarian workers to make decisions based on facts and not opinion (Clarke, M. et al., 2019).

Taken together, numbers aid governance in determining *who is trusted to act, in what context they can act and how they can act*. But quantification does not just function as a technical task of enumeration and analysis, it needs to be communicated and given meaning in order to function effectively as a technique of governance. Often this process is referred to in the literature as “discourse”. The importance of discourse has been well documented in relation to humanitarian governance. As explained in the introduction, my notion of discourse is distinctly Foucauldian – given that my work relates to governance – yet also attempts to account for the materialist elements of quantification as put forward by the work with STS. We can examine how discourse functions within humanitarian governance when we consider the United Nations.

Global governance through discourse

As with quantification, the United Nations system plays a central role in the communication of humanitarian-related issues. In his book *Global Lies?*, Mark Alleyne (2003) highlights how the communication of information has been central to the United Nations since its formation. This is evident in the creation of the United Nations Department of Public Information (DPI) in 1946. Whilst the DPI consistently positioned itself as the disseminators of information rather than propaganda, Alleyne identifies a strategic element to this communication.

This primarily involved a two-step model of cultural internationalism: they wanted to make citizens more aware of the scope of citizenship in order to manufacture

international citizens. One of the major success stories of this strategy is the proliferation of human rights across the world. Alleyne (2003: 170) argues that the concept is so central to how nations speak and act that it is almost impossible to imagine international relations without it. Whilst establishing “human rights” as a norm is commendable, it also highlights the way UN communication strategies often involve the implementation of concepts from the Global North across the rest of the world (Servaes, 2007; Ecker-Ehrhardt, 2018; Alleyne, 2003).

Since the publication of Alleyne’s book, the Department of Public Information has changed its name to the Department of Global Communications (DGC). But its mission is similar to its 20th century counterpart. Its current mission is to communicate the “ideals and work of the United Nations to the world; to interacting and partnering with diverse audience; and to building support for peace, sustainable development and human rights for all” (Department of Global Communications, 2019).

It offers a series of digital content through UN News, UN Video and the Audio-Visual Services Section. In the resource proposals for 2018-2019, the DGC were set to receive \$186.2 million in funding. If we take funding as an indicator of importance, public information is still an important aspect of the United Nations (Department of Global Communications, 2019). Specifically to crises, the United Nations runs ReliefWeb, the largest humanitarian information portal in the world. Managed through UNOCHA, it provides context-specific information about crises and relief operations across the world. Whilst this is primarily aimed at humanitarian workers, it is also a source of information for journalism, politicians and the general public. ReliefWeb is indicative of a shift towards integrating communication within the day-to-day practice of humanitarianism.

Integration of communication to humanitarian practice

Alleyne argues that the importance of integrating practice and communication was first recognised across the humanitarian sector during the UN peacekeeping missions of the 1990s. In their position as peacekeeper, the UN engaged in two of the most significant crises of the 1990s: the Rwandan genocide (1994) and the Bosnian conflict (1992-1995). Alleyne argues that during these missions, the United Nations had a clear communicative strategy

A key priority at the start of any peacekeeping mission was the efficient dissemination of information to the news media to ensure that the operation was framed before world public opinion in a fashion favourable to the UN. (Alleyne, 2003: 137).

Cultivating such an image operated alongside disinformation. Certain Muslim-focused media outlets in Bosnia, unhappy with the UN's role in the conflict, "accused the head of the peacekeeping operation there of having a Serbian wife and of being guilty of rape and murder" (Alleyne, 2003: 138). Such was the importance of managing discourse during the peacekeeping that *The Brahimi Report* in 2000 recommended that "[p]ublic information specialists must be part of the mission from its inception". The advice extended beyond the United Nations peacekeeping operations to all humanitarian-related work (United Nations, 2002).

If we return to the aforementioned example of UNOCHA's management of the 2004 Indonesia tsunami and earthquake, we can identify the importance of communication in the governing of the crisis. A significant part of the humanitarian effort was the circulation of daily situation reports that contained "such useful information as country-by-country situation summaries; a breakdown of aid provision by sector, agency, and dollar amount; a description of UN efforts; and a description of national responses"

(Weiss and Thakur, 2010: 24). Furthermore, through ReliefWeb, “OCHA was able to inform the world about survivors’ immediate needs, what was being done to meet those needs, and what help aid workers required, such as transportation and communications equipment” (Weiss and Thakur, 2010: 24).

Stressing the importance of the communication of quantification does not aim at detracting from the material and corporeal horrors of emergencies. Instead, it is to underline the discursive nature of the way numbers function. Accountancy practices and evidence-based action needs to be communicated as “rationalisation” processes to evoke trust (Miller, P. and Hopwood, 1994). Whilst the quantified humanitarian problem needs to be discursively expressed to the international community to legitimise specific interventionist strategies. The significance of the communication of numbers can be most explicitly identified when we consider the way international organisations, national governments, multilateral institutions, non-government organisations and powerful actors look to downplay or exaggerate crises. The way numbers are used in this fashion can be described as the “hidden power” of statistics (Best, Joel, 2001).

Communicating inaccurate or misleading numbers

Stereotypically, exaggerations have been associated with “host countries” that have large refugee populations. These countries have been known to overplay the number of refugees in order to secure increased funding from international bodies. It is no surprise, therefore, that when the topic of “politics of numbers” emerges, it is used as a way to criticise host countries. But it is not just host countries that exaggerate or downplay numbers. As Crisp (1999: 10) explains

While the truth of such allegations may be beyond dispute in certain cases, the notion that 'host countries always cheat with the figures' is a crude and, given the prevalence in expatriate circles, perhaps even a racist one.

Crisp (1999) goes on to explain that affected parties during conflicts also use inaccurate numbers to bolster their resources by saying they have more people to support, feed and house. During the war in Bosnia (1992-1995), "the allocation of food for Muslims and Croats...reflected pre-war population figures rather than relative needs of the two communities" (Crisp, 1999: 9). These figures were relied upon

Because of pressure from the Croat authorities of Herzeg Bosna, who controlled the main route into central Bosnia - large quantities of UNHCR food were distributed to Croat areas in the far south of the country which had hardly been affected by the war at all, and where there was no real need for humanitarian assistance. (Cutts, 1999: 15)

Furthermore, the high volume of people leaving a specific country is often associated with people "voting with their feet" – a clear indication by citizens that they oppose the incumbent leader and/or government. It is in the interest of these countries, therefore, to downplay the number of people leaving. There are a variety of discursive tactics used to under-estimate the refugee population leaving the country. A common strategy identified by Crisp (1999: 8) is to deny that those leaving are refugees at all or even citizens of the state. Such a ploy was used by the Bhutanese government to explain the Nepali exodus in 1991-1992 and the Burmese government to justify the mass movement of Rohingya refugees in the same period.

Whilst the focus is generally on misrepresentation of numbers by countries in the "developing world", the practice is common in "developed" nations too. Downplaying the number of people suffering is often conducted by donor states to fulfil a variety of

purposes. They can selectively use statistics to justify specific politics, such as restricted levels of immigrations from certain countries. Geo-political interests can often mean donor states will play down numbers of refugees that have fled from countries that are their allies. Or, if there are certain refugee programmes that they wish to end, they can communicate under-estimates to downplay the need for such interventions (Crisp, 1999: 11-14).

Outside of nation-states, humanitarian organisations have been known to exaggerate the magnitude of a crisis. Often this is aimed at raising attention of the crisis and at gaining financial and political support for humanitarian intervention (Whaites, 2000). Dijkzeul & Sandvik (2019: S92) point towards “the mortality surveys in the Democratic Republic of the Congo (DRC) and Iraq” that provided an inflated estimate of people who had died. Furthermore, De Waal (1997: 208) explains that the numbers of people “about to die” in central Africa in 1996 were presented as astronomical. Whilst the figures were exaggerated by humanitarian organisations, the scale of suffering meant that the crisis made international news and pressured the international community to act. A similar story emerged during the Niger food crisis in 2005-2006. The Niger president accused “NGOs of overemphasising the problems faced by his country in order to improve their own finances”. In certain cases, INGOs will even falsify statistics

For example, an NGO claims that it was working with 3,500 HIV/AIDS infected children in a section of Delhi. NAZ Foundation records show that there is not even a tenth of that number of children actually infected with HIV/AIDs in that area. (Lawrence and Brun, 2011: 82)

In order for this quantitative communication to resonate at an international level, humanitarian organisations rely heavily on the news media. Therefore, they constantly “seek entry to today’s complex global news ecology” (Cottle, 2009: 149). As Franks

(2013: 141) has argued, this has become more pertinent in an ever increasingly competitive humanitarian sector.

Importance of discursive exposure in a competitive humanitarian sector

Since the 1980s, humanitarian organisations have bid for private and public funding in an economy of scarcity (Chouliaraki, 2013: 6; Cottle, 2009: 150). Suzanne Franks (2013: 134) explains that “the [Ethiopian, 1984-1986] famine coverage inspired new ways of charitable fundraising, but it was also a crucial milestone in the overall growth and significance of non-governmental organisations in the world of aid and development.” The decade of the 1990s saw funding levels for INGOs nearly triple, from \$2.1 million to \$5.9 million (Chouliaraki, 2013: 6). In 2004, the Asian tsunami saw hitherto unprecedented levels of funding – the Disaster Emergency Committee (DEC) appeal alone reached almost £400m (Franks, S., 2013: 137). By the 2010s, funding levels dwarfed the late 20th century. In 2016, the humanitarian industry handled \$27.3 billion (Dijkzeul and Sandvik, 2019: S91). Such is the financial clout of contemporary INGOs that they now have larger budgets than many states in the developing world (Wright, 2018: 35).

The large levels of funding that the humanitarian sector attracted led to an “explosion of international organisations (IOs) and international NGOs (INGOs)” (Chouliaraki, 2013: 6). In 2014, it is estimated that the humanitarian system comprised of 4,480 operational aid organisations, employing around 450,000 professional humanitarian aid workers (Dijkzeul and Sandvik, 2019: S93). Despite the number of charities, the humanitarian sector is still dominated by the International Red Cross and Red Crescent Movement, UN humanitarian agencies and the five largest NGOs (MSF, Save the Children, Oxfam, World Vision and International Rescue Committee).

Of these large institutions, the United Nations receives the most amount of financial support (Weiss, 2013: 72). This is because the UN is a multilateral organisation that is made up of nation-states and acts on behalf of these governments. Therefore, governments commit to funding the UN by treaty rather than through voluntary donations.²¹ So, when we combine government funding for charities and for the United Nations into one category, the UN receives upwards of 85% of all this financial support (Stoddard et al., 2015: 21). This is particularly important given that

Governments, as opposed to corporate, philanthropic or public donations or other private sources (not counting remittances) remain the largest source of international humanitarian funding flows. (Stoddard et al., 2015: 22).

Of these states, the UK government provides a substantial amount of aid. In fact, their pledge of 0.7% GDP to international aid (spent on both humanitarian assistance and international development) means the UK government provided £13.4 billion in Overseas Development Aid (ODA) to developing countries (DfID, 2017: 4:). Since the 1970s, this budget has been increasingly spent on outsourcing humanitarianism. Franks (2013: 137) explains that “between 1977 and 1988 the British government, and in particular the Overseas Development Administration, increased its annual support of NGOs from £5 million to £42 million”. Contracting INGOs to conduct this work rests on an increasingly common neo-liberal logic that these organisations can provide a service that is better value for money than what the governments could offer (Tzifakis and Huliaras, 2015). Therefore, funds have not only increased dramatically yet the source of funding switched from predominantly private donors to the state (Smillie and Minear, 2004: 8-10; Barnett, 2005: 723-740).

²¹ There is scope within the United Nations for voluntary donations, a prime example being the World Health Organisation (WHO).

In this neo-liberal context, where charities are constantly competing for state and private resources, these organisations seek discursive exposure through the news media. It is assumed that those charities that establish themselves within public discourse during humanitarian crises are more likely to receive financial support for their humanitarian programmes. Therefore, it has become increasingly necessary for humanitarian organisations to court journalists. In order to push “their” story within the international news agenda, NGOs and International Organisations (IOs) have increasingly adopted “media logics” and “media practices”. As Cottle (2009: 151) explains “through experience and routine media interactions, aid organisations know exactly what the media require and incorporate this into their professional practice and communication strategies.” They often package certain “stories” in a media-friendly way, ensuring that their content matches with the style and form of news organisations (Wright, 2018: 38). This means that humanitarian organisations engage with the event logic of journalism and the appeal of a celebrity-endorsed campaign (Cottle, 2009: 152-153). The twinning of INGO content and news media logics is achieved, in part, by hiring media professionals comprised largely of ex-journalists (Fenton, 2010: 158-160). As Franks (2010:79) explained NGOs will often “send out expertly trained staff (some of them former journalists) to produce edited packages which are then offered to mainstream news programmes.” But it is not just humanitarian organisations that need the news media, journalists also rely on NGOs and IOs to provide content about international news.

News media reliance on INGOs: content, access and narratives

Since the partial de-regulation of UK news media ownership in the 1990s and the 2000s²², and especially since the financial crash between 2007-2008, journalists have been afforded less time for “traditional news gathering” and “fact-checking tasks” (Lewis, J. et al., 2008; Wright, 2018). This shift has been particularly noticeable in international news coverage, where only a limited number of news outlets now consistently produce original content about the Global South (Scott, M. et al., 2018). News organisations increasingly rely on “fireman” or “parachute” journalists rather than foreign correspondents or local reporters (Franks, S., 2013: 141-142). More often than not, these “fireman” reporters fly to a specific area, spend a couple of days gathering information and then file their story. Alongside decreasing resources for in-depth international news coverage, there has been increased pressure to produce more content (Lewis, J. et al., 2008).

In this light, news organisations increasingly rely on the content produced by NGOs or the UN (Scott, M. et al., 2018). But the relationship between NGOs/UN and the news media stretches beyond one-way tailor-made content. When journalists *are* looking to produce “original” content, NGOs often help them access places and people in humanitarian crises, conflicts and remote areas (Cottle, 2009: 152). One of the most well documented cases occurred during the Ethiopian famine (1984-1986) when the media relied on NGOs for access, transport, information and context (Franks, S., 2013: 141-147).

²² Details regarding de-regulation can be found in literature on cross-ownership structures and the establishment of OFCOM Gibbons, T. 1998. Aspiring to Pluralism: the constraints of public broadcasting values on the deregulation of British media ownership. *Cardozo Arts and Entertainment Law Journal*. **16**, pp.475-500, Smith, P. 2006. The politics of UK television policy: the making of Ofcom. *Media, Culture & Society*. **28**(6), pp.929-940.

Taken as a whole, the relationship between humanitarian organisations and the news media can be seen as symbiotic. This model can most readily be described as the “trading” relationship between journalists and their sources (Lewis, J. et al., 2008: 2). But such a dynamic does involve certain sacrifices for the journalist. Suzanne Franks (2006; 2008; 2013) documents how during the Ethiopian famine (1984-86) the close relationship between certain aid charities and BBC reporters meant that the latter reproduced these charities’ narratives. Furthermore, an over-reliance on content from INGOs means that journalists can forego traditional journalistic practices of verification and interrogation for the sake of desirable “content”. This “sacred cow” is rarely interrogated by journalists, allowing certain discourses to go unchallenged (Franks, S, 2010). The historical example presented by Franks is as relevant today as it was in the 1980s.

Kate Wright (2018) documents how “NGOs create content and stage events that can mislead journalists, resulting in significant, and false, news coverage.” This has been highlighted in the previous section on communicating inaccurate or misleading numbers. A further example of which can be outlined here. During the conflict in Darfur during the 2000s, the Save Darfur Coalition would consistently use inflated mortality statistics to raise awareness. These exaggerated claims were reproduced by many news outlets in their reports of the conflict without seemingly any critical engagement (Bunce, 2019; De Waal, 2007). Whether referring to statistics or not, it seems that Franks’s (2013) comments regarding scrutiny of charities by the journalists ring true

There is still a long way to go before aid agencies are subject to the same kind of scrutiny as other kinds of institutions in public life and journalists refrain from relying heavily and uncritically on aid organisations for statistics, subjects, stories and sources.

Through a lack of criticism, it can be argued that journalists often operate as the communicative arm of humanitarian organisations. This can be further exacerbated when journalists take on an “advocacy” role in their coverage of emergencies, what Bunce et al. (2019) would call “journalism as humanitarianism”. This an approach to reporting aims to alleviate suffering and improve humanitarian welfare. Taking such a normative stance means that journalism as humanitarianism can be seen as a form of “advocacy journalism” (Waisbord, 2009). The proponents of this style of journalism stress the importance of taking a position in relation to an issue instead of acting as a “transmission vehicle” for institutional discourses (Franklin et al., 2005). This concept can be linked to two notions that emerged during the 1990s: “journalism of attachment” (Bell, 1998) and “peace journalism” (Galtung, 1986). As Hanitzsch (2004: 484) explains

The concept of peace journalism penetrated the field of mass communication in the early 1990s by emerging from peace research, where it has its roots. Developments in war reporting, triggered by the Gulf War of 1991, played a crucial role in raising a critical debate on conflict and war coverage.

Within peace journalism, reporters are encouraged to be “attached” in their style. “Attachment” can take the form of connections with the victims of a conflict (Galtung, 1998: 8) or as a moral position that takes a side between “good” and “evil” (Bell, 1998). Whilst formulations of “attachment” may differ in certain aspects, they centre on the rejection of an over-emphasis upon “objectivity” and campaign for an increased sense of normative values in reporting. Journalism as humanitarianism follows a similar line of thought. It advocates for a communicative strategy that aims at improving humanitarian outcomes (Bunce et al., 2019).

Often the direction of this humanitarian advocacy work is strongly guided by humanitarian organisations. Therefore, journalists tread a delicate line between good journalistic advocacy and repeating verbatim the official line from their sources. All too often journalists can put their own credibility at risk by going on a “crusade against conventional reporting” (Peleg, 2007: 5) and being recruited into a propaganda war (Kempf, 2007: 2). This can mean that journalists act as an extension of a specific institution’s public relations department by uncritically repeating official discourses referring to the particular conflict or crisis that they cover (Lugo-Ocando and Hernandez-Toro, 2015). When we consider how quantitative information is communicated from humanitarian organisations to the news media, this dynamic is particularly important.

The over-reliance of the news media on humanitarian organisations often means that journalists repeat quantitative-based communication uncritically. In this way, journalists often facilitate the quantitative governance of crises by granting large institutions unfiltered access to international public discourse. These numbers can be technically accurate, reliable and valid yet still serve to quantitatively construct crises in a particular way that requires certain types of intervention by certain institutions and actors. In other cases, the numbers are not even technically sound yet are still allowed to form narratives. A pertinent example emerges from public discourse surrounding the *17 years a refugee statistic*.

17 years a refugee

In his blog *Singular Things*, Benjamin Thomas Whitehead devoted an entire post to a single statistic: the average length of stay in a refugee camp is 17 years. Writing in 2015, he identified a number of English and French language sources that referred to

this “fact” (White, 2015). This statistic is still relevant in contemporary communication. A range of news outlets used this number in their reporting in 2019.

*[T]he reality is...that the average time that refugees stay in exile is 17 years.
(UN News, 2019).*

*Everyone talks about returning home and that it's a temporary solution, but
the reality is people live there for an average of 17 years. (Kidd, 2019).*

*Research shows that on average it takes a refugee 17 years to come back
to their own country as a result of several challenges. (Khamis, 2019).*

The statistic is reported as fact, underpinned by certain categorical language such as “the reality is” or “research shows”. Such language facilitated the quantitative construction of refugees and afforded a large degree of power to the sources within the articles. Across these three examples, the statistic is used to emphasise the scale of the problem and connect this to a potential solution. In the article by the UN, the author points to the statistic to emphasise the need for refugee children to be included in national education systems so they can learn the language and gain basic skills (UN News, 2019). The Forbes article covers a refugee charity called KLABU (meaning “club” in Swahili) who point towards children’s extended stays in a refugee camp to emphasise the importance of their work in setting up sports clubs (Kidd, 2019). In the article by Gulf News, the statistic is used as a way to emphasise the importance of the “2 billion Kilometres to Safety” solidarity campaign launched by the UNHCR.

Upon closer inspection, however, Benjamin Thomas-Whitehead and his colleague Eleanor Davy found no evidential basis to this statistical claim. They located the origin of the statistic to a 2006 edition of the UNHCR publication *The State of the World’s Refugees*. When referring to the *17 years a refugee* statistic, this report refers to an

internal UNHCR document from 2004. Upon reading that document, they noted a series of striking things. It does not mention camps in the entire text at all, it states the situation in 2003, it makes clear that the number they give is an estimate and Palestinian refugees are not included (White, 2015). In other words, even if the original document mentioned camps, the statistic itself is outdated and cannot be reported as a fact.

Conclusion

In in this chapter, I have provided an explanation of how numbers wield “power” in the humanitarian sector. Using humanitarian governance as my theoretical framework, I showed how quantification functions within the management of crises. Not only do numbers help construct crises in particular ways that afford power to large humanitarian organisations but they also confer trust onto specific organisations to carry out this humanitarian work, most notably the United Nations. But numbers do not function just at a technical or operational level, they are also discursive. Their discursive power is most explicitly observed when institutions and actors communicate exaggerated statistics to gain more attention, funds and political support for a crisis. In light of this, humanitarian organisations compete for discursive exposure within the news media by providing tailor-made content that fits certain news logics. But this relationship is not one-way. Due to reduced funding for international news and a pressure for more content, journalists often rely on the stories provided by these organisations. With one side aggressively seeking discursive exposure and the other in need of the discourse provided, stories can often be repeated *verbatim* with limited cross-verification or interrogation. This is particularly evident in my final example where the *17 years a refugee* statistic was (and still is) used by journalists even though

its empirical foundations are highly suspect. Whilst this example is informative, it can say very little about how journalists use numbers in their day-to-day practices. The next chapter looks at how quantitative information functions within journalism as a whole.

Chapter 4. Journalism and numbers

Introduction

Chapter 4. argues that this humanitarian-specific issue with numbers is widespread across journalism. Journalists use numbers uncritically and, in doing so, reproduce numerically underpinned discourses. Bringing together often unconnected parts of the literature on journalists and numbers, I outline four possible explanations. The first points to a lack of technical expertise and confidence in using numbers. The second emphasises the lack of time journalists are given to check numbers, arguably exacerbated in highly market-focused online news contexts. Yet given that data journalists often uncritically reproduce quantitative information too, this explanation only goes so far. Instead, I argue that journalists struggle to challenge numbers because they form part of the fabric of journalism itself in the third and fourth explanations. On one level, they are essential in the creation and construction of news stories. On another, they operate to confirm the idea that journalism is a profession that rests on facts, accuracy and a special relation to the real world.

The state of numbers in journalism

Numbers are central to journalism. Such is the proliferation of measurements, counts and statistics within modern reporting that many argue they are constitutive of the journalism itself (Curtin and Maier, 2001; Van Witsen, 2018; Harrison, S., 2016). The importance of numbers to the profession can be observed in how often they are used in news articles. In a study of American and non-American news articles in 1995, Zillman and Brosius (2000: 25) showed that around 44% of articles included pieces that incorporated exact numbers such as percentages, amounts or proportions. In a

content analysis of the *News & Observer* (a US newspaper) from 2002, Maier (2002: 511) found that 48% of news stories involved a mathematical calculation or numerical point of comparison. Brand (2008) applied Maier's definitions and methodology to a content analysis of the *Cape Times* in South Africa – he found that 40% of articles contained a “mathematical element”. Even when journalists do not seem to be dealing with numbers, much of what they report on is based on quantitative information (Cohn and Cope, 2011: 10).

Whilst the use of numbers has been a mainstay in Western journalism, quantitative information is rarely verified (Maier, 2002; Brand, 2008; Ahmad, 2016; Best, J., 2008; Lugo-Ocando and Brandão, 2016; Lugo-Ocando and Harkins, 2017; Lugo-Ocando and Nguyen, 2017; Berger, 2009).²³ In their analysis of *The Guardian*, *The Times*, *The New York Times* and *The Washington Post* during 2012-2013, Lugo-Ocando and Nguyen (2017: 46) found that “only a tiny proportion (less than 5%) of statistics about the developing world were cross-checked or contested.” More often than not, “journalists tend to see statistics as a scientific encapsulation of complex realities into concrete, communicable figures” (Lugo-Ocando and Nguyen, 2017: 44).

Much of the work cited above refers to journalists' use of *statistics*, often provided to them by an institutional source. Over the past ten years, *data* has become increasingly important to the profession. This has been formalised in the hiring of *data journalists* to do *data journalism* (Coddington, 2015a). Put loosely, data journalism is defined as stories generated from large datasets that are either publicly accessible or collected through Freedom of Information Acts (FOIs) (Splendore, 2016: 345). This type of journalistic work has become increasingly popular across news organisations. In the

²³ All of the research referenced concentrates on statistics rather than numbers in general. Nevertheless, these findings are instructive and informative.

2017 Global Data Journalism Survey, 181 participants from 46 countries were asked about their experiences as journalists using data. Even though it was available to *all* journalists, 86% of the respondents identified as data journalists (Heravi, 2019). Of these respondents, 46% said they had a dedicated data team with 70% of these journalists saying they worked in a small team of five or less people (Scott, C., 2017).²⁴

Protagonists of the data revolution present the idea that numbers are a distinguished language (Dilnot and Blastland, 2008: 1) which “offers the possibility to reframe the epistemology of science, social sciences and humanities” (Kitchin 2014, 147) and reshape “how knowledge is produced, business conducted, and governance enacted” (Kitchin 2014, xv). This data utopian narrative is the place from which academic critiques start (Borges-Rey, 2016; Borges-Rey, 2017; Boyles and Meyer, 2017; Brandão, 2019; Coddington, 2015a; Gray and Bounegru, 2019; Knight, 2015).

Chris Anderson (2018) points towards the long history of quantitative information within journalism, a temporal context that is often ignored when people talk of data journalism. Anderson (2018) comprehensively details the way quantitative information became an integral part of U.S. journalism since the turn of the 20th century. Anderson points to three key moments in this history. He argues that the American social movements of the late 19th century had a glancing yet meaningful impact upon journalism. Groups such as the Men and Religious Forward Movement (MRFM) “began to argue that certain forms of fact generation – based on empirical, numerical evidence – provided greater access to social reality than others” (Anderson, C.W., 2018: 2). Whilst newspapers did not necessarily increase the amount of data they used in the creation of a story, they did increase the reporting of stories about the use of

²⁴ The disproportionate sample of data journalists means that certain news organisations with very small numbers of data journalists, or no data journalists at all, are less likely to appear in the study.

data at exhibitions and exhibits (Anderson, C.W., 2018: 48). The next notable moment Anderson points to is the early 1960s with the rise of precision journalism. Anderson traced a direct through line from this early form of quantitative journalism to computer-assisted reporting (CAR) in the 1970s and into contemporary discussions regarding data journalism (Anderson, C.W., 2018: 84-137).

This historical account encourages us to not draw such a clear line between data journalism and journalists who use statistics. To position the former as more transparent, critical, rigorous and neutral than conventional statistically based reporting is somewhat of a false binary (Borges-Rey, 2016: 836, 842; Gray and Bounegru, 2019). For example, data journalists rarely challenge “the fundamental logic and structure of the categories, metric, indices, and demographic groups that are baked into data sets” (Lowrey and Hou, 2018: 4). Instead, data journalists also fall back on numbers’ “aura of objectivity” like their journalistic counterparts that generally use statistics (Stalph, 2019: 9). Both types of journalists generally approach quantitative constructs as “black-boxed, unquestioned and naturalised” (Lowrey and Hou, 2018: 15).

Treating quantitative information as unquestionable truths is most explicitly identified in the text when journalists do not attribute a source to a number. In their textual analysis of digital news, Stephen Cushion et al. (2017: 1206) found that in only 8% of cases did journalists refer to the actual provenance of the statistic they used. This means that reporters often treat numbers as facts that do not require a source. In doing so, reporters use quantitative information as something that can “stand-in” for reality rather than as an imperfect representation of it (Romano, 1986; Root, 2013: 66).

This can be observed in the way journalists treat opinion polls as standing in for political mood of the nation (Lewis, J., 1999) or how measurements of poverty *become*

the problem of poverty itself (Berger, 2009). This connection between numbers and social reality leads some academics to argue that numbers are “perhaps as essential as words” in how journalists establish discourses about reality (Lugo-Ocando and Nguyen, 2017: 44). If numbers occupy such a “meaningful” role within journalism, the general lack of criticality means that data and non-data journalists can reproduce particular numerically underpinned discourses.

A number of recent research articles have looked to document this relationship between numbers and discourse. Ahmad (2016) has shown that the uncritical use of statistics is evident in conflict reporting. During the US drone strikes in Pakistan from 2004 to 2015, journalists repeated inaccurate figures of civilian deaths by official sources. Ahmad (2016: 20) argues that this served to downplay the significance of civilian casualties and so denied the public an “opportunity to fully assess its humanitarian and ethical implications”. When they did address problems with statistics, these stories were “relegated to the back pages” (Ahmad, 2016: 22). Similarly, Lugo-Ocando and Brandão (2016: 715) explain that the reporting of crime statistics in the UK “has had a profound influence on both public attitudes and public policy towards law and order.” In general, it has served to reinforce the discourse of an increasingly punitive state.

As these examples suggest, uncritically using numbers does not just reproduce certain narratives but also affords power to certain institutions and actors. Ahmad (2016: 23) argues that statistics construct reality in that way that “often reflect the culture, structure and practices of the organisations producing them.” This means that numbers often “have a politics of their own that serves the purpose of reinforcing

dominant ideology or existing power” (Lugo-Ocando and Nguyen, 2017: 43).²⁵ Gans’s (1979: 116) statement that it “takes two to tango” but “more often than not, sources do the leading” is further exaggerated when we consider numbers.

Such a practice by journalists raises a series of red flags. Their use of numbers defies their own ideals of accuracy and verification, as well as contradicting the importance of holding power to account (Kovach and Rosenstiel, 2007). How, therefore, can such a practice be explained? The last chapter highlighted one explanation: in the reporting of humanitarian crises, newsrooms deal with reduced resources for international news and an increased supply of materials from humanitarian organisations that often fit with their advocacy position. However, a political economic explanation only goes so far.

Explanation 1: Lack of technical skills, confidence and time

Anderson (2018) argues that the rise of computer-assisted reporting in the 1970s did not lead to a widespread adoption of quantitative logics by journalists. Instead, he explains that for the everyday average reporter, the “use of numbers and social-science methods” seemed “increasingly opaque, elite” and outside their interests (Anderson, C.W., 2018). A similar sentiment can be found in contemporary journalism. When dealing with numbers, journalists seem to lack the technical expertise to directly engage in verifying numbers. This has been well documented in research on mathematical errors appearing in the newspaper and television news at a general level (Berry, 1967; Charnley, 1936; Galdieri, 1999; Brand, 2008; Maier, 2002) and in relation

²⁵ The way journalists uncritically communicated quantitative information from humanitarian organisations, and how this served certain strategic goals, was detailed in *Chapter 3*.

to specific topics, from the homeless (Hewitt, C., 1996) to natural disasters (Singer and Endreny, 1993).

At the beginning of the 21st century, there was a renewed push for journalists to improve their statistical literacy (Curtin and Maier, 2001). This was often expressed in terms of improving the level of training that journalists receive in quantitative methods during their formal education (Lugo-Ocando and Nguyen, 2015; Heravi, 2019). As the body of work developed, it also became clear that technical expertise was not enough for journalists to challenge numbers. Even when they scored relatively well on mathematical tests, they lacked confidence in their ability to use numbers (Maier, 2003). Therefore, the “aura of objectivity” (Kennedy et al., 2016) afforded to numbers, through their association with science, means even mathematical expertise is not enough to engender journalists’ critical faculty.

The contemporary rise of data journalism has gone some way to improve the technical skills required to interrogate numbers. Journalists have become more adept at working with “large and small data sets, public records, and data visualisations” (McAdams, 2019: 1). This is somewhat reflected in Heravi’s (2019) survey of journalists: 62% of respondents considered themselves experts in data journalism or identified “as having a better than average knowledge in data journalism.”²⁶ But two caveats must be made. As with the rise of computer-assisted journalism in the 1970s, the quantitatively astute journalist is still the minority in the newsroom. The vast majority of journalists still lack a basic understanding of statistics. Beyond technical expertise, journalists argue that time pressures mean they do not have the space in their day-to-day routines to check numbers.

²⁶ This is from a total population, from which 86% of respondents identified as data journalists (even though the survey was directed to all journalists).

Explanation 2: There is not time to check numbers

Across different news media context, journalists and editors consistently refer to time pressures as dictating the day-to-day practice of their profession. This has been well-documented in the way sources are selected by journalists for stories based on time pressures as well as the credibility and accessibility of the source. Sources that are more readily available, providing clear information that fits within news media logics, are more likely to be chosen as sources by the reporter (Powers and Fico, 1994; Reich, 2009). A similar story can be identified when we consider checking numbers too. This was identified in the early work within journalism studies, most notably by Tuchman (1978) who argued that journalists would prioritise the checking of pertinent facts over less pertinent information due to the lack of resources and time they were afforded. This explanation has gained even more significance in the contemporary news context. Since the 1980s, the logics of the marketplace have become increasingly embedded in the way news organisations function (McManus, 1995: 301). As Picard (2004: 54) explains, “market concerns now determinate operation and content.” This has meant that journalists spend less time checking facts and more time producing (or recycling) content (Lewis, J. et al., 2008). In doing so, they inadvertently repeat numbers that are incorrect or misleading. Such a practice is described as “churnalism” by Nick Davies (2009) in his eviscerating account of contemporary news cultures. Even contemporary pushes towards “fact-checking” in the context of fake news maintain that checking facts is a time consuming practice for the day-to-day journalist to undertake (Graves, 2016). But the way that organisations *with* fact-checkers or those with dedicated data journalists can often reproduce numerically based discourses means technical expertise and time alone cannot explain why numbers are often left unchallenged by reporters.

Explanation 3: Numbers and credibility

Much more fruitful is a discussion about the way that numbers help journalists establish the credibility of their reporting. Quantitative information has a long history of affording credibility to those who produce and communicate it (Prevost, 2009; Zuberi, 2001). In a contemporary society that covets scientific rigour and scientific knowledge, being the purveyor of objective numerical facts lends considerable credibility to the actors and institutions using them (Porter, 1995). This has been documented empirically in fields such as law enforcement (Brayne, 2017), global governance (Merry et al., 2015) and criminal justice (Starr, 2016). The same can be said for journalism. In their attempt to delivery accurate and objective coverage of events, numbers play a particularly important role (Van Witsen, 2018). To understand how quantitative information can function in this capacity within journalism, we first need to detail the role that objectivity and accuracy play within journalism.

Objectivity and accuracy

As Broersma (2010: 16) argues “journalism’s claim to truthfulness and reliability is crucial for its existence. It is the basis of a shared social code between journalists and their public.” In this way, the news media occupy a “special relation to the Real” (Enli, 2015: 4-6) by recording something that “has actually happened” (Harris et al., 1981: 27). This notion is set within a relatively long history of objectivity within journalism. At the turn of the 20th century, the discourse of objectivity took centre stage within journalism.²⁷ In its simplest form, this involved presenting the news as a reflection of reality rather than a (mis)representation of construction of the world around us (Maras,

²⁷ A comprehensive history of objectivity and journalism can be found in Anderson’s 2018 book yet will not be the focus of this chapter. Instead I examine the more contemporary concept of accuracy.

2013; Ruigrok, 2008). In contemporary journalism, the concept of objectivity is “perhaps now rather old-fashioned” (Shapiro et al., 2013: 669). One can argue that accuracy has taken its place in the 21st century (Kovach and Rosenstiel, 2007). Accuracy has gained such a central position within journalism that it is the value that journalists most identify with (Shapiro et al., 2013: 657; Zelizer, 2004). When we examine contemporary UK news media guidelines, accuracy is certainly more prevalent than objectivity. The BBC talk of “due accuracy” and “due impartiality” in their reporting (BBC, 2017a), whilst *The Guardian* have “accuracy” as the first clause in their “Editor’s Code” (Guardian News, 2011). The concept of accuracy is somewhat ambiguous

On its face, the idea of accuracy could imply a kind of “pure” accuracy (literal truth), an accuracy of what is told (uncritical reliance on an attributed source), a larger accuracy (concerning a story’s overall thrust in context), and accuracy of interpretation. (Shapiro et al., 2013: 669).

The use of facts by journalists help them adhere to the “pure” version of accuracy – they tell the public about what is actually happening (Godler and Reich, 2013: 674). As Coddington (2015b: 61) explains “facts are the central piece of journalistic epistemology, the container in which truth as journalists conceive of it comes packaged.” Facts also relate to older notions of objectivity too. As Michael Schudson (1978: 6) argues “the belief in objectivity is a faith in ‘facts’”.

In this way, facts function to root journalists’ work in reality rather than conjecture because facts stand “beyond the distorting influences of any individual’s personal preferences” (Schudson, 1978: 5). It is this type of adherence to accuracy, and the use of facts in the process, that positions journalism as a “scientific profession” that can mediate between real-world events and the public by adopting a scientific rigour

to their reporting (Lippmann, 1965; Meyer, 1973; Dahlgren and Chakrapani, 1982; Schudson, 1978). This is most commonly expressed as verification. Shapiro (2010: 153) describes this as a two-part process “seeking out purported facts, on the one hand, and testing their veracity and coherence, on the other”. This two-step model is not linear, however. Shapiro et al. (2013: 667) found it was more of a circular process

Many of our interviewees explicitly described an interweaving between verification and original information-gathering (EE1, EE2, CE1, EF1, CF1). One subject put it this way: “[T]o me, verification is much more rooted in the actual reporting process, step by step and looping back in upon itself” (EE2).

Whether linear or circular, Shapiro et al. (2013: 669) encourages us to see this adherence to verification “as the kind of distinguishing ethical value equivalent to the lawyer’s idea of a special loyalty to the client and to the integrity of the justice system.” The act of verification, therefore, “legitimizes a journalist’s social role as being demonstrably different from other communicators” (Shapiro et al., 2013: 669). Their position chimes with earlier work on journalism and knowledge. Zelizer (1992: 97) argues that “journalistic professionalism is established as much by the representation of knowledge as by the actual possession of knowledge.”

Numerical knowledge and accuracy

Numbers are perhaps the most coveted fact for journalists to establish the accuracy of their reporting (Godler and Reich, 2013; Ericson, 1998). Lugo-Ocando and Nguyen (2017) argue that numbers “help journalists to back up their claim that they are scientifically driven professionals in pursuit of objective truth”. This has been highlighted by those looking at how journalists use statistics (Lugo-Ocando and

Brandão, 2016: 718; Ahmad, 2016: 21-27). The way journalists back up this claim often occurs within their news pieces when numbers are used as rhetorical devices. Koetsenruijter (2018) argues that numbers are used rhetorically to underpin the credibility of journalists when they were making arguments. In positioning themselves as purveyors of facts instead of conjecture, numbers create an “impression of nothing-but-the-facts-journalism” (Roeh and Feldman, 1984: 347). This rhetorical role of numbers is also recognised by the producers and consumers of news too. Journalists themselves have acknowledged that numbers “lend credibility” to their reporting (Van Witsen, 2018: 6-7). Whilst in his work with audiences of news content, Koetsenruijter (2011) shows how numbers are important in establishing the credibility of a news article for those reading it. In fact, he shows that “more numbers make an article more credible” for the reader (Koetsenruijter, 2011: 78).

The rhetorical power of numbers has also been emphasised in literature examining data journalism. A wealth of literature has documented how data journalists represent the quantitative information they use as more certain than they actually are (Allan, 2005: 100; Kennedy et al., 2016; Hullman and Diakopoulos, 2011). Eddy Borges-Rey (2016) argues that his interviews with journalists show how “in order to persuade their audiences of the veracity of their accounts ... journalistic authority endured as the imperative requirement to perform within the trade.” Particularly important to journalistic authority was “the perceived soundness of their reports” so journalists would “explain their use of methods and computing tools as part of their stories”. The neutrality of this scientific rigour helped to reinforce the perceived accuracy of reports. Developing this point, one UK journalist argued that “in order to remain trustworthy in the public eye, scientific rigour was imperative to regain the trust that journalists lost after the Leveson Inquiry” (Borges-Rey, 2016: 10-11). As with the literature on

journalists using statistics, research indicates that the audience is convinced by the credibility of data, especially when presented as data visualisations (Du et al., 2019; Dahmen, 2015; Lee and Kim, 2016).²⁸

Taken together, numbers often operate as evidential bulwarks against the threat of conjecture, establishing the accuracy of journalists' work (Ahmad, 2016; Lugo-Ocando and Nguyen, 2017). In doing so, quantitative information can be considered a legitimisation tool by journalists who use them (Eberstadt, 1995; Hacking, 2016; Livingston and Voakes, 2005). But journalists' use of numbers cannot be only understood from a rhetorical perspective. When we consider that reporters rarely check the numbers that they use (Lugo-Ocando and Nguyen, 2017: 46), it is necessary for journalists to protect themselves from the potential inaccuracies, unreliability and misleading use of numbers. To do so, journalists rely on their numerical sources. This practice is part of a wider practice within journalism.

Verifying numbers and hiding behind sources

It is more likely for reporters to *not* check numerical and non-numerical facts that they use. In their seminal study of British news media, Lewis et al. (2008) showed that less than half of the stories in their content analysis of broadcast and print made an attempt to verify or contextualise the information reported. When it comes to just verification, this percentage drops much further. Their findings are supported by ethnographic work conducted by Machill and Beiler (2009). They found the German journalists they observed spent only 5.5 per cent of their time cross-checking the facts they used. In light of this research, it is fair to side with the judgement of Lewis et al. (2008) that “the

²⁸ The nature of audience studies means that “credibility” is defined in different ways across these pieces of research.

everyday practices of news judgment, fact checking, balance, criticizing and interrogating sources” are “the exception rather than the rule.” In light of this, journalists attempt to establish the accuracy of their work through their sources.

In this context, reporters often “establish factuality by using credible sources who make statements that can be quoted as fact without further investigation” (Ericson, 1998: 85). Reich (2017: 560) calls this practice “trust-based view of news gathering.” This was well documented by the work of Lewis et al. (2008) on the UK press. In their sample of print, radio and broadcast news, they found that “60 per cent of press stories rely wholly or mainly on pre-packaged information, a further 20 per cent are reliant to varying degrees on PR and agency materials” (Lewis, J. et al., 2008: 14). Furthermore, 87 per cent of the pieces were based on a single primary source (Lewis, J. et al., 2008). Reliance on singular sources was reflected in the type of news articles produced. They found that “30 per cent of the stories in the press sample replicated agency service copy almost verbatim” (Lewis, J. et al., 2008: 5).

Similarly, Sampaio-Dias (2016: 96-98) found that the Portuguese public service television (RTP) generally relied on only one source in their articles and these sources were most often politicians and leaders. The same pattern was identified in research on how journalists used numbers to cover stories on crime. More often than not, the article contained only one source of information (Lugo-Ocando and Brandão, 2016). This dynamic is further exaggerated when reporting on unstable areas that involve issues of access and safety for journalists, such as civil wars, humanitarian emergencies or natural disasters (Scherling, 2019: 3).

In this type of reporting, it is very important that journalists trust their sources. To decide whether a source is trustworthy or not, journalists engage in a construction of a hierarchy of reliable sources (Shapiro et al., 2013: 293). In their interviews, Shapiro

et al. (2013: 666) found that journalists “expressed a high level of trusts in experts, especially science and economics.” This trust was extended to professionals commenting on topics unrelated to their profession

One reporter presumed, on this basis, that the information that a lawyer provided regarding a problem with plumbing would be factual and accurate (CF1). (Shapiro et al., 2013: 666).

Such a reliance on these types of sources has a long history in the practice of journalism (Schlesinger, 1990). Gans ([1978]2004: 130) has shown that sources who treat reporters more cordially and have a similar political position are more likely to be trusted. Whereas those who offer “self-serving information” or have “lied” in the past are less likely to be used. Those falling at the bottom of this hierarchy, such as an anonymous source, would almost always need to be corroborated by more trustworthy sources. As one reporter put it

If you're hanging key elements on an anonymous source (...) I would never do that (EE7). (Shapiro et al., 2013: 666).

In this context, numerical sources are particularly coveted. Given the resources and expertise required to produce quantitative information, numerical sources are almost always highly placed actors or well-funded and established institutions (Lugo-Ocando and Brandão, 2016; Cushion et al., 2017; Stalph, 2018). But research has shown that even numerical sources are set in a hierarchy based on how much the journalist trusts each source (Van Witsen, 2018: 7). Ranked above even the most actor or institutional representative are “official documents”, such as databases or numerically based reports (Shapiro et al., 2013: 667). This was also identified in Witsen’s interviews with journalists based in the USA. In talking about business data, one reporter explains

how they trust business data because “you can’t fake it; the sales are the sales” (Van Witsen, 2018: 8).

Whilst journalists *can* rely on one source of information, they often cross-reference the claims of multiple sources when constructing news pieces. This practice is referred to as “cross-verification”. As Golder and Reich (2017: 567) explain, cross-verification of facts involves “the juxtaposition of two news sources...against each other with the express intention of ascertaining the information’s reliability.” Through their interviews, Shapiro et al. (2013: 666) showed that this type of verification was more likely to occur in certain contexts: when the information was sensitive, when alternative sources were available and if the reliability of the original source was brought into question. In fact, some of their interviewees had used up to “six or seven sources to validate a single fact.” This practice was also found by Coddington (2019) in his work on news aggregators.

In this context, journalists engage in what Gaye Tuchman (1972) calls “objectivity as strategic ritual”. This journalistic practice privileges form over content. As journalists cannot cross-check every claim made, they regard the statement “X said A” as a “fact”, even if “A” is false. Thus, objectivity is not about the validity of ‘A’, the claim. Rather, it is the construction of journalistic objectivity by following a specific process of the presentation of claims by sources. This means that journalists can hide behind the ‘cover’ of their source to protect themselves from flak or libel (Tuchman, 1972: 664-665). Given that statistics are presented as claims by powerful institutions or actors, they are often considered as extremely reliable sources of protection for the journalist. Taken together, journalists’ uncritical use of numbers can be understood as a project of establishing and maintaining credibility. This derives partly from the number itself, a scientific fact that helps journalists emphasise their objectivity and accuracy, and

partly from the nature of numerical sources, well-placed institutions or actors that help establish credibility and protect journalists from flak or claims of libel. In this context, it may not be in the interest of journalists to interrogate the very numbers that help establish their own credibility. But numbers are not just related to “credibility”, they are also fundamental to the way journalists create and construct news articles.

Explanation 4: Creating news and telling stories

The end of the previous chapter outlined how journalists often repeated the established discourses articulated by their sources, as well as a range of misleading, inaccurate or entirely false numbers. Part of the purpose to this section is to leave off from that starting point by examining the ways numbers function in turning issues into “news” and how these news stories are then told. When INGOs are attempting to get their story into the news agenda, they will try to make the story appeal to news media “values” and “factors”. If a story cannot become news, it is excluded from the discourse of humanitarianism. Furthermore, the different representational strategies adopted by journalists identify the way that journalists communicate numbers within this discourse. Such representational tropes are as dependent on the humanitarian discourse as they are on wider journalistic discourses. In other words, this section allows for an examination of the humanitarian discourse through the lens of journalistic practice and representation. It stresses that journalists may not challenge numerically underpinned discourses because they are crucial for how they tell humanitarian news stories.

News values and news structures

News values is concerned with decision making within journalism about which story becomes news and which do not. These decisions are far from clear. Referring to

news values, Richardson (2005: 173) calls it a “somewhat mythical” idea that is passed down unsystematically from one journalist to the next. Whilst textual analyses, interviews and observation work has highlighted certain consistencies, “news values” is not a totalising explanation of what stories become news (Galtung and Ruge, 1965; Harcup and O’Neill, 2017). Nevertheless, we can understand journalists’ use of numbers within the framework of news values by examining the way quantitative information can turn a story into news.

In their original work on news values, Galtung and Ruge (1964) emphasised the magnitude of a crisis as one of *the* determining factors of coverage. The larger the number of people suffering (amplitude), the more likely that the crisis would become news. Subsequent research in the 1970s corroborated their claims (Gans, 1979). Research in the 1980s began to add nuance to these claims by quantitatively testing whether the number of deaths (or injured, affected etc.) correlated with the amount of coverage. Whilst initial research highlighted some degree of correlation (Adams, 1986; Gaddy and Tanjong, 1986), more qualitative work began to highlight cases where increased deaths did not equal increased coverage (Moeller, 1999: 8, 22, 297). This qualitative work was developed in the 21st century alongside quantitative analysis of news values. This literature highlighted a number of factors, other than magnitude of suffering, which determined news coverage. These other factors were largely concerned with news structures rather than news values, a movement away from decision-making processes towards the way news content was structured by location, sources, finances and so on.

As Paterson and Sreberny (2004) explain, research on international news began to identify the way news gathering and dissemination was often structured by global political and economic interests. News agencies, who provided a large amount of

international news content, were often based in areas that had a large Western diplomatic presence and strong economic ties (Boyd-Barrett, 1980). By being located in particular parts of the world, these news agencies influenced where “the news” happened and where it did not.

Subsequent quantitative studies by researchers used macro-level indicators within a regression model to determine the factor that has the greatest impact on coverage. From these studies they point to the cultural ‘nearness’ of the suffering, the economic impact of the disaster and, to a lesser extent, its geographical proximity as highly influential factors (Westerstahl and Johansson, 1994; Van Belle et al., 2004; Franks, S., 2006; Joye, 2009; Hanusch, 2010). In the most recent comprehensive study of news structures, Maier (2019: 10) found that foreign news coverage by NYT, Time and NBC was driven primarily by military personnel in said country, economic relationships and the air transport connections. These all out-ranked the factors that focused on the number of refugees or the extent of human rights abuses. This points to the elevated role of geopolitical connections, financial transactions and tourism over the level of human suffering in determining the level of coverage.

Other research has looked at how death is reported in the news more generally. Hanusch (2008) documents how the *type* of person who has died has a considerable impact on whether that suffering is reported. He points to Hoijer’s (2004) research that highlights how the children and the elderly are considered more “worthy” victims. But it is not just the demographic of the sufferer that matters. Coverage is also dependent on the type of death that occurs. Frost et al. (1997: 843) found that “for most causes of and risk factors for death, there was a substantial disproportion between the amount of text devoted to the cause and the actual number of deaths attributable to the cause.” Deaths from the use of illicit drugs, car accidents, toxic agents and homicide were

largely over-represented (Hanusch, 2010: 39-40). In this revised view, the number of those suffering is still important but their significance is structured by other factors. But journalists' use of numbers does not just relate to the "magnitude" or "amplitude" of the crisis. When INGOs position a crisis as "the largest famine in history" or "the biggest earthquake of the century", they are more likely to receive coverage of the event because the story is "unexpected". The more unexpected the event, the more likely that the event will receive attention from journalists. Furthermore, numbers can serve to reduce the "ambiguity" of an event by quantifying it and making it understandable to the journalist. The less ambiguity, the more chance of it becoming news (Galtung and Ruge, 1964: 65-67). Once a story becomes "news", journalists engage in the act of constructing the news-story.

Telling news stories

The rise of data journalism in the late 2000s placed increased emphasis on the way journalists could use numbers to create stories (Cohen, Sarah et al., 2011). In contemporary journalism, many news practitioners are experimenting with "the production of narratives and visualisations that harness large-scale datasets for digital storytelling" (Boyles and Meyer, 2017: 430). In *Data Journalism Handbook*, they list a typology of the different "data stories" that journalists can tell. These can be measurement stories, "the simplest story: counting or totalling something", referring to something changing over time and discussing "league tables". At a more complex level, this also includes categorical analysis and associations between categories (Gray et al., 2012: 160). Telling stories through data is not just a technical task, however. As Eldridge and Franklin (2019) explain

While 'data' is a prominent focus across digital journalism, it is not a singular source of information, nor is it a discrete aspect of news storytelling; rather, it is complex, and the way we think about data within digital journalism studies needs to be equally engaged with that complexity (Lewis, 2014).

In their analysis of “award winning storytelling”, Ojo and Heravi (2018: 706) position the work of data journalists within traditional norms of journalism. They outline seven types of data stories: those that refute claims, reveal unintended consequences, reveal information of personal interest, enable a deeper understanding of a phenomena, reveal anomalies and deficiencies in the systems, track changes in systems, and reveal information about an entity in increasing levels of detail (Ojo and Heravi, 2018: 706). Taken together, data journalism offers reporters “innovative forms of storytelling” based on the quantitative rather than the qualitative (Borges-Rey, 2017: 11).

A prime example can be identified in the rise of networks to tell data stories. Using “networks” involves the visualisation of data to present the connections between various nodes (people, topics, words etc.). This allows journalists to identify patterns within datasets. Such is the power of these visualisations that Bounegru et al. (2017: 701) approach networks as “network narratives” and “network stories”. They highlight five ways that networks are used by journalists for storytelling: exploring associations around single actors, detecting key players, mapping alliances of oppositions, exploring the evolution of associations over time and revealing hidden ties (Bounegru et al., 2017: 703-723).

In a far more adventurous and unique approach to data and networks, Anderson (2018: 148-162) details the *Structured Stories* project in New York City. Journalism and public affairs students at Duke University developed a “database of journalistically relevant news events, themselves comprised most fundamentally of a newsworthy

noun and a newsworthy and descriptively accurate verb” (Anderson, C.W., 2018: 149). When this database is populated with enough entities it “can link various related events together in a variety of larger semantic webs and event patterns” (Anderson, C.W., 2018: 149). These connections can then be manipulated into structured maps of relevant linkages.

Scale helps journalist “sense-make”

To argue that numbers only became important as storytelling devices in the late 2000s, however, would be misleading. Guidelines, books and manuals about how to use numbers have long argued for treating numbers as important devices for journalists in the construction of their news articles. As Livingston and Voakes (2005: 1) argue in their book *Working with Numbers and Statistics*

Numbers, numbers, numbers. There’s just no avoiding them, especially when you are a journalist...you can tell the story better with the appropriate (and accurate) use of numbers.

In this way, we can appreciate that numbers function at a much broader level in the act of “sense-making” by the journalist (Berkowitz and Nossek, 2006: 693). That is, taking a phenomenon and *making-sense-out-of-it* for the audience that read, listen or watch news content. Often this involves converting complex phenomena into frames that the audience can understand (Berkowitz and TerKeurst, 2006). When journalists use numbers, this can involve setting the specific within a broader context. Cushion et al. (2017) highlight how numbers can be used by journalists to contextualise stories. They refer to domestic reporting on terrorism and crime

The coverage of terrorism also makes fairly sparse use of statistics, despite a considerable amount of data that could help put a story into context or illuminate the relative risk or scale of terrorist activity

If we want to convey the social realities of crime, it is unhelpful to begin—as much crime reporting does—by looking for the unusual and the dramatic (...) there are instances where the desire to entertain (to tell a good story) may end up so disregarding statistical patterns that they end up misinforming our view of the world. (Cushion et al., 2017: 1213-1214).

In both cases, they argue that numbers can be used to provide broad statistical claims. For terrorism, it can outline “the relative risk or scale of terrorist activity”. Whereas for crime, journalists can lean on numbers to place “the unusual and the dramatic” against “statistical patterns” to determine their frequency. Such a position rests on the notion that numbers provide an understanding of magnitude or scale to the phenomena being reported.

When this concerns people, such as the number of people who are subjected to assault or the injuries due to terrorist attacks, numbers function discursively to accumulate a set of individuals into groups. In his book on discourse and practice, Theo Van Leeuwen (2008) argues that numbers “aggregate” groups of people by quantifying them and presenting them as statistics. He lays out the discursive characteristics of this aggregation. First, there needs to be a plurality of people being represented. This can be specific, e.g. “Australian” and “Muslims”, or using mass nouns or a noun denoting a group of people, e.g. “this nation” or “the community”. Second, this plurality is described by “definite or indefinite quantifiers which either function as the numerative or as the head of the nominal group, as with “a number of

critics”...and “forty percent of Australians”” (Van Leeuwen, 2008: 37-38). He goes on to argue that this type of representation matters because

In our society, the majority rules, not just in contexts in which formal democratic procedures are used to arrive at decisions, but also and especially in others, through mechanisms such as opinion polls, surveys, marketing research, etc. (Van Leeuwen, 2008: 37).

The meaningful nature of accumulation is outlined by Ahmad (2016) in his study of civilian casualties due to drone attacks in Pakistan from 2004 to 2015. He argued that the figures of civilian deaths by official sources was lower than the actual number. Operating on the logic outlined by Van Leeuwen, the lower the number of deaths meant the less coverage and attention the topic received in the news media (Ahmad, 2016: 20).²⁹

The importance of this accumulative logic is further highlighted in the work of Berger (2009). In 2007, the South African Institute of Race Relations (SAIRR) released a report that claimed the number of South Africans living on less than the equivalent of a dollar a day [R6.80] had increased from 1.9 million in 1996 to 4.2 million by 2005. The “government’s own figures cited by [Thabo] Mbeki [the head of the ANC] and others defined poverty as people living on less than R3000 a year”. This meant that the daily rate per person was R8.22 on government measures compared to R6.80 from the SAIRR. The difference in definitions meant the government figures were much lower than those from the SAIRR. So, both the government and the SAIRR pointed to levels of poverty yet the former emphasised how their numbers were

²⁹ A caveat must be made here in reference to the inconsistent relationship between magnitude of suffering and news coverage as detailed in the section on news values.

acceptably low, whereas the latter argued that their figures revealed that the rates were shockingly high (Berger, 2009: 198-204).

Numbers intersect with other storytelling norms

Numbers do not just operate within news reports as a distinct form of metrological story-telling. In their handbook, Gray et al. (2012: 158) emphasise the symbolic power of numbers to attract readers to a story. They explain that “to draw your readers in, you have to be able to hit them with a headline figure.” Whilst Livingstone and Voakes (2005: 3) emphasise how numbers should be framed in certain ways to maximise the meaning of data. Instead of writing “the city council approved a budget increase of \$39.2 million” they explain that the journalist should write “the city council approved a budget increase of 17 percentage” as the latter means much more to the audience. For these authors, raw numbers should be avoided at all costs. They emphasise the use of “relative numbers (ratios, percentages, odds etc.)” or the use of language to describe increases, decreases and so on (Livingstone and Voakes, 2005: 105-108). The most detailed account of the meaningful nature of numbers comes from Teun van Dijk (2000). He analyses how aggregated numbers function rhetorically in a 1989 article by *The Sun* headlined “Britain Invaded by An Army of Illegals”. He approaches statistics as pieces of evidence that underpin an empirically based argument. However, he also treats this type of argumentation as a discursive and rhetorical endeavour that relies on a series of tropes and representations to function.

Following on from claims that Britain is being “invaded” and “swamped” by illegal immigrants, the article presents the statistical “facts” that empirically confirm such a claim. Instead of emphasising the figure of 2,191 illegal migrants, however, the journalist relies on vague hyperbolic phrases such as “tens of thousands” as well as a

numerical visualisation that “illustrates the rising number by a steeply climbing line, and the caption of how the number of illegals has total has shot up, a metaphor that also is borrowed from the domain of violence (as is army and invaded)” (van Dijk, 2000: 45). Furthermore, in later sections of the article, “shocking” numbers were highlighted in bold. Van Dijk (2000: 45) argues that this “number game of immigration reporting has one main semantic objective: to associate immigration with problems and threats, if only by quantity.”

Van Dijk’s paper can be placed within a broader body of work that examines the rhetorical capacity of quantitative information. The earliest work is the aforementioned study by Roeh and Feldman (1984) on the rhetorical nature of statistics in establishing journalistic credibility. This was followed by a small but relatively coherent set of studies that examined numbers as rhetorical devices across a range of communications and topics (John, 1992; Katchergin, 2015; McCloskey, 1987; Koetsenruijter, 2018; Aviles, 2016; Kilyeni, 2013). They identify a range of rhetorical devices: intensification, immediacy, objectivity/truthfulness, melodrama/hyperbole, alliteration, metonymy, 111rosopopoeial and pathos. Only Van Dijk’s study, however, focuses on the way numbers are used rhetorically by journalists to represent the phenomena of the news story.³⁰

In part, this reflects a wider problem within studies of meaning through text. Numbers are often seen as less meaningful than their non-numerical counterparts (e.g. images, narrative, videos, sound etc.). This means that all too often “narrative and data mark the two poles of modern social description” (Peters, 2001). Despite calls to collapse this distinction, much of the work within discourse studies, representational analysis and (at a broader level) meaning-making has ignored the quantitative. This is certainly

³⁰ As opposed to Koetsenruijter and Roeh and Feldman who look at credibility and factuality.

true when we consider literature on the meaningful capacity of numbers within humanitarian journalism.

Using numbers to tell stories about crises

When reporting humanitarian crises, numbers take on an even more significant role for the journalist in the “sense-making” process of their work. The nature of disasters and crises mean that they are violent and chaotic breaks from the norm that involve the “menace and mockery, the dizzying unreason of the world, and the feeble ridicule of men” (Foucault, 1964: 13). Furthermore, the consistent reduction in resources for international news often mean that the journalists reporting on these crises are not based in the countries in which the crisis occurs (Lewis, J. et al., 2008; Wright, 2018). This often means that they are also reporting about a crisis within a context that they do not fully understand. Taken together, journalists often look to describe crises in simplified codes that they (and their audience) will understand.

An example of which is the way journalists present crises as events rather than processes, despite the argument by many academics that humanitarian crises, such as famines, are long-drawn-out processes (de Waal, 2005; Franks, S., 2013: 103). This reflects a wider pattern within journalism to take an “event-centred” (Barnhurst and Mutz, 1997) or “episodic” approach in their coverage (Iyengar, 1991). This type of reporting is often contrasted to “thematic” reporting where an emphasis is placed on “broader trends and social conditions” instead of “a single event or problem case” (Cozma and Kozman, 2015: 672).

There has been some attention given to the way journalists use numbers in these contexts but most lack a comprehensive analysis. Simon Cottle (2009: 151-152) refers to a humanitarian sector report called *Tricks of the trade: how to sell forgotten*

emergencies. In this document, press officers are urged to “put a number on it: death tolls give journalists pegs to hang their stories on” (IFRC, 2005). The association of numbers with “pegs” hints at the special role numbers have in grounding or rooting a story to a certain ontological solidity. In other pieces of research, numbers have been documented to have a more symbolic, myth-making role.

In his examination of how reporting of disasters relates to myths, Lule shows how numbers are used (alongside other devices) to construct the “myth” of the great flood. Quantitative information emphasises the enormity, the power and the destruction of disasters (Lule, 2001: 175-179). He points towards the New York Times’s coverage of Hurricane Mitch, the article explains that “of 164 houses in this northwestern Nicaraguan farming village, only one was standing today.” (Lule, 2001: 179).

Whilst Lule focuses on the way magnitude adds to the gravity of a crisis in a mythical sense, Joye (2009) points to the more deleterious effects of using numbers to convey scale. Taking a discursive approach to nine news items broadcasted on a public and commercial television news provider in Belgium, he identifies the different ways crises are reported. In crises affecting Australia and America, the reports were dense with local agents such as benefactors and emergency services. The reports on the Indonesian Floods, however, were markedly different. Individuality was replaced by statistical accounts of victims. Joye (2009: 52) explains “the voiceover using passive verbs, talking about an anonymous group of people and focusing on facts and numbers.” Alongside other discourses, this served to reinforce the Indonesian other.

Conclusion

This chapter has highlighted how numbers are generally used uncritically by journalists in their reporting. More often than not, these numbers underpin certain discourses.

This affords a large degree of power to the sources of this quantitative information. Given that this conflicts with basic tenets of journalism, the chapter goes on to outline three possible explanations. At a technical level, numbers do present a challenge to journalists who are not numerically literate or confident in their use of figures. Another, interlinked explanation put forward is that lack of time afforded to journalists to check the numbers they use. But the use of numbers by data journalists and fact-checkers within a metrological realism paradigm is testament to the fact that a technical and logistical explanation can only take us so far.

Instead, I emphasise the need to consider the following: it may not be in the interest of journalists to challenge numbers. Numbers are closely associated with journalistic integrity and credibility. They are often treated as coveted facts to establish the objectivity and accuracy of reports, whilst numerical sources are often used to protect themselves from flak or libel. But I also detail how numbers function in the creation and telling of news stories. Quantitative information can help reporters decide whether a story becomes “news” and then be used as representational devices in the construction of news. Such a storytelling practice is particularly important when journalists cover crises, phenomena that they can struggle to comprehend and explain to their audiences.

If we combine the argument presented in this chapter with the previous two theoretical chapters, we can observe a coherent theoretical framework. The way quantification of society has become *common-sense*, as detailed in *Chapter 2.*, underpins much of the way journalists use numbers. Their scientificity affords them an aura of objectivity that makes them a daunting technical task, helps root them to the ontological real and makes them come across as credible. Whilst the legitimacy of numbers to describe the social allow them to be used in deciding whether a story is “news” and in the telling

of that story. The work in *Chapter 3*. Points towards the ramifications of journalists not interrogating quantitative constructs. By uncritically reproducing content from their sources, they function as the discursive governing arm of large humanitarian institutions. Rooted in this theoretical position and my research questions, I developed my research design.

Chapter 5. Research design

Introduction

My theoretical framework outlined the way that quantification functions discursively in the governance of crises but also in the way news stories are created and constructed. Therefore, I created a corpus of news media articles from UK news media coverage of humanitarian crises in 2017. The entirety of these texts were analysed using a quantitative content analysis that provided a broad statistical analysis of the articles. A selection of articles were then subjected to a thematic analysis to provide nuance and detail to these findings. Following this, three numerical cases were selected from the corpus and were then developed using other media texts (press releases, reports, official correspondence and so on) to provide temporal context to these news articles. My theoretical chapters also emphasised the way numbers intersected with the rituals and practices of journalism itself. Therefore, I focused on interviews with journalists. First, I conducted a thematic analysis of publicly accessible interviews with journalists that use quantitative information to provide an overview of how reporters talk of numbers within journalism. Second, I conducted semi-structured interviews with journalists that had authored at least one article in my corpus. These interviews gave more detailed insight to the way quantitative information functioned within the specifics of humanitarian crisis reporting.

Once triangulated, these five methods (content analysis, thematic analysis, case studies, publicly accessible interviews and semi-structured interviews) were positioned as a sequential mixed-methods approach (Cresswell and Plano Clark, 2011: 77-81). This research design directly interrogated my three research questions by combining qualitative and quantitative approaches and a textual and human-participant perspective.

SRQ1 – How important are numbers in the coverage of humanitarian crises?

SRQ2 – How does the use of numbers relate to the norms, practices and rituals of journalism?

SRQ2a – How does the use of numbers by journalists relate principles of objectivity, neutrality, accuracy and impartiality?

SRQ2b – How are numbers used by journalists in the construction of news stories?

SRQ2c – What is the relationship between journalists and their numerical sources?

SRQ2d – How confident are journalists in using numbers?

SRQ3 – How does the use of numbers by the UK news media relate to the management, intervention and policing of humanitarian crises?

SRQ3a – How does the use of numbers by journalists legitimise humanitarian crisis intervention and policy implementation?

SRQ3b – How does the use of numbers by journalists reinforce or destabilise existing power structures?

A more detailed explanation of how these research questions relate to specific methods is detailed in the *methods* section of this chapter. A sequential mixed-methods approach to tackle these types of research questions is not without precedent. When looking at the use of statistics by UK journalists covering knife crime, Lugo-Ocando and Brandão (2016) adopted a similar research design. They initially used a quantitative content analysis for the entirety of their media texts and then used a sample for a thematic analysis. This was followed by semi-structured interviews with

these journalists. In their results section, they outline how the findings of their different methods could be compared to produce insights to their research question.

Developing my corpus and case studies

My quantitative content analysis, case study approach and thematic analysis are rooted in a textual analysis. To decide which texts to use, I developed a corpus. This was a collection of 978 online news articles from five UK-based news media outlets about seven humanitarian crises in 2017. My case study approach identified specific “numerical cases” covered in the main corpus yet also used relevant press releases, reports, statements, additional news coverage and organisational documents to contextualise the “numerical case” examined. Thus, the texts used for the case study approach was less systematic than for the content analysis.

Pilot corpus: digital news, archives, search terms and identifying case studies

The development of my main corpus (n=978) involved an initial pilot corpus that was used to gain answers to several methodological questions: should I focus on print or digital news? Which UK news outlets should I choose? How should the texts be collected from digital archives? What search terms should be used? Which humanitarian crises from 2017 should I focus on?

Instead of analysing print news media, I chose its digital counterpart. Since the 1990s, mainstream UK news organisations have developed digital editions to run alongside their print newspapers (Thurman and Fletcher, 2019: 543). Most of these newspapers have been negatively affected, with falls in circulation (Brock, 2013). The online format,

however, has witnessed a dramatic rise in readership.³¹ In OFCOM's (2018: 14) latest survey, they asked "which of the following platforms do you use for news nowadays?" They found that 64% of people responded with "Internet", compared to 40% who said "Newspapers".³² In fact, the Internet was the most popular media for audiences to access news. The rising popularity of digital news has been reflected in academic literature. It can be argued that "digital journalism" is now a distinct genre within journalism studies, as highlighted by the collection of short essays in *The Routledge Companion to Digital Journalism Studies* (Franklin and Eldridge II, 2017).

It is important, however, to not overplay the difference between print and digital news. It is best to understand the difference as a set of continuities and ruptures. To do so, we can turn to one of the "success" stories of digital journalism, in terms of readership and financial sustainability. *The Daily Mail* Online consistently ranks as one of the most popular online news sites in the world (Comscore, 2019; Ebizmba, 2019).³³³⁴ As Thurman and Fletcher (2019: 558) argue, "the popularity of DailyMail.co.uk is, in part, due to an editorial approach focused on entertainment and celebrity – very different in character from the more conservative stance taken in print." Other news organisations have maintained a similar editorial stance to their print counterparts yet made adjustments to specific challenges and affordances of the digital news environment. For example, "the Guardian has sought to build scale online, keeping content free-to-access" (Thurman and Fletcher, 2019: 558). They recorded a profit for the first time in

³¹ As Deacon (2007) explains, comparing print circulation and online readership is problematic. Therefore, I will detail what is meant by "popularity" in the online news space each time a figure or source is cited.

³² Those being surveyed could provide multiple platforms in their answer.

³³ Ebizmba uses "estimated unique monthly visitors" derived from U.S. Traffic Rank from *Quantcast* and Global Traffic Rank from both *Alexa* and *SimilarWeb*.

³⁴ comScore calculate "total unique visitors/viewers" from the U.K. per month from a combination of "tag" and "panel" data.

20 years in 2018/19, largely due to soliciting donation subscriptions from readers (Rajan, 2019).

The two cases above highlight how the transition from print to digital news is not uniform. The Daily Mail Online switched to a more profitable editorial position, whilst The Guardian Online maintained their political stance yet, in doing so, only recently secured their financial position. Therefore, when I selected which digital news sites to focus on, I used the tabloid/broadsheet distinction as a useful (if not perfect) way to distinguish between news media outlets (Deacon, 2007: 5). Importantly, however, this was combined with two other measures: political leaning and popularity (OFCOM, 2017: 29).

For the broadsheets, I selected The Telegraph Online (centre-right) and The Guardian Online (centre-left). For the tabloids, I chose The Mirror Online (centre-left) and the Daily Mail Online (centre-right) (Jones, B. et al., 2007: 219-220). In doing so, I heeded the advice of Martin Scott (2017: 41-45) to not just focus on certain news institutions, such as The Guardian Online, when looking at the “developing world”. These four online news providers were combined with BBC News Online. OFCOM’s (2018: 21) most recent survey identified them as the most popular news producer (as opposed to news amalgamator, e.g. Facebook) for UK audiences. This was corroborated by their #5 ranking in the latest comScore (2019) data. Initially, I planned to cover BBC News television programmes as well. The incomplete and selective nature of broadcast archives, however, meant that I decided to switch to BBC News Online.³⁵

Now I had the site of study – digital news – and the five news organisations – The Guardian Online, The Mirror Online, The Telegraph Online, Daily Mail Online and BBC

³⁵ Box of Broadcasts (BoB) archives rely on content being recorded and uploaded to the archive and is therefore not a total account on television news.

News Online – I had to decide what content was to be included. I decided to look at humanitarian crises from 2017 as this would mean my corpus was relevant, whilst also being historical enough for perspective. I began by compiling an index of *all* humanitarian crises during 2017 from lists provided by humanitarian organisations and from news media coverage (CARE International, 2018; The New Humanitarian, 2017; UNHCR, 2018).³⁶ I collected all of the content produced about these 44 crises by the five news organisations identified above. However, the scale of the corpus became extremely large and unfeasible for a manual (as opposed to computational) content analysis. Instead, I elected to take a sample of crises from the total of 44.

To do so, I constructed a matrix that categorised the 44 crises by continent, crisis type, and number of articles. I initially set out to also record the number of people who had died and/or were affected by the disaster but I was presented with significant problems of comparing different crises using these units.³⁷ To determine the number of articles per crisis, I conducted an initial search for online articles. This involved identifying the relevant online archives for each news outlet. I surveyed each news organisation's own website for their archival system as well as exploring third-party software. I found that across all of the news providers, Google News was the best option.

The archive on The Mirror Online and The Telegraph Online is outsourced to Google News. BBC News Online and The Daily Mail have their own archival system. To determine which system was more comprehensive, I compared the two internal

³⁶ It should be noted that there are a range of definitions of “humanitarian crisis” from across the humanitarian sector. Examples of which can be found from the Centre for Research on the Epidemiology of Disasters (CRED) who refer to “natural disasters and crisis situations caused by civil strife, conflict or others” and the International Federation of the Red Cross and Red Crescent (IFRC) who explain that “a disaster is not a single event; it may have various causes and consequences, and so each disaster is unique.” This thesis approached the ambiguity of “humanitarian crisis” by combining lists from different humanitarian organisations.

³⁷ Some crises affected millions of people yet only a relatively small number of people had died, whereas other crises witnessed many more deaths yet a much smaller number of people affected. In many ways, this reflects the issues of quantifying crises.

archives with Google News for inter-archival reliability (Deacon, 2007: 16-17). To do so, I adopted the search terms I used in my main corpus – focusing on the Central African Republic. After refining the results of both searches, I found that Google News retrieved more relevant articles than either the BBC Online or The Mail Online internal systems. When it comes to The Guardian Online, there are three ways to access their content: through their website, Google News and LexisNexis. Given that their website's archive is outsourced to Google News, I opted to compare the two external news archives for inter-archive reliability (Deacon, 2007: 16-17). I conducted an identical test to the one above and found that Google News retrieved more articles than LexisNexis.

To query Google News, I developed a set of “key words”. Initially, I searched the archive using the term “humanitarian crisis” yet soon realised that this excluded content about humanitarian crises that did not use the term “humanitarian crisis”. Instead, I used “humanitarian crisis”, “humanitarian emergency”, “humanitarian catastrophe” and “humanitarian disaster” in combination with a “name” (place, ethnic group, state) for the crisis. The search tools allowed for me to select the date range to “01/01/2017-12/31/2017”. So, an example of the standard query read as follows:

*“Rohingya” humanitarian crisis OR humanitarian emergency OR
humanitarian catastrophe OR humanitarian disaster site:
www.bbc.co.uk/news*

Once I had conducted this search for all of the crises on my database and recorded the number of articles that it returned, I began selecting the crises I wanted to concentrate on. It should be noted here that using digital news means that the articles retrieved in searches are not necessarily the original edition (Deacon, 2007). Content

can be changed from the date of publication yet all articles contained the “last update” time stamp.

Introducing the seven case studies

I selected crises that received a large amount of coverage but also involved different types of “man-made” crises, different forms of “natural” disasters and were from different areas of the world (see Appendix 6).³⁸ The process identified seven crises from the total of 44: Manus Island detention centre (Australia), Hurricane Irma (Caribbean and North America), La Puebla quake (Mexico), NHS winter crisis (UK), Rohingya refugee crisis (Myanmar & Bangladesh), South Sudan Famine and the conflict in Yemen. None of the crises were “man-made accidental” as there were no crises in my entire list that could be categorised in this way.

Hurricane Irma

The most covered crisis in my corpus was Hurricane Irma (n=339). The Category Five storm affected the north-western areas of the Caribbean and the south-eastern tip of North America (mainly Florida) between 5th and 10th of September.³⁹ The threat of the hurricane led to mass evacuations. The entire island of Barbuda was evacuated, according to the Prime Minister of Antigua and Barbuda (Cockburn, 2017). Whereas the Florida governor, Rick Scott, ordered the evacuation of 5.6 million residents in his state (NBC News, 2017). Despite these mass migrations, at least 129 people died as a direct or indirect result of the hurricane across the Caribbean and North America, according to the latest report from the National Hurricane Center (Cangialosi et al.,

³⁸ I used the Humanitarian Coalition typology of crises to inform the types of crises.

³⁹ Average sustained winds of 156mph or higher for at least one minute.

2018).⁴⁰ Furthermore, there was mass destruction of buildings and public infrastructure. In the British Virgin Islands (BVI) alone, 4,240 houses were reported damaged or destroyed in the third situation analysis presented by the Department of Disaster Management and the National Emergency Operations Centre (BVI News, 2017).

This natural crisis is a particularly good case study because it allows for a comparative analysis of how the hurricane was reported when it hit the “developing” world (areas of the Caribbean) and when it hit the “developed” world (Florida, USA). Furthermore, the coverage of Hurricane Irma was confined to four months (September to December 2017) with most of the coverage occurring in the first month.

Yemen

The humanitarian crisis in Yemen was the joint third most covered disaster (n=220). The conflict in Yemen began in 2015 and continues to this day. Instead of looking at the entire war in Yemen, I focused on specific aspects of the war that have resulted in humanitarian catastrophes. First there is the obvious crisis during war: the killing and injuring of civilians directly through conflict (Save The Children and Watchlist, 2017). A UN report published in August 2017, found that the Saudi-led Coalition (SLC) were responsible for the maiming of 683 children and the bombing of 28 schools and 10 hospitals (UN Secretary General, 2017).

The second and third dynamics relate to the (more indirect) impact of conflict. From April 2017, Yemen experienced an unprecedented cholera epidemic (WHO, 2017f). By the end of 2017, there were over 1 million suspected cholera cases – the largest

⁴⁰ This is calculated from counting the number of people who have died (a descriptive statistic), this number is almost always a minimum.

number of suspected cases recorded anywhere in the world – as well as 2,237 cholera-caused deaths (WHO, 2017c).⁴¹ There were also high levels of food insecurity through the year (FEWSN, 2017). During 2017, 226,557 children aged between 6 months and 59 months were treated for severe acute malnutrition (SAM) by UNICEF. Furthermore, the country spent the entire year on the brink of famine (UNICEF, 2017c). Reporting of medical statistics and the treatment of malnutrition and cholera was severely affected due to half of Yemeni health facilities being abandoned or destroyed (UN News, 2017).

Of course, these three types of crises are intimately connected. Conflict often leads to restrictions on access to food for certain populations, droughts can exacerbate conflict, and disease is often a bigger killer during famine than starvation (de Waal, 2005). In this way, the humanitarian crisis in Yemen was both a “man-made – intentional” and “natural – prolonged” crisis. Unlike Hurricane Irma, the crises in Yemen are not as easily bounded to 2017.

Rohingya

This disaster attracted the fifth most amount of coverage (n=177). Whilst the Rohingya have experienced a long-history of discrimination in Burma, late August 2017 saw attacks from the Burmese army and extremist Buddhists on the Rohingya population. Médecins Sans Frontières (MSF) (2017) estimated that 6,700 Rohingya had died directly as a result of the conflict in Burma.⁴² This led to mass migration of Rohingya out of Burma (mainly into Bangladesh). By October 2017, the average amount of people crossing into Bangladesh per day was reportedly 10,333 – creating one of the

⁴¹ A more in-depth explanation of cholera statistics forms the central part of a later chapter.

⁴² Through six pooled retrospective mortality surveys conducted in Bangladeshi refugee camps with Rohingya who fled Rakhine State, Myanmar.

largest refugee camps in the world. Over 700,000 refugees were recorded to have been living there in October 2017 (UNOCHA, 2017).

The extremely high numbers of Rohingya crossing the border into Bangladesh was coming to an end by 2017. This was caused, in part, by an agreement between Burma and Bangladesh to allow Rohingya to return back to their homes. The media attention to the crisis somewhat reflects this. In September there were 49 articles on the crisis yet by December this number had more than halved to 23. Therefore, the conflict (and the ensuing migration) can be considered relatively “bounded”.

Clearly, this crisis can be seen as an “intentional man-made disaster” – the violent oppression of a minority group resulting in their displacement into Bangladesh. In this way, the Rohingya case study allows for my analysis to explore how conflict can produce large refugee populations. Also, the Rohingya crisis has a special resonance with the British media because Aung San Suu Kyi, an Oxford graduate and civil rights “celebrity”, was (and is) part of the Burmese government.

Manus Island

The detention centre on Manus Island was the eighth most covered crisis (n=75). In 2012, the Australian government resumed their offshore detention centres for illegal migrants attempting to enter Australia (UNHCR, 2017). The two main centres are on Manus Island and Nauru. Both has been condemned for their abuse of human rights by detaining people for prolonged periods of time in prison-like conditions (AAP, 2017). On October 31st 2017, the Regional Processing Centre was closed down – food, water and power supplies were cut, as well as mental and physical health services (UNHCR, 2017). Those housed on Manus Island refused to leave the facility. On the 3rd November, lawyers representing those in the centre warned “that the men are

“starving” and a full-blown humanitarian crisis is unfolding” (Hasham, 2017). Three weeks after the closure of the centre (21st November), the UN reported that 300 refugees and asylum seekers remained in the decommissioned facility.

The reason for the refugees refusing to move are numerous: the lack of protection they would be afforded on the island, the lack of mental and physical health services they needed (due to their internment) and the chance for the refugees and asylum seekers to show the world the terrible conditions they had endured (UNHCR, 2017).

On 23rd November, the PNG military and police were sent to Manus Island to clear the detention centre (Staff writers and wires, 2017). The refugees and asylum seekers were moved to three new facilities in late November. The scale of suffering on Manus Island, around 600 men, was relatively low compared to the other crises in my corpus. Its significance, however, belied its small scale.

La Puebla quake

The La Puebla earthquake struck Mexico on 19th September 2017. According to UNICEF (2017a: 4), a total of 369 people died. The number of casualties was partly due to its location, striking densely populated areas in Mexico City. But it was also due to the size of the earthquake. Measuring 7.1 on the Richter Scale, the U.S. Geological Survey would class the quake as “Major” because it can “damage things seriously over larger areas” (RAIOT Collective, 2016).

In my matrix, there were only seven humanitarian crises that affected Latin America. One of these was the previously selected Hurricane Irma, excluding it from selection for Latin America. Of the remaining crises, all of the well covered emergencies were “natural – immediate”. Given that I had already selected a hurricane, I chose the La Puebla earthquake (n=38) over Storm Nate (n=91). The La Puebla quake is an

important case study to be compared to the coverage of Hurricane Irma as they both involve a relatively short emergency period that relates to the short time span on the natural event.

South Sudan Famine

For the first time in six years, anywhere in the world, a famine was declared on 20th February 2017 in South Sudan. A combination of drought and conflict exacerbated the food crisis in South Sudan, pushing it from a food emergency to a famine. Whilst this crisis received a relatively low level of coverage (n=22), food insecurity and famine is a very interesting and pertinent case study for my research.

A “famine” is no longer a contested term, it is defined statistically by the Integrated Phase Classification (IPC) – a classification system that uses quantified information to determine the food insecurity of a population. When a large group of people pass from tier four (Emergency) to tier five (Famine), the United Nations declare a famine. The IPC system was introduced in 2008 as a way to make it easier for agencies, donors, and governments to identify intervention priorities before the food insecurities became catastrophic (IPC Global Partners, 2012). The system was initially developed by the Food Security Analysis Unit (FSAU) for Somalia in 2004 and derived inspiration from Howe and Devereux’s famine categorisation system (Howe and Devereux, 2004). It has since been operationalised by the United Nations, Oxfam, Save the Children, the United States Agency for International Development, the UN Children’s Fund and the WFP.

Alongside the declaration of famine on 20th February 2017, the IPC released a series of other figures that informed public discourse. They estimated that 4.7 million people were severely food insecure (in Phases 3, 4 and 5). Furthermore, they found that of

the 23 countries with recent data, 14 had Global Acute Malnutrition (GAM) at or above 15%. The IPC also included important predictions about future insecurities if no action was taken by the international community. The report declared that the number of severely food insecure was projected to reach 5.5 million by July (IPC South Sudan, 2017). On the 21st June 2017, famine was declared “over” in South Sudan because the IPC had re-categorised South Sudan as Phase 4 (emergency) instead of Phase 5 (famine) on their latest data (BBC, 2017d).

NHS winter crisis

Whilst the NHS winter crisis was only the 14th most coverage (n=40), its significance cannot be understated. On 6th January 2017, the British Red Cross declared a “humanitarian crisis”, pointing to the increasing need for their services to supplement the work of NHS staff (British Red Cross, 2017). It was the first time (to my knowledge) that a “humanitarian crisis” was declared in modern Britain. Whilst immediate natural disasters occurred in “developed nations” (e.g. Hurricane Irma and Hurricane Harvey) during 2017, the NHS winter crisis was unique. The emergency was a combination of an “intentional man-made” crisis (lack of funding) and an “immediate natural” one (winter health crisis).

By focusing on a humanitarian crisis in the “developed world”, this case study allows for a comparative analysis with other disasters in the “developing world”. In doing so, we can understand how the news media reports a “domestic” crisis as opposed to an “international” one, how numbers function in these different contexts and the wider significance of labelling a situation a “humanitarian crisis”. The occurrence of a “humanitarian crisis” in a highly bureaucratic state, and within a highly quantified public health sector, meant that there was a wealth of numbers. Almost all of this quantitative

information came from complete datasets made available to the public.⁴³ These included numbers of patients attending Accident & Emergency (A&E), percentage of people seen within the 4-hour A&E wait time pledge, the amount of patients that should be discharged but (for multiple reasons) have not, the number of hospitals declaring an emergency in their trust, and so on (NHS Digital, 2019).

Given that the crisis was declared on 6th January, and had ended by the end of February, this health crisis is bounded. It does exist, however, within a larger context of a public health system that is struggling to cope with funding cuts, mismanagement and increased demand (The Health Foundation, 2019). In other words, this humanitarian crisis is set within a wider public health crisis.

Returning to my corpus: news articles on these seven crises

After selecting these seven crises, I returned to my corpus. When reviewing the news articles that my initial search returned, I realised that I needed to expand the scope of my search terms. First, this involved removing “humanitarian” from the query. This meant the query for Google News was as follows⁴⁴

*“Rohingya” crisis OR emergency OR catastrophe OR disaster
site:www.bbc.co.uk/news*

By excluding “humanitarian”, the search retrieved articles that referred to the “humanitarian crisis” without explicitly mentioning “humanitarian”. In addition, for certain crises I conducted a second search. This involved a more focused query relating to the specifics of the crisis. For example, the conflict in Yemen involved a

⁴³ Complete datasets does not mean each data point was complete across all of the NHS databases. Instead, it means that statistics about the NHS were descriptive and not inferred from a sample of hospital data.

⁴⁴ See the difference to the query on page X.

range of crises: conflict, cholera and malnutrition. Therefore, I searched for specific mentions of these words. A typical query would read

“Yemen” cholera OR conflict OR malnutrition site:www.bbc.co.uk/news

The results of these two searches were combined and duplicates were deleted. However, just using “key words” to find content is not great practice as it often identifies “things” and not “themes” (Deacon, 2007: 8-10). To make sure that the content retrieved from the database was the content I was looking for, I screened the articles (Soothill and Grover, 1997: 592). I developed a series of rules about what to exclude from my corpus. To begin with, I excluded pieces by “form”. As I am focusing on news articles, I excluded letters sent to the news organisation and transcripts of podcasts. Within pieces that would be classed as “news”, I decided to exclude live feeds (due to their length) and articles that provided overviews, e.g. BBC News Online’s *Africa highlights* or The Guardian Online’s *Briefings* (due to their lack of specificity). I included video and image-based articles yet only coded the text elements of these.

In respect to content, I systematically excluded articles based on the headline and lead paragraph. If there was no direct reference or indirect reference to the crisis, e.g. political meetings aimed at providing a solution to the crisis, the article was excluded. Furthermore, articles focusing only on the death, injury or plight of animals were excluded to ensure *human* suffering was the focus (Hanusch, 2008).

This process was not as effective for two types of crises: war and refugees. War is peculiar because, first and foremost, it is a military conflict between two or more sides. Often the *consequence* of war is a humanitarian crisis – either directly caused by war (e.g. casualties) or indirectly caused by war (e.g. blockades of trade). Therefore, I needed to be careful about what war-related articles were included and excluded. I excluded articles that focused on the injury or death of military groups (unless they

were important figures, e.g. leaders of ISIS) and specifics of police cases on military attacks (e.g. articles on how police foiled an attempted suicide bomber). This meant that I *did* include articles that provided overviews of the war, political decisions about the war, and deaths or injuries of civilians, UN workers/aid workers, non-military state personnel (e.g. policemen or civil servants) and journalists.

I included articles that did not include any numbers. I did so for two reasons: one, I wanted to compare the total number of articles to the number of articles with at least one statistic (to understand the prevalence of statistics); two, this process of eliminating articles with no statistics could be done more effectively during my coding. The final corpus consisted of 978 articles. The Guardian Online provided the most amount of coverage (40.6%) and The Mirror Online published the least (8.3%). The most extensively covered crisis was Hurricane Irma (33.1%) and the least covered was the La Puebla earthquake (4.6%) (see Figure 1).

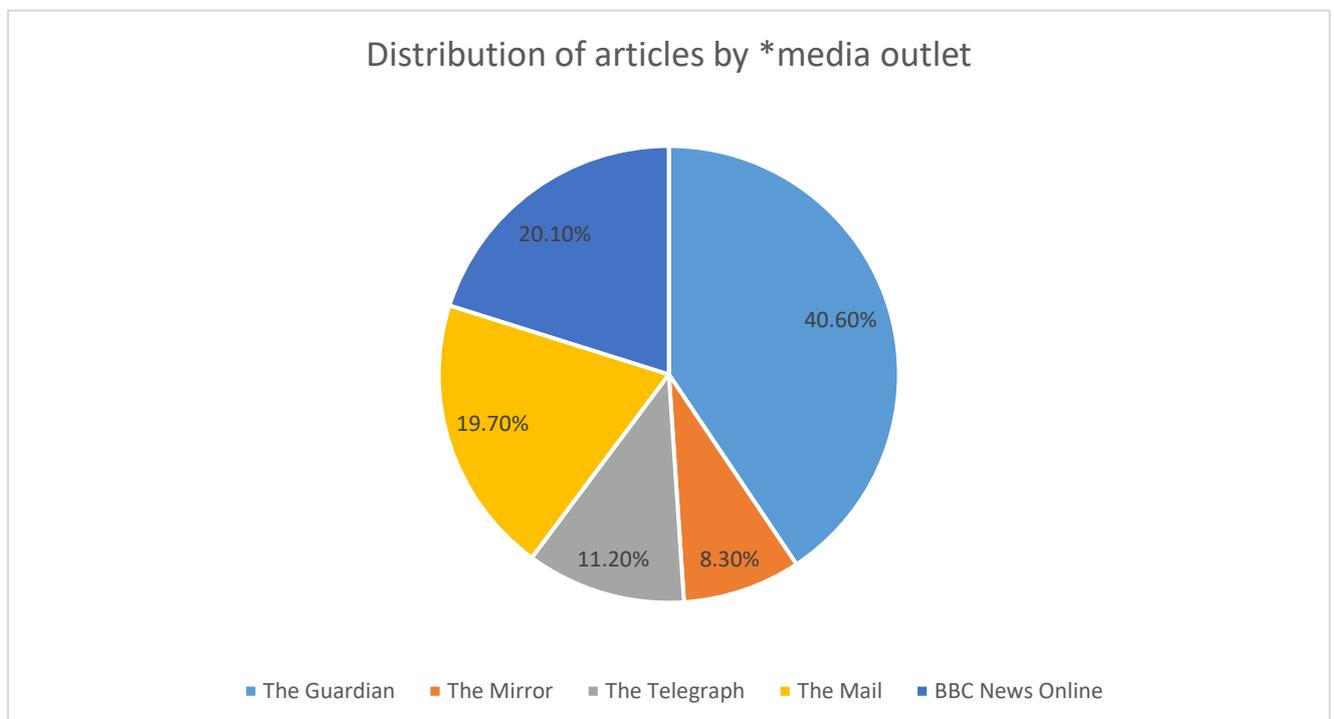


Figure 1: Distribution of articles by *media outlet

Methods

To analyse this corpus, I used three different methods: content analysis, thematic analysis and a case study approach. These were used alongside two sets of interviews: publicly accessible online interviews with journalists that use numbers and semi-structured reconstruction interviews with journalists. All five methods were used to answer one or more of my research questions: SRQ1, concerning the importance of numbers in reporting, was addressed by the content analysis; SRQ2, focusing on journalistic practice and rituals, was answered using content analysis, thematic analysis, case studies and the two types of interviews; SRQ3, concerning governance and power, was tackled using content analysis, thematic analysis and the case study approach.

Method (i): Quantitative content analysis

Content analysis is an approach that quantifies content in terms of predetermined categories in a systematic and replicable manner (Bryman, 2012: 289).⁴⁵ For my analysis, I will focus upon both manifest and latent elements of the text (Vladisavljević and Voltmer, 2017: 5). In order to guide my content analysis, I will follow the guidelines as set out by Krippendorff (2004a). This involves developing a codebook and coding manual (see Appendix 7). The coding manual it is made up of a series of variables. Within these variables, there are a set of categories. Different elements of the text are coded by being placed within a category of a variable. Following the codebook means that I can systematically and transparently code the text. The results of the coding can

⁴⁵ In light of my critical approach to quantification, and the “reality” it can access, I recognise that there is a certain irony in conducting a quantitative analysis. Therefore, I treat quantitative analysis as having certain affordances (e.g. being able to look at general trends) but do not consider a content analysis to access a “truth” that other qualitative methods cannot.

then be analysed through SPSS to look for statistical frequencies, associations and predictive relationships. I conducted a full content analysis of the main corpus (n=978). Content analysis has been used by other academics examining how journalists use numbers. Maier (2002) carried out a mathematical audit of a US daily newspaper. He adopted a content analysis of two sets of data – 500 news stories in a one-month review and 1500 articles from a three-month review. In my research, content analysis was used to examine the importance of statistics by recording the frequency they occurred in the text (SRQ1), whether journalists challenged statistics (SRQ2) and how numbers framed crises (SRQ3).

It is important to note Krippendorff's warning "that it is extremely difficult to establish causality from exclusively textual data" (Krippendorff, 2018: 204). One of the key elements needed to establish causality is a content analysis that accounts for the passing of time (Nueundorf, 2017: 37). Given that my corpus is not a longitudinal study, as it focuses on multiple crises across one year, I do not attempt to establish causation.⁴⁶

Defining the "unit" and "item" of analysis

The unit of analysis for my content analysis is the "article" – defined here as starting from the headline of the article through to the final sentence of the article. This includes images if they appear within the "body" of the article. What it excludes is (1) all content that is not within the main body of the article – including navigational tabs to other parts of the online news website, e.g. the 'opinion' section or the 'sport' section, adverts at the bottom or at the side of the news article; (2) the text at the end of the article that positions the content within the 'topics' of the news organisation; (3) all interaction

⁴⁶ The closest my analysis comes to this claim is my regression analysis.

metrics (shares, comments); (4) video or audio content; (5) any captions below photographs; (6) links to other articles that appear separate to the content (i.e. not an URL within the text of the article).

Within the unit of analysis, my codebook focuses on one “item” of analysis: the statistic as expressed in text. The main focus of my codebook is upon the “statistic” within the text – this excludes statistics in images but includes the image captions. Identifying statistics within news media text is not straightforward. Different researchers have developed different definitions of “numbers”, “statistics” and “quantitative information” (Cushion et al., 2017; Maier, 2002; Brand, 2008). For my content analysis, I decided to construct a set of typologies for *all* the numbers within the text (see Appendix 1). This included a typology for knowledge and a classification based on presentation (see Appendix 2). Both of which informed my decisions on what counted as a statistic within my content analysis.

Statistics, in this content analysis, are two types of numerical information: (1) a *statistic*: the past, present or future state of multiple “things” – e.g. number of people starving, rate of increase of house prices, average age of buildings; (2) a *classification, index* or *ranking* based on a statistic(s) – e.g. the level of the Integrated Phase Classification (IPC) that a specific country is within and NHS’s Operational Pressures Escalation Levels (OPEL) categories. Included within this definition of “statistics” are “informal” statistics that come from unofficial sources – e.g. 30 planes have flown overhead in the past 20 minutes – as well as “formal” statistics that come from official sources – e.g. there have been 10,000 cases of cholera reported.

Under this definition of statistic, certain types of numerical information are excluded: (1) *measurements*: the past, present or future state of one “thing” – wind speed, earthquake wave, distance, time; (2) *classification, index* or *ranking* based on these

measurements – e.g. Saffir-Simpson scale; (3) *targets* or *pledges*: a benchmark created by an organisation – e.g. for the NHS not to exceed 85% bed occupancy rate – or the future pledges – e.g. the government will spend £30 million in 2020/2021 on healthcare.

Within this definition, I will only include statistics that are numerically expressed – either specifically, e.g. “101,000”, or non-specifically, e.g. “hundreds of thousands” or “roughly half”. This excludes statistics that are referred to using vague language that is not strictly numerically bound, such as “risen”, “high”, “small”, “large”, “several”, “few” and “many”. The need to omit these non-numerical forms of expression was for reliability. Therefore, taking into account the exceptions above, the ‘item’ of analysis can be identified if the following words or numbers are present: 0,1,2,3,4,5,6,7,8,9; zero, one, two, three, four, five...; ten(s), hundred(s), thousand(s), million(s), billion(s)...; half(s), third(s), quarter(s), fifth(s)...; second, third, fourth, fifth, sixth, seventh, eighth, ninth...; dozens.

Codebook and coding manual

To guide my content analysis, I produced two documents. The codebook provides the sheet from which I will code the articles, consisting of variables, categories and the research question that each variable relates to (if applicable). Whereas the coding manual provides a more in-depth explanation of the codebook, including a codebook dictionary that attempts to explain each variable and category clearly. Both of these documents were subject to a series of revisions from the first pilot study through to the final coding of the entire corpus.

The codebook can be split into two types of variables: basic general variables and variables that relate directly to my research questions (see Appendix 7). Basic general

variables consist of information about the article (V1-V8) as well as information about the type of humanitarian crisis being covered (V9-V10). These are primarily useful for comparative analysis – e.g. how does coverage by *The Guardian Online* differ to that of *The Mirror Online* (V5) – but do not relate specifically to my research questions. The second half of my variables (V11-V16) focus on how statistics are used within the text. At a basic level, I use two variables to understand how important statistics are in the construction of crises in texts. I coded the number of statistics in the article (V11) using an ordinal scale (0, 1-3, 4-6, 7 or more) and I logged whether there was a statistic in the headline of the article (V14). I posited that if there is a high frequency of statistics in the text and the headline, then they are important in the storytelling process of reporting crises. Following on from these initial codes, I coded for *how* statistics were used in the text. This involved coding for the way statistics framed the crisis in terms of causation, problem or solution (V12), what type of statistics were used (V13) and whether these statistics were challenged (V15). Much of my analysis of how statistics were used was based on connecting crisis type (V10), framing (V12) and type of statistic (V13). This makes it important to lay out exactly what I mean by “framing” in this context.

Framing

Leaning on the work of Reese (2003: 11-12), I categorise numbers based on how they appear in the text as “symbolic forms of expression”. Through the analysis of these manifest textual occurrences, I point towards a “structural” notion of framing by identifying “patterns of structures” that the symbolic frames support or contest. In this way, I approach framing as both “symbolic” and “structural”. Before detailing exactly how these concepts of framing relate to my research, it is important to first recognise

that the term “framing” is ambiguous within media and communication studies. To tackle this ambiguity, a group of academics published *Framing Public Life* in 2003 to identify distinct strands of this field.⁴⁷ In the prologue, Stephen Reese outlines the different strands of “framing” in media research. Some are concerned primarily with the effect or outcome of framing (Entman, 1993). Others are “more modest” in their definition, referring to subtle changes in the presentation of information (Iyengar, 1991: 11). Others still use framing as a way to grasp the “central organising ideas...for making sense of relevant events, suggesting what is at issue” (Gamson and Modigliani, 1989). In this conception, framing is closer to Stuart Hall’s (1982) emphasis on how the media can decide what is relevant and irrelevant. The work of Gitlin (1980) points towards structural and organisational processes that transcend any individual story and remain persistent over time.

Taking this as his theoretical backdrop, Reese (2003: 11-12) identifies a “working definition” of framing as consisting of six characteristics: organising, principles, shared, persistent, symbolic and structure. His model can be applied to the following chapters. The most relevant piece to my research design is Philemon Bantimaroudis and Hyun Ban’s (2003) chapter called *Covering the Crisis in Somalia*. In this section, they analyse newspaper coverage for predominant media frames during the 1991 crisis in Somalia. They identified *warlords* and *factions* as predominant frames through a quantitative and qualitative textual analysis of news reports (symbolic framing). These frames are then linked to “structural and ideological influences” that manifest in these frames and serve to reinforce them (structural framing).

My work takes a similar approach. I use a quantitative content analysis that identifies the existence of frames and counts their frequency. More specifically, I record whether

⁴⁷ The term “field” is used to refer to the different methodologies and theoretical strands of framing.

the framing of each statistic (the item of analysis) is “causative”, “problematic”, “solution-focused” or “none of the above” (V12). Within each article, I count the number of different frames per statistic and code the one with the highest frequency. For example, if an article has 10 statistics and three were “causative”, three were about a “problem” and four were about a “solution” then I coded the article as “solution”. In this way, I am focusing specifically on how *statistics* frame the article (and not the framing of the entire article).⁴⁸ By focusing on cause/problem/solution, I am leaning on Entman’s (1993: 52) notion of framing as a communication process that promotes “a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendations.” Examples of similar research can be found in the work of Vladislavljevic & Voltmer (2017) and Redden (2011). Whilst it is more common for framing to be used qualitatively, there has been a rise in quantitative framing analysis since the 1990s (Matthes, 2009).

Returning to Reese’s definition, my approach to framing adopts the “symbolic” aspects of framing by examining the manifestation of frames within the text. In doing so, I can identify the “persistent” frames that “warrant our study” (Reese, 2003: 12-19). Frames that are used consistently are structured by discourses that precede it but also help to “structure” the topic it frames. The use of certain frames when reporting humanitarian crises structure practice, organisations, aid flows and policy. It is important, however, not to over-state findings from a quantitative content analysis of framing. It can indicate connections to wider discourses yet cannot establish a causal link. To provide context, I will bring in existing literature and examples that can elucidate the significance of certain frames (Reese, 2003: 12-19).

⁴⁸ More in-depth explanation of my methods can be found in my coding manual.

Inter-coder reliability

Most of the coding during this content analysis will be conducted by one person. Nevertheless, I conducted an inter-coder reliability test to determine whether my coding was statistically reliable when compared to another coder. As Lacy et al. (2015: 10) explain, “it is important to remember that the primary aim of inter- or intra- coder reliability checks is to test the reliability of *the coding protocol*, and the protocol’s ability to result in consistent categorisation of content.” To conduct the inter-coder reliability test, the author and another coder coded a sample of 10% of the articles (n = 98) in my main corpus. To test the reliability of our coding, I used Krippendorff’s (2004a) Alpha test. Variables with alphas above .8 were considered reliable and those between 0.667 and .8 considered useful for tentative conclusions. Krippendorff’s *Alpha* is considered superior to *Kappa* because it treats coders as independent (Krippendorff, 2011) and superior to *Pi* because it adjusts for small sample sizes and can be used with multiple coders and all levels of data (Krippendorff, 2004b). All my variables achieved a score above 0.667 with all but two variables above .8 (see Appendix 3).

How I can use SPSS to provide answers to my research questions

I used SPSS software (v.25, IBM SPSS) to analyse the results of my coding. This involved simple statistical analyses, such as frequencies, but also includes more complex functions, including associations and regressions. As I am not dealing with continuous data, I will not look at correlations. In order to conduct a statistical test for association or regression, I began by formulating a null-hypothesis. The statistical test was then applied to prove or disprove the null-hypothesis.

There are a range of null-hypotheses that I could apply to my data. I could posit the following null-hypothesis: *there is no association between the existence of a statistic*

in the headline of the article (V11) and the challenging of a statistic in an article (V15).

As these are two dichotomous nominal variables, I can use Fisher's exact test in SPSS and see if the association is significant and its strength. If it was found that I could reject the null-hypothesis, I could argue that the way the presence of a statistics in the headline of an article is linked to whether they are challenged or not. Both frequencies and associations are often expressed visually in the analysis section. When this is the case, individual variables are given an asterisk (*) to denote clearly which variables are being counted or compared.

Whilst tests for associations are a good basic tool to understand the relationship between two variables, regression analysis provides a more nuanced and statistically sound argument. As I am dealing with categorical data, my regression involves the calculation of odds. When working with two variables, an odds ratio asks the following question: what are the odds that X will happen if Y is Z and not V? The answer comes in the form of odds. For example, it is 50 times more likely that X will happen when Y is Z and not V. As part of this process, I recoded my variables for "framing" and "type of statistic" into "dummy variables", which recorded whether a certain type of framing or type of statistic occurred or not. For example, a "dummy variable" was created to record whether the framing of "problem" was the most prevalent in the article (2 = yes) or not (1 = no).

Using odds ratio to test the relationship between two variables provides certain insights but often these are limited in scope. To gain a broader understanding of the factors that make a variable more or less likely to occur, I conducted a binomial regression model to determine the relationship between a set of independent variables on a dependent variable (Erickson et al., 2018). Whereas the two variable regression provides a single odds ratio, a regression model provides an odds ratio for each

independent variable. Importantly, this is not the chance of the dependent variable occurring if that dependent variable is present. Instead, the odds ratio is set in relation to the other odds ratios in the model. This is an important aspect to remember as it makes the results of a binomial regression model relative rather than absolute. These models are expressed in a table that provides an odds ratio for all the independent variables as well as the constant value, the number of observed cases, the pseudo R2 value, degrees of freedom and the chi-squared value. Of these, the pseudo R2 value is the most important as it indicates the percentage of variance that is accounted for by the model. In essence, the higher the number the better the model for those independent and dependent variables.

The current literature on how journalists use numbers is often based on frequencies and associations rather than regression (Lugo-Ocando and Brandão, 2016; Ahmad, 2016). Introducing this more sophisticated statistical tool allows for me to develop a more nuanced and robust quantitative assessment of my content analysis.

But as recent literature has emphasised, the adoption of statistical methods based on “p-values” has its own issues. For one, there is a problem with what is called “p-hacking” – the deliberate manipulation of research design or the data from research to yield a statistically significant ($p < 0.05$) result. Furthermore, even correctly conducted experiments and analysis can make statistical conclusions that are overblown. Instead of relying on statistical significance to make categorical claims, statisticians are increasingly emphasising that statistical significance points to something that needs further investigation (Wasserstein and Lazar, 2016). Both of these problems are addressed in my research. My quantitative content analysis was careful to construct definitions, categories and variables prior to their application to the test and any transformations of categories were done to examine specific elements of

the text (rather than to achieve statistical significance). The issue of statistical significance being indicative rather than definitive is highlighted in the way my analysis was used to identify broad discursive patterns that then formed the basis for my other textual analyses (thematic analysis and case studies) but also my interviews too.

Method (ii): Thematic analysis

Through the coding process of the content analysis, I identified certain patterns and anomalies within the coverage. I used a thematic analysis to provide more detail and nuance to these statistical findings. This meant that my content analysis provided a list of articles to be analysed in my thematic analysis. To analyse these articles, I followed Braun and Clarks (2006) model of thematic analysis. They explain that thematic analysis is a method for identifying, analysing and reporting patterns within data (Braun and Clarke, 2006: 3-6). I used existing work within journalism studies to guide my coding and develop specific themes. These themes were then refined, following Patton's (1990) dual criteria for judging categories: internal homogeneity and external heterogeneity (Braun and Clarke, 2006: 16-23).

For example, when I examined statistical challenges in more detail, I conducted a thematic analysis of all the articles with a statistical challenge (n=47) to determine what types of challenges were most common. This relied on existing work on how journalists challenge numbers, as well as paying special attention to specific challenges prevalent within humanitarian crisis coverage. A similar process was used to develop different areas of my content analysis, as highlighted in *Chapter 6*. In doing so, my thematic analysis was mainly concerned with providing detail to answers about journalistic practices, as observed in the text (SRQ2) and the way crises were constructed discursively (SRQ3).

Method (iii): Case studies

In their 2018 review paper of sociology and quantification, Berman and Hirschman (2018: 265) explain that “tracing a single [numerical] case (...) may be most useful for thinking about the mechanisms through which relatively influential forms of quantification exercise that influence.” So, I chose one “numerical case” from the coverage of each of my seven humanitarian crises. Each case was selected during my content analysis and thematic analysis due to its prominence in the coverage and/or because it was particularly informative about how numbers can operate within journalism. The seven case studies were as follows:

- **Hurricane Irma:** how the OECD rules about international aid flows were challenged by political groups and the news media, leading to a change in the restrictions of aid to newly graduated countries during crises
- **Yemen:** the consistent and prolific use of “suspected cholera cases” when reporting the cholera epidemic in Yemen
- **Rohingya:** the demand, creation and communication of the MSF mortality survey in the Bangladesh refugee camps for the Rohingya
- **NHS winter crisis:** two cases of “leaked” NHS data regarding the state of English hospitals over the winter period
- **Manus Island:** the contestation over the “three alternative sites” provided to refugees housed on Manus Island by the Australian government
- **La Puebla quake:** the consistent use of the 7.1 magnitude La Puebla earthquake
- **South Sudan Famine:** the official IPC guidelines on how to communicate IPC findings on famine

Unlike many of the “case study” approaches adopted in the social sciences, I was not looking to identify specific causal mechanisms. Instead, I focused on what George and Bennett (2005: 25) call “scope conditions” that indicate how and why certain numerical cases emerged. In terms of methodology, George and Bennett (2005: 49) explain

There is no single “case study research design.” Rather, different case study research designs using varying combinations of within-case analysis, cross-case comparisons, induction, and deduction for different theory building purposes.

Therefore, I developed my own analytical approach combining the analytical tools of Merry’s (2016) investigative work into human rights quantification and Dorling and Simpson’s (1999) four-step guideline to understanding statistics. Such an approach mapped the “life-cycle” of the numerical case. Starting with how a number came to be – *who* demanded for its conception and *why* did they do so. Such an examination often points towards how the specific number relates to “power”. Numbers can be demanded for necessary and seemingly benign accounting practices that operate as just one part of the way states use numbers to govern. Yet it can also play a clear instrumental role for specific political purposes of intervention, the passing of policy or the gaining of certain votes (Dorling and Simpson, 1999).

Once a number is demanded, it needs to be “created” through a series of “technical” processes that centre on two main stages: data collection and data analysis. Both of which can range from the simple – using limited data points and almost no analysis – to the complex – employing thousands of people, applying multiple types of analysis and covering millions of “things”. Such a process is not simply a technical exercise by

experts yet a site of contested knowledge and practices, which determine how data is collected and how it is analysed (Dorling and Simpson, 1999).

The number is then communicated by those who produced it. I am specifically interested in two aspects of this communication. How the number is communicated to the news media through reports, press releases, databases and other sources of numerical information. And how this communication is set within a communicative strategy to ensure that quantitative information is not a “tool without a clientele” (Merry, 2016: 181). I also include communication *by* the news media in news articles and how journalists’ use of this number can engender further communication.

Tied to communication, the final stage assesses *when* and *how* a numerical case stops being relevant for the actors and institutions involved. This can be when a number is replaced by a new, improved quantitative process rendering the existing one redundant. But it can also refer to the point at which a number becomes so “stable” that it forms the “infrastructure” of government itself: receding into the background, away from discussions of specifics, yet remaining a crucial element of the type of governing, accounting or policing practice that it was created for (Star, 1999). Given the way these four stages of the life-cycle of a statistic was mapped, the case-study approach was primarily aimed towards answering SRQ3 on power but also addressed the way journalists communicate these numbers (SRQ2). To complement my textual analysis, I collected two types of interview data: publicly accessible interviews with journalists and semi-structured interviews conducted by this author with journalists who covered one or more of the seven crises in my corpus.

Method (iv): Publicly available interviews

Matt Carlson (2016: 350) argues that journalism should be treated as a “cultural practice” that sits within “a field of discourse that continually constructs meaning around journalism and its larger social place.” Carlson (2015: 350) calls this field “metajournalistic discourse” that can be found in “public expressions evaluating news texts, the practices that produce them, or the conditions of their reception.” In my research, I use publicly accessible interviews with journalists to understand the “metajournalistic discourse” of how numbers are used by those working within the news media. To collect these interviews, I used Google search engine to conduct the following search:

Interview AND (journalist OR reporter) AND (data OR statistic OR number)

I refined these results by only including interviews with journalists where they referred directly to quantitative information. This was especially important as large parts of the search results contained articles giving advice to prospective journalists regarding how they should conduct interviews. After collecting the initial sample, I searched within each website that contained an interview for more interviews with journalists referring to numbers.

This process retrieved 22 interviews (see Appendix 5). Of these, 19 self-identified as a data journalist. This included “data journalist”, “data visualisation journalist”, “data interactive journalist”, “data graphics editor” and “data journalism editors”. Only three journalists did not identify as a data journalist. These journalists referred to their use of numbers but identified as a “reporter”, “investigative reporter” or “journalist”. The imbalance between data journalists and non-data-journalists is indicative of the contemporary rise in data journalists yet also poses certain problems. A comparison

between the two types of journalists is not as robust as it would be with a more evenly matched sample.

Nevertheless, a comparison is instructive of how the “metajournalistic discourse” manifests within journalism primarily geared towards data and journalism that uses numbers but is not focused on quantitative-storytelling. To do so, these interviews were subjected to a thematic analysis (Braun and Clarke, 2006). In doing so, these publicly accessible interviews provided some contextual explanations for SRQ2 that focuses on journalistic practices and rituals. A more detailed answer was provided by semi-structured interviews with reporters that covered humanitarian crises.

Method (v): Semi-structured Interviews

Conducting interviews with people in the news media is very common in journalism studies. Put the most clearly, DeMarrias (2004: 54) defined the interview method as “a process in which a researcher and a participant engage in a conversation focused on questions related to a research study.” It is often used to access “people’s perceptions, meanings, definitions of situations and constructions of reality” (Punch, 2014: 144; Petty, 2012: 380). There are certain affordances and drawbacks to the method, however. Paterson et al. (2016: 11) argue that “without the many early ethnographic investigations of news production (...) our understandings of journalism would be limited to what little we are able to glean from the observation of news content, or from what journalist say they do.” And, as Jerolmack and Khan (2014: 178) argue, “what people say is often a poor predictor of what they do.” Thus, Ryfe explains that during interviews “participants often made declarative statements about how things worked, which I dutifully wrote down, but which turned out, in practice (that is, in their interactions), to be wrong” (Ryfe, 2016: 47). But such commentary risks

throwing the baby out with the bathwater – access to newsrooms is increasingly rare so methodological work-arounds are more and more necessary. I approach interviews as journalists' interpretation of their (and the wider organisation's) practices. Their responses are not infallible yet are not completely disregarded either.

Design of my interviews

There are many different ways to approach interviews (Minichiello et al., 1990; Punch, 2014; Fielding, 1996). I elected to conduct a semi-structured interview with journalists, using an article they authored as a prompt for discussion. This allowed for me to guide the conversation along certain themes (informed by my interview schedule, see Appendix 4) yet base the discussion in a piece of work the journalist was familiar with. Such an approach is similar to “reconstruction interviews” (Reich and Barnoy, 2016). Unlike these interviews, however, my approach was not aimed at systematically reconstructing how journalists constructed the prompt article used (Barnoy and Reich, 2019). In fact, the aim of these articles was not to uncover processes of production *per se*. Instead, the articles were used as a way to ground the conversation in the familiarity of the text. In this way, the conversation explored journalistic rituals and practices (SRQ2) and how numbers intersect with power (SRQ3). Often this would occur simultaneously. For example: when a journalist is discussing how they received a statistic from a source, they will also be asked why the statistic was important for their article and whether they trusted the statistic as a piece of information.

Targets for interviews

The author or authors were recorded for all the articles in my corpus for the content analysis. Authors that were not journalists, e.g. academics or film stars, were excluded

so I could focus on those working within the news media. For each “author”, I recorded their Twitter handle (if they had one) and what type of communication their Twitter account allowed: either “direct message” or an email address in their biography. I originally planned to target only the journalists that covered (a) the “numerical cases” that I was examining and (b) two or more crises in my corpus. But due to a small rate of return, I expanded my scope to all of the 315 journalists that authored at least one piece in my 978-article corpus.

I either sent a “direct message” on Twitter or sent them an email via their publicly accessible email address. Where possible, I also deployed the “snowballing” method: asking existing interviewees whether they had colleagues who would be interested in taking part in the research project. Whilst I conducted the interviews, I soon reached a level of saturation: the same themes, ideas and tropes were emerging again and again as I conducted more interviews. This can partly be explained by the specificity of my interviews: journalists’ use of numbers was one relatively small aspect of their reporting and, as will be explored further in my findings, there was a considerable degree of consensus about how these numbers were used. Therefore, I interviewed 16 journalists in total. They represented at least one from each news outlet, with The Guardian Online (n=6) most represented and The Mirror Online (n=1) and The Daily Mail Online (n=1) the least. Across all the interviewees, they reported on all but one of the crises (La Puebla quake). The NHS winter crisis was the most covered (n=6), followed by the famine in South Sudan (n=4).

Analysing interviews

To analyse the interviews, I used the thematic analysis model of Braun & Clarks (2006). Braun & Clarks (2006: 3-6) explain that thematic analysis is a method for

identifying, analysing and reporting patterns within data. Braun and Clarks (2006: 16-23) provided a blueprint of six stages of analysis. First, transcribe the verbal data – some researchers argue this is “a key phase of data analysis within interpretive qualitative methodology” (Bird, C., 2005: 227). Second, initial codes will be developed from the verbal and visual information. Third, they were combined to form over-arching candidate themes and subthemes. Fourth, there will be a refinement of themes, following Patton’s (1990) dual criteria for judging categories: internal homogeneity and external heterogeneity. Fifth, a detailed analysis of the individual themes will be conducted, with an emphasis upon SRQ2. Sixth, I will produce a report: a detailed, interlocking, comprehensive story about the qualitative information.

Ethical considerations

Journalists were identified because they had produced publicly accessible content, meaning their work (and sometimes their normative position on a crisis) were fairly well known. Nevertheless, the public nature of the media product does not necessarily mean the process of producing these articles are public knowledge. Therefore, when I approached journalists I was careful to adhere to four strict ethical positions.

First, I supplied an information sheet about the interviews well in advance of our discussions (Brinkmann and Kvale, 2008: 266). A corresponding consent form was signed on the day of the interview, either in person or returned digitally (Lewis, J. and Graham, 2007). Second, I made sure that audio files from our interviews were kept in secured and locked folders. After they were transcribed, these files were permanently deleted. Third, I created an anonymity cipher for each journalist. They were randomly assigned a number that was used each time I referred to conversations with said journalist. Fourth, the nature of humanitarian crises meant I was aware during my

conversations with journalists to not dwell on certain areas that may cause psychological stress (unless the journalist was happy for the conversation to go there). Furthermore, I was aware that in using a piece of their work to guide our conversation, their identity could have been revealed. To tackle this problem, I made sure the article was a prompt for discussion and any specific, potentially identifiable details, were omitted from my findings. This included taking out references to the news organisations they worked for and choosing vaguer statements that expressed the same sentiment as more specific ones (that could identify the journalist). Furthermore, I sent a draft of my chapter to each journalist that was included in said chapter so they could review their contributions and assess for themselves whether they could be identified.

Limitations of my research design

There are certain limitations to my research. At a broad level, Simon Cottle warns against over-stating the claims of journalism research, especially researchers concerned with the open-ended nature of structuralism, constructionism and post-structuralism. He explains that “these processes of mediation [social construction] are (...) multidimensional and involve multiple interactions between different institutional agencies and contending social actors” (Cottle, 2009: 165-166). Therefore, “processes of social construction (...) cannot be easily ringfenced and confined to processes of news representation, neither perhaps should they be (Philo, 2007)” (Cottle, 2009: 165-166).

In regard to my corpus, the use of digital news articles, rather than print, presents issues of uncertainty. Online archives have problems in creating consistent, reliable and replicable results of specific searches. The nature of the algorithm may mean that

a search conducted previously does not yield the same results when conducted again (Deacon, 2007: 12-14). Furthermore, the results that are given are rarely the entirety of the news media's coverage. In other words, digital archives are only ever partial (Robinson, P. et al., 2005).

The traditional criticisms levied at each method become less important in a mixed-methods approach. For example, content analysis is often critiqued as a method that only provides broad-brush stroke analysis of the corpus. On the other hand, thematic analysis can be considered highly relativistic, being unable to extend beyond its own specifics and say anything approaching a general claim. The idea of mixed-methods is to use a set of different approaches that can account for the limitations of the other. Nevertheless, comparing and corroborating findings presents its own problems. This becomes especially important when we consider that my content analysis focused on "statistics" and my other methods analysed *all* quantitative data. Furthermore, the existing research on journalists' use of numbers adopts varying definitions of what counts as a "statistic", "mathematical calculation" or "number". Therefore, I cannot directly compare my findings to other research.

Stepping away from content analysis, the case study approach has been shown to have certain flaws. Most of these limitations are posited by those within more quantitative-driven disciplines of the social sciences (George and Bennett, 2005: 22-33). These tend to centre on issues of bias, replicability, causality and representativeness. Whilst my methodology does not attempt to address all of these aspects, it does highlight the systematic selection of case studies (reducing bias and increasing representativeness) and makes clear that they are *not* geared towards a scientific notion of causality. Furthermore, by examining seven numerical cases, my

work addresses the problem of only focusing on a singular case when interrogating the representation of humanitarian crises (Bunce et al., 2019).

Taking these limitations into consideration, my mixed-methods sequential research is designed to utilise the affordances of these four distinct methods to provide a nuanced and comprehensive account of how journalists use numbers when they cover humanitarian crises. As with all good mixed-methods approaches, I cross-reference and co-develop the findings from empirical work to inform a wider argument and contribution to theory.

Conclusion

The aim of this chapter was to discuss the study's research design. The first section of the chapter outlined how I decided on my seven humanitarian crises and the way I developed my corpus of news articles about these emergencies. The second section outlined my five methods, set within a mixed-methods sequential research design. First, I outlined my quantitative content analysis that used a codebook to code the entirety of my corpus. Second, I explained how I would use a thematic analysis to provide detail and nuance to my content analysis. Third, I argue that a case study approach is necessary to provide temporal and discursive context to specific numerical cases within my corpus. I then posit that interviews are needed to gain insight to what journalists' think about numbers in the reporting of humanitarian crises. To do so, I first compiled a list of publicly accessible online interviews with journalists talking about their use of numbers. After analysing these, I then explain how I collected interview data by interviewing 16 journalists who contributed at least one article to my corpus. Taken together, this mixed-methods approach allows for a well-rounded and detailed understanding of how journalists use numbers in their reporting of crises.

Chapter 6. Content analysis and thematic analysis

Introduction

In this opening empirical chapter, I discuss the findings from my content analysis and thematic analysis. I begin by outlining the frequency of statistics within my corpus. This is followed by an account of how numbers are used to frame crises, based on basic frequencies and a regression model. I follow this framing section by outlining how journalists challenged the numbers they used, dividing these instances into different types and challenges and exploring where they are more likely to occur. The next section explores the differences in media outlets, utilising two regression models to outline which categories made coverage more or less likely for each news outlet. My final section addresses the difference in the way the NHS winter crisis was covered compared to the other international crises. The chapter concludes by explaining how this content and thematic analysis provides partial answers to all three research questions (SRQ1/SRQ2/SRQ3) yet a case study approach is needed to develop these findings in relation to SRQ3.

Frequency of statistics

For every news article in my humanitarian crisis corpus (n=978), I coded for the frequency of statistics. Only 6% of articles (n=59) *did not* contain a statistic, meaning that 94% of articles (n=919) *did* contain at least one statistic. When an article contained a statistic, it was most common for it to contain seven or more statistics (see Figure 2). Not only were a large number of statistics used in the main body of the article, these numbers were also used within the headline of these articles. Roughly one in every five (19.3%) articles had a statistic in the headline.

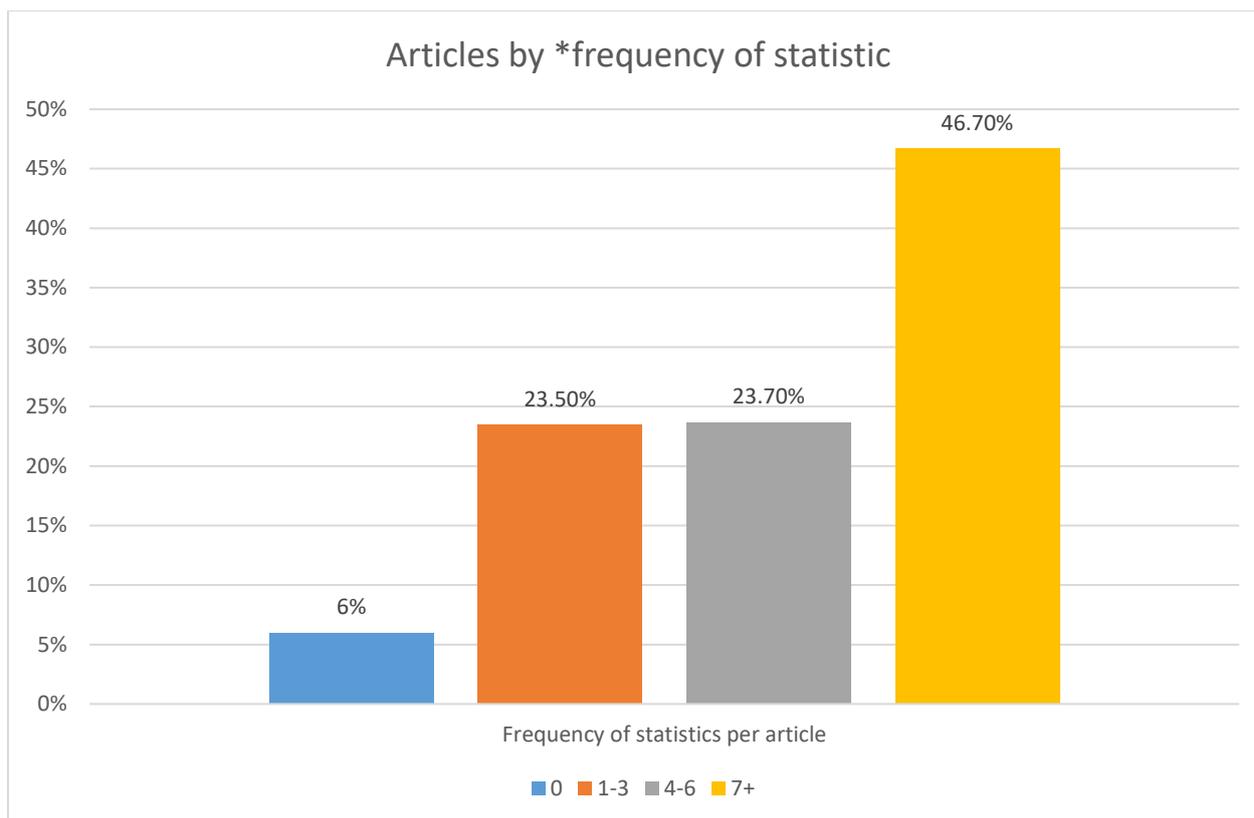


Figure 2: Articles by *frequency of statistic

Therefore, the prevalence of statistics in the body of the article, as well as the headline, emphasises the importance of numbers in telling news stories (Curtin and Maier, 2001; Harrison, S., 2016). But it also reflects the highly quantified structure of humanitarian institutions, practice and discourse. Whether it is human rights (Merry, 2016), international development (Jerven, 2013) or humanitarian crises (IPC Global Partners, 2012), numbers are of central importance. Thus, journalists ratify their coverage by situating their work within the larger (numerically dominated) discourse of institutional humanitarianism.

Frequency can indicate *importance* but says nothing about *how* these numbers are used by journalists. To understand this, I coded each article for the most prevalent frame: problem, cause, solution or other. This analysis allowed for me to address SRQ3: *how do the use of numbers by the UK news media relate to the management,*

intervention and policing of humanitarian crises? The literature has highlighted how numbers are used in the management of crises to determining the size of the problem, assessing the nature of its cause and legitimising interventionist solutions (Jerven, 2013; Dijkzeul et al., 2013; Dijkzeul and Sandvik, 2019). Therefore, the prevalence of these three main frames (problem, cause and solution) in comparison to “other” frames indicates the importance of statistics in the discursive management of crises.

Framing crises with statistics

Of all the articles in my corpus, 94.6% used statistics to frame the crisis as either a problem, cause or solution. About two-thirds of the articles (66.9%) used statistics to frame the crisis as a “problem”. Only 13.8% of articles used a “causative” frame and 13.9% used a “solution” frame (see Figure 3). The relatively low number of articles framed as “other” (n=50), highlights the way statistics are generally used within this cause-problem-solution concept of framing (Entman, 1993; Vladislavljević and Voltmer, 2017). My thematic analysis provides examples of how these frames

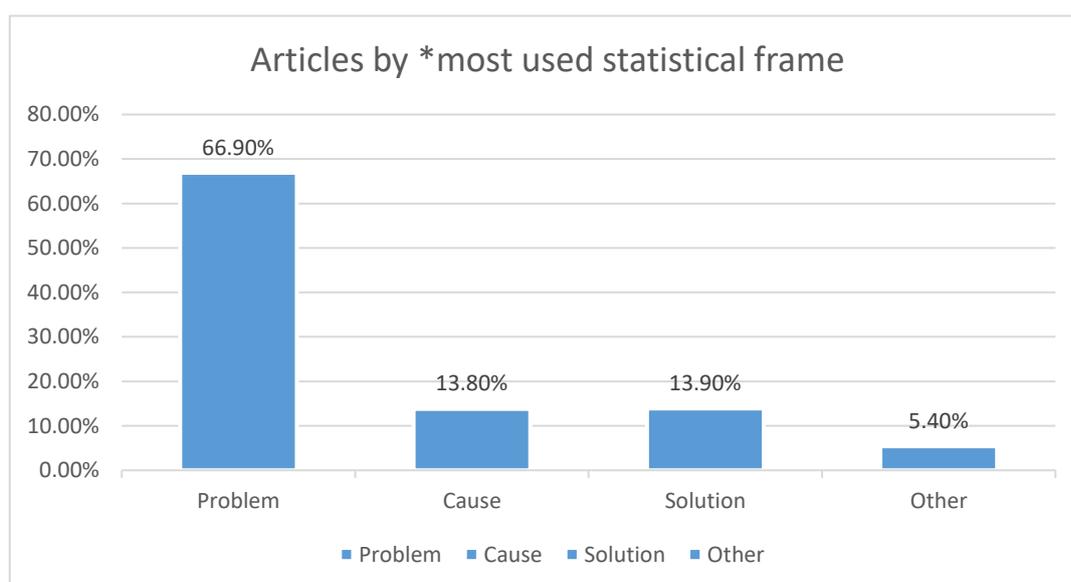


Figure 3: Articles by *most used statistical frame

manifested in the text. The first is a *problem* frame, the second *causation* and the third *solution*.

Unicef fears that 150,000 children could die by the end of the year. (The Guardian, 2017)

Don't blame the elderly: only one in five A&E patients are pensioners, says former Health Secretary. (Bodkin, 2017)

The generous UK public has already given £10million to the Disasters Emergency Committee East Africa Crisis appeal and the Queen has made a personal donation. (Chamberlain, 2017)

To understand the circumstances under which certain frames would appear in news coverage, I conducted three binary regression models. These looked to ascertain the effects of certain variables from my content analysis (the amount of words in the article, the number of statistics in the article, the frequency of statistics in the headline, the type of crisis, the type of statistic, challenges to statistics and the location of the crisis) on the likelihood of an article having a problem, causation or solution frame.

Regression: problem, cause and solution

For the problem model, the logistic regression was statistically significant, $\chi^2(8) = 197.398$, $p < 0.001$. The model explained 29.0% (Nagelkerke R²) of the variance in the problem frame. For the causation model, the logistic regression was statistically significant, $\chi^2(8) = 341.779$, $p < 0.001$. The model explained 57.6% (Nagelkerke R²) of the variance in the population frame. For the solution model, the logistic regression was statistically significant, $\chi^2(8) = 57.933$, $p < 0.001$. The model explained 11.4% (Nagelkerke R²) of the variance in the population frame (see Table 1).

Taken together, these three models can help us understand which factors seem to have the largest effect on the framing of the article. Statistical conclusions are not drawn from the solution frame model because of the relatively low chi-squared and the Nagelkerke R2 values (in comparison to the problem and causation frame models). Across the problem and causation models, the type of statistic stood out. Not only did this independent variable have a very low Pearson's coefficient ($p < 0.001$) but it also had a high odds ratio.⁴⁹ The use of population statistics made it much more likely for a problem frame to be used (OR = 3.584) and much less likely that a causative frame was evident (OR = 0.223). Whereas the use of statistics about nature made it much more likely for a causative frame to be used (OR = 60.101) and much less likely that a problem frame was evident (OR = 0.076). It is notable that the odds ratio for the predominant type of statistic being nature predicting the predominant statistical frame of causation. Within the relative nature of the model, the use of statistics about *nature* made it 60.101 times more likely for a *causation* frame to be used.⁵⁰ Therefore, this regression highlights the relationship between (a) *population* statistics and the *problem* frame and (b) *nature* statistic and the *causative* frame.

⁴⁹ Look at section X in the methodology section for a detailed explanation of odds ratio.

⁵⁰ The odds ratio for each independent variable is always set in relation to the other independent variables in the model. Therefore, the odds ratio is not the likelihood of the dependent variable occurring if that independent variable is present. So, the use of a statistic on nature does not absolutely make it 60 times more likely that a causation frame is used.

Table 1: Regression model. Notes: Odds ratios displayed (Exp(B)), 95% CI in parentheses, Pseudo R2 is Nagelkerke's R2, df is degrees of freedom, x2 is chi-squared, ***p<0.001, **p<0.05, *p<0.1

Non-reference variable	Problem	Causation	Solution
249 words or less	2.420** (1.155-5.071)	.735 (.232-2.323)	.353** (.134-.929)
6 statistics or less	.546*** (.376-.792)	1.520 (.832-2.779)	1.748** (1.139-2.683)
Statistic in headline	1.021 (.657-1.589)	1.183 (.594-2.355)	.839 (.491-1.433)
Man-made crisis	.771 (.523-1.137)	.117*** (.034-.399)	2.220*** (1.469-3.355)
Type of statistic (1) - population	3.584*** (2.308-5.566)	.076*** (.039-.150)	.727 (.433-1.218)
Type of statistic (2) - nature	.223*** (.114-.439)	60.101*** (16.945-213.163)	.062*** (.018-.221)
Developing world	1.278 (.899-1.817)	1.566 (.882-2.779)	.584** (.391-.873)
Statistic challenged	2.360 (.889-6.264)	.527 (.113-2.462)	.402 (.120-1.343)
Constant	1.403	.318**	.233***
Observed	868	868	868
Pseudo R2	.290	.576	.114
Df	8	8	8
X2	197.398***	341.779***	57.933***

My thematic analysis highlights the way that these frames and statistical types are connected within the text. The first three extracts are examples of a *population* and *problem* connection and the last two are examples of a *natural* and *causation* connection.

The Campaign Against Arms Trade (CAAT), which mounted the case, says more than 10,000 people have been killed in the war since 2015. (Ferguson, 2017)

In BVI, the relatives of 27 people who are now feared missing frantically shared their photographs online to try to track them down. (Miller, A. and Crane, 2017)

Thousands are left homeless in towns and communities outside Mexico City as official rescue and relief efforts struggle to cope with the widespread destruction. (Lakhani and Agren, 2017)

'Nowhere in the Keys will be safe': Irma will strengthen to a Category 5 storm when it hits the US. (Collman and Graham, 2017)

Mexico earthquake: powerful 7.1-magnitude tremor 'traps workers in burning buildings' (Clarke-Billings, 2017)

As these extracts have helped to elucidate, we can observe how these two relationships from the regression model play out in the text. Journalists use *population* statistics to talk about the *problem* of the crisis. This is expressed through the loss of human life during the conflict in Yemen (extract 1), the number of missing people from Hurricane Irma (extract 2) or those left homeless from La Puebla quake (extract 3). On the other hand, they are much more likely to adopt statistics on *nature* to refer to the *cause* of a crisis. This can be most readily observed during the two "natural

disasters” in my analysis. In extract four, the journalists refer to the category of the storm to identify the cause of the devastation. In extract five, the cause of workers being trapped in burning buildings was the 7.1 magnitude earthquake. Therefore we can conceptualise the use of statistics to underpin a *natural causative* and *population problem* frame. When we consider that the problem frame constitutes around two-thirds of the articles in my corpus (66.9%), the *population problem* frame is particularly important.

Problems of using statistics in this way

The use of population statistics to frame a crisis as a problem has been documented by Houston et al. (2012) in their study of major U.S. disasters between 2000-2010. On one level, this makes sense: a humanitarian crisis is a crisis affecting humans. But we can also approach this pattern as part of the ongoing need for humanitarian organisations to construct “the problem” of the crisis in order to legitimise humanitarian intervention (Dijkzeul and Sandvik, 2019). Such a practice has been documented in other framing studies. Using the example of 9/11, Scherling (2019) explains how the media framed the event as an “act of war” (problem), caused by “envy” and “ideology” and that the only remedy was war. By excluding other frames, the only logical conclusion (presented by the media) to the 9/11 attacks was to go to war with the offending party. Whilst such a logic can fall naïve causality (Robinson, P., 2002), it should not deny the importance of framing in influencing policy and public opinion.

The *population problem* frame does not just legitimise intervention. It also presents a crisis as an event rather than a process, reflecting the norm of event-centred reporting within journalism (Iyengar, 1991). When we consider that humanitarian crises are often the culmination of a series of trends across a long period of time, the number of articles

where the frame is *problem* is concerning. In fact, only 13.8% of all the articles in my corpus had causation as the predominant statistical frame. When a causative frame was used, it was often accompanied by statistics about nature. For man-made crises, this relationship makes little sense given that causation can rarely be talked about in terms of statistics referring to nature.

On the other hand, when we consider natural disasters then the connection between nature and causation is logical: wind speeds define the existence and severity of a hurricane that can wreak damage on infrastructure, people and livelihoods. But it is important to understand what is excluded from the frame (Gitlin, 1980). “Natural” disasters do not just have “natural” causes. Whilst earthquakes and hurricanes have immediate causes expressed in measurements of wind speeds or seismological activity, the frequency and severity of these “natural events” can be linked to human activity. There is mounting evidence that the increased frequency of extreme weather events (such as hurricanes) is closely associated with global warming (Knutson et al., 2010; Coumou and Rahmstorf, 2012; Kossin et al., 2014).

The warming of the earth is considered by most of the scientific community as being caused by rising levels of emissions by human-based activity. By ignoring this connection between “natural” events and “human activity”, journalists do not utilise the range of numerical information that can develop a more nuanced understanding of “causation”. These include rising levels of emissions, predicted rises in global temperatures, the number of countries adopting strategies to combat global warming, and so on.

There is also room for journalists to acknowledge the way a “natural” disaster often affects certain communities more than others. Most notably, the disproportionate effect on poorer communities. As Hanna and Oliva (2016: 116) explains:

Even today, many developing countries experience a disproportionate share of extreme weather, and they are predicted to suffer disproportionately from the effects of climate change.

Even within the same country, poorer communities generally fare worse than richer communities during a crisis and in its aftermath (Morris et al., 2002). Statistics on wealth inequality, public investment in infrastructure, economic rankings and socio-economic statuses could help develop this argument. Sadly, journalists did not regularly elect to use these numbers in their reporting.

Thus far, I have identified how numbers are important pieces of information in humanitarian journalism and the way that they can frame crises in particular ways that is often misleading or can serve to govern crises. As of yet, I have not examined whether these numbers, and their ability to frame crises, are challenged by the journalists that write these news pieces. To do so, I coded for the frequency of challenges to statistics. These include a direct challenge by the journalist to the accuracy, reliability, validity and/or interpretation of the statistic and when reporters cross-verified one numerical claim with one or more competing claims.⁵¹

Frequency of challenges to numbers

According to research, verifying information is one of the most prevalent ideals within journalism (Kovach and Rosenstiel, 2007; Shapiro et al., 2013). My analysis found that only 5.1% (n=47) of all the articles in my corpus that had at least one statistic had one or more challenges to numbers. In other words, 872 articles out of a total of 919

⁵¹ Given that a content analysis looks at text, it is only possible to record textually manifested moments of contestation. This does not include journalists receiving numbers from sources and either disregarding them out of hand or cross-verifying these numbers with other facts or sources. This is explored in the final empirical chapter where I analyse my interviews.

(94.9%), did not have a statistical challenge. The relatively low number of statistical challenges meant that any tests for association or regression models returned non-statistically significant results. To understand how these acts of contestation manifested and played out in news articles, I relied on cross-tabulations and my thematic analysis.

How non-contested statistics were presented

In the articles that did not contain a statistical challenge, my thematic analysis highlighted how numbers were presented as facts. In the language of Desrosières (2001), journalists positioned statistics within a “metrological realism” paradigm. This was achieved discursively in two main ways. Most commonly, numbers were presented using categorical language that erased any uncertainty from the statistics used. Four examples outline this below

The £50m includes a £10m aid match donation by the Department for International Development. (McVeigh and Rankin, 2017)

Winds of 185mph left 90 per cent of buildings destroyed and much of the island is flooded. (Robson, 2017)

A child in Yemen is being infected with cholera every 35 seconds. (Sanchez, 2017)

Untold thousands of innocent people will die in Yemen unless the Saudi-led military coalition unconditionally lifts its blockade of the country's ports. (Wintour, 2017b)

Alongside categorical language, statistics were also used within a more explicitly scientific (or positivist) paradigm that emphasised the way numbers “reveal”, “discover” or “show” an ontological reality previously hidden.

New figures revealed just one fifth of patients attending A&E last year were over 65. (Bodkin, 2017)

Figures show there are 101,589 acute hospital beds, 7,301 fewer than in 2010. (Halle, 2017)

Witsen (2019) refers to these discursive tropes as “certainty markers”, the use of certain language to emphasise the infallibility of numbers. Whilst the use of certainty markers was the norm in the reporting of statistics, there were occasions *where* journalists challenged numbers (n=47).

Challenges were context-dependent

The occurrences of these challenges seem to be dependent on the crisis being reported. The bar chart below, based on a cross-tabulation, highlights how the Rohingya refugee crisis (12.4%) and the NHS (11.9%) winter crisis involved more challenges to statistics than the overall percentage (see Figure 4). The statistical challenges detailed in each crisis took a different form. For the Rohingya crisis, journalists relied on cross-verifying competing numerical claims. Whereas the reports on the NHS winter crisis provided more direct challenges to statistics.

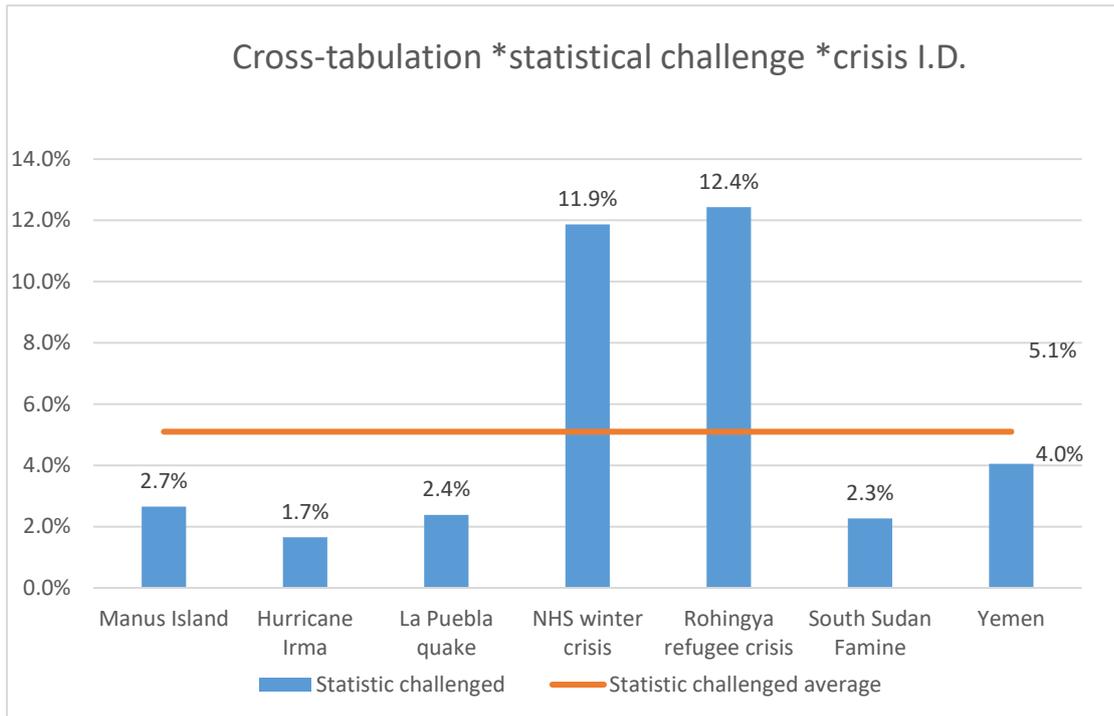


Figure 4: Cross-tabulation *statistical challenge by *crisis I.D.

Direct challenges to numbers

Out of the two ways statistics were contested, direct challenges occurred the least. Almost all of these challenges occurred in the coverage of the NHS winter crisis. For example, an article from *The Guardian* below explained why a momentary fall in bed occupancy waits is not a reason for optimism about the UK health service:

King’s Fund research shows that “occupancy had dipped below 90% on only four days since mid-December”.

The King Fund’s Director of policy explains, however, that “The NHS did indeed achieve occupancy rates below 85%, but only on 23–25 December, when bed occupancy often falls as hospitals discharge as many patients as they can for Christmas” (Campbell, 2017).

Challenges, such as those above, were often based on the “validity” of the statistic - whether the number can make the claim it attempts to make. There were also challenges levelled at journalists’ own data. This occurred in two articles that contained

“leaked” NHS data, centring on the problems of this data not being fully verified by NHS Digital.

The NHS Providers chief executive, Chris Hopson, said: “These figures have not been verified and should therefore be treated with caution, but they are in line with the feedback we have been getting from trusts. (Weaver and Campbell, 2017).

Dr Kathy McLean, of NHS Improvement, said the data given to BBC News Online had yet to be verified and was meant for “internal” purposes so the true figure could be lower. (Kirkland and Triggle, 2017).

These types of direct challenges to the validity, reliability or accuracy of statistics were rare across my corpus. Much more common, was cross-verifying competing numerical claims. In my content analysis, the Rohingya crisis had the highest percentage of articles with a statistical challenge (see Figure 4 above). Of these 23 articles with statistical challenges, almost all involved an act of juxtaposing one numerical claim against another.

Cross-verification

The reporting of the Rohingya crisis documented the contestation between the United Nations, humanitarian organisations and the Myanmar government over different statistical claims. A typical example involved the contestation over the number of people who had died during the crisis:

The Myanmar government claims about 400 have been killed so far, though UN officials in the country have estimated the death toll at more than 1,000 (Safi, 2017).

Earlier this month the UN special rapporteur on human rights in Myanmar, Yanghee Lee, said more than 1,000 people may have been killed in the conflict, most of them Rohingya. The army says some 400 people have been killed during military operations, the vast majority of them Arsa militants. But BBC correspondents say it is very likely that many of them were civilians. (BBC, 2017b).

Contestation can also be observed over other statistical claims. As one article in *The Telegraph* notes:

Particularly controversial was Ms Suu Kyi's claim that more than half Rohingya villages are untouched by violence and that there has been no fighting or "clearance operations" in Rakhine state since September 5.

Human Rights Watch on Monday said it had counted 214 villages that have been almost completely destroyed (Oliphant and Connor, 2017).

Rather than providing a direct critique of the technical flaws of respective numbers, journalists presented two institutional sources and their conflicting numerical accounts of the same phenomena. What are the ramifications for challenging statistics in this manner (especially in comparison to the other type of challenge and non-challenges)?

The problem of not challenging numbers

The Reuters Handbook of Journalism explains that "accuracy is at the heart of what we do" (MacDowall, 1992). To ensure that reports are accurate, journalists engage in the practice of verification (Godler and Reich, 2017; Hermida, 2015; Shapiro et al., 2013). The remarkably low number of articles with statistical challenges suggests that the norm of accuracy and the practice of verification is not rigorously applied to the

use of statistics. This supports previous work that shows how statistics often go unchallenged by reporters (Lugo-Ocando and Brandão, 2016; Lugo-Ocando and Nguyen, 2015; Cushion et al., 2017). Whilst this literature has been thorough in identifying the lack of statistical challenges, it has not paid much attention to the nature of challenges when they do occur.

My thematic analysis highlighted how statistics were generally challenged through an act of cross-verification. Journalists relied on contestation between different institutions and actors to structure their challenges to quantitative information. Such a practice is common across journalism as a whole. Hallin (1986) argues that the news media in the USA presented controversies only if those controversies were between two “legitimate” actors or institutions (such as politicians, businessmen, and so on). A similar practice can be observed in the reporting of numbers (Cushion et al., 2017). A much rarer occurrence was a direct challenge to numbers. In fact, this occurred almost exclusively within the NHS winter crisis. Such a finding suggests that direct challenges to numbers depend on the context of the reporting. The NHS winter crisis is a domestic story, often covered by data journalists using large, publicly accessible databases covering the NHS hospital system. The importance of context is explored in more detail in the following chapter that examines three case studies.

Differences in news media outlets

As the opening section highlighted, a considerable amount of coverage in my corpus was provided by *The Guardian*. This partially explains why much of the research conducted on international crises use *The Guardian* as their media outlet (Bantimaroudis and Ban, 2003). Nevertheless, the fact that more than half the coverage came from other news outlets, highlights the importance of not just looking

at left-leaning, broadsheet-style news coverage (Scott, M., 2017). Most notably, *The Mail* accounts for nearly a fifth of all news coverage (19.7%).

To explore the differences in news outlets, I refrained from categorising the media outlets into media types (tabloids and broadsheets) or political affiliation (left-wing, centrist and right-wing). Instead, I examined my data using the five news outlets as distinct categories. This allowed for me to identify specific patterns with my content analysis instead of imposing an external classification system. Furthermore, this analysis provided an understanding of how different journalistic cultures and institutional logics relate to the use of numbers by reporters when they cover crises (RQ2).

Regression: what influences the coverage by different news outlets?

All five models looked to ascertain the effects of certain variables (the length of the article, number of statistics, statistics in the headline, type of humanitarian crisis, type of framing, type of statistic, location of the crisis and statistical challenge) on the likelihood of an article being produced by a particular news outlet. Across the five models, certain patterns were identified in the way independent variables effected coverage. *BBC News Online* and *The Guardian* followed a similar pattern and so did *The Mail* and *The Mirror*. *The Telegraph* was somewhat of an outlier (see Table 2).⁵² For *The Guardian*, the logistic regression model was statistically significant, $\chi^2(8) = 87.356$, $p < 0.001$. The model explained 12.9% (Nagelkerke R²) of the variance in *The Guardian's* coverage. For *BBC News Online*, the logistic regression model was statistically significant, $\chi^2(8) = 82.838$, $p < 0.001$. The model explained 14.4%

⁵² Again, it is important to state that the odds ratio for each independent variable is always set in relation to the other independent variables in the model. Therefore, the odds ratio is not the likelihood of the dependent variable occurring if that independent variable is present and is not directly comparable across models.

(Nagelkerke R²) of the variance in *BBC News Online*'s coverage. Within both models, *The Guardian*'s and *BBC News Online*'s coverage was made more likely if there was no statistic in the headline, if the predominant statistic type was not nature and if the crisis was man-made.

There were points at which they differed. If an article was about the "developing world", the likelihood of articles by *The Guardian* would decrease whereas for *BBC News Online* it would increase. This can partly be explained by *The Guardian*'s extensive coverage of the Manus Island refugee crisis (a crisis classed as the "developed world" due to its connection with Australia). There were other differences too. The shorter the article length, the increased chance of *BBC News Online* coverage. Whereas the lower the number of statistics, the less likely it made coverage by *The Guardian*.

The Mirror and *The Mail* also shared similarities in both models. For *The Mirror*, the logistic regression model was statistically significant, $\chi^2(8) = 56.817$, $p < 0.001$. The model explained 14.1% (Nagelkerke R²) of the variance in *The Mirror*'s coverage. For *The Mail*, the logistic regression model was statistically significant, $\chi^2(8) = 173.208$, $p < 0.001$. The model explained 28.7% (Nagelkerke R²) of the variance in *The Mail*'s coverage.⁵³ *The Mirror* and *The Mail*'s coverage was made much more likely if the article had 250 words or more and the type of humanitarian crisis was natural. They did differ on two important points. The likelihood of *The Mirror*'s coverage was also influenced by the problem and causative frame, whereas the chance of *The Mail*'s coverage was increased if there was a statistic in the headline.

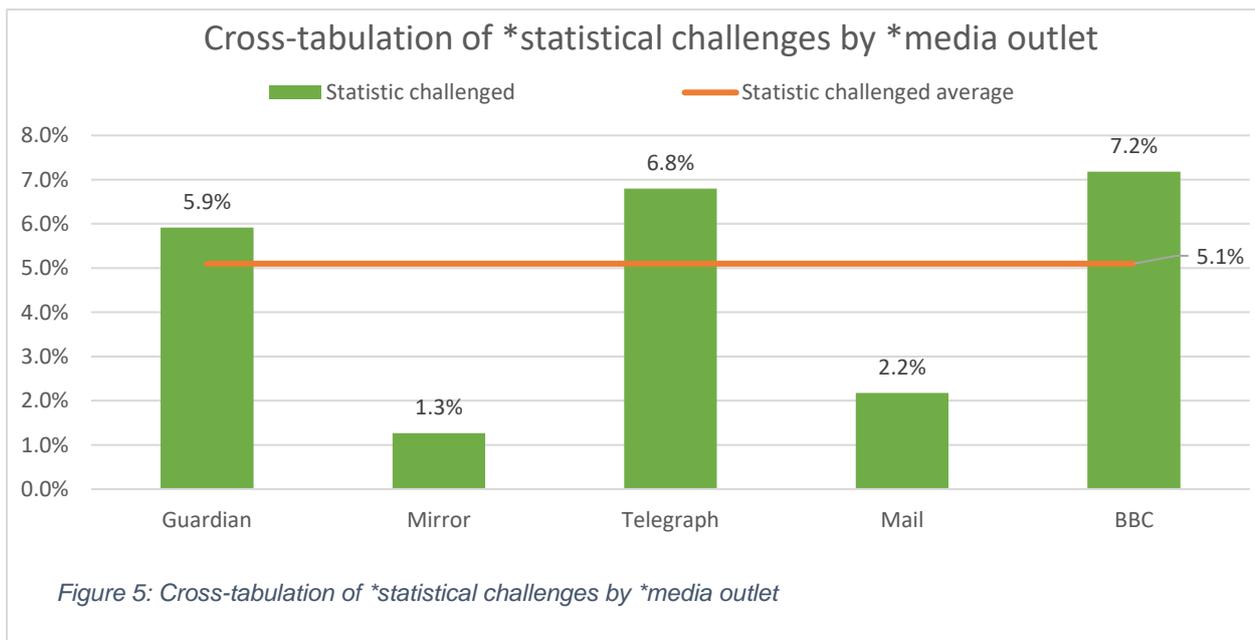
⁵³ The high χ^2 and Nagelkerke R² values for *The Mail* highlights that these independent variables were particularly good at predicting *The Mail*'s coverage compared to *The Mirror*, *The Guardian* and *BBC News Online*.

Table 2: Regression model. Notes: Odds ratios displayed ($Exp(B)$), 95% CI in parentheses, Pseudo R2 is Nagelkerke's R2, df is degrees of freedom, χ^2 is chi-squared, *** $p < 0.001$, ** $p < 0.05$, * $p < 0.1$

Non-reference variable	Guardian	Mirror	Telegraph	Mail	BBC
249 words or less	1.589 (.906-2.785)	.102** (.013-.768)	.500 (.202-1.238)	.147** (.033-.648)	2.618*** (1.459-6.698)
Less than 6 statistics	.658** (.477-.907)	1.558 (.914-2.656)	1.808** (1.120-2.920)	.741 (.485-1.132)	1.376 (.929-2.039)
Statistic in headline	.404*** (.273-.596)	1.329 (.730-2.419)	1.256 (.722-2.183)	4.456*** (2.902-6.841)	.431** (.249-.744)
Natural crisis	.421*** (.295-.601)	2.998*** (1.672-5.376)	.833 (.486-1.428)	4.469*** (.2890-6.912)	.591** (.382-.914)
Type framing (1) - problem	.740 (.490-1.117)	4.772** (1.441-15.801)	.769 (.418-1.412)	1.010 (.591-1.724)	.936 (.567-1.546)
Type framing (2) - causation	1.598 (.801-3.190)	6.596** (1.556-27.961)	.515 (.170-1.553)	.591 (.247-1.417)	.556 (.215-1.437)
Type statistic (1) – population	.636* (.404-1.002)	3.259* (.968-10.972)	2.465* (.935-6.497)	.856 (.474-1.545)	1.054 (.587-1.892)
Type statistic (2) – nature	.287*** (.133-.621)	3.515* (.879-14.057)	3.097* (.856-11.205)	1.967 (.818-4.734)	.246** (.062-.978)
Developing world	.597*** (.437-.816)	1.032 (.613-1.738)	2.499*** (1.441-4.333)	.838 (.561-1.254)	1.760** (1.162-2.663)
Statistic challenged	1.056 (.566-1.973)	.302 (.040-2.269)	1.447 (.607-3.446)	.464 (.152-1.413)	1.552 (.774-3.113)
Constant	3.403***	.004***	.028***	.118***	.193***

Observed	868	868	868	868	868
Pseudo R2	.129	.141	.059	.287	.144
Df	10	10	10	10	10
X2	87.356***	56.817***	26.324**	173.208	82.838

Nevertheless, there is a notable similarity in the way *The Mirror* and *The Mail* cover humanitarian crises. This can be identified further when we consider some of the variables that involved such small sample sizes that statistical significance could not be achieved. Most notably, we can consider statistical challenges. The bar chart below (Figure 5) highlights how *The Guardian*, *The Telegraph* and *BBC News Online* all provide more articles with statistical challenges than the average (5.1%). On the other hand, *The Mirror* and *The Mail* provide considerably less than the average. In fact, *The Mirror* only had one article that included a statistical challenge. Taken together with the regression analysis, how can these patterns between media outlets be explained? What do each news outlet have in common with each other?



The Mirror and *The Mail* have different political affiliations, the former is left-leaning and the latter is right-leaning. They have different owners: *The Mail* is owned by Daily Mail and General Trust, whereas *The Mirror* is owned by Reach Plc, which was until recently, Trinity Mirror. They do share a common history, however, of being a tabloid

newspaper (Davies, N., 2009).⁵⁴ In his book *Flat Earth News*, Nick Davies argues that the rule of commercialism is the defining feature of tabloid coverage. That is, the need to sell newspapers is the primary motivation. In 2003, Piers Morgan changed the anti-Iraq War stance of the *Daily Mirror* in the face of declining readership (Davies, N., 2009: 370). Whilst Davies (2009: 371-373) also points to a litany of commercially driven practices by *The Daily Mail* geared towards the creation of fear in relation to minority groups (including asylum seekers and black males).

Whilst this distinction has been deemed problematic by some in the digital space (Bird, S., 2009; Franklin, 2012), it must receive some attention here. Especially when we consider that two of the *other* three news outlets are historically considered “broadsheets”. To test this assumption, I conducted a further regression analysis that examined the likelihood of coverage by a “tabloid” (*The Mail, The Mirror*) or “not a tabloid” (*The Guardian, The Telegraph* and *BBC News Online*) across my corpus. To gain a better understanding of what variables were influencing coverage, I split the regression into two blocks. Block 1 uses the most prominent variables from the previous regression. Block 2 keeps the variables from Block 1 and adds other variables. A comparison between Block 1 and Block 2 allows for a better appreciation of which variables are most important (see Table 3).

⁵⁴ The concept of tabloids, broadsheets and tabloidization will be explored after the regression analysis.

Table 3: Regression model. Notes: Odds ratios displayed ($Exp(B)$), 95% CI in parentheses, Pseudo R2 is Nagelkerke's R2, df is degrees of freedom, χ^2 is chi-squared, *** $p < 0.001$, ** $p < 0.05$, * $p < 0.1$

Non-reference variable	Tabloid	
	Block 1	Block 2
249 words or less	.088*** (.026-.302)	.090*** (.026-.314)
Less than 6 statistics		.980 (.672-1.430)
Statistic in headline	4.580*** (3.110-6.747)	4.535*** (2.984-6.892)
Natural crisis	5.452*** (3.761-7.902)	5.309*** (3.562-7.913)
Type framing (1) - problem		1.694** (1.017-2.824)
Type framing (2) - causation		1.243* (.546-2.826)
Type statistic (1) – population	1.123 (.680-1.856)	1.263 (.718-2.222)
Type statistic (2) – nature	2.441** (1.278-4.664)	3.177** (1.362-7.412)
Developing world	.905 (.636-1.287)	.854 (.588-1.240)
Statistic challenged		.354** (.129-.973)
Constant	.121***	.079***

Observed	868	868
Pseudo R2	.329	.345
Df	6	10
X2	240.060***	238.945***

For Block 1, the logistic regression model was statistically significant, $\chi^2(8) = 240.060$, $p < 0.001$. The model explained 32.9% (Nagelkerke R2) of the variance in Tabloid's coverage. When "statistical challenge" was added to the model for Block 2, the predictive capacity of the model increased. For Block 2, the logistic regression model was statistically significant, $\chi^2(8) = 238.945$, $p < 0.001$. The model explained 34.5% (Nagelkerke R2) of the variance in Tabloid's coverage. When we compare the Nagelkerke R2 and chi-squared values from the Block 2 model to the media outlet model above, it provides a more predictive account of coverage. This indicates that the split between tabloid and not tabloid is statistically productive.

Block 2 highlights how coverage from a tabloid is much more likely when the article is longer, there is a statistic in the headline, the framing is either causation or problem, the predominant statistic in the article referring to nature, when the crisis is a "natural" one and when statistics are not challenged. Given the dichotomous nature of this model, the opposite is true for *BBC News Online*, *The Guardian* and *The Telegraph*. They are more likely to produce articles that are shorter, when there is no statistic in the headline, when the framing is not problem or causation, when the statistic is not about nature, when the crisis is a man-made one and when statistics are challenged. These findings are particularly important in answering my second research question that focuses on journalistic practices and rituals in relation to numbers. It helps identify the way that numbers are used differently across different institutions and news

cultures. To understand how and why these differences are apparent, I place them in dialogue with existing concepts of tabloids and broadsheets in the literature.

Does the label of “tabloid” apply?

There has been a wealth of literature dedicated to understanding the “tabloid culture” (Otto et al., 2016; Magin and Stark, 2015; Skovsgaard, 2014; Bird, S., 2009; McLachlan and Golding, 2000; Esser, 1999). Conboy (2004), for example, defines the tabloid format as involving a focus on popular culture, news about celebrities, lifestyle features, entertainment and personal issues often presented in a sensationalised form in an “easy-to-consume” format. According to Davies (2009) this “tabloid culture” has been entrenched over the past 40 years. This means that news organisations traditionally defined as non-tabloids increasingly adopt tabloid-style logics of production, content and form (Davies, 2009: 141-142). This shift has been recognised in the literature from the 1990s when discussions began to shift from delineating between media outlets as either tabloid or broadsheet towards the idea of tabloidization (Esser, 1999).

Otto et al. (2016: 145) argues that tabloidization is characterised by two aspects “(a) it is a process that takes place over time (Esser, 1999) and (b) this process is characterized by spill overs of values from the popular to traditional news media (Donsbach and Büttner, 2005).” Often these conversations are set within wider notions of the erosion of quality journalism by info-entertainment, content trivialisation and banalisation of the news (Palau-Sampio, 2016; Zelizer and Allan, 2010). More often than not, tabloidization is also linked to changes in news production. Namely, the shifting economic models from copy sales to paywalls and print advertising to digital advertising (Curran, 2010). Compared to the categorical discussions that delineate

between the type of media as either tabloids or broadsheets, this concept focuses on a process of something become more tabloid-like. According to Otto et al. (2016: 145) tabloidization can be identified within the text of news articles by examining three characteristics: *form*, *range* and *mode of address*. These three characteristics can be used to understand the regression model above.

Otto et al. (2016: 145-146) point to the *range* of content produced by news organisations as an indicator of tabloidization. This specifically refers to the way tabloids are less likely to cover international news compared to domestic affairs (McLachlan and Golding, 2000; Connell, 1998). This restricted *range* can be observed in the low levels of reporting on humanitarian crises by *The Mail* and *The Mirror*. This conclusion must not be overstated, however. As highlighted, *The Mail* still provided a considerable proportion of articles to the humanitarian crisis corpus.

Tabloidization is also associated with a change in the *mode of address* or *style* of news reporting (McLachlan and Golding, 2000). As Otto et al. (2016: 145-146) highlight, this involves addressing the viewer or reader through a series of linguistic and discursive tropes that often include appeals to emotions, personalisation of content and sensationalism of the issue (Skovsgaard, 2014; Esser, 1999; Uribe and Gunter, 2004). It can be argued that the way *The Mirror* and *The Mail* used a *natural causative* frame and were more likely to cover *natural crises* points towards a type of reporting that emphasises the sensationalist devastation of hurricanes and earthquakes over the economic, political and social mechanisms underpinning these “natural” events. Whilst *range* and *mode* seem to apply in this context, the characteristic of *form* does not work as well. Form is perhaps the foundational definer of tabloids. As (Otto et al., 2016: 145) explain

In the late 1880s, tabloid was a British pharmaceutical trademark, a concentrated and easy-to-swallow form of medicines (Esser, 1999). Soon, the term was used for newspapers of a particular size that, for example, commuters could easily read on trains.

The same logic can be identified in contemporary discussions of tabloidization that point towards the push towards shorter stories, more pictures and simpler vocabulary (Schönbach, 2000). My analysis offers a counter to this definition. Stories with 250 or more words were predictive of coverage by *The Mirror* and *The Mail*. This suggests that the concept of tabloidization, at least in the context of humanitarian crises, needs to fundamentally re-assess the importance of the length of an article. But my analysis did not account for how much of the content was recycled from other news reports or supplied by press agencies. This is particularly important when we consider that such a practice is often associated with tabloids when research refers to “churnalism” (Davies, 2008: 59).

Furthermore, articles with seven or more statistics means coverage by tabloids is more likely. This can indicate two things. Tabloids do not use “simpler” language as evidenced by the prevalence of statistics in their articles. Such a conclusion means that tabloids must receive greater credit for adopting more complex representational strategies. On the other hand, it can be argued that tabloids may be using statistics to fulfil a linguistic need for “simplicity” by drawing on the representational power of numbers to convey a complex issue in a single number. In this view, we need to re-evaluate whether statistics are simple or complex pieces of information (especially in the context of use within tabloids). Either conclusion presents a challenge to the traditional notions of tabloids based on *form*.

Furthermore, the literature on tabloidization detailed above does not refer to the way tabloids and non-tabloids act out the basic tenets of journalism. Most notably, the regression analysis identified that a statistical challenge within an article was predictive of more coverage by non-tabloids. This suggests that tabloids are more inclined to trust sources to provide numbers, instead of offering a direct challenge to the figure or multiple contesting sources. Whilst the tabloidization literature does not prioritise this characteristic, literature on tabloids have identified the distinct lack of verification and checking of information. Davies (2009: 108) explains that “display and packaging have taken over from verification of facts.” In my analysis, at least, it is a good indicator of the tabloid-broadsheet split. An area of my content analysis where these statistical challenges *were* prevalent across tabloids and non-tabloids, however, was in the reporting of the NHS winter crisis.

Domestic crisis vs. international crises

As the section on statistical challenges highlights, the NHS was somewhat of a peculiar case. There were a high number of challenges in reports and these challenges were often directly addressing accuracy, reliability and validity. Such a finding led to me create a dummy variable that identified if the article was about the NHS or not about the NHS. Problematically, there were a relatively small number of articles on the NHS winter crisis ($n = 65$). Therefore, tests for regression or association returned mostly non-statistical significance results. There were certain variables, however, that did have statistically significant results.

I conducted a chi-squared test for independence between (1) whether the article was about the NHS or not and (2) statistical type. The relation between these variables was significant, $X^2 = (2, n = 919) 68.8, p < 0.001$. The effect size was medium ($\phi_c =$

0.274). Quite remarkably, no articles on the NHS winter crisis used statistics on nature the most (see Figure 6). On the other hand, there were just under four times as many statistics on economics, government, infrastructure and humanitarian operations (EGIH) as the average. My thematic analysis highlighted how EGIH statistics were used in articles to support all three types of frames⁵⁵: the “problem” of the NHS winter crisis (the first extract), the “cause” of the crisis (the second extract) or towards potential “solutions” (the third extract).

Yet despite him knowing 42 overstretched A&Es were forced to shut their doors in a week Health Secretary Jeremy Hunt claims that most hospitals are coping well - with, in his words, just "one or two" under severe pressure. (Jones, S., 2017)

As calls grow for the government to do more to tackle the funding gap in social care – predicted to reach £2.3bn by 2020, David Miles, chief executive of Mears Group, agrees that the social care sector's position is precarious. (Bawden, 2017)

I am calling on the Prime Minister to bring forward the planned £700million of extra funding for social care to ease the pressure on hospitals. And also to bring forward a new funding settlement for health and social care in March's Budget so this never happens again. (Methven, 2017)

⁵⁵ A chi-squared test for independence was not statistically significant, meaning that I needed to rely on my thematic analysis to highlight how statistics were used in relation to framing.

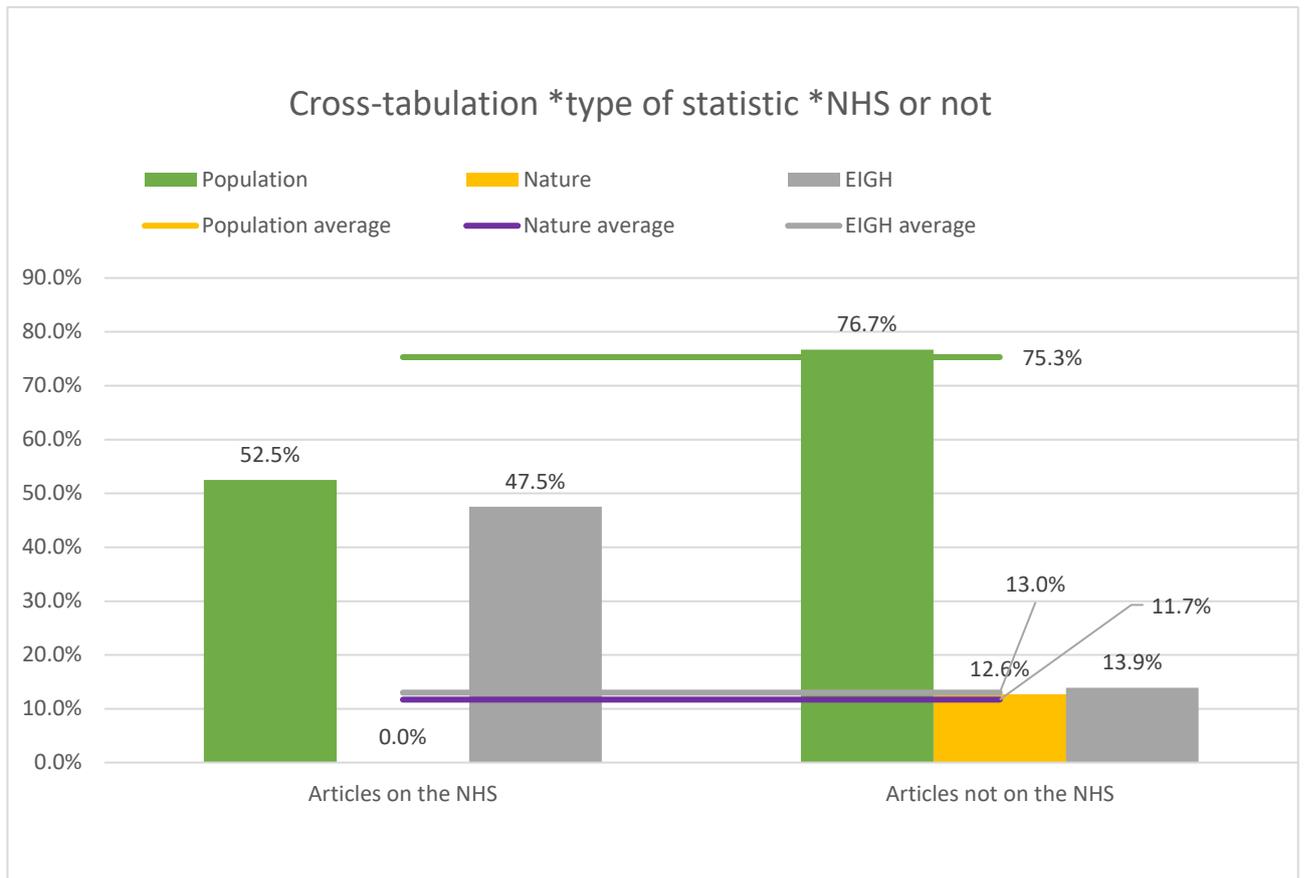


Figure 6: Cross-tabulation *NHS crisis or not by *type of statistic

It can be argued that by using these types of statistics more often, journalists help to place the NHS winter crisis within broader structural processes. This means they emphasise the “problem” of the crisis as something that not just affects populations but is also conceived as a problem in the provision of healthcare over the winter period. Furthermore, the causes of the NHS winter crisis are not just positioned as disease rates or increased attendance at hospitals. Instead, journalists seem to point towards low funding, poor staffing and questionable management decisions. It also made journalists more likely to point towards solutions that did not involve emergency responses of humanitarian aid but to long-term structural changes to the management of the NHS. Taken as a whole, the NHS offers a distinct counter to much of the

reporting identified across international crises, placing the immediacy of the crisis within much needed context that allows for structural and productive debates around causation and solutions that go beyond the immediacy of emergency relief or the strength of a hurricane. The ability of journalists to engage in this type of reporting rests largely on the quantitative context within which they report. The availability of large, publicly accessible databases providing descriptive statistics on English hospital performance means that data journalists can produce informative, numbers-based stories that go beyond the release of statistical information (Bradshaw, 2015; Jones, R. and Jones, 2019; Tunney and Thomas, 2015).

Conclusion

The analysis in this chapter has highlighted some general statistical claims that address all three of my research questions (SRQ1/SRQ2/SRQ3). Statistics were prevalent across humanitarian crisis coverage within the main body of the article and in the headline. This emphasises the importance of statistics to humanitarian news (SRQ1). These statistics were most often used to frame the crisis as a “problem”, leaning heavily on population data. Numbers were used less in the presentation of a “solution” or “causative” frame. When a causative frame was used, it was often associated with the use of natural statistics. These frames seemed to either serve the effective management of crises, through the construction of the humanitarian “problem” (Dijkzeul and Sandvik, 2019), or provide misleading narratives over the event-centred nature of crises that have mainly natural causes (Iyengar, 1991). In doing so, this analysis provides some initial answers to SRQ3 by examining how quantitative information can be used to discursively construct humanitarian crises.

The ability of statistics to perform this symbolic role is facilitated by journalists who rarely challenge the statistics that they use. The way journalistic practices are evident within the text addresses SRQ2. Most frequently, journalists presented statistics within a paradigm of “metrological realism” (Desrosières, 2001) that relied on “certainty markers” (Van Witsen, 2019). When statistics *are* challenged, they either take the form of direct challenges to statistics or acts of cross-verification that presents two or more contestations around the “actual” figure. The occurrence of these challenges is largely context dependent, most direct challenges occurred during the NHS winter crisis and most cross-verification challenges during the Rohingya crisis.

The way statistics are used does depend on the news media outlet. After an initial set of regressions, I showed how tabloids and non-tabloids were distinct in their uses of numbers. A set of regression analyses highlighted a number of statistically significant independent variables. Most notably, the longer the articles and the existence of a statistics in the headline were predictive of tabloid coverage. These findings necessitate somewhat of a rethink around how tabloids are defined, as well as the nature of statistics in news reporting.

The final section addressed a finding that emerged across the entire chapter: the way the reporting of the NHS was different to international crises. Through a set of chi-squared tests for independence, it was shown how the coverage of the NHS was associated with statistics on economics, government, infrastructure and humanitarian operations. These were used across all three types of frames to refer to the problem of the crisis, its causes and possible solutions.

The next section looks to build on each aspect of the content analysis by tracing three numerical cases from three different humanitarian crises.⁵⁶ The cases provide examples of the typical *population problem* frame, as well as atypical examples of an *economic solution* framing. It serves to contextualise this symbolic use of statistics by tracing the source of these numbers, the alternative statistics that could have been used, and the discursive and technical problems underlying the figures adopted. In doing so, the examples highlight the importance of directly challenging statistics instead of either providing no challenge or presenting two institutional narratives in relation to each other. As noted in the content analysis, the NHS winter crisis will receive particular attention to understand why the coverage of this crisis is distinct from the six other international crises.

⁵⁶ These three numerical cases were selected from seven numerical cases from seven different crises. All seven were analysed yet only three were chosen.

Chapter 7. Case studies

Introduction

This chapter looks to develop the key findings from my content analysis through three numerical cases from three different humanitarian crises. In doing so, the next section pays closer attention to SRQ3 by examining the flow of numerical information, who it affords power to and how it is used to construct certain notions of humanitarian crises. Whilst the primary research question addressed is SRQ3, these case studies also provide insight to journalistic practices evident within the text (SRQ2).

I begin by outlining the first numerical case: the statistical claim that “one Yemeni child every 35 seconds was being infected with cholera”. I explain that this case study is a statistically typical example of how numbers were used in the coverage of international crises. The next section provides an atypical example of how numbers are used in the reporting of international crises. I explain how this second case study focuses on the discourse surrounding a political leak during Hurricane Irma that highlighted the way Britain could not send as much money to their overseas dependencies because they were deemed “too rich” by an OECD classification system. The third case study focuses on the NHS winter crisis. I explain how two sets of leaked data was reported by the UK news media and how this compares to international coverage. The chapter concludes by relating these findings to my SRQs and emphasizes the need to use interview data to understand journalistic practices further.

A typical example of international crisis coverage: reporting “suspected cases of cholera” in Yemen

By December 2017, the total number of suspected cases of cholera in Yemen had reached “one million” (BBC, 2017e). To place this figure into perspective, the highest number of annual suspected cases of cholera across the entire world between 1991 and 2016 was just below 600,000 (WHO, 2019b). In other words, the cholera outbreak was unprecedented. If size is measured by suspected cases, Yemen experienced the largest outbreak of cholera since records began in 1949 - surpassing the ongoing cholera outbreak in Haiti in just six months (Relief Web, 2017).

The cholera outbreak was extensively covered by news organisations: of the entire coverage of the humanitarian crisis in Yemen, 10.5% of articles referred to cholera in the headline. Most of these articles were published after 24th April 2017 - the start of the “second wave of cholera”, when the suspected cases increased dramatically (Camacho et al., 2018). Almost all of the coverage centred on the same statistic: suspected cases of cholera. To explore this statistic in more detail, I chose a particularly pertinent numerical moment within this coverage. On 14th June 2017, both *The Telegraph* and *The Guardian* reported on the same statistic in their headline:

*Yemeni children infected by cholera at rate of one every 35 seconds. -
(Ratcliffe, 2017)*

*Yemen cholera epidemic: A children infected ‘every 35 seconds’, as death
toll nears 1,000. - (Sanchez, 2017)*

In the lead paragraphs of both articles, they explain that Save the Children are the “source” of the statistic:

At least 942 people have been killed since the outbreak began in April, according to Save the Children. The charity warned that the rate of infection is increasing and that one child is contracting the disease every 35 seconds. More than 30 people a day are dying. - (Sanchez, 2017)

The cholera outbreak in Yemen is escalating at an alarming rate, with experts warning that a child is now infected with the disease every 35 seconds, according to Save the Children. - (Ratcliffe, 2017)

Whilst neither article provide links to a press release by Save the Children, one can be found on their website from the same day (14th June) titled “YEMEN CHOLERA EPIDEMIC INFECTING ONE CHILD EVERY MINUTE” (Save The Children, 2017). The press release, however, does not provide the source of the statistic. The actual provenance of this number can be located in a *Daily epidemiology update* by the World Health Organisation (WHO) from 13th June (WHO, 2017e). The two-page update provides three main statistics: the number of suspected cases of cholera, the total number of people who have died from the disease and the percentage of people who have died in respect to total cases (case fatality ratio). Accompanying these numbers are tables and maps explaining how the attack rate (number of cases per people) of the epidemic breaks down geographically and demographically. The report does not refer to the infection rate of children, however. We can assume, therefore, that Save the Children used a more detailed version of the WHO’s report to create the statistic in the headline of their press release.

When the two news articles used this number, they positioned the statistic as an uncontested “fact”. This was mainly achieved through the use of categorical language when describing the statistic.

Experts warning that a child is now infected with the disease every 35 seconds, according to Save the Children. - (Ratcliffe, 2017)

The charity warned that the rate of infection is increasing and that one child is contracting the disease every 35 seconds. More than 30 people a day are dying. - (Sanchez, 2017)

Both extracts above deploy categorical words such as “is now”, “is increasing” and “are dying” when referring to the numerical claim being made. They do both refer to a source (Save the Children), hinting at the notion that this is a claim made by an institution. Yet neither article qualifies the numerical information itself by explaining that it is an estimate or by juxtaposing it with a counter-claim. Imbuing this statistic with such a level of “facticity” was misplaced – there are problems with both its accuracy and validity that point towards a broader misrepresentation of cholera statistics during the epidemic in Yemen.

Challenging the statistic (i): accuracy

As the word “suspected” suggests, the cases recorded were not “confirmed” instances of cholera. To appreciate why “suspected” cases are used, we need to examine the disease of cholera itself. The WHO explains that “cholera is a diarrhoeal disease (...) which can cause rapid dehydration and death.” The disease is caused by toxigenic serogroups of the bacterium *Vibrio cholerae* that “are spread by direct faecal-oral contamination or ingestion of contaminated water or food” and manifests “as acute, profuse watery diarrhoea (“rice water stools”), usually with vomiting”. Those presenting with these symptoms often suffer from “rapid dehydration, which can result in hypotensive shock, renal failure and death within hours of onset” (WHO, 2017a: 3).

The severity of the disease meant that the “Yemen Health Authorities set up a national cholera surveillance system to collect information on suspected cholera cases presenting at health facilities”. The “suspected cases” were “confirmed by culture [biological testing in a laboratory], and a subset of samples had additional phenotypic and genotypic analysis” (Camacho et al., 2018: 680). Once cholera had been confirmed, the health facilities followed advice from the surveillance and working group of the Global Task Force on Cholera Control by recording a “suspected case” as “any patient presenting with three or more liquid stools with or without vomiting in the past 24 h” (GTFCC, 2017: 5). In other words, three or more liquid stools *indicated* but did *not confirm* that a patient had cholera.

These “suspected cases” were recorded across all the health facilities in Yemen. As Camacho et al. (2018: 681-682) explain, this system of cholera reporting was extensive. At the first level, “district surveillance officers (for each of the 333 districts) compiled the line-list from all health facilities in their district.” This database of lists “was sent electronically to the governorate level (23 total governorates) each day” (the second level). At the tertiary level, the data from each governorate was “aggregated by the Emergency Operation Centre run by the Yemen Health Authorities and cleaned by WHO surveillance officers to remove duplicates, standardise district names, and solve inconsistent entries (e.g. inverted month and day in date format).”

Given that not all “suspected cases” would be “confirmed cases” of cholera, it could be argued that there is an overestimation of cholera cases. But this would be a misleading conclusion. During a cholera epidemic, there are always certain communities or individuals that will not or do not have access to healthcare facilities. The situation is exacerbated when the epidemic occurs in a war zone where travel is already much more restricted than usual. With respect to Yemen, certain estimates

stated that “roughly half of all medical facilities in the country have been destroyed in the war” (Snyder, 2017). So, in certain areas of the country there was simply no local health facility and thus no ability to record the “suspected cases” of cholera. Thus, the over-estimation of cases *may* cover those who contract (and potentially die) from cholera but never make it to a health centre. But there is simply no way to say for certain.

Retrospective analysis has since shown that “the large number of suspected cases reported is likely much higher than the actual number meeting the suspected case definition” (Spiegel et al., 2018: 5). Such a discrepancy is partly explained by people presenting with *symptoms* of cholera yet not actually *having* the bacterial infection. But the report also points to economic incentives for workers to over-report cases of cholera. It explains that “health workers in DTCs had not been paid since 2016” and so “the incentive system rapidly implemented by WHO and UNICEF to pay wages of health workers may have inadvertently encouraged them to report suspected cases that did not meet the case definition.” Whilst this was “not a case of paying for each case detected, but more a general push to continue payments” (Spiegel et al., 2018: 24), the scale of payments was substantial enough to reasonably expect that it could drive the over-reporting of cholera in Yemen. The report explains that,

On an analysis of needs for national cholera outbreaks in Haiti and Africa, the World Bank provided USD 200 million (Feb 2017), split between UNICEF (WASH and primary health care) and WHO (health and secondary health care), and another USD 83 million (Mar/Apr 2017). The World Bank used a contingency emergency response component to mobilize USD 45 to 50 million from prior funding for reimbursement at a later date. - (Spiegel et al., 2018: 34)

Such is the concern over the reliability of cholera data, that scientists are attempting to find different ways to measure the disease. In February 2019, *The Telegraph* reported on a “new study in the journal *Science Translational Medicine*” which had developed an “algorithm that can estimate cholera incidence with more than 90 percent accuracy” (Newey, 2019). With relatively small sample sizes, they could accurately estimate *Vibrio cholerae O1* infections in epidemic (India) and endemic (Canada) cases using serology (Azman et al., 2019). Neither the lack of accuracy nor degree of uncertainty was addressed in the news media coverage. Whether this is due to a lack of understanding of the data or because the uncertainty is an unnecessary caveat for a journalist, is not clear. Either way, by not engaging with issues of accuracy, journalists also miss the chance to interrogate the validity of the statistic. Can “suspected cases” speak about the severity of the crisis? Or is this link between the statistic and what the statistic can say an erroneous one? Connecting the “thing” measured and the “measurement” is a question of *validity*.

Challenging the statistic (ii): validity

The link between the number of suspected cases and the severity of the crisis seems like a logical one: as the number of cases rise, the cholera epidemic is getting “worse”. Upon closer inspection of the data, however, the validity of this connection comes into question. Whilst reports focused extensively on suspected cases, they gave less attention to the number of people who died. The two articles covering the “numerical case” both presented the number of deaths in absolute terms:

*At least 942 people have been killed since the outbreak began in April
(Sanchez, 2017).*

942 deaths have been registered in 20 of Yemen's 22 governorates (Ratcliffe, 2017).

Neither of the articles expressed the number of deaths as a percentage of the total number of suspected cases. In fact, not a single article on the conflict in Yemen from the entire corpus (n=181) referred to deaths from cholera as a percentage. To do so, is to work out what the World Health Organisation call the Case Fatality Rate (CFR). The CFR is an important indicator of how cholera and mortality are related - the higher the CFR percentage, the more likely people are to die from cholera if they contract the disease. According to WHO guidelines, “the case fatality rate should remain below 1%” yet in their report from 2009 “45% of countries reporting cholera had a CFR exceeding 1%” (WHO, 2019a). In fact, the WHO explain that “it may reach 5% in the most vulnerable settings” (WHO, 2017a).

During the “second wave” of the cholera epidemic in Yemen, the CFR started at 1.3% at the start of May, dropped to 1% by the middle of the same month and plummeted to 0.22% by the final report of 2017 (Health Cluster Yemen, 2017; WHO, 2017d; eDEWS, 2017). In other words, the CFR reached the WHO’s acceptable threshold in less than a month from the start of the 2017 outbreak and then continued to decline through the rest of the year. By consistently using statistics on “suspected cases”, journalists missed the opportunity to tell a different story: yes, suspected cases were extremely high but the amount of people dying from cholera (relative to cases) is remarkably low. This numbers-based story was not hidden from journalists, the CFR was made publicly available through weekly epidemiology reports by the WHO. In ignoring this statistic, they also neglected to report on a wider, and much more significant, aspect of the cholera epidemic in Yemen.

Let cholera spread but focus on saving lives

It has been well documented that humanitarian work during the cholera epidemic was aimed at saving lives and not at reducing the spread of cholera. In July 2017, when the number of cases was at roughly 400,000 (UNICEF, 2017b), the WHO “suspended its planned cholera vaccination campaign (...) stating that a preventive campaign would not be advantageous now that the disease has proliferated widely.” As such, no oral cholera vaccines (OCV) were administered “in any of the examined organisations’ attempts to control the outbreak”. It was only “in August 2018, nearly 16 months into the outbreak” that “OCVs were finally delivered to 540,000 people by the WHO and UNICEF” (Federspiel and Ali, 2018). In doing so, the WHO argued, “thousands of lives in the short term” would be saved through “immediate cholera treatment” (Snyder, 2017). Records do show that these short-term interventions by health workers meant CFR *did* fall from early May to late June (Dyer, 2017). Nevertheless, the number of “suspected cases” of cholera nearly tripled from the WHO’s decision in July 2017 through to the administration of the vaccine in August 2018 (WHO, 2017b).

The choice between providing a vaccine and saving lives is not an easy moral or technocratic decision to make. Letting cholera cases increase meant a large number of people suffered with the horrendous symptoms of cholera. But by providing life-saving assistance, those with cholera were generally saved from dying due to the disease. On the other hand, if the international community had actively worked to provide a vaccine (at the expense of life-saving treatment), less people would have suffered but more may have died from cholera. Whether the international community made the “right” decision or not, the decision itself was not reported on. In doing so, journalists missed a chance to add nuance to their humanitarian reporting by detailing the agonies of humanitarian practice in the face of finite resources.

The ability of journalists to tell this story was hampered by the statistical communication of humanitarian organisations. The press release from Save the Children analysed above was emblematic of communication from the international community to the news media during the cholera epidemic. The number of suspected cases were emphasised, whereas the case fatality ratio (CFR) was excluded from communications. Such a pattern of communication is ironic: the international community emphasised the very number they had allowed to increase and ignored the statistic that indicated the success of their life-saving treatment. Any categorical arguments as to *why* they chose this tactic would be based on conjecture. But what we can do is place this case within a broader literature of humanitarian governance that emphasises the need to a “humanitarian problem” for “humanitarian intervention”. If we apply these arguments to my case study, humanitarian organisations emphasised a statistic that exaggerated the *problem* of cholera to receive more financial and political support for a solution. In this case, journalists reproduced this discourse by not challenging such a narrative. Such a pattern has been documented elsewhere. Kate Wright (2018) documents how “NGOs create content and stage events that can mislead journalists, resulting in significant, and false, news coverage (Bunce, 2019: 52)”. Within these communication strategies, it has been shown that numbers are especially effective communicative strategies by INGOs and the United Nations system (Franks, S., 2013; Wright, 2018).

The use of numbers to convince audiences and push for policy changes is not a new phenomenon. As Merry (2016) found in all three of her case studies of humanitarian quantification, “numbers are used to strengthen narratives and to persuade audiences of the validity of their underlying theoretical argument.” Mamdani (2007) provides a pertinent example from Save Darfur Coalition during the 2000s who used

Inflated mortality statistics to raise awareness of the conflict in Darfur. These exaggerated claims were reproduced by many news outlets in their reports of the conflict. The group also took out full-page newspaper adverts alleging that Sudanese President, Omar al-Bashir, had overseen the killing of 400,000 citizens in Darfur – double the 200,000 deaths estimated by other experts.

He goes on to explain that the adverts were eventually ruled as misleading by the British Standards Authority. The embarrassing outcome “played directly into the hands of the Sudanese government and its allegations that Western groups were exaggerating the scale of the conflict” (Mamdani, 2007). Whilst the claims around “suspected cases” of cholera were not as brazen as those made by the Save Darfur Coalition, they can be read as operating in a similar capacity. Furthermore, whether the intentions of the humanitarian organisations were nefarious or not, what can be said with certainty is that journalists failed to provide a statistically aware account of the cholera epidemic in Yemen. Remarkably, however, not even these startling statistics seemed to be enough to a suitable financial response by the international community. By the end of 2017, only 71% of the \$1.6 billion appeal for the humanitarian emergency in Yemen was met (UNOCHA, 2020).

In many ways, this case study emphasises the gravity of the findings from my content analysis. Journalists *uncritically* used *population* statistics to position the crisis as a *problem* and, in doing so, failed to interrogate a numerically underpinned narrative that they received from their sources. Whereas this case was somewhat typical of news coverage, the next case study provides an exceptional example in international news coverage. In the coverage of a natural disaster (Hurricane Irma), the numerical case is set within an *economic solution* frame rather than *natural causation*.

An exceptional example of international crisis coverage: restrictions on overseas aid during Hurricane Irma

In late August, Hurricane Irma crossed the Atlantic from the west coast of Africa. By the time it made landfall at Barbuda on 6th September 2017, it had turned into a Category 5 hurricane - meaning that it contained maximum sustained wind speeds (over a one-minute time period) of at least 157 miles per hour (NOAA, 2019). Over the next four days, it remained at Category Five as it passed through the Caribbean. Eventually, it reduced to a Category 4 (max sustained winds between 130-156 mph) when it made landfall in Florida on 10th September. By the time the hurricane had ended, 92 people had died in North America and 37 in the Caribbean (Cangialosi et al., 2017)⁵⁷. Furthermore, the hurricane left large areas of the Caribbean uninhabitable. In Barbuda, the United Nations Development Programme (UNDP) found that 100% of all buildings had experienced some level of damage (UNDP, 2017).

British overseas territories

Among those affected in the Caribbean were three British overseas territories - Anguilla, the British Virgin Islands (BVI) and the Turks and Caicos islands. An article from September 10th explained that “RFA Mounts Bay has helped to restore power and communications as well as clear the airport runway in Anguilla, and will next provide relief in the British Virgin Islands” (Davies, G. and Burns, 2017). This was set within a wider response by the UK government: pledging £32 million in aid and sending hundreds of military personnel (Davies, G. and Burns, 2017).

⁵⁷ According to the National Hurricane Center Tropical Cyclone Report, which counted the total number of those who had died (descriptive statistic).

Just under a week after the hurricane made landfall, an “unnamed minister told *BBC News Online* that the figure [level of financial aid] could have been significantly higher” for the British overseas territories (De La Mare et al., 2017). Under current international aid rules, however, all three states were “considered too wealthy to qualify for assistance” (Landale, 2017a). The initial report by *BBC News Online* was followed by articles in *The Guardian* (Wintour, 2017c), *The Mirror* (De La Mare et al., 2017) and *The Mail* (2017). In these initial reports, none of the articles were specific about what these “international aid rules” consisted of.

The 0.7% of UK GDP allocated to “overseas aid” is subjected to international rules that determine which countries can and cannot receive this money. A country’s eligibility hinges on two criteria: one, a per capita Gross National Income (GNI) of less than \$12,235; two, not being members of the European Union or the G8 (OECD, 2019b). So, Ukraine, with a GNI per capita of \$8,900, is not on the list of eligible countries (World Bank, 2019). These rules are decided by the Development Assistance Committee (DAC) - “a unique forum of many of the largest providers of aid, including 30 members” (OECD, 2019a). The DAC sits within the broader institution of the Organisation for Economic Co-operation and Development (OECD) - a body that contains 36 member states, mainly from Europe and North America (OECD, 2019c). When Hurricane Irma hit the Caribbean, all three British overseas territories were not on the list of countries that qualified for aid (OECD, 2014). Thus, none of the UK’s £13 billion budget could be spent on assisting those in Anguilla, the British Virgin Islands (BVI) and the Turks and Caicos islands. Instead, the Treasury would “have to foot the bill” (Wintour, 2017a).

As Bowker and Starr (1999: 16) explain, “classification systems are integral to any working infrastructure” and this is no more apparent than in the humanitarian sector.

The intermeshed set of institutions, practice, economic flows and representation is highly structured by quantification (Merry, 2016). In this sense, the ODA list serves as a classification system to determine the flows of international aid - certain countries can receive this money and certain countries cannot. Macro-economic classification on the basis on GDP, GNI or GNP is rooted in the practice of international development. Large economic and financial bodies, such the OECD, World Bank, and International Monetary Fund (IMF), categorise national economies into different groups. These classifications then determine which countries receive development aid, the relevant expertise and certain economic programmes. Whilst the accuracy and suitability of macro-economic organisation by GDP has been extensively critiqued (Fioramonti, 2013; Fioramonti, 2014; Jerven, 2013), it remains a powerful quantitative indicator that structures both international development and international humanitarian crises.

Normally, once a classification system is introduced, accepted and used by institutions and actors “its epistemological discussions evaporate”. In doing so, it operates in the “background”: structuring practice, discourses, individuals and institutions almost silently (Berman and Hirschman, 2018: 260). There are certain occasions, however, when quantification is forced into the “foreground” because its underlying logics are challenged (Star, 1999). UK news media coverage of the ODA list did exactly that. Through a discussion about its suitability, the classification system was forced into the foreground of humanitarian crisis discourse.

A call for change: OECD aid rule changes

As explained previously, the international aid rules story emerged from an anonymous minister from Parliament. Their account was published by *BBC News Online* and

followed up by *The Guardian*, *The Mirror* and *The Mail*.⁵⁸ The initial response from the UK government was to rubbish claims that these international rules had restricted their response to Hurricane Irma (Ellicot, 2017; Landale, 2017a). Yet within a couple of days, *The Guardian* reported that:

Theresa May is frustrated with rules set by the Organisation for Economic Co-operation and Development (OECD) that exclude British overseas territories like Anguilla, Turks and Caicos and British Virgin Islands from receiving money from the aid pot - (Wintour, 2017c).

This led to Priti Patel (former Secretary of State for International Development) writing “to the OECD’s development assistance calling for reforms to reflect the vulnerability of the Caribbean island states, which stand in the path of tropical storms like Irma” (Wintour, 2017c). As explained in *The Mirror*, these reforms were focused on a relaxation of the rules for natural disasters (De La Mare et al., 2017). Calls for change were met with opposition from certain parts of the international community. Christian Aid argued:

The [UK] overseas aid budget is quite rightly subject to serious scrutiny and a set of rules which ringfence overseas aid spending to ensure it goes to the poorest people in the poorest countries. Overseas Territories are not among the world’s poorest countries. - (Hewitt, G., 2017).

On 30th and 31st October 2017, the members of the OECD DAC convened in Paris to discuss, among other things, the proposal from the United Kingdom (DAC, 2017). An agreement was made that “Britain will now be able to spend official development aid on hurricane hit-islands” (Landale, 2017b). Going forward, the OECD ruled that

⁵⁸ *The Telegraph* Online did not have any articles about the OECD rules.

“aid could be used for short-term help for middle-income countries” (Landale, 2017b). Priti Patel stated that “we’ve made huge progress on ensuring official development assistance can be used when vulnerable nations are struck by crises or natural disasters” (Lamble, 2017).

The gravity of the decision should not be lost in the hyperbole of political rhetoric. The allowance for ODA (a significant pot of government money) to be used on middle-income countries during certain disasters is a substantial change in policy. Not only does it reconfigure what “development aid” relates to (extending beyond poverty) yet it also highlights how certain powerful countries can lobby to change rules that affect the financial capacities of nearly every nation-state.

The initial leak of information from a politician inside Westminster can be set within a long history of leaks from politicians to the press. These leaks often function as a way for governments to pre-announce information to the public to diminish its potential negative effects (Boorstin, 2002[1961]) or as ways for the opposition parties opposition governments to attack the incumbent party (Jaworski et al., 2004: 184). In this case, however, the leak seemed to be an attempt by a politician to raise a policy issue that their own party had not emphasised publicly (Walker, 2000; Davis, A., 2009: 207). Whether this was to pressure the government to challenge the OECD or as a tactic to undermine the cabinet is impossible to tell. What can be argued with some certainty is the continued importance of the news media in allowing politicians to leak information to the public.

The political discourse was the driving force in the subsequent coverage of the classification system as well. The news reports concerning the suitability of the economic classification in determining aid flows largely reflected institutional contestation between the UK government, other nation-states and international non-

government organisations (INGOs). In this way, the news media coverage (after the initial leak) largely follows the structure of Hallin's (1986) spheres of legitimacy. In his view, issues within the news media can be split into distinct spheres. The *sphere of consensus* at the centre where the topic is beyond partisan dispute so both sides of the argument do not need to be presented. It is here that journalists report from when they rely on a limited number of sources for information and provide no opposing views or acts of verification. The next layer is the sphere of *legitimate controversy* where legitimate, powerful sources contest an issue. Journalists that cross-verify facts from trustworthy sources occupy this space. Whilst they present conflict, it is still within the conventions of institutional power. (Hallin, 1986: 117).

When reporting the OECD classification system, reporters were firmly set within the *sphere of legitimate controversy*. Importantly, reporting within this sphere is firmly dictated by controversy from within powerful institutions. This often means that journalists do not actively engage in the information they provide, instead opting to mirror official narratives. This is particularly prevalent in statistical reporting. As Cushion et al. (2017: 1213) explain there is a "widespread reluctance to embrace the notion of objectivity in statistical reporting and to wallow, instead, in the safer but murkier waters of impartiality." This means that journalists often failed to interpret "the evidence supporting different perspectives" (2017: 1200). Without this "independent intervention", this style of reporting is "unhelpful to audiences, and helps create widespread cynicism about statistical expertise (BBC Trust, 2016)" (Cushion et al., 2017: 1213). Furthermore, it cements the ability of institutional sources to be the "primary definers" of news content (Hall et al., 1978; Schlesinger, 1990). In this case, it allowed the United Nations system (through the World Bank), large humanitarian organisations and nation-states to structure the news on the classification system. In

doing so, the news media largely operated as communicative appendages to these large international institutions.

Whereas the first and second case study have identified typical and atypical numerical cases in international crisis coverage, the third case study elucidates the way the NHS winter crisis provides an exception to many of the rules found in my content analysis. Much of this exceptionalism can be rooted in the domestic setting of the crisis. The reporting of the crisis involves more resources and attention from journalists but is also a phenomenon that is highly quantified by a highly bureaucratic state.

Bucking the trend: NHS leaked data

A “crisis” within the National Health Service over the winter months (December, January and February) has become a perennial issue in the UK. There are certain epidemiological peculiarities during the winter that contribute to this crisis. Some respiratory system diseases, such as asthma, can be caused or worsened in colder weather. Whilst other “seasonal illnesses” are almost entirely located in the winter months - most prominently flu and norovirus (The Health Foundation, 2019). But to place too much emphasis upon disease would be misleading. The NHS winter crisis is not a “UK health crisis” but a crisis within the provision of care by the National Health Service. In this way, the crisis should be understood as “man-made” rather than “natural”.

The emergency can be measured by a range of statistics on NHS performance. The most common yardstick is the “four-hour wait”: how many patients are seen, treated and admitted, transferred or discharged within four hours of checking in at the A&E desk at a hospital. The lower the number, the more severe the “crisis”. But the existence of a crisis is also discursive: such was the severity of the 2016/2017 winter

crisis that the British Red Cross (2019) called the situation in public hospitals a “humanitarian crisis”. This claim was supported by opposition parties yet widely disputed by the incumbent government.

The causes of the crisis also have quantitative and non-quantitative elements. Figures on A&E attendance show that the winter months actually see the lowest numbers of patients attending A&E compared to the rest of the year (NHS England, 2017). Leading many to point towards other “causes” of under-performance. Blunt, Edwards and Merry (2015: 2) explain that the problem is the “ability to discharge patients safely and quickly from the hospital as a whole” as reflected in the number of “excess bed days” where a patient who should be discharged is not. A contributing factor of this “back-end blockage” is a crisis in social care. This is an issue news media coverage will often highlight with personal testimony about the lack of options for certain patients to leave hospital and enter into suitable care. But issues within social care is also reflected in the financial data: there was a “16 per cent cut in real-terms net expenditure on social care for older adults between 2009/10 and 2013/14” (Blunt et al., 2015: 14). Such are the long-standing causes that some argue this seasonal crisis is not “explosive (...) but predictable, and predicted” (McCartney, 2018: 360).

“Leaked data” and media coverage

During the 2016/2017 “winter crisis”, two NHS England performance reports were leaked to *BBC News Online*. The December 2016 figures were published at the start of January 2017 and the January 2017 figures at the start of February 2017. Both datasets highlighted the poor performance of NHS England during the two winter months. The way the “data leak” was reported by the press highlights the main difference in how number stories functioned within international crises compared to

the NHS winter crisis. Whilst there may have been political motives, the leak itself was not a *political* leak. Instead, it came from an unnamed source from inside the NHS that was attempting to highlight the poor health provision by English hospitals. The need for this source to leak the data was rooted in an issue of timeliness.

The official NHS data policy involved a significant “lag” of about six weeks between the last data collection across NHS Trusts and the publication of said data. So, December 2016 data was set to be released in the middle of February. Such a delay meant that journalists covering the NHS winter crisis often faced an issue of timeliness with the data they reported on. They could include a personal testimony about an individual waiting over 24 hours in A&E yet did not have access to recent quantitative information to contextualise or generalise the story. Therefore, the “leak” offered more “timely” data, allowing journalists to say what is happening now(ish) in the NHS.

The quantitative information was markedly different to the OECD leak. Instead of providing a statistical claim (the UK cannot spend its aid budget on British Overseas Territories), the journalists received an entire dataset. This allowed the reporters to focus on particular aspects of the data and tell *their* numbers story. The ability of the journalists to do so rests largely on their ability to interrogate the data they received. Domestic journalists covering health are familiar with the importance (and potential) of data in their reporting. Often these journalists are designated data journalists or have an intimate understanding of what data means. This is reflected in the increased emphasis placed on data journalism within reporting on the NHS (Bradshaw, 2015; Tunney and Thomas, 2015). Such is the centrality of data to reporting on the NHS that BBC News Labs have used automation to provide local interactive data on healthcare (Jones, R. and Jones, 2019).

Both authors in the January article had considerable experience of dealing with NHS data. Whilst Faye Kirkland does not identify as a data journalist, she has considerable experience in dealing with health-related data-based stories. On the other hand, Nick Triggle is a senior Health Journalist that regularly provides national stories based on NHS data releases. From the leak, they decided to focus on waiting times in hospitals (extract 1). This narrative was followed in the subsequent coverage by *The Guardian* (extract 2), *The Telegraph* (extract 3) and *The Mirror* (extract 4).

Record numbers of patients are facing long waits in A&E as documents leaked to BBC show the full extent of the winter crisis in the NHS in England (Kirkland and Triggle, 2017).

Showed that more than 60,000 people waited between four and 12 hours for a hospital bed (Weaver and Campbell, 2017).

The NHS saw record waiting times in A&E wards in December (Scott, P., 2017).

Last week 18,000 patients waited on trolleys for more than four hours, 485 of them for more than 12 (Nelson and Small, 2017).

To emphasise waiting times was a political act by journalists. Waiting times are the key indicator of NHS performance used by the government. Introduced by the Labour government in 2002, and amended by the Coalition government in 2010, the “four-hour wait” target aims to see 95% of all A&E patients within four hours. In practice, this means that 19 in 20 patients should be seen, treated and admitted (or discharged) in under four hours from the point at which they register at the A&E desk. Whilst the target is under review, and could be scrapped by 2020, the indicator provides a clear benchmark for NHS Trusts: if your “four-hour wait” is below 95%, you are

underperforming. Over the winter period, the chance of NHS Trusts not meeting this target increases. The data from both leaks provided updates on these targets, the first extract from January and the second from February

Since the start of December, hospitals have seen only 82.3% of patients who attended A&E within the four-hour target (Kirkland and Triggle, 2017).

82% of patients in A&E - rather than the target 95% - were transferred, admitted or discharged within four hours (Kirkland and Roxby, 2017).

The two reports appear unequivocal: NHS Trusts are under-performing according to their own yardstick. Such a failure is set within a longer history of the NHS missing its “four-hour wait” target. Blunt, Edwards and Merry (2015) explain that the focus on “A&E performance has become even more intense since the start of 2015, as problems have worsened (...) the length of time spent in A&E has increased and it has risen up the list of “voters’ concerns””. In fact, major A&Es (which see more serious cases than minor A&Es) have not met this target since 2013. So, the report did not come as a surprise. Instead, it was the latest data point in a trend of under-performing A&E departments in the UK. Problematically, however, the timeliness of the report meant that journalists faced problems of *veracity*. It is around this issue of *verification* that much of the contestation of this data emerged.

Verification of “leaked data”

In both their January and February reports, *BBC News Online* referred to the *veracity* of the leaked data. In each report, the challenge was not presented by the reporter themselves. Instead, they quoted two institutional figures. In January (extract 1), they

quoted Dr Kathy McLean from NHS Improvement and in February (extract 2) they referred to a statement by a spokesman from the Department of Health

The data given to BBC had yet to be verified and was meant for “internal” purposes so the true figure could be lower (Kirkland and Trigg, 2017)

It is irresponsible to publish unverified data and does a disservice to all NHS staff working tirelessly to provide care around the clock (Kirkland and Roxby, 2017)

Neither the individual articles, the statement from the Department of Health or NHS Improvement divulged what the NHS data verification process entailed. If we look at documents from NHS England, “verification” is used as a blanket term to describe all the data quality processes conducted between the collection of data and its publication. There are six parts to this process: *coverage* - has all the data been received?; *completeness* - do data items include all expected values?; *validity* - does data match standards and business rules?; *default* - have the standardised values been used in data collection?; *integrity* - is patient identification information used across different data sets? Are there men on women’s wards? Do appointment tables match up to referral tables?; *timeliness* - is the data available when it needs to be? (NHS England, 2016: 6-7). The “leaked data” was not subjected to these six checks.⁵⁹ The reporting of this leaked data went beyond this contestation between the leaked data and its veracity, providing more insights from a wide range of sources. In the coverage of the second leak, the article by the *BBC News Online* referred to an

⁵⁹ A retrospective analysis shows that both leaked reports had worse A&E performance figures than the verified data. The “official” data from January 2017 (published in mid-March 2017) showed that the “four-hour wait” target was in fact 85.1% across all A&Es rather than 82%. It was a similar story for the data from December 2017. Whilst the media reported on the figure 82.3%, the “official” number rose to 86.2%.

alternative dataset in their report. They pointed towards the Royal College of Emergency Medicine who “said their figures backed up those seen by BBC” (Kirkland and Roxby, 2017). However, using quantitative information was rare given the monopoly that NHS Digital has on quantitative information about hospitals. Most often, journalists sought out claims based on experiential (non-quantitative) evidence.

In their follow-up article, *BBC News Online* report that “nurses say conditions in the NHS are the worst they have experienced, the Royal College of Nursing has said” (BBC, 2017c). *The Guardian* quotes Chris Hopson, NHS Providers chief executive who explains that the data is “in line with the feedback we have been getting from trusts” (Weaver and Campbell, 2017). Whilst *The Mirror* explains that “faced with those kind of stats [leaked data], what the Red Cross said [a humanitarian crisis] does not seem to be overblown at all” (Nelson and Small, 2017). The range of sources provided is testament to good journalistic work. But it also reflects the nature of reporting a domestic crisis. Journalists can draw on a range of pre-existing relationships for comments, they have a shared language and cultural understanding of the topic and they are generally better funded to provide more detailed reporting. This coverage culminated in the changing of health information policy.

Affect on information policy

The Director General for Regulation at the Office of National Statistics, Ed Humpherson, wrote to NHS England, NHS Improvement and NHS Digital in February 2017. His main concern was upon the importance of the two NHS data leaks to the press,

Leaks of management information represent a disorderly release of data on Accident and Emergency attendance, and this could undermine the public's assessment of trustworthiness in the Official Statistics. (Humpherson, 2017)

He argued that the “6 week lag (...) between collection and publication” of Accident and Emergency attendance figures “leaves the system vulnerable to leaks because management information circulates around the NHS system for operational purposes well in advance of the publication of the statistics” (Humpherson, 2017). Humpherson advises that this lag should be reduced, especially pertinent during winter months when increased pressure on services means there is a “considerable public interest in NHS performance”.

By May 2017, all three NHS bodies reply to the ONS explaining the measures they have taken to reduce the time between data collection and publication. They highlight how the “new” reporting system will significantly reduce the “lag”: the previous month's data will be published on the second Thursday of the following month. In other words, the lag was reduced to between 8 to 14 days (depending on where the second Thursday falls). The new measures were implemented in August 2017 (NHS England, 2019). In addition, weekly reports were published from December 2017 to February 2018 - posted on the following Thursday (4 days after the last data collection) to “coincide with the monthly performance reports” (NHS England, 2018). These reports include bed occupancy levels, A&E diverts and other hospital information yet do *not* include statistics on the “four-hour wait” target, which was still published monthly. In real terms, the lag was reduced from a minimum of 42 days to a maximum of four days from the winter crisis of 2016/17 to the winter crisis of 2017/18.

The speed of publication means that only “minimal validation” is allowed but the data is considered “fit-for-purpose” (NHS England, 2018). This was made possible because

the NHS introduced automation. In October 2017, a new system went live that automatically sent NHS data from each trust rather than people having to upload data manually - a task that could take up to 45 minutes per day (NHS Improvement, 2019). Further automation was introduced in 2018 to deal with information disclosure. When small numbers populate “people-related” tables - e.g. people waiting for surgery past X months - the exact number cannot be published due to risk of identification of the patient. Previous to the change, this involved replacing values between 1 and 5 with ‘*’ and then checking “that other values within the data could not be used to recalculate the original small numbers”. Whereas before, this was manual, it became fully automated.

The argument presented by NHS and government sources on *verification* was clear: the numbers are not verified and we will not discuss how this process could be improved. This can be set within a history of statistical regulation. In fact, one of the key reasons for the creation of the National Statistics Authority in the UK was to issue penalties to an official or minister who leaked statistics and denounce the data breach. The changes to the information flow that followed the leaked reports, however, highlighted how veracity was not a process that was set in stone. In fact, within a year, the NHS were publishing weekly data on the NHS only four days after the last piece of data was collected. Whilst this did not include A&E wait times, it did include other pertinent information to judge the health of the NHS. Such a change in information policy points towards the way the NHS is set within what Dunleavy and Margetts (2010) call “digital-era governance”.

The UK government has shifted from a policy based on freedom of information requests towards “open provision of detailed, comparable information” regarding hospitals that is often referred to as “open-book governance” (Tunney and Thomas,

2015). By making data public, and thereby indicating transparency, the government or quasi-government body makes themselves appear more trustworthy. Whilst the connection between transparency and trustworthiness has been disputed by a variety of studies (Worthy, 2015; Bannister, Frank and Connolly, 2011; Janssen and Hoven, 2015; Clarke, A. and Francoli, 2017), it is nonetheless a widely adopted tactic by modern Western governments. It should be noted that whilst some degree of publicly accessible data is available for international crises, e.g. macro-level indicators, this type of granular information is largely dependent on the degree of bureaucratic infrastructure in the country of the crisis. Therefore, this type of open-book data is much less common in countries in the Global South.

In the context of this case study, the data leak and subsequent information reform can be understood as a quasi-government body (the NHS) grappling for ownership and legitimacy over the transparency of its own data. The lack of data leaks since the information policy change emphasises their success in regaining authority. Their success can be put down to the political will that enabled the introduction of new information technology that could verify information quicker and allow for the presentation of more timely data. Whilst there is very little work done on how the coverage of the UK press relates to the governance of the NHS (Tunney and Thomas, 2019), my analysis highlights the way they can undermine attempts to control the quantitative information that emerges from hospitals. In this case at least, the press play a much more disruptive and active role in the governance of the NHS compared to other international crises. This is discussed further in the concluding section.

Conclusion

In this chapter, I provided a case study analysis of three numerical cases to better understand the way power functions through the coverage of humanitarian crises (SRQ3). The first case study looked at the statistical claim that “one Yemeni child every 35 seconds was being infected with cholera”. In many ways, this provided a statistically typical example of how numbers are reported during international crises. Journalists uncritically report the *problem* of the crisis in Yemen and provide statistics on *population* to describe this *problem*. If the first case is a typical example of how statistics were used to cover international crises, the second provided the exception to the rule.

During Hurricane Irma, an anonymous political source explained that the British government could not send as much money to their overseas dependencies because they were deemed “too rich” by an OECD classification system. The subsequent coverage involved considerable contestation over the suitability of such a classification system, leading to a change in international aid rules. Instead of using a *natural cause* frame, the number referred to an *economic solution*. Furthermore, the substantial contestation within the news coverage does not reflect the distinct lack of challenges to numbers identified in my content analysis.

The final case study traced two occasions of NHS hospital data being “leaked” to the press. In some ways the third example is similar to the reporting of international crises. The leaked reports emphasised *population problem* by drawing on waiting times at A&E departments. But the way journalists challenged the statistics was markedly different. The reports provided direct challenges to numbers from journalists, hospital representatives and politicians. Such a practice was common in the coverage of the NHS but much rarer in articles on international crises.

These three case studies also spoke to certain aspects of coverage not addressed in the previous chapter. It was shown that statistical frames, the types of statistics and the level of contestation was largely structured by the relationship between the journalist and their numerical sources. This emphasises how quantitative-discourse that appear in the news media are generally associated with a particular set of actors or institutions that is pushing a certain numbers-based narrative. It is through these three numerical cases, therefore, we can observe the quantitative-discursive governance of humanitarian crises where sources depict and construct crises in particular ways to legitimise their interventionist policies (Barnett, 2013; Weiss and Thakur, 2010).

The way journalists interacted with their sources, however, was markedly different depending on the context of their reporting. When covering international crises, journalists relied on certain powerful institutions and actors: the UN system (including the World Bank and the IMF) and INGOs (e.g. Save the Children) dominated the coverage. This meant that journalists generally repeated the quantitative-discourse presented by these organisations. In the case of the statistics on cholera, journalists operated in a similar fashion to what is documented in the literature. They did not critically engage with dubious numbers and, in doing so, they facilitated a numerically underpinned narrative that supported intervention (Lugo-Ocando and Brandão, 2016; Ahmad, 2016; Berger, 2009). When they did provide contestation, as highlighted in the second case, they reported on the contestation between powerful institutions. By sticking with a “he said, she said” structure of reporting numbers, reporters afforded a great degree of power to powerful sources to dictate the narrative (Hallin, 1986; Cushion et al., 2017; Herman and Chomsky, 2002).

A different picture emerges when we consider the NHS winter crisis. Journalists *did* use claims from powerful organisations (the NHS, other large medical bodies (e.g. Royal College of Nursing) and the government) but for this particular case study, they relied on a data leak from an anonymous source. In this way, they provided more active and counter-institutional reporting. They received politically sensitive information that undermined the incumbent government's ability to provide healthcare. The numbers were rejected by some yet journalists sought to establish counter-points to this rebuttal through other institutional sources. Such was the significance of the leak that officials deemed it necessary for NHS information policy to be changed. The peculiarity of the NHS and the ramifications of this case study is explored in more detail in the concluding chapter.

Chapter 8. Interviews

Introduction

In this final empirical chapter, I move away from a textual analysis towards my analysis of publicly accessible interviews with journalists who use quantitative information (n=21) and my semi-structured interviews with journalists who covered at least one crisis in my corpus (n=16). This analysis is geared towards answering SRQ2 regarding journalistic practice yet is also used to establish the importance of numbers to journalists (SRQ1) and the way journalists facilitate or disrupt power (SRQ3). I open the chapter by outlining how self-identified data journalists (or variation thereof) talk about their use of numbers. These findings are then compared to the way non-data journalists discuss the role of the quantitative in their reporting. Through this comparative thematic analysis, I draw out some themes across both types of journalists and tropes that only apply to a certain group.

The second section outlines the way journalists covering international crises talk about using statistics in their reporting. I show that journalists generally do not check the numbers they use, relying on the trustworthiness of their source instead. The way journalists decide on trustworthy and untrustworthy sources is then documented. Following this, I outline reasons why journalists do not check the numbers that they use. This section addresses technical ability but mainly focuses on journalistic validity in association with storytelling, science and objectivity. I then go on to relate these findings to “strategic rituals” as outlined by Tuchman (1978) and Shapiro (2013).

The third part of this chapter documents the way journalists who covered the NHS winter crisis talked about using data. This outlines their technical expertise, their reasons for trusting data and the rationale for interrogating data too. These findings

are deemed particularly important when we compare them to the way quantitative information functions during international crises.

Publicly accessible interviews

Of the 22 publicly accessible interviews with journalists using quantitative information, the majority were with data journalists (n=19). These data journalists can be placed into two categories: back-end journalists that were described as using “technical knowledge of a speciality area, like numerative or image analysis, to find stories in data” and front-end journalists who told stories using their audio and visual expertise (Elmer, 2016; Ottaviani, 2019). Within the front-end of data journalism, there was a further delineation made between those who predominantly tell their stories in the more traditional journalistic format that relies on text and those who use data visualisations (Roberts, 2018). Increasingly, these data visualisations have incorporated an interactive element (Cairo, 2016; Ball, 2013; Lambrechts, 2016).

Data journalism: the now and the future of journalism

Across the interviews with these data journalists, there was a consistent pro-data narrative. This often involved positioning data journalism as the most exciting and innovative part of the news media. This sentiment is articulated clearly by Maher (2015)

The role data plays in journalism I see as a very exciting one. There is so much more you can do with your reporting if you have all of the structured data behind it. Being able to query who's in a story and what's their relation

to it is a very powerful thing. That's how I ended up doing this sort of thing in journalism.

This optimism had a distinct temporal aspect: journalists pointed to the contemporary significance of data journalism and its future importance. Journalists emphasised the contemporary nature of data journalism. This was identified in the rise of entries to data journalism awards (Rogers, 2019) as well as the rise in attendance at computer-assisted conferences (Roberts, 2018). This contemporary narrative was also informed by a contemporary historical perspective on data journalism. It is best encapsulated by the introduction to an interview with Simon Rogers by Google News

In 10 years, data journalism has gone from a niche reporting exercise to becoming a key part of newsrooms all over the world. To find out how data journalism has changed in the last decade, we talked with Simon Rogers, the founder of Guardian Datablog that published its first dataset in 2009. This is what he told us about his journey from London to Silicon Valley, where he is now data editor at Google. (Rogers, 2019)

Not only was data journalism spoke about as important to *now*, it was touted as key to the future. Such sentiments were expressed explicitly and confidently. Megan Lucero (2016) explained that “for me it is not about thinking, or hoping; I know that data journalism is on the rise. It is the future of journalism”. She bases this statement on the current trajectory towards an increasingly datafied society where “the data of every minute of our lives are being captured” (Lucero, 2016). An emphasis on an ever-increasing wealth of data often goes hand in hand with the rise of automated data collection and scraping (Dubas-Fisher, 2014; Rogers, 2019). Away from “back-end” data journalism, reporters also discuss a movement towards virtual and augmented reality to “showcase data in new and more interesting ways” (Rogers, 2019).

Such is the strength of the future-facing data journalism discourse that John Burn-Murdoch (2016) argues “going forward, we may, in five years or so, find that a lot of people who today would define themselves as data journalists are simply digital journalists, people who tell stories and happen to use various tools along the way.” In other words, current data journalism will become so normalised that it becomes the more general category of digital journalism. When journalists discuss *why* data journalism is so key to journalism itself, they generally point to two aspects: data realism and data storytelling.

Advantages of data journalism (i): realism

One sports data journalist explained that “statistical analysis can provide an insight into what is actually happening in a match” (Dubas-Fisher, 2014).⁶⁰ Other journalists, however, spoke of data realism through hypotheticals or metaphors. This was most commonly expressed when interviewees compared traditional news gathering with data journalism.

Think of it like the way that newsrooms send their journalists to where the stories are. For example, when the war in Iraq started newspapers sent reporters to Iraq -- they sent them into war. Court reporters are sent to court hearings because they know there is a story there. Similarly, we send our journalists into the pool of data. We know that's where government bodies and organisations are producing stories. To mine that data properly, we

⁶⁰ There were some interviewees that challenged the data realism narrative, pointing towards their uncertainty (1).

need to send journalists there, skill them up and provide them with people to collaborate with. (Lucero, 2016)

Statistics is answering questions just like journalists do. It's taking data and performing analyses on it to see if this is going to find a result that's worthwhile, statistically valid. Journalism is the same thing: You're going out and collecting information and saying this is a story. (McMinn, 2016)

Both Lucero and McMinn treat data as real as places and spaces that journalists can access and source information from. Many considered the realism of data particularly important in the face of contemporary attacks on journalism as untrustworthy.

Data analysis has always been subject to interpretation and disagreement, but good data journalism can overcome that. At a time when belief in the news and a shared set of facts are in doubt every day, data journalism can light the way for us, by bringing facts and evidence to light in an accessible way. (Rogers, 2019)

The idea of “good data journalism” was developed in other interviews. The main emphasis fell on the need for checking and verifying the data they used (Bentley, 2016). The two extracts below identify different verification processes within data journalism

First of all make as much effort as possible to get your data right, that means double check your data, the assumptions in your data, how things are measured obviously, talk to experts, domain specific experts who have domain specific knowledge about your data so they can help you understand the data better. (Cairo, 2016)

There are different ways to check, such as through Excel and other tools. In general, there are always at least two people working on a project, one who conducts the analysis and the other who verifies the analysis. In order to ensure the robustness of collected data, two main sources of data are checked. One is from official sources such as government records. Data from such sources will have been repeatedly verified and so can be used” (Calver, 2019).

Both extracts above identify the need for journalists to have a technical expertise in handling quantitative information. At a basic level, journalists recommend learning basic statistics. Megan Lucero (2016) argued that it was necessary to have “a good understanding of statistics (...) as we handle more numerical, tabulated, or list forms of information.” For her, this helped journalists “avoid jumping to spurious conclusions”. This technical expertise in statistics often needs to be matched with a basic appreciation of handling data. Janet Roberts argues that journalists “should know how to use a spreadsheet to sort data, write formulas, do a pivot table, and import data they find on the internet.” This involves an awareness of what “data the agencies you interact with have, in what format, and how they make it available” (Roberts, 2018).

On top of these basics, data journalists increasingly need to know computer languages and software that allows them to conduct back-end and front-end data journalism (Zehr, 2018). Aleksandra Wisniewska (2016) advises journalists to use R for data analysis and HTML for data visualisations. In fact, Angelo Zehr (2018) published a “how to” video alongside his *20 years, 20 titles* project that detailed how R can be used to make visualisations. Whilst these skills were once seen as exceptional within the newsroom, they are increasingly becoming the norm. In the late 2000s, “if you could

use an Excel sheet you were a rarity” whereas these basic data skills have become somewhat standard within the news room (Ball, 2013). But technical skills only take a data journalist so far. The journalists interviewed often set data in relation to the “story” they were trying to tell. This was most clearly expressed in two oppositional points.

Advantages of data journalism (ii): storytelling

Interviewees expressed the importance of *the story* coming before *the data*. John Burn-Murdoch explains that the “story you are trying to tell” should guide data analysis. This process is clearly expressed in the three extracts below

Often the most time consuming of any data journalism project is the stage where you are figuring out what story am I trying to tell here? And what does that mean in terms of the data I'll need. (Burn-Murdoch, 2016)

I'm not a big believer in using data to search for a story. I think that data journalism tends to be much richer when you start with a story, and then look for empirical findings by which to tell that story, rather than the other way around. (Roberts, 2018)

Breaking a game down to say “this team had 73% of possession” and “that team hit 23 shots with a 56% accuracy rate” can mean very little to the fans... You may have a stat that shows one team had more shots, but it doesn't really tell you if any of those ever looked like they were going in. (Dubas-Fisher, 2014)

In this view, data is treated as a source for a story. As Megan Lucero (2016) puts it “data is just a tool that aids the process” of journalism. But this source is often considered more reliable than other non-numerical sources. Not only does data

provide an insight to an objective ontological reality, it also identifies things that other forms of journalism cannot.

It feels natural to me to find data sources in order to draw reliable conclusions. In journalism, that approach is very useful because you can discover so many more issues than simply guessing what's out there in the real world. (Elmer, 2016)

Often this means data is placed alongside other sources to help tell the story (Ball, 2013). This means that journalists must rely on their ability to seek out and tell a story rather than just good back-end or front-end data journalism skills. James Ball (2013), perhaps most well known for his work with *WikiLeaks* in 2010 and for his early data visualisations at *The Guardian* explained that “the eye for the stories is as important as anything, and is as hard to teach as it ever was, but don’t let the new techniques distract you from that.” Journalists argued that this mind-set was particularly important when there is a wealth of data to deal with (Burn-Murdoch, 2016; Ball, 2013; Wisniewska, 2016). In this context, a clear narrative helped the audience to not “get lost” in the data (Wisniewska, 2016).

There were other journalists, however, who inverted this process of using data. They explained that they found stories to tell *from* the datasets they interrogated rather than using them *as sources* to develop a pre-existing idea. These were in the minority, however. Mona Chalabi (2019), a data visualiser, explained that even though she used other sources too, “numbers are my main source of inspiration for stories”. Alberto Cairo (2016) provides more detail to his method. He begins by “interrogating the data” then tries to “figure out how to better display that information to the audience”, which often means “you are going to show the data in a way that makes it understandable.”

Whether the journalist derives their story from data or uses data as a source, their stories are highly dependent on the quantitative context of their reporting. Without access to relevant data, journalists cannot draw on the realism of data to tell data stories.

Limitations: Quantitative context

Most often, data journalists relied on publicly accessible data for their reporting.⁶¹ These were generally provided by governments or quasi-public bodies. In a UK context, Megan Lucero (2016) explains that in the UK, there “have been a lot of advances and fighting to open data up, and maintain [Freedom of Information Requests] FOIs” of public information. This means that “most of the sources” for UK data stories “come from what is made available by government departments and ONS [Office for National Statistics] data” (Ottewell, 2019).

But not all nation-states provide such comprehensive, accessible and uniform datasets. Megan Lucero (2016) explains that in the US they are “still very far behind in terms of open data and how data is published.” For Lucero, this is partially rooted in the fragmented nature of the U.S. government structure. Each government body producing numbers does not adhere to a systematic standard so “the data is so messy” (Lucero, 2016). This was also referred to by Janet Roberts. She explained that when they try to do a national analysis and need to get data from all 50 states in the U.S., there are freedom of information problems and issues with reluctant government bodies (Roberts, 2018). In these contexts, it is particularly important for journalists to

⁶¹ Including data made available after a FOI request.

scrape and organise data into a format that makes analysis straightforward (Wisniewska, 2016).

Data does not just come from nation-states, however. During an interview with Jacopo Ottaviani (2019) who works for *Code for Africa*, the data journalist referred to important projects that he had worked on across the continent. Ottaviani pointed towards the gender pay gap project where users could put in their gender and their nationality to find out the difference between pay to males and pay to females in that country. This project relies on “World Economic Forum data to estimate the gender pay gap in African countries” (Ottaviani, 2019). Alongside these international organisations, data is also produced by private, commercially focused organisations.

Calver (2019) explained that he used data from two housing websites - Zoopla and Rightmove - to find out the location of houses that were bought for over £1 million. In a similar way, Angelo Zehr (2018) explained that their *20 years, 20 titles project* used the wealth of data from the Association of Tennis Players (ATP) to produce a data interactive of Roger Federer’s career in tennis. Furthermore, Ottewell (2019) explained that they did a project on people’s favourite foods based on data from Just Eat. But more often than not, data from the private sector is harder to get hold of. Amanda Cox argues that “great data is not on the internet, so I am interested in proprietary data that people make decisions off of” (Cox, 2015). For Cox, this includes things like “Walmart targets” and “Google Driverless cars/medical policy.”

Non-data journalists

Up until this point, my analysis has primarily concerned data journalists. These interviewees accounted for the majority of the online interviews (19 of the 22

interviews). There were a small cohort of interviewees who did not identify as data journalists, however.⁶² They displayed certain similarities to their data journalist counterparts. Most notably, they discussed using numbers as *sources* for stories rather than deriving stories *from* data. Gordon Brkic (2018), self-described as a journalist who has an interest in data-driven journalism, put it this way

Right-wing politicians often say that people from NGOs and independent media are traitors being paid by foreign Western governments that are hostile toward Serbia. I find that the data shows that the biggest beneficiary of aid from Western countries is: the Government of Serbia, its ministries, and public enterprises!

Beyond using numbers as sources, it was also apparent that data journalists were not the only journalists to deal with colossal amounts of information. Bastian Obermayer, an investigative journalist for the International Consortium of Investigative Journalists (ICIJ), worked on two of the most notable large-scale leaks in the past five years. First, the ICIJ received “4.8 million emails, 3 million database files and 2.1 million PDFs” that exposed “a widespread system of global tax evasion” (Obermayer, 2019). This was titled *The Panama Papers*. Shortly afterwards, “an anonymous source sent Obermayer more data” which eventually became the *Paradise Papers: Secrets of the Global Elite*.

Furthermore, Obermayer drew a similar association between data and truth. He explains that “I’ve always felt the need to tell the truth about things” (Obermayer, 2019). The article goes on to explain that data has become an increasingly important way for Obermayer to do this. In fact, the article is titled *Journalist finds strength in numbers*

⁶² This group is particularly important given that the majority of the interviews conducted face to face by the author were with non-data journalists.

to keep truth alive. Whilst implicit, a similar association is made by Brkic (2018) in the extract above when he places “data” above “claims” in a hierarchy of credible information.

But it was noticeable that neither journalist discussed their process of verifying the information they received. This is not to say that no such verification takes place, rather it is that neither journalist thought it pertinent to talk about verification. One journalist did refer to verification, however. When discussing her approach to interviews, Lizzie Johnson (2019) explained that she records all of her interviews and also takes “notes by typing” on her laptop or “jotting things down in a notebook”. If she quoted someone, she goes back to “listen to that snippet, just to make sure” she is “accurately quoting the person.” When it comes to “numbers” and “figures”, however, she does not usually go back through the whole recording, relying on her notes instead. If her notes matched with the number or figure in her report, she would deem this piece of information as correct. Compared to the emphasis that data journalists place on verification and technical skills, for this journalist at least, it is enough for a source to have stated the number for it to be accurate.

There was also a difference in the historical narrative presented by one of the journalists. In the interview with Gordon Brkic, he explains that

My first big project was the U.S. led coalition attack on Iraq in 2002. I compared the strength of two sides with data from different sources, wrote the story and created a huge visualization. The year after I made a reconstruction of the assassination on Serbian prime minister Zoran Đinđić.
(Brkić, 2018)

Given that almost all the data journalists spoke of data journalism as something beginning at the end of the 2000s, this longer historical narrative may reflect the way

non-data journalists conceive of numbers as forming a central role in journalism from before the 2010s.

Laying the foundations for my semi-structured interviews

This section has documented the metajournalistic discourses surrounding quantitative information within journalism. Unsurprisingly, this conversation is dominated by data journalists talking about data journalism. These interviews highlight the way data journalism is seen as absolutely central to contemporary journalism, as well as the future of journalism too. Such a notion rests on two key explanations: data realism - data can tap into an objective reality if the journalist has the required technical expertise; data storytelling – data can help *create* stories and data can help *inform* stories. When these journalists do refer to the limitations of data journalism, they rarely refer to flaws within data journalism itself. Instead, they point to the restrictions that quantitative contexts impose on the data journalist. When we consider interviews with journalists who do not identify as data journalists, there are certain similarities. Quantitative information is positioned within the data realism paradigm and regarded as a key source for telling news stories. But these interviews also displayed differences. There was less emphasis on verification processes. When one journalist did discuss checking numbers, it involved checking that they had accurately quoted a source instead of directly interrogating that number. Furthermore, one reporter emphasised the importance of numbers before the late 2010s and the contemporary rise of “data journalism”. These themes across data journalism and non-data journalism can be observed in the way humanitarian crises are covered by the news media.

International crisis journalists using statistics

Whereas data journalists dominated the publicly accessible interviews, the opposite is true for my face-to-face interviews. Most of my interviewees talked about using statistics rather than data (n=11). All of these journalists covered one or more of the six international crises in my corpus. These journalists explained that they did not check the accuracy, reliability, or validity of numbers before they were published. Common sentiments are expressed below

There isn't the time that there is in academia to go into it and say are these numbers correct? Because that will take you months by then the news has gone. So there's an element of trust that you've got there. (J3, 2019)

There's an energy. And if you are a journalist you are desperate to try and get as much information as you can, and you can't verify it, so you're always waiting for usually the first credible people to come out and say something, they will usually be like possibly the OHCHR [Office of the United Nations High Commissioner for Human Rights]. (J5, 2019)

The all-important figures which you know, are probably never going to be 100% accurate, but they [humanitarian organisations] take great care to make sure it is as accurate as possible. (J10, 2019)

As the extracts above point towards, journalists opt to trust sources rather than spend time checking the sources of that information. The publicly accessible interviews hinted at this dynamic yet did not elaborate on which sources journalists were more likely to trust to provide credible information. My interviews, however, provide more detail on this relationship. Most commonly, these sources were institutions and/or

actors that communicated a figure, or set of figures, via a press release, a social media post, direct communication, the news wires or other forms of communication. Initial conversations presented trusted and untrusted sources without much explanation.

We contacted the governor's office at the time that was Rick Scott, we contacted a few centres, the rehabilitation centre at Hollywood field. So, we contacted them. We contacted humanitarian agencies such as American Red Cross. We also called the Department of Health. (J14, 2019)

I met the consul general or whatever that, I don't think he is an ambassador, the highest ranking British diplomat there on the first day, just to give me a little background briefing on the conflict and everything and then I did the same thing with the head of OCHA, and also with the head of the British Army out there. (J15, 2019)

I mean, social media throws up a lot of great information, but I wouldn't draw on any say local media assumptions on figures that hasn't been sourced properly. (J10, 2019)

And then are there places where like, I would never really use the numbers. I mean, if it like someone that's like a, like a random person just said, like, there's a million people. (J13, 2019)

As my interviews developed, these journalists began to identify specific strategies to classify credible and non-credible sources. Most commonly, expressed the process of constructing a hierarchy of trustworthy sources. This structure was informed by the source's track record, the level and type of advocacy that the source engaged in and the reporters' experiences on the ground with that source. Ranking above even the

most trusted institution or actor were databases, repositories apolitical and rational quantitative data.

Given that this practice conflicts with traditional tenets of journalism, namely the importance of verifying facts and adhering to accurate reporting (Kovach and Rosenstiel, 2007), how can reporters' use of numbers be explained? My interviewees put forward three explanations. At a technical level, they emphasised their low numerical literacy. Not being able to assess the accuracy, reliability and validity of numbers meant that they *could not* check much of the quantitative information they used. The exception to this rule were data journalists who professed a sophistication in dealing with numbers.⁶³ To just rely on technical expertise as an explanation, however, provides an incomplete picture.

A much more common explanation provided by journalists was the way numbers helped reporters establish the validity of their work. Journalists identified numbers as key storytelling devices when reporting humanitarian crises. They emphasised the need for individual cases of suffering (as expressed through narrative, images or videos) to be related to suffering at a wider level (as expressed by a number). Even if numbers were not deemed important to tell a story, journalists would include them to demonstrate that they "had done their research". Such a practice evokes the idea that journalism is a scientific profession.

When a number was proved incorrect or false, potentially threatening the scientific nature of journalism, reporters spoke of "hiding behind" their sources. A hierarchy of trustworthy sources allowed them to defer responsibility for the accuracy of a number to the respected source they received it from. Taken together, the way numbers establish credibility and protect the journalist (via sources) from criticism relates to

⁶³ All these data journalists covered the NHS winter crisis.

existing concepts of the way objectivity and verification are performed by journalists to distinguish themselves as a profession (Shapiro et al., 2013; Tuchman, 1972).

There was a marked distinction between those covering the NHS winter crisis (n=5) and those covering the other six international crises (n=11). The wealth of quantitative information (stored in publicly accessible databases) available to those covering the NHS meant that data was a crucial part of reporting. Two of my interviewees identified as data journalists and the other three all referred to the NHS database. On the other hand, those covering international crises rarely referred to databases and none of the journalists referred to themselves as data journalists. This split was reflected in how each group of journalists spoke of using data, their sophistication in dealing with quantitative information and the importance of it to their work. Nevertheless, there was a shared approach to the facticity of numbers and their importance to the profession of journalism (especially humanitarian journalism).

Institutions and actors

The most common numerical source for journalists were institutions and actors. The way journalists spoke about “trusting” their sources initially involved a “common-sense” explanation. They presented a self-evident argument about the trustworthiness of organisations.

Obviously, the United Nations, is quite a trustworthy as a source. If they've said something meaningful about what you're writing, there's justification to include it. (J12, 2019)

As my interviewees developed their position, they highlighted how this was far from a “given” within journalism. Instead, determining whether a source was more or less trustworthy than another was a constant journalistic endeavour. None of the journalists interviewed referred to organisational guidelines on trusting a source. Instead, they referenced *their* approach, and *their colleagues’* approaches, to establishing the credibility of a source. Reporters from across different institutions and freelance journalists working in different contexts across the world expressed remarkably coherent explanations about how this trust was determined. They spoke of three intersecting factors: the “track record” of an institution (or its history of numerical claims), its tendency to advocate or lobby for particular ends and the relationship the journalist had with the organisations “on-the-ground”.

Track record

It has been documented by Reich (2011) that journalists’ evaluation of a source’s credibility depends on the history and track record of that source.⁶⁴ During my interviews, many journalists referred to this history in terms of the “track record” of an organisation. This track record would determine how likely they were to use that source.

I mean, I think like, we would always veer towards organization that has an established track record. I mean, if we see something that we're not sure about, then I think that we would seek to do is verify it from sources that we are sure about. (J11, 2019)

⁶⁴ A discussion around source credibility and how this is constructed is detailed in the discussion below (section X) as well as in the theoretical section (section X).

I have not had any reason to distrust UN stats, for example, or stats of UN agencies. They tend to be quite rigorous in how they collate that information. (J4, 2019)

I think you just have to go to trusted sources and kind of people who have already have a good records in humanitarian crises rather than just kind of random statistics that you'd find from people that you've never heard of. (J10, 2019)

If its certain governments, I did one or two things in Rwanda, which I feel like they have some reputation for like massaging the numbers, I feel like I will have said like, "according to the government", blah, blah, blah, which is still fine. (J13, 2019)

As the extracts highlight, journalists distrust those that have a reputation for misusing numbers *and* those with no discernible history as a source of quantitative information. It is only those with an exemplary (or at least not "bad") "track record" that were trusted. But the interviewees' references to the historical use of data included no specific accounts of good or bad numerical practice. In fact, only a small number of the journalists interviewed referred to specific moments where certain organisations had deliberately exaggerated or underplayed a number.⁶⁵

Historical accuracy was not the only factor that informed journalists, it also depended on the advocacy role that the organisation took. If organisations used numbers to underpin a campaign that the journalist's advocacy role aligned with, they were more likely to be trusted. But if these sources were judged to be excessively lobbying for a

⁶⁵ These emerged during conversations with journalists covering the NHS with a familiarity of the data involved. A more detailed explanation of these conversations is reserved for the conclusion.

specific position, and especially if this stance was *not* in line with journalist's own argument, they were more likely to be distrusted.

Advocacy

Most journalists expressed the importance of what Bunce, Scott and Wright (2019) would call "humanitarianism as journalism". Writing during disasters, these journalists explained why they were engaged in the humanitarian effort they were reporting on. As one interviewee explained

With something like this, when I have gone and seen people starving, you can't help but want to make a difference. (J15, 2019)

In order to "make a difference", journalists explained that it was their job to communicate pertinent information about the crisis to the wider public. In doing so, they hoped to make the public more aware of the horrors of the crisis. We can observe this narrative in the first extract below

Hopefully you're reaching a lot of people who either did know it was coming or just want to read any updates that you have as a journalist or making people aware. So yeah, it definitely does come down to a matter of WOW this is going to be big, we want to just get all the information out there. (J14, 2019)

So from that point of view, my first and foremost focus was to make sure that their stories were heard to try and get people in to help them. (J9, 2019)

More often than not, this “information” consisted of telling the stories of the individuals that were suffering and was linked to a notion of helping those suffering (as seen in second extract above). For one journalist, this was an intensely personal project

Often when I speak to friends and family in Yemen, one of the things is like, “is the world listening?” “Do people know?” And to be able to amplify their voices and to contribute to shedding light on it so that the world might know about what's happening is such a privilege. (J11, 2019)

As a whole, the journalists’ version of humanitarian journalism was to write compassionately and honestly about suffering in order to bring attention to the crisis and bring about a solution. This meant that journalists often had a close relationship to aid organisations also engaged in the humanitarian effort. As one journalist put it

That's why, you know, journalists and organizations often work together on crises like this because aid organizations have the information and the statistics, but not necessarily the means to kind of get it out to as wide an audience as possible that journalists would have. So, you know, when I went there, I worked mainly with UNICEF who really wanted to work with, I mean, they had all kind of wants to work with journalists, but UNICEF were particularly helpful when I went there. In terms of kind of getting access to the right people in the time that I had, so, yeah, I think we need each other really. (J10, 2019)

In this way, journalists would come to rely on certain humanitarian organisations that were conducting particular types of campaigns. In other words, they were more likely to “trust” numerical sources that aligned with their position on the crisis they covered. This also worked in reverse. If the journalist thought that source was supporting a

narrative that did not sit well with their own position on the crisis they were covering, they would be more likely to not trust this source (and so not trust their information). The most frequently cited example during my interviews were references to national governments. Specifically, the national governments that were experiencing a crisis

The Myanmar government don't give a shit, they will just lie. No one takes them seriously. (J5, 2019)

I wouldn't trust the Myanmar government on figures because, you know, they're basically just, they've instigated this brutal crackdown on a minority that that they clearly wants to push out of the country. (J10, 2019)

I wouldn't say government stats can't be trusted but you just have to make a judgement based on what that stats about and that guides how much you trust them. (J4, 2019)

Classic example from my region is the Haiti earthquake. Those figures have long been disputed, and those are official figures from the government, but then politics plays a role as well. (J9, 2019)

As the previous section highlights, however, the national government may be cited in a news piece, alongside other competing claims, if an “accurate” number cannot be found. In this way, they are provided *some* level of trust by the journalist. There are certain sources that rarely (if ever) manage to be “trustworthy” enough for journalists to use them at all in their reporting

I mean no way would they [the editors] take seriously a figure from an activist group, like an expat Rohingya activist group. They wouldn't publish it, they wouldn't even mention it as “activists are saying this”. (J5, 2019)

But the relationship between “advocacy” and “trust” was not quite so straightforward. The credibility of a source did not just depend on whether the journalist agreed with the normative position of the source. The *level* of advocacy was also a key factor. When asked why the United Nations was elevated above other sources, journalists often referred to the extent of advocacy from an organisation. Humanitarian organisations, for instance, were perceived to be engaged in more “campaigning” and “advocacy” work than the United Nations and, therefore, were trusted less. As one journalist explained, there were Grade A sources (mainly the United Nations) and then Grade B sources. These Grade B sources “Would probably be what you might call lobbying-based charities who are prone to put an extra zero” (J15, 2019). The less the INGO was known for lobbying, the more trustworthy they were seen to be. For example, when Médecins Sans Frontières (MSF) published their figures on the number of Rohingya that had died during the conflict in 2017, one journalist explained that they took particular attention because the MSF were not known for their advocacy work.

Because MSF so rarely speak out and they are held in such high regard, and rightly so because they are amazing, I have nothing but respect for everyone who I have met who works for them have been amazing. So yeah, I mean, I think that was, you're absolutely right. That was a key turning point.
(J5, 2019)

Within the concept of “advocacy” itself, there are a series of factors underpinning how this measure is applied to sources. The degree of advocacy and the purpose of such advocacy seem to determine how journalists trust lobbying sources. This relationship between advocacy, sources and journalists has been identified by Tenenboim-Weinblatt and Baden (2018) when they examined how journalists “transformed” press

releases, reports, social media content and other forms of “textual inputs” for their news articles. They found that journalists engage in “political transformations”, where they would take information and use it to reinforce, criticise or marginalise “specific positions advanced by sources” (Tenenboim-Weinblatt and Baden, 2018: 487-488). In combination with an organisation’s “track record” and their level of lobbying, journalists pointed to more experiential factors that determined their trust in an organisation.

Experiences “on the ground”

Journalists emphasised the importance of witnessing the practices of certain organisations “on the ground”. These experiences did not refer directly to data collection or analysis practices yet to more general references of how they’ve witnessed that organisation operating in the region. Often this involved a direct working relationship between the institution (often an INGO) and the journalist

And then there are prominent NGOs in the region that establish trust...you get to know the NGOs, how they work and you’ve corroborated with one or two, broadly speaking, check out how they do their work and there are reports to back it up so you are not really operating on much scepticism. (J4, 2019)

This relationship between journalist and NGO was articulated in broad terms above, the reporter explains that “you get to know the NGOs” by observing “how they work”, corroborating facts with several other NGOs and examining the reports that these NGOs produce. These vague notions of “trusting” certain NGOs were discussed

further by other journalists who referred to “reputations” and experiences “on the ground”

You get to know the different NGOs and the reputations on the ground in Rakhine state, how they operate and sometimes you get sources of people who you can talk to for context and background off the record. That does tend to inform your opinion, if you see something from them you are more receptive, if you know if that group is a bit more flaky or a bit more solid. (J5, 2019)

That is, I mean, I saw MSF on the ground when I was there. When it was in Cox's Bazar. They're very well respected. (J10, 2019)

Two of the three journalists cited above specifically mentioned how they worked with press officers from humanitarian organisations. Their relationship with these institutional representatives seemed particularly important for journalists' trust in an organisation

And the topic you are working with, they have press officers on the ground there so it's more to do with that. (J4, 2019)

In terms of how people, you know, how responsive you are to certain things, if I see something from OCHA, it is almost certainly something very reliable, I think. They've got a pretty clear and straightforward mandate, they communicate it well, and I always got on with the press guy, who was pretty open with me and seemed pretty principled. (J5, 2019)

The way journalists talk about experiences “on the ground” relate to research on the “social” element of the source-journalist relationship (Blumler and Gurevitch, 1981; Reich, 2009). Whilst recent research has focused on how journalists construct this

trust via online sources (Wintterlin, 2017), my interviews emphasise that for some journalists, the face-to-face encounter is still very important.

On the whole, track record, advocacy and experiences “on the ground” are vital factors in constructing a hierarchy of trustworthy sources. This hierarchy then runs analogous to the information that these sources provide. Such a practice can be placed within a broader process of “trust-based views of news gathering” (Reich, 2017: 560). As Ericson (1998: 85) notes “journalists establish factuality by using credible sources who make statements that can be quoted as fact without further investigation.” More often than not, this would elevate organisations such as the United Nations and demote national governments and local advocacy groups. Such a finding matches with previous textual analysis that has highlighted how journalists rely on certain powerful international institutions for numerical information (Cushion et al., 2017; Lugo-Ocando and Brandão, 2016) but provides specific examples of which sources are deemed more and less trustworthy during humanitarian crises.

Journalists did not just rely on institutions and actors as sources, they also relied on databases. Of all the interviewees covering international crises (n=11), only three journalists pointed towards databases or original reports as direct sources of numerical information (J13, 2019; J10, 2019; J4, 2019). These references were made in passing and never contained an extended discussion about databases. For those reporting on the NHS winter crisis, on the other hand, databases were important sources of information. These databases contain a range of information from *all* NHS Trusts across England, from Accident and Emergency (A&E) waiting times to average times from diagnosis to treatment for cancer patients.⁶⁶ Furthermore, this data was published

⁶⁶ NHS data is split by the four countries within the United Kingdom: England, Wales, Scotland and Northern Ireland.

relatively recently after the last data collection point, making it a timely and useful data source.⁶⁷

Databases

As Shapiro et al. (2013: 667) explain “court documents, securities files, government statistics reports, and independent studies and surveys” are considered “the most reliable sources of all” (Shapiro et al., 2013: 667). Whilst data was not regularly used by journalists covering international crises⁶⁸, a similar sentiment was expressed in my interviews: if institutional sources are generally trusted, databases occupy an even more coveted position for journalists. This can be observed in the way one journalist explains that press releases containing statistics have data underpinning them.

They will say things in a press release but there is almost always databases to back up stats they have done. (J4, 2019)

The premise of this statement is that press releases *may* spin figures *but* there are databases released alongside these press releases that ensure their facticity. Databases sit at the top of the hierarchy of trustworthy sources, even though they are rarely available or utilised. Below them are the United Nations and other organisations that rarely “campaign” (or have campaigns in line with journalists’ normative position), beneath these are aggressively campaigning charities known to “add a zero”, then comes national governments that consistently exaggerate and lie, followed by

⁶⁷ During the period that interviewees referred to, A&E waiting times were published 6 weeks after the last data collection point.

⁶⁸ That is not to say, however, that international news coverage as a whole is devoid of data journalism. A recently published book documents the way data journalism functions in the Global South: Mutsvairo, B., Bebawi, S. and Borges-Rey, E. 2019. *Data Journalism in the Global South*. Palgrave MacMillan.

relatively unknown advocacy groups that clearly have an agenda but may not have the resources to do proper numerical research. Whilst such a system is sophisticated, it has obvious flaws. Namely, if journalists do not actually check facts then certain sources have a large degree of power to provide incorrect, fabricated or misleading information (as shown in *Chapter 7*). Given that this conflicts with basic tenets of journalism – verification and accuracy (Kovach and Rosenstiel, 2007) – why do journalists take such an approach?

Why do journalists rely on sources and not check numbers?

Early research into journalism emphasises they lack the resources or time to investigate each and every fact that reporters use (Tuchman, 1978). Contemporary news production, one can argue, has exacerbated this situation. More content is demanded from journalists and there is less money to do so (Lewis, J. et al., 2008). During my interviews with those covering international crises, however, these pressures were not identified.⁶⁹ Such a finding matches with the work of Shapiro et al. (2013: 665-666). Only one of the 28 interviewees referred to time and resources as an issue for checking facts. It is not to say that these pressures are not important *per se*. Rather, it is to emphasise that these factors are not important for journalists when they discuss their work during interviews with researchers.⁷⁰ Journalists *did* point towards other factors.

⁶⁹ This journalist explained that one possible explanation other journalists don't scrutinise numbers is because they do not have the time to do so.

⁷⁰ Ethnographic research may yield different findings from this research based on interviews with 16 journalists.

Technical expertise

Across my interviews, journalists repeatedly stated how journalism as a profession lacked people with an interest, experience or training in using numbers. As two reporters put it

[It is] probably reasonably fair to say that most journalists are arts people and not science people...There was not much fluency in numbers at the [news organisation name omitted], certainly not much internal challenge on numbers. (J15, 2019)

I was the only person in the office who enjoyed [numbers], they are a part of the NCJ [National Council for the Training of Journalists] portfolio that you are supposed to do, I think I'm the only person who actually enjoyed that part. (J8, 2019)

These broad claims match with existing work in journalism studies about the lack of numerical skills in the newsroom (Maier, 2003; Lugo-Ocando and Nguyen, 2015).

To just rely on a technical explanation, however, would be misleading. From my interviews, numbers and numerical sources play a more complex role in the way journalists do journalism.

Journalistic validity (i): a profession that needs the specific and general

During my interviews, journalists highlighted the importance of setting individual stories during crises in relation to the wider level of suffering. Whilst individual stories were articulated through narratives, images and videos, the broader magnitude of

suffering was expressed numerically. For many journalists, the way numbers related to the “broader picture” made them essential for humanitarian journalism.

I suppose to make a reason why they should care about it and the scale of it? And not, you know, this isn't just some sort of isolated incident. (J15, 2019)

I think you have to whittle down what that huge number means in terms of individuals that, you know, out of say 700 thousand Rohingya refugees this is what it means to be one of them. And this is then multiplied on like a massive scale. (J10, 2019)

In fact, one journalist used numbers to demonstrate why a story mattered. Without numbers, the story would not matter. Therefore, they argued

I think it's better to have a “why it matters story” that's not interesting than an “interesting story” that doesn't matter. (J13, 2019)

For this journalist, if there were no numbers to explain scale, the article would be an “interesting story” but it would not matter within the news media. In fact, the same journalist argued that numbers can delineate between what was “news” and what was “not news”. They argued that if a crisis is described just using numbers, this takes the form of a press release from a humanitarian organisation. In their view, such reports are “bereft of individuals” and so cannot be considered a “news story”. On the other end of the spectrum, a news piece *only* referring to individual stories (and not using numbers) would be “like having a profile of an un-notable person” (J13, 2019). The case may be emotive and captivating but a lack of numbers means it is not a piece of “news”. For this journalist, both individual stories and numbers are necessary to constitute a news piece. The ability to harbour both forms of representation means

that their work is neither a numbers-only press release nor a solely individual magazine piece.⁷¹ A similar explanation can be read from this extract

In a pitch to my editors, or the way my editors at the [new outlet excluded] would sell it to the overall editor on a newslist where you might have a one line explanation of the story. That would very normally involve a big number. The same, in terms of my email would be crammed full of stats, whereas the main article might only have one or two numbers. (J15, 2019)

Numbers are pieces of information that signify the importance, the “why it matters”, of a story. Even if these numbers do not appear in the article, they allow the journalist to write the story in the first place. In this way, numbers are not just important devices to represent suffering but seem to possess the capacity to (partially) define the genre of “news”. This matches with the argument of Eddy Borges-Rey (2016: 841-842), who argues that quantitative-based journalism can be defined “in terms of a constant interplay between two predominant paradigms”: “reporting through the articulation of quantifiable evidence and its subsequent contextualisation through human testimony.” But numbers were not just important in relating individual stories to the general, they were also used to demonstrate that journalists were engaging in a scientific (rather than opinionated) endeavour.

⁷¹ It should be noted here that the interviewee was a freelance journalist and thus did not produce news pieces for a press agency or news organisation that may use a “by-the-facts” approach that would resemble a report or press release.

Journalistic validity (ii): a scientific profession rooted in the ontologically “real”

As the section on databases highlighted above, numbers are often associated with scientific certainty. This was expressed most clearly when journalists positioned data as apolitical and unemotional. A similar sentiment emerged in my interviews with those journalists that did not regularly use data. When asked why they included numbers in their reports, interviewees consistently referred to the “credibility” or “credence” that numbers would afford. The extract below provides a typical example

I mean, very often that's [a number] not what's going to draw a reader into a story. It's not a kind of amazing statistic, it would be a personal, powerful story. So that's, you know, the figures are just kind of in there just to give some credibility to your story. (J10, 2019)

Whilst the above presents numbers and credibility in a “common-sense” manner, the two extracts below speak of how numbers are not essential to telling their story but are necessary pieces of information to add “credence” and “credibility” to their work

For me, it's always, I guess because a lot of my stories focus on social justice and cultural issues, so numbers to a certain extent are secondary and they are just kind of there to add credence to the story and show them that I have actually done my research. (J9, 2019)

Yeah, right? So obviously the human-interest story is important, because all events are devastating. You need, you need some sort of person or people for someone to connect to. The numbers are supplemental, you use it to sort of back up your claim. (J14, 2019)

Numbers indicate for one journalist that they have “actually done” their “research”, whereas for another, numbers “are supplemented” to “back up your claims”. For these two journalists, at least, numbers are more rhetorical than informative. They serve to underpin a general norm within journalism that their work is based in scientific rigour (Manning, 2001; Tuchman, 1978; Lugo-Ocando and Nguyen, 2017).

Approaching numbers as something scientific, or representing a scientific rigour, was also addressed by interviews in less direct explanations. When interviewees discussed numbers as metaphors, they emphasised the way numbers “anchored”, “pegged” or “pinned” a story about crisis. The most commonly used metaphor was “anchored”, as highlighted in the extracts below

I think I mean, I think the nice thing about using numbers is to anchor it. (J13, 2019)

It does anchor it if you have, you know, a figure of 2 million. (J10, 2019)

Why is this story so extreme? And you need to be able to say, well, because 50% of people are experiencing XYZ. So yeah, it's kind of an anchor that you can anchor the story on. (J7, 2019)

The concept of “anchoring” hints at the ontological and epistemological presumptions of scientific rigour within journalism. In order for one entity to be anchored to another, the latter needs to be a mass that is suitably large and stable enough to hold the object being anchored from floating away. In this view, there is a split between the unmoored personal experience and the solidity of quantitative information suggests a wider conception of numbers as something that is grounded to, and a constitutive part of, the ontologically fixed “real”. As one journalist explained, numbers “provide concrete” rather than “anecdotal information” (J6, 2019). Such a notion was also identified by

Simon Cottle (2009: 151-152) who refers to a humanitarian sector report called *Tricks of the trade: how to sell forgotten emergencies*. This guide urges press officers to “put a number on it: death tolls give journalists pegs to hang their stories on.”

The importance of numbers in “anchoring” stories and affording scientific rigour to journalists’ reporting is further highlighted when journalists talk about ignoring or erasing ambiguity. As the extract below highlight, journalists would look to remove uncertainty from numbers and present them as definite encapsulations of reality

I had to say like the largest. Not like “arguably” or “by some metrics the world's largest.” (J13, 2019)

This journalist speaks of ignoring the uncertainty of whether *this* refugee camp is the biggest in the world. Given the uncertainty involved in enumerating the population of refugee camps, comparisons between different camps across the world is highly problematic. The second interviewee is referring to “the latest” data about a particular aspect of the UK government. They elect to ignore that this data speaks of a historical phenomenon and not a current one. Such certainty facilitates the interrelated notions of scientific rigour and ontological fixity. But the facticity of a number can never be fully secured when journalists do not check the facts they use. Therefore, reporters often rely on numerical sources to protect themselves in case a number is proven wrong, fabricated or misleading.

Journalistic validity (iii): Numerical sources protect the journalist

Two journalists referred to what they considered as the most trustworthy source, the United Nations, and the way they provided protection to their numerical claims.

If the UN says a number, it's like, I feel like much more assured in like my own reporting and the UN said this, so if you have a problem with it, blame the UN. Which is I mean, somewhat shifting the burden of the proof. But like, I think it's also not shifting the burden of proof. I mean, yeah. I assume that the UN has like, demographers and researchers or whatever and that's their job. (J13, 2019)

If some reader turned around and said "well, actually I don't agree with that".

Then I can say well that's a UN claim. Take it up with the UN. (J15, 2019)

As Gaye Tuchman (1972) documented in the early 1970s, journalists often rely on the credibility of their source to stand in for the credibility of the information provided. She called this practice "rituals of objectivity". As journalists cannot cross-check every claim made (e.g. statistics), they regard the statement "X said A" as a "fact", even if "A" is false. Thus, objectivity is not about the validity of "A" (the claim). Rather, it is the construction of journalistic objectivity by following a specific process of the presentation of claims by sources. In this way, journalists rely on "form" over "content" to hide behind the "cover" of their source and protect themselves from flak or libel (Tuchman, 1972: 664-665).

Given that numbers are presented as claims by powerful institutions or actors, they are often considered as extremely reliable. This affords these journalists a greater degree of protection from flak or libel. Such a practice of self-preservation becomes especially apparent when journalists use numbers that are openly contested. Instead of making a technical judgement on the more reliable, accurate and valid number, they elect instead to present competing claims and use the sources of each claim for protection. Referring to the number of people who had died during the Rohingya refugee crisis, one journalist explained

When you do the reporting, you just have to say “the Myanmar government...”, you have to put one next to the other so it’s “the UN say this and then the Myanmar government say that.” (J5, 2019)

This approach to reporting, they explained, was a way of “incorporating the ambiguity into” their news report (J5, 2019). In other words, when journalists cannot “hide” behind one source of information, due to the contestation of that number, they hide behind two sources instead. It can be reasonably argued that the construction of a hierarchy of trustworthy sources serves a dual purpose: to establish the credibility of the number that is being used *and* to protect the journalist from potential criticism if that number is proved incorrect. In a way, relying on trustworthy sources provided the journalist with an epistemological insurance policy that was constantly in effect. In other words, reporters were constantly secure in their use of numbers because they were almost always backed up by a source that could take the criticism, flak or libel that they could have been subjected to.

Relating my findings to “strategic rituals”

The way journalists use numerical sources relates to Tuchman’s (1972) idea of “strategic objectivity”. Journalists are protected from “flak” or “libel” by “hiding” behind their sources. These institutions, actors or databases were presented as credible sources because they emerged from a structure of trustworthy sources carefully maintained by journalists. Connected to source protection was a much more prevalent theme in my interviews: numbers seemed to establish interviewees as “journalists” doing “journalism”. In other words, numbers were important in demarcating the boundaries of their profession. This theme can be related to what Shapiro et al. (2013)

call “verification as strategic ritual”. Iterating Tuchman’s “strategy of objectivity”, they argue that “verification” has become a performative act by the journalist. The importance is not on the *actual* practice of verification but how the *performance* of verification serves to mark the boundaries of the profession. As they explain

Self-reported adherence to a norm of accuracy could be understood as the kind of distinguishing ethical value equivalent to the lawyer’s idea of a special loyalty to the client and to the integrity of the justice system, or a physician’s oath to “do no harm”. (Shapiro et al., 2013: 669)

It does seem that these journalists use the veracity of numbers to establish the credibility of their work, and by proxy their profession. Most obviously highlighted when journalists talk about using numbers to show they have “done their research”, coveting numbers as ways to anchor their stories in the “real” and erasing the uncertainty of these numbers to make them appear as solid facts.

But there are key differences between both “verification as strategic ritual” and “objectivity as strategic ritual”. Both models are based on two rules. First, that *almost all* journalists check *some* facts. There is contestation over which facts are checked but agreement that some definitely *are* checked (Shapiro et al., 2013: 663-664; Tuchman, 1972; Hermida, 2015). Second, that *almost all* journalists use *at least two sources* in their work. Shapiro et al. (2013: 667) point to the “two source rule”, whereas the existence of two sources is integral to Tuchman’s model. Therefore, the performance of “objectivity” and “verification” runs concurrent to the partial implementation of these ideals.

My interviews, on the other hand, highlighted that most reporters using numbers when reporting on humanitarian crises did not speak of checking *any* facts and *mainly* relied on *one source*. Therefore, the “actual” checking of numbers was almost always

inexistent, replaced by two concurrent acts: the structuring of trustworthy sources and the discursive affirmation of scientific certainty. The first performance protects them from accusations of inaccurate reporting by hiding behind trustworthy sources. One can argue that the trustworthiness of the source is even more important in this context than in Tuchman's (1972) classic model as journalists often have no knowledge of whether the number they are using is accurate, reliable or valid. The second performance roots their work in a "realism" that is integral to valid journalistic work and the genre of news itself. This attachment to the "real" does not come through the act of verification, as Shapiro et al. (2013) identify. Instead, it is rooted in the objectivity of numbers themselves. Using numbers in this way can be linked to a wider literature that positions numbers as a legitimation tool to separate out subjective opinions from a factual independent reality (Porter, 1995).

Furthermore, my research highlighted another way that journalists use numbers to demarcate the boundaries of their profession. They talked about how numbers allow them to relate suffering at a general level to the individual sufferer. In this way, they distinguished their work from genres with *only* the individual, such as magazine pieces about famous people, and from genres that *just* included numbers, such as press wires. Therefore, it can be argued that journalists constantly engage in a balancing representational act between the use of quantitative information and the use of the qualitative. In doing so, they distinguish themselves from other professions and establish their own important.⁷²

In this way, my interviews suggest that the way journalists use numbers during humanitarian crises may be better explained by what this thesis calls *quantification as*

⁷² Setting themselves apart from other "storytellers" is not just about the relationship between numbers and non-numbers, it also includes the length of the story, the format, the type of media, the focus, and so on.

strategic ritual. Journalists reporting on humanitarian crises quantify crises in a performative manner to establish the scientific nature of their work and its peculiar storytelling capacity. Quantification allows journalists to say “we are a scientific profession bound by scientific rigour” and “we provide explanations that harbour the quantified mass and the individualised specific”.

Given that journalists rarely check the numbers they use, however, they also hide behind their sources of information. This is particularly important for quantitative information when a limited number of sources are available. Whereas Tuchman (1972) refers to the presentation of two opposing sources, my interviewees generally explained that they protected themselves by using one trustworthy source. This switch from two sources to one source can be linked to a market-model trend of journalism that affords less time to fact checking and verification (Davies, N., 2009). To determine whether that source was trustworthy or not, these journalists constantly engaged in an act of hierarchisation of numerical sources. The importance of this structuring process is further underlined when we consider that journalists rarely engaged in a technical appraisal of the numbers they used.

There are obvious risks in relying on certain sources in this way and depending on numbers to contain an inherent facticity. As my content analysis in *Chapter 6* highlighted, numbers themselves have considerable power to frame crises in specific ways that risk misinterpretation of the causes, problems and solutions to crises. Furthermore, my case study analysis in *Chapter 7* highlighted how certain institutions and actors, especially the United Nations, used numbers for specific communicative goals. Whilst my interviewees did not necessarily cover these case studies, the argument put forward above highlights how their practice of using numbers could perpetuate these acts of governance. A counter-point to how journalists use numbers

during international crises is the utilisation of quantitative information during the NHS winter crisis.

NHS winter crisis journalists using data

Of the 16 semi-structured interviews, five journalists covered the NHS. Of these journalists, two identified as data journalists, two discussed and demonstrated sophisticated data practices and one journalist spoke of relying on quantitatively adept colleagues to collect and analyse data. These journalists spoke of using a wealth of publicly accessible data in their reports. Where data was not available, journalists spoke of freedom of information (FOIs) requests.

So, if you want to find a particular story you will need to write your FOI request, send it off, then you've got 20 working days till they respond. (J1, 2019)

Government stats and FOIs were massive untapped resources, especially back then, it is less so now. (J8, 2019)

The wealth of numerical information meant journalists could create data-driven stories. These can involve large-scale data analysis that draws from a number of different databases, such as a longitudinal study outlined by the reporter below

We looked at the last 12 rolling months. How many have been seen, for the whole of [region omitted], how many have been seen within the four hour window and how which trusts if any had met the four hour target on any given occasion and we were able to say that one trust has met it in three occasions in the last year or whatever it was. So that made a really good piece. (J1, 2019)

It was clear across the interviews that journalists coveted databases as reliable and trustworthy sources, especially when compared to numbers provided by actors and institutions. Most journalists treated their trust for data as matter-of-fact. But some explicitly explained their relationship to sources and data

NHS England occasionally send stuff out but more often than not we go and find the story in the data. They don't put out press releases saying "worst ever A&E figures", they just don't do it. So we will go and do that. They do put out stuff about extra money being invested in R&D or whatever, so sometimes we take it but it's not really a stat and more an announcement about money. (J1, 2019)

So all of the arguments like the IEA [Institute of Economic Affairs] make, where the NHS is too expensive, and therefore, we need to put in a system like the Americans. Well, that doesn't make any sense because they spend more than us. So it means that their arguments kind of fall down, because they're relying on these very superficial, non-contextualized analyses of the numbers. And they're relying on the ideas, which fall down any kind of scrutiny. (J3, 2019)

Whilst this split between numerical sources and databases is clear, being able to interrogate data relied on a certain degree of technical expertise.

Technical expertise

These statements, however, miss some of the nuance of how numeracy has spread across journalism. Over the past ten years or so, the rise of data journalism (and data

journalists) has allowed for certain journalists to specialise in using data. In doing so, they have become relatively sophisticated in their use of numbers.

I realised that more and more what I wanted to do could be found through spreadsheets, government statistical releases, things like that...I think I am proficient in finding my way around datasets. (J2, 2019)

These journalists talked of their experience and training in dealing with datasets and number-based stories and how increased funding from organisations have developed these skills

I really just self-taught myself how to use spreadsheets and raw data that as pumped out by all our public bodies and I did that for three or four years...[and then] The BBC about 4 years ago started investing in DJ so there were roles created across the BBC...the BBC has invested in training for DJ and stuff like that so there were opportunities to take hobby DJ and turn it into something a bit more solidified. (J2, 2019)

Most journalists hate numbers, so much. So I have always, I have an A-level in maths and statistics, I quite like maths. A lot of data stories, a lot of ONS stats, a lot of government statistics, so writing a lot of stories based on numbers... It was about the time that data journalism was really taking off as a separate thing with the Guardian data blog. (J8, 2019)

Needless to say, not all journalists are data journalists. In fact, both the data journalists interviewed covered the NHS. Across my interviews with journalists that covered the six international crises, none referred to specialist training in handling databases. Furthermore, some explained that the rise of data journalism had a negative effect on

their ability to use numbers. One journalist said that since the rise of data journalism, their technical expertise in dealing with numbers has decreased. They explained

My Excel skills used to be good and are now no longer good, they are ok. He [the data journalist] is an Excel Ninja. So what I got him to do with those ones is to show me and remind me how to do it. So I can do it myself now. But I will go to him with complicated Excel stuff because he is so capable at doing it. What will take him 20 mins will take me half a day. And even then I would want him to check it. (J1, 2019)

At least according to this journalist, the specialism of data journalism has made their skills in handling data worse. A similar explanation emerged from one of the data journalists I interviewed

We do the analysis and messing around with spreadsheets and we do it once for everyone rather than individual journalists spending time trying to figure out spreadsheets. (J8, 2019)

The increased specialisation of data journalists may have a negative effect on the numerical abilities of other non-data journalists as they outsource data stories to their better-trained and more experienced colleagues. Such a finding emphasises the continuing need to have numerical training as part of journalistic courses and training (Lugo-Ocando and Nguyen, 2015). But it also calls on journalism scholars to be more cautious with optimism about the potential of data journalism, especially if this type of data journalism is based on specialisation rather than general data skills for *all* journalists (Stalph, 2019). Nevertheless, the rise in technical expertise within a news organisation allows journalists to using quantitative information more proactively.

Why is data trusted over statistics provided by an institution?

The rationale for such a position was articulated along two lines: databases were positioned as apolitical and as rational (or unemotional). Returning to the extracts at the beginning of this section, we can observe the way data is seen to be apolitical.

NHS England occasionally send stuff out but more often than not we go and find the story in the data. They don't put out press releases saying "worst ever A&E figures", they just don't do it. So we will go and do that. They do put out stuff about extra money being invested in R&D or whatever, so sometimes we take it but it's not really a stat and more an announcement about money. (J1, 2019)

So all of the arguments like the IEA [Institute of Economic Affairs] make, where the NHS is too expensive, and therefore, we need to put in a system like the Americans. Well, that doesn't make any sense because they spend more than us. So it means that their arguments kind of fall down, because they're relying on these very superficial, non-contextualized analyses of the numbers. And they're relying on the ideas, which fall down any kind of scrutiny. (J3, 2019)

Both interviewees explicitly favour databases over press releases as the former does not "spin" the figures. A similar logic can be observed when journalists talked about databases and emotion. As the extract below highlights, journalists would refer to human emotion on the one side and numerical rationality on the other

Data journalism in that environment would use that context to go, strip out all the human emotion, what do the numbers tell us? (J2, 2019)

The extract above highlights the privileged position that databases occupy in the news-making process. It serves to describe the “reality” of the NHS winter crisis unclouded by human emotion, thought or judgement. This becomes even starker when we consider how the same journalist refers to personal anecdotes and case studies

If nine people in ten were not being seen within four hours then statistically you would say “yes that is a crisis” but two in every ten, in a statistical sense, is that a crisis? Well it’s subjective. And that is where the health debate is, it is a very subjective area full of emotion and full of very strong personal stories about people being kept on trollies for hours in corridors, not having food or the ability to go to the toilet. Stuff that is very degradable and powerful and that is what my profession inherently wants to do, it wants to tell powerful stories about human beings and that is where the statistics then used to back up those powerful human interest stories. - (J2, 2019)

These extracts highlight how journalists were far more comfortable talking about “data” as a “matter of fact” rather than a “matter of concern” (Latour, 2004). In doing so, they associated data with a scientific realism. Such a finding has been highlighted in the research into data journalism

Many data journalism projects may be argued to embody a form of what Desrosières (2001: 346) calls “proof in use realism”, or an attitude that “reality” is nothing more than the database to which they have access. According to such a view, data visualisations, data stories, data interactives may treat datasets and databases as self-evident collections of facts which designate different aspects of the world. (Gray and Bounegru, 2019: 366)

In taking such an approach, reporters often ignored a range of issues: “how and by whom it was generated, how it is used, what it shows and does not show, how it may

be manipulated, and the different kinds of biases, inequalities and injustices that it may give rise to” (Gray and Bounegru, 2019: 369).⁷³ Trusting the underlying logics of these datasets can be linked to aforementioned explanations regarding journalistic validity. The certainty of these databases intersects with journalistic notions of objectivity and accuracy, whilst the extracts below highlight the importance of data in contextualising and generalising the specific

We take readers very close to the action through human emotion and every so often we need to step back and say this is the bigger picture. (J2, 2019)

So if you have a case study saying “I had to wait 15 hours for a bed in A&E” now that might just be a one off because some things just don’t work for one person and it’s just an oversight. But if you are saying this person’s experience was also shared by one in twenty people who turned up in A&E this weekend then you are essentially saying that this is not an uncommon problem and their experience was horrendous but imagine that happening to lots and lots of other people as well. (J8, 2019)

In this way, data functions in a similar way to statistics to render journalists’ articles valid pieces of journalism. There were two journalists, however, that did talk of interrogating the underlying logics of databases.

Interrogating data

Whilst the other journalists spoke of using their quantitative skills to find and summarise key information from datasets, these two journalists spoke of critically

⁷³ As explained in the conclusion, some journalists did interrogate databases. But this was the exception to the rule.

interrogating the assumptions, concepts and definitions underpinning these datasets. One reporter discussed how they interrogated the 12-hour trolley wait statistic.

What we looked at specifically is what is often referred to as a trolley wait or a 12 hour wait so what people think of that traditionally is the time frame from which somebody enters A&E to 12 hours later and that's a massive misconception. Actually a 12 hour wait in the NHS England data, you could be there for 24 hours and then the doctor decides to admit you. And it is at THAT point the clock starts ticking to a further 12 hours. We found the number of people who had actually been in A&E for 12 hours and its was 100s of thousands of patients. (J16, 2019)

This reporter went on to explain that they had a particular system for analysing data: where did it come from?; how robust is it?; who paid for it?; is it a checkable number? (J16, 2019). On the other hand, none of my interviewees that reported on international crises identified as a data journalist or talked about being particularly adept with using numbers. It can be argued that this made it less likely that these journalists would challenge the numbers they received and even less likely to seek out and analyse databases or numerical reports.

But only interrogating numbers at a technical level runs the risk of treating databases “as a scientific encapsulation of complex realities into concrete, communicable figures” (Lugo-Ocando and Nguyen, 2017: 44). In this view, journalists focus on arriving at more accurate, more reliable and more valid numbers. This can often risk overlooking the way numbers relate to different discourses. One journalist covering the NHS winter crisis identified the way that numbers inform, underpin, construct and maintain certain discourses.

And this is the thing, this is where fact checking is a really interesting thing. Because, you know, if Jeremy Hunt says the NHS budget is 136 billion, or whatever it is, then, you know, yes, yes, you say he is correct. I have checked that fact and it is correct. But that's not analysis. What does that number mean? How does that fit into the context of other numbers surrounding it? How does it fit into people's experiences? How does it fit into other health services? How does it fit? (J3, 2019)

This reporter makes a clear distinction between the technical accuracy, validity and reliability of a number, on the one side, and the way that numbers intersects with experience, discourse and governance, on the other. Even though these two journalists addressed both technical and discursive aspects of data, it did not mean that they could tell any quantitatively based story that they wanted. In fact, journalists covering the NHS winter crisis spoke of the way their work was structured by the data they used.

Journalists structured by data

In general, journalists spoke of the difficulty in stepping outside the four-hour wait target when reporting on the NHS. One journalist explained that other quantitative measures were more informative about the health of the NHS.

You take figures regarding delayed transfer of care. So they are figures where patients are fine to go home but there is no care plan in place because social services haven't got enough staff to give that person enough care in the community that is required so therefore they end up bed blocking. (J2, 2019)

This means shifting away from focusing on those seen at A&E departments towards those who cannot be discharged from hospitals. In doing so, there is an emphasis on a more systematic or mechanical explanation of hospital performance. As one journalist explained

So if you think about hospital as a system you have the front door, the hospital itself and you have the backdoor. They work based on a flow of people through the front door, through the middle of the hospital and then successfully out the back. So if you get a blockage at any of those situations then that's when you get that sort of backlogging [delayed transfers of care] and it all piles up at the front door of the A&E. (J1, 2019)

Taking this approach is particularly informative when we consider winter pressures on hospitals. The conventional logic is that rising A&E attendances lead to a crisis. In fact, as one reporter pointed out, the highest numbers of attendances actually occur in July each year (J2, 2019). It is not the number of people but the type of people and the medical problems they present. The winter period witnesses a rise in elderly patients entering A&E with medical problems that often require them to be admitted to hospital. The complexity of the cases and the age of the patients often means that they cannot be sufficiently cared for outside of the hospital due to cuts in social care provision.⁷⁴ This means that the figures were delayed transfer of care spike and then A&E departments struggle to deal with new cases that require admission (J8, 2019). But journalists spoke of the difficulties in telling this data story. Some pointed to the time delay in when the figures are published explaining that “the data is historic” so it is “often too late to be of any use” (J1, 2019). But others pointed to more pressing

⁷⁴ Funding for the NHS and funding for social care (including care for the elderly at home) are separate budgets. The former has been somewhat protected, whilst the latter has been cut during austerity-era politics.

issues regarding the difficulty in telling this data story. For one journalist, the numbers are “meaninglessly large” because they are expressed as a total number rather than as a percentage (J1, 2019). They go on to explain that human stories to develop the data were often difficult to find because patients often did not know that they were “bed blocking” (J1, 2019). But perhaps most importantly, delayed transfers of care were not as relatable as A&E waiting times. As one journalist explained

The reporting of A&E is a story every reader, every viewer, every listener can relate to because most of us have been there ourselves, with a loved one or a friend. We’ve all had that experience of being at the hands of the NHS during an emergency. (J2, 2019)

Taken together, journalists struggle against the ease at which the four-hour wait target can be told. This is, in part, because of the way this indicator has become naturalised within the discourse surrounding the NHS. Such is the centrality of this number in public discourse that the four-hour wait percentage is often conflated with the state of NHS hospitals. To understand why, we need to acknowledge the political history of the four-hour wait target. In 2002, at the dawn of the digital-era governance, the Labour government introduced the four-hour wait target as an indicator of hospital performance. The initial target was initially set at 100%, reduced to 98% in 2004 and reduced again to 95% in 2010 by the Conservative government. It remained at 95% through the 2010s. This target has been used by journalists over the past decade to criticise the incumbent government for consistently missing their own targets on healthcare.⁷⁵ Such is the significance of this criticism that the Conservative Party and the NHS have re-iterated their plan to change the four-hour wait target to a more

⁷⁵ The annual figure has not been met since 2013.

suitable measure of A&E performance. They argue that more clinically appropriate alternatives should be adopted that better gauge the quality of healthcare across NHS Trusts and not just in Accident and Emergency departments (Iacobucci, 2019; Donnelly, 2019; The NHS National Medical Director, 2019).⁷⁶ This process of naturalisation is not just a political story, it also relates to the way the four-hour wait target is relatively simple and relatable as a measure of public health.

Whilst this story could be about the tug-of-war between journalists and the government/NHS, it highlights the way that data itself can govern by structuring practices, institutions, discourses and policy. In this way, we can begin to think of certain data points possessing more “power” than others because of their communicative potential (as well as their political significance).

When we take these findings as a whole and relate them to the way journalists use numbers during humanitarian crises, stark differences are evident. Those covering the NHS rely on technical expertise and quantitative-discursive awareness to produce stories from publicly accessible databases that both describe the dataset but also question its underlying logic. Whereas those covering international crises engaged in *quantification as a strategic ritual* where they used numbers to reinforce notions of accuracy and storytelling, whilst relying on a hierarchy of trustworthy sources to protect themselves from criticism.

⁷⁶ A number of different alternatives have been suggested. A report with recommendations from NHS England was due to be released in March 2020 but has been delayed to October 2020 with the current pandemic.

Conclusion

In this chapter, I began by providing an overview of how journalists talk about numbers in publicly accessible interviews. Their emphasis on the importance of data journalism due to its ability to tell data stories and tap into the “reality” of a situation lays the foundations of the semi-structured interviews conducted by myself. These two data sets of interviews were used mainly to address SRQ2 yet also touched upon SRQ1 and SRQ3. Most of these interviews (n=11) were with journalists covering international crises that did not identify as data journalists or speak about using data in their reports. The analysis highlighted how journalists covering humanitarian crises relied on trustworthy sources to provide accurate and reliable numbers rather than checking the numbers themselves. To decide whether a source was trustworthy or not, journalists relied on the track record, level and type of advocacy and the experiences “on the ground” with their sources. Most often this meant relying on information from the United Nations system or INGOs. Ranked above even the most trusted source were databases, discussed as accessing a truth that statistics could not.

The next section looked to address the question: *why do journalists not check the numbers they use?* Here, I argued along four lines. The first centred on a lack of technical training and confidence in using numbers. The second, third and fourth related to journalistic validity: numbers are needed to construct news stories, numbers are used to present a science-styled article and numerical sources are useful to “hide behind” so reporters avoid flak.

I then placed these findings in relation to existing work on “strategic rituals”. I presented an iterated version of this literature that emphasises *quantification as strategic ritual* in journalists’ coverage of humanitarian crises. This model incorporated the way numbers are essential to the news-telling process and how they are utilised as

symbols of science-style credibility. But it also addresses the way journalists need to protect themselves from flak (because they do not check numbers) by constructing a hierarchy of trustworthy sources. Set within the wider context of my thesis, *quantification as strategic ritual* affords a considerable amount of power to the United Nations and “non-advocacy” INGOs. The quantitative information being provided by these sources seem to get a free ride through the news making process to construct and dictate narratives within articles about humanitarian crises. This can be explicitly observed in *Chapter 7*.

The final section focused on my face-to-face interviews with journalists who covered the NHS winter crisis and, in doing so, used a wealth of data. Utilising this data in their reports rested on a proficiency in data handling yet they spoke of how this technical expertise was not evenly spread through the newsroom. These reporters spoke of trusting data over numbers from institutions or actors due to the apolitical and rational nature of datasets. In doing so, they rarely challenged the underlying logics of these databases. There were two exceptions to the rule, however, who spoke of a technical and discursive interrogation of the numbers they dealt with. In part, the interviews with these journalists provide a counter-point to the interviews with those covering international crises.

Chapter 9. Conclusion

Introduction

The following chapter will set the findings from my previous three empirical chapters in relation to the opening three theoretical chapters to develop answers to my three research questions. As the coverage of international crises was the main focus of this thesis, this part of this conclusion will answer SRQ1, SRQ2 and SRQ3 by referring to these findings. I will outline the way numbers are important to international crisis journalism (SRQ1) in regard to frequency, representation and practice. Then I will highlight how journalists use statistics by drawing on what this thesis calls “quantification as strategic ritual” (SRQ2). Finally, I will document the way crises are managed by referring to “quantitative-discursive humanitarian governance” (SRQ3). Following these initial sets of answers, I use the second half of this chapter for a comparative account of the coverage of international crises and the NHS winter crisis. This comparison initially follows data utopian narratives regarding the normative superiority of data journalism. But this is followed by a more critical examination of how journalism is structured by data, context and the sources they attempt to critique. Through this comparison, I conclude by suggesting potential improvements within journalism that handles quantitative information. This is then followed by outlining future research on this topic. In doing so, I address the limitations of this research design.

Comparing international and domestic crises

The majority of my analysis was concerned with international crises. Of the seven humanitarian emergencies, six were international crises: the Manus Island refugee detention centre, Hurricane Irma, La Puebla quake, Rohingya refugee crisis, Yemen and the South Sudan famine. This was reflected in the split of my corpus - international crises contributed 913 articles to the total corpus (n=978) – and in the participants in my interviews – 11 of the 16 interviewees covered one or more of the six international emergencies. A small, but significant, part of my research design focused on the NHS winter crisis, declared a “humanitarian crisis” by the British Red Cross (2017). This emergency made up a relatively small number of articles in my corpus (65 out of a total of 978) and provided a small proportion of the interviews conducted (five of the 16 interviews). Despite this empirical imbalance, the NHS winter crisis provided a continual counter-point to the findings from the international crises across *Chapters 6, 7 and 8*. Therefore, the final section is dedicated to providing more nuanced answers to the three sub-research questions through a comparative approach.

SRQ1: Importance of numbers

Across both the NHS winter crisis and the international emergencies covered, my thesis provides a clear set of answers to my first sub-research question: how important are numbers in the reporting of humanitarian crises? If we equate importance with frequency, my content analysis in *Chapter 6*. showed that 94% of the articles in my corpus had at least one statistic.⁷⁷ This is somewhat higher than previous studies

⁷⁷ As explained in Chapter 5., this does not include other numbers that are not classified as “statistics”. Therefore, we would expect this percentage to be even larger if these were included.

conducted across news genres as a whole (Zillman and Brosius, 2000; Maier, 2002; Brand, 2008; Cushion et al., 2017). Whilst it could be argued that this means numbers are even more important in humanitarian crisis news than other types of news, this would be an erroneous conclusion. The definitions of “statistics”, “mathematical elements” or “quantitative information” used in these studies are not standardised so a direct comparison is not advised.⁷⁸ Nevertheless, the fact that nearly 19 in every 20 articles had at least one statistic does emphasise the importance of numbers.

But importance is not just about frequency, it can also refer to the way numbers function representationally. My framing analysis in *Chapter 6*. and my case study approach in *Chapter 7*. demonstrated the power that numbers have in news reports to dictate certain narratives during emergencies. The framing analysis provides statistical support to existing work within journalism studies that examines how numbers inform or underpin discourses by quantifying a “problem” and presenting a numerically expressed “solution” (Lugo-Ocando and Brandão, 2016; Lugo-Ocando and Lawson, 2018). The case study approach provides a possible blueprint for tracing the meaningful nature of numbers. Drawing inspiration from Merry (2016) and Dorling and Simpson (1999), I present a “life-cycle” approach to three numerical examples that examines why the number(s) was produced, how it was produced, how it was communicated and when it ceased to become relevant.

Beyond frequency and representation, we can identify the importance of numbers in testimonies from journalists. My interviews in *Chapter 8*. point towards the considerable role quantitative information plays in underpinning the credibility and validity of journalism itself. This functioned in a scientific-style capacity by

⁷⁸ Part of the methodological contribution of this thesis was to clearly outline a typology of quantitative information so these analyses could be standardised according to a set definition.

underpinning claims of rigorous, research-based journalism *and* in a genre-defining capacity in establishing journalism as something about the specific and the general. Such findings develop the existing working that emphasises the importance of numbers in establishing journalistic objectivity and accuracy (Ahmad, 2016) but also recognises other ways it establishes the boundaries of the profession of journalism. Across these three definitions of “importance”, it is clear that numbers are central to humanitarian crisis journalism in a domestic and international setting. How, then do my findings relate to my other two research questions: SRQ2 - How do the use of numbers relate to the norms, practices and rituals of journalism? SRQ3 - How does the use of numbers by the UK news media relate to the management, intervention and policing of humanitarian crises? There is a stark difference between the NHS winter crisis and international emergencies. It is through this difference that questions for both research questions are developed.

SRQ2: Journalistic practice

During international emergencies journalists almost always received statistics via press releases or direct communication from large humanitarian organisations and supranational organisations (e.g. the United Nations). If these statistics came from trustworthy sources, they were then used uncritically by the reporter. This flow of quantitative information through the news-making process reflects the narrative presented in much of the work done on journalists’ use of statistics (Ahmad, 2016; Berger, 2009; Cushion et al., 2017; Lugo-Ocando, 2015). As this conflicts with basic tenets of journalism such as *verification* and *acting as a watchdog* (Kovach and Rosenstiel, 2007), how can such a practice be explained?

My interviews point towards a lack of technical expertise or confidence in interrogating numbers. Such a finding lends weight to existing work that emphasises the need for better quantitative education and training of journalists (Lugo-Ocando and Nguyen, 2015; Lewis, N. et al., 2020). Such a view holds that journalists *would* challenge numbers if they *could*. But my interviews also highlight the way journalists may not seek to challenge numbers because they are so integral to the profession of journalism itself. Journalists spoke of the way numbers added “credibility” to their work or symbolised that they “had done their research”. In this way, quantitative information served a vital role in shoring up key journalistic notions of truthfulness and accuracy (Shapiro et al., 2013). But numbers were not just used in such a scientific-like fashion, journalists also spoke of the way quantitative information was important to tell humanitarian crisis news stories. For many, the ability of numbers to generalise the suffering of an individual was a fundamental part of their storytelling repertoire. Such a finding emphasises the need for increased research on the way numbers function within journalism as non-metrological symbolism (van Dijk, 2000; Lule, 2001).

Whilst quantitative information clearly played a highly symbolic role for journalists, interviewees did acknowledge that this rested on somewhat shaky foundations. As they rarely checked the numbers they used, reporters relied on a hierarchy of trustworthy sources to stand in for the accuracy, reliability and validity of the number. This follows a long tradition of literature that points to journalists’ over-reliance on their sources (Tuchman, 1972; Reich, 2011) and particularly numerical sources (Van Witsen, 2018). But my interviews also identified particular criteria that structured the hierarchy of sources: the track record of the source, how much advocacy the source engaged in and experience the journalist had on-the-ground with that source.

Taken together, this thesis contends that we can see journalists' use of numbers during humanitarian crises as "quantification as strategic ritual". This concept emphasises the symbolic role of numbers in affirming journalistic accuracy and storytelling modes and the way that relying on numerical sources "stands in" for the practice of checking numbers that are used. Clearly, this concept owes a considerable debt to the work of Tuchman (1972) and Shapiro et al. (2013) yet also provides a specific iteration of their concepts that focuses specifically on numbers.

When we consider how the NHS winter crisis was covered, the *quantification as strategic ritual* model partially applies to those covering the NHS in the way some journalists rely on the underlying logics of databases and the ability of this data to confer credibility and aid storytelling. However, the distinct lack of criticality towards information from institutional sources was not observed in those covering the NHS. In fact, these reporters spoke of almost always distrusting statistical sources and relying on databases instead. Furthermore, two journalists identified how they technically and discursively interrogated the data they used.

SRQ3: Management of crises

The journalistic practices outlined above in regard to international crises allocate a large amount of power to reporters' sources. This can be observed in the quantitative discourses that reporters reproduce in their news articles. These discourses often construct crises in ways that validate interventionist policies by the United Nations, INGOs and other supranational organisations. As my content analysis highlighted in *Chapter 6.*, statistics generally function to present the crisis in terms of a *problem with population*. As my case study in *Chapter 7.* highlighted, this *population problem* frame

was often used to emphasise the need for humanitarian intervention. This can sometimes mean that organisations communicated misleading figures to exaggerate the scale of the crisis. During the cholera epidemic in Yemen, the United Nations and other large INGOs only referred to “suspected cases” of cholera rather than the case-fatality ratio. In doing so, they presented a misleading narrative about the scale of the epidemic in order to attract more political and financial support. This instrumental use of numbers adds to a long list of exaggerations made by those within the international community to legitimise specific interventionist policies (De Waal, 1997; Dijkzeul and Sandvik, 2019; O Grada, 2009).

But not all quantification is communicated in such a strategic fashion. The second case study presented in *Chapter 7* placed emphasis on the way that quantification structures humanitarian action through banal, background processes. The way economic classifications of nation-states related to international rules on aid spending operated as part of the international humanitarian infrastructure until an anonymous source leaked the OECD rules to the press. This brought this quantitative structure to the foreground of public discourse. After initially denying the impact of these rules on aid spending, the UK government successfully lobbied to change these restrictions. In doing so, this relationship between macro-economics and emergency financial flows returned to a background process.

This example emphasises two things. For those looking at how organisations communicate numbers during humanitarian crises, more attention must be paid to the way quantitative structures function within public discourse. Whilst those conducting work on the quantification of the humanitarian sector must set these indicators, metrics, rankings and classifications within a discursive structure that can draw attention to, and change, how quantification functions (Espeland, 2015; Merry, 2016;

Merry et al., 2015). We can combine both of these recommendations into a concept of “quantitative-discursive humanitarian governance” that combines communication and power into a framework that acknowledges instrumental uses of numbers as well as quantitative structuring.

When we consider the NHS winter crisis, journalists did a better job at holding power to account by providing counter-institutional narratives. This was shown in the amount of direct challenges in the coverage of the NHS winter crisis identified in my content analysis from *Chapter 6*. But perhaps most obviously, it is evident in the way the two data leaks functioned within news reporting. This information provided clear counter-points to the official narrative regarding the state of the health service. Whilst data does not always come from leaks, the journalistic practice of using data to counter official narratives and hold power to account fits within the pattern of literature on data journalism (Anderson, C.W., 2018; Borges-Rey, 2016; Coddington, 2015a; Brandão, 2019).

What does this say about quantification, crises, communication and power?

The answers to my three SRQs point toward the coverage of the NHS winter crisis as an example of how journalists challenged quantitative-discursive humanitarian governance. In doing so, it would support the literature calling for the statistical education and training of journalists (Lugo-Ocando and Nguyen, 2015), whilst providing pertinent examples for those lauding the importance of data for journalism (Robinson, S. et al., 2014; Gray and Bounegru, 2019). But such a conclusion would be cursory and misplaced. Exerting power through the communication of numbers still

exists within data journalism, just in a different form. As Kitchin (2014: xv) explains, data reshapes “how knowledge is produced, business conducted, and governance enacted.” To interrogate this notion within the context of my thesis, we can reflect on the way “power” functioned within two examples concerning data (rather than statistics) from my empirical work: the publicly accessible data from the NHS and the OECD rules on international aid during crises.

Both forms of quantification went through a process of *naturalisation* where a phenomena was placed within a specific set of categories, these categories used as part of a quantitative analysis and then the logics of this classification becomes reified and “black-boxed, unquestioned and naturalised” (Lowrey and Hou, 2018: 15). This can be observed within the four-hour wait target that was most frequently relied upon by journalists in their reporting of the NHS. This indicator has come to symbolise the health of the NHS in such a way that a rise or fall in this statistic often dictates the positive or negative narratives that are produced. In doing so, journalists often ignore the range of other measures available regarding the performance of NHS Trusts: cancer waiting times, number of cancelled operations, the 12-hour trolley wait times and so on.⁷⁹

A similar process of “naturalisation” can be observed when we consider the OECD rules on international aid spending. The quantitative logic that restricted aid spending during Hurricane Irma was based on macro-economic classification of each nation-state’s Gross National Income (GNI) per capita. If a country fell below a certain threshold, they did qualify for financial support from aid budgets but if they were above this threshold, they did not. Logically, this system makes sense: make money available

⁷⁹ Most journalists are aware of this. In fact, many display an acute knowledge of the alternative indicators available and the way these indicators do not always match with “reality”.

to countries who need more economic support. And this is where the conversation within the news media took place: should countries that fall just above that threshold be allowed the financial support reserved for those that fall below it? But the quantitative logic of GNI, or its earlier incarnation GDP, was rarely questioned. A group of literature has presented challenges to relying on these macro-economic indicators within international development, arguing that they are overly simplistic, unreliable and often misleading (Fioramonti, 2013; Fioramonti, 2014; Fioramonti et al., 2019; Jerven, 2013; Philipsen, 2015). Nevertheless, per capita macro-economic statistics are regularly conflated with the economic wealth of a particular nation.

When quantitative constructs are treated as *natural* and *real* as the things they are quantifying, they often have considerable power to structure the practices, institutions, policies and discourses (Porter, 1995: 42). Levay, Jonsson and Huzzard (2020) point towards Chua's (1995) example of Australian healthcare. They explain that when "account systems based on diagnostic-related groups (DRG) were introduced in Australian hospitals, patients were transformed into consumers, doctors into resource managers, and administering a public hospital was equated with managing a private enterprise" (Levay, Jonsson and Huzzard, 2020: 3).

We can observe how data structures actors, institutions and journalists during the NHS winter crisis in a similar way. When the four-hour wait target was created, it was not designed to undermine the austerity politics of the Conservative Party during the 2010s. It was created by a Labour government as part of a new push towards accountability and transparency in the early 2000s. Nevertheless, the way this indicator encapsulates public health performance meant that the power of the dataset expanded beyond the specific goals of the political party that introduced it. It was so well established that it continued to operate as a standard against which the

subsequent government was to be judged. The power of this indicator became particularly important from 2013 onwards when the annual four-hour wait target was continually missed. But the UK government are not powerless in this dynamic. In fact, they have the power to change this quantitative structure.

The Conservative government are working towards the replacement of the four-hour wait target with an indicator that is more clinically (and definitely more politically) suitable. Whilst they were successful at changing the international rules on spending, allowing them to provide aid during emergencies to certain countries in the future if they had recently graduated to a middle-income country. Nevertheless, on both occasions the government were operating within, and working against, a quantitative structure. But this structure did not just dictate how the government could act, it also effected the ability of journalists to report. As reporters explained in *Chapter 8.*, the four-hour wait target was an easier quantitative base story to tell than other metrics or indicators that would be more informative to the public. The most pressing example being the quantitatively tricky news story regarding the people “blocking beds” in NHS hospitals because they cannot be discharged into the community.

Similarly, journalists and their sources (governments, powerful actors, large institutions etc.) were structured by the GDP-based threshold logic for international aid spending. The OECD classification was not created to undermine British attempts to provide aid to overseas territories during Hurricane Irma in 2017. Instead, it was geared towards the organisation of nation-states into specific economic groups in order to dictate where aid budgets could be spent. By the time Hurricane Irma occurred in 2017, this quantitative structure meant that it seemed normal for Britain’s aid budget to be restricted in this way. So normal, in fact, that it was only when an anonymous source leaked this information to the press that the Conservative government began

applying political pressure to try to change these international rules. Whereas the change to the four-hour wait target is still in progress, the UK government were successful at changing the rules around international aid. In doing so, they alleviated some political pressure by opening up a large source of money to their overseas territories during future natural disasters.

This comparison brings us to an evaluative juncture that asks an important question: in the communication of data, where does the power lie? It is clear that data has the power to structure the actions, discourses and institutions of powerful actors and organisations, and journalists themselves. But the degree to which this data can be changed by the organisations and actors they structure is weighted heavily in the favour of powerful governments. As shown in the two examples, governments can alter the quantitative logic of datasets by applying political pressure (OECD rules) or through a political mandate to a quasi-public body (NHS 4-hour wait). Journalists, on the other hand, can only change the quantitative logic of databases by applying pressure on government and supranational bodies to do so.

Therefore, if journalists use publicly available data to critique an organisation, and this organisation can change the quantitative logic of this data to suit their needs, power lies in the following order: those who produce data, the data itself and the journalists that use data. That is not to say that power *always* lies in this order. At certain moments, data can exert a great degree of influence over policy and reporting in a way that structurally favours journalists or their sources. At other moments, data is massaged, manipulated or erased by the organisations that produce it. Therefore, the site of power must always be understood from within a specific context and over a prolonged period of time.

What can this say about better quantitative journalism?

Given this conclusion about “power”, what are the possibilities for better quantitative journalism? At a fundamental level, there are merits to improving journalists’ ability to deal with numbers. Journalists covering international crises need to improve their basic ability to deal with quantitative information. But these technical skills must be matched with an understanding of the discursive capacity of numbers. This understanding will help journalists identify the strategic use of numbers but also how they structure issues in particular ways.

When these two aspects are brought together, journalists can improve their quantitative-based journalism. If we take the cholera epidemic in Yemen as an example. A technical awareness of cholera data would help journalists to identify the lack of information regarding the case fatality ratio and a discursive awareness would allow them to better understand *why* these numbers were not being communicated by the humanitarian organisations. Once they identified the story of “suspected cases” and “case fatality ratio”, they could use their technical skills to tell a quantitatively informed story about cholera management in Yemen.

These two suggestions are about emphasising the importance of existing research around statistical literacy (Maier, 2002; Maier, 2003) and statistical discourse (Ahmad, 2016; Lugo-Ocando and Brandão, 2016). In many ways, this involves pushing journalists who cover international crises to be more like data journalists covering the NHS. Taking this approach inevitably frames my suggestions within a data-utopian discourse that pervades much of the contemporary discussions regarding data journalism (Brandão, 2019). Whilst there is some truth to these optimistic accounts, data journalism should not be the end-point for better quantitative reporting.

Yes, data journalists have a great deal of expertise in “back-end” and “front-end” journalism but these skills are almost always deployed in comprehensive explanations of *what* has happened, *where* it has happened and *when* it happened. They all-too-often neglect the “why and how questions” (Cox, 2015). To answer these questions, journalists need to develop their technical expertise even further by learning and utilising modelling, regressions and other “causal” or “predictive” quantitative analysis. With these skills, journalists can bring together disparate datasets to determine mathematical connections and relationships between often disconnected sets of information. In respect to the NHS, for example, they could use funding for local NHS Trusts and local NHS Trust performance to determine whether finances can be linked to better public healthcare. The same analysis could be conducted on similar healthcare systems in other countries to provide comparative cases. In doing so, reporters can disrupt the quantitative dominance of the organisations producing that data.

Added to this, journalists need to find better ways to tell awkward quantitative stories. Take the example of the delayed transfers of care and bed blocking. All the journalists agreed that these numbers were more informative about the health of hospitals but they lamented the issues of telling these stories. They explained that the numbers were meaninglessly large, the audience had an inability to relate to the figures and their own difficulty in finding individual stories to sit alongside the data. This particular quantitative story could better be told in a more holistic quantitative account of hospitals, emphasising visually the people going into hospital, the people staying in hospital and the lack of people leaving hospital. Alongside this, journalists need to dedicate more time to finding personal stories. This could be done by working

backwards from those discharged into nursing homes or working alongside social services to identify pertinent cases.

Whilst both of these suggestions call on data journalists to go even further within their technical and discursive ability with numbers, a fundamental issue must also be recognised: most publicly available databases are produced by the organisations that they quantify. Therefore, journalists exist within a quantitative structure that can be changed and manipulated by the very actors and institutions they look to criticise. To tackle this problem, journalists need to campaign for better quantitative practices of public institutions. There is a strong case to be made that independent organisations should collect, analyse and disseminate data on public bodies. In doing so, there would be less room for government bodies to change the underlying logics of the database to suit their political needs. Whilst such a proposal may seem unnecessary or inappropriate, journalists can place this policy change as the natural progression of the FOI and open data movement beginning at the start of the 21st century. Without these changes in quantitative policy, journalists will always be at the mercy of the organisations they attempt to keep in check.

Further research and limitations

Despite the important empirical and theoretical contributions made in this thesis, there are certainly some limitations to my research design. These limitations will form the basis to my suggestions for future research. At a fundamental level, future research needs to adopt a clearly comparative account from the beginning. This would avoid the sampling imbalances of texts and interviews evident in this research design. In

doing so, future research can develop the concluding explanations presented in this chapter.

However, just adopting a comparative approach does not address the problems of particular methods in my mixed-methods quantitative-qualitative research design. I examined quantitatively based discursive structures by looking at news stories, located flows of information and locations of power through case studies, and used interviews to better understand how journalists deal with this quantitative information. But these methods have certain flaws.

My work says nothing about the audience of these discourses and does not include human-based research with those communicating the quantitative information that journalists draw upon. Furthermore, my research was not geared towards a historical account of numbers – an area that became increasingly important in my concluding discussions regarding power. Therefore, additional methods will be needed for any future research. Insights from the audience can be gleaned through focus groups, a method that is particularly viable for COVID-19 due to the significantly wider exposure of the audience to coverage of the virus. Furthermore, the scope of human-based research can be expanded to include people who communicate findings from scientific research and those using the language of science to discuss public health policies. In doing so, a more holistic understanding of how quantitative information functions within crises can be constructed.

Concluding remarks

This thesis has attempted to tackle an often misunderstood and under-researched aspect of humanitarian communication in journalism and media studies: the way numbers function discursively. In a time of increasing media audience fragmentation, public de-politicisation, foreign policy isolationism and national populism, and growing compassionate fatigue towards tragedies in the Global South, awakening the public imagination and strengthening global empathy towards those in distress is an urgent moral task for activists, scholars and the common citizens.

As we have seen in this thesis, numbers are perhaps one of the most important elements of modern humanitarian communication. One that allows for journalists to move from the visceral, individual accounts of horror to a notion of a collective, shared horror that affronts a mass. They do so by saying “how many people have experienced this horror?”, helping us rank, order and categorise different types of experiences during crises. But the quantitative also seeks to represent the collective nature of the horror in question as it rests on the very logic that individuals share an experience.

In this sense, in a communication system where a multitude of crises from all corners of the earth exist within a single mediated reality, the ability of numbers to function in this way is more important now than ever before. Therefore, instead of seeing numbers as morally and politically deleterious, as much of the literature on mediated ethics has done, there is an increasing recognition that these quantitative elements play a vital role in the contemporary mediation of suffering.

As noted by Silverstone (2007; 2003), numbers help to achieve “proper distance” from suffering. But they also underpin, according to Frosh (2011), the sense of accumulation of the tragedies we face as a human society, which is central to a “phatic” response from the audience. My thesis sits somewhere between the two. Despite all

the criticism we can formulate against the way these numbers have been historically and presently abused by those seeking to push for intervention, to engage with humanitarianism today means also engaging with numbers, not rejecting them.

Quantification, for all of its baggage as a device of management and control, can be also a process that informs us about, and helps us to engage better with, human suffering and recovery. Indeed, if my thesis has shown anything, it is precisely that numbers can also create new meaning, alter existing frameworks of meaning and even open up spaces for other forms of representation to thrive. If my work here contributes somehow towards that end, I would be more than satisfied that it was worthy of the effort.

Bibliography

News articles

- AAP. 2017. *UN Warns Of Looming Humanitarian Crisis On Manus Island*. [Online]. [Accessed 22nd September 2019]. Available from: https://www.huffingtonpost.com.au/2017/10/18/un-warns-of-looming-humanitarian-crisis-on-manus-island_a_23247316/?guccounter=2
- AFP. 2016. *UN removes Saudi-led coalition from child rights blacklist*. [Online]. [Accessed 4th February 2020]. Available from: <https://arynews.tv/en/un-removes-saudi-led-coalition-child-rights-blacklist/>
- Amnesty International. 2017. *Yemen: UN downplays Saudi Arabia-led coalition's crimes against children*. [Online]. [Accessed 3rd February 2020]. Available from: <https://www.amnesty.org/en/latest/news/2017/10/yemen-un-downplays-saudi-arabia-led-coalitions-crimes-against-children/>
- Anderson, C. 2008. *The End of Theory: the data deluge makes the scientific method obsolete*. [Online]. [Accessed 12th January 2020]. Available from: <https://www.wired.com/2008/06/pb-theory/>
- Bawden, A. 2017. *'Care work is tough. We should not be paying minimum wages.'* [Online]. [Accessed 12th November 2019]. Available from: <https://www.theguardian.com/society/2017/jan/10/homecare-future-local-authority-funding-cuts-david-miles-interview>
- BBC. 2017b. *'Mass Hindu grave' found in Myanmar's Rakhine state*. [Online]. [Accessed 29th March 2019]. Available from: <https://www.bbc.co.uk/news/world-asia-41384457>
- BBC. 2017c. *NHS conditions worst ever, say leading nurses*. [Online]. [Accessed 1st July 2019]. Available from: <https://www.bbc.co.uk/news/health-38570177>
- BBC. 2017d. *South Sudan no longer in famine*. [Online]. [Accessed 29th September 2019]. Available from: <https://www.bbc.co.uk/news/world-africa-40352926>
- BBC. 2017e. *Yemen cholera cases reach one million - ICRC*. [Online]. [Accessed 1st July 2019]. Available from: <https://www.bbc.co.uk/news/world-middle-east-42440805>
- Black, I. 2016. *Rights groups condemn removal of Saudi Arabia from UN blacklist*. [Online]. [Accessed 4th February 2020]. Available from: <https://www.theguardian.com/world/2016/jun/07/rights-groups-condemn-removal-of-saudi-arabia-from-un-blacklist>
- Bodkin, H. 2017. *Don't blame the elderly: only one in five A&E patients are pensioners, says former Health Secretary*. [Online]. [Accessed 1st October 2019]. Available from: <https://www.telegraph.co.uk/news/2017/01/16/dont-blame-elderly-one-five-ae-patients-pensioners-says-former/>
- BVI News. 2017. *4,240 houses reported damaged or destroyed in BVI*. [Online]. [Accessed 22nd September 2019]. Available from: <https://bvinews.com/4240-houses-reported-damaged-or-destroyed-in-bvi/>
- Campbell, D. 2017. *Hospitals 'dangerously full' during winter crisis, says think tank*. [Online]. [Accessed 29th March 2019]. Available from: <https://www.theguardian.com/society/2017/jan/28/hospitals-dangerously-full-during-winter-crisis-says-thinktank>
- Chamberlain, G. 2017. *Family's tragic tale is a reality for millions as South Sudan is gripped by famine and civil war*. [Online]. [Accessed 12th September 2019]. Available from: <https://www.mirror.co.uk/news/world-news/familys-tragic-tale-reality-millions-10681739>

Children and Armed Conflict. 2016. *Shock at the Scale of Grave Violations Committed Against Children in 2015*. [Online]. [Accessed 31st January 2020]. Available from: <https://childrenandarmedconflict.un.org/2016/06/shock-at-the-scale-of-grave-violations-committed-against-children-in-2015/>

Clarke-Billings, L. 2017. *Mexico earthquake: Powerful 7.1-magnitude tremor 'traps workers in burning buildings' killing 'at least 44 people' on anniversary of massive quake*. [Online]. [Accessed 29th March 2019]. Available from: <https://www.mirror.co.uk/news/world-news/earthquake-mexico-buildings-sway-powerful-11203083>

Cockburn, H. 2017. *Hurricane Irma: For first time in 300 years, there is no one living on the island of Barbuda*. [Online]. [Accessed 22nd September 2019]. Available from: <https://www.independent.co.uk/news/world/americas/barbuda-hurricane-irma-300-years-no-one-living-ronald-sanders-gaston-browne-a7949421.html>

Collman, A. and Graham, R.F. 2017. *'Nowhere in the Keys will be safe': Irma will strengthen to a Category 5 storm when it hits the US mainland as 1.4m terrified Floridians and Georgia are ordered to abandon their homes*. [Online]. [Accessed 2nd April 2019]. Available from: <https://www.dailymail.co.uk/news/article-4863996/Florida-Georgia-brace-arrival-Hurricane-Irma.html>

Davies, G. and Burns, I. 2017. *Boots on the ground: Royal Marines get to work in Barbados bringing relief to Hurricane Irma victims as 200 more troops are sent to the disaster zone*. [Online]. [Accessed 1st July 2019]. Available from: <https://www.dailymail.co.uk/news/article-4870124/Royal-Marines-work-Barbados-wake-Irma.html>

De La Mare, T., Stubbs, G. and D'Arcy, S. 2017. *UK territories devastated by Hurricane Irma 'too wealthy' to tap into foreign aid budget of £13billion*. [Online]. [Accessed 1st July 2019]. Available from: <https://www.mirror.co.uk/news/uk-news/uk-territories-devastated-hurricane-irma-11167162>

Dearden, L. 2016. *UN blacklists Saudi Arabian led coalition for 'killing and maiming children' in Yemen airstrikes*. [Online]. [Accessed 3rd February 2020]. Available from: <https://www.independent.co.uk/news/world/middle-east/un-blacklists-saudi-arabia-led-coalition-for-killing-and-maiming-children-in-yemen-air-strikes-a7063681.html>

Donnelly, L. 2019. *A&E four-hour target to be scrapped except for most serious cases*. [Online]. [Accessed 3rd March 2020]. Available from: <https://www.telegraph.co.uk/news/2019/03/11/ae-four-hour-target-scrapped/>

Ellicot, C. 2017. *A hurricane force farce: UK can't use its £13billion foreign aid budget to help British islands devastated by Irma - because they're 'too WEALTHY'*. [Online]. [Accessed 1st July 2019]. Available from: <https://www.dailymail.co.uk/news/article-4881734/Britain-BANNED-using-13billion-aid-budget.html>

Emmons, A. and Jilani, Z. 2016. *U.N. Chief Admits He Removed Saudi Arabia From Child-Killer List Due to Extortion*. [Online]. [Accessed 3rd February 2020]. Available from: <https://theintercept.com/2016/06/09/u-n-chief-admits-he-removed-saudi-arabia-from-child-killer-list-due-to-extortion/>

Ferguson, K. 2017. *Campaigners fail in High Court bid to stop the UK selling billions of pounds of arms to Saudi Arabia - but the case has STILL cost taxpayers £600,000*. [Online]. [Accessed 2nd April 2019]. Available from: <https://www.dailymail.co.uk/news/article-4681716/Court-bid-stop-UK-selling-arms-Saudi-Arabia-fails.html>

Halle, M. 2017. *Jeremy Hunt urged to "stop hiding" after 7,000 hospital beds are lost under Tories*. [Online]. [Accessed 2nd April 2019]. Available from: <https://www.mirror.co.uk/news/uk-news/jeremy-hunt-urged-stop-hiding-9581260>

Hasham, N. 2017. *Manus authorities 'turn away food aid' as humanitarian crisis deepens*. [Online]. [Accessed 22nd September 2019]. Available from: <https://www.smh.com.au/politics/federal/starvation-manus-authorities-turn-away-food-aid-as-humanitarian-crisis-deepens-20171103-qze7nm.html>

Hewitt, G. 2017. *Our hurricane-hit islands deserve aid. The rules that block it are wrong*. [Online]. [Accessed 1st July 2019]. Available from: <https://www.theguardian.com/commentisfree/2017/sep/19/hurricane-maria-caribbean-oecd-aid-rules-assistance>

Human Rights Watch. 2016. *UN: Return Saudi-led Coalition to 'List of Shame'*. [Online]. [Accessed 31st January 2020]. Available from: <https://www.hrw.org/news/2016/06/08/un-return-saudi-led-coalition-list-shame>

Jones, S. 2017. *How your local NHS is in meltdown with thousands facing four-hour wait to be seen at A&E*. [Online]. [Accessed 2nd April 2019]. Available from: <https://www.mirror.co.uk/news/uk-news/nhs-crisis-how-services-struggling-9609068>

Khamis, J. 2019. *It takes a refugee 17 years to come back to their own country*. [Online]. [Accessed 1st December 2019]. Available from: <https://gulffnews.com/uae/it-takes-a-refugee-17-years-to-come-back-to-their-own-country-1.62375267>

Kidd, R. 2019. *How A Refugee Charity Plans To Become The World's Biggest Sports Club*. [Online]. [Accessed 1st December 2019]. Available from: <https://www.forbes.com/sites/robertkidd/2019/11/29/how-a-refugee-charity-plans-to-become-the-worlds-biggest-sports-club/#f5721214efa6>

Kirkland, F. and Roxby, P. 2017. *NHS Health Check: A&E waits for January "worst ever"*. [Online]. [Accessed 1st July 2019]. Available from: <https://www.bbc.co.uk/news/health-38907492>

Kirkland, F. and Triggles, N. 2017. *Leak shows full extent of NHS winter crisis*. [Online]. [Accessed 1st July 2019]. Available from: <https://www.bbc.co.uk/news/health-38570960>

Lakhani, N. and Agren, D. 2017. *Entire towns in Mexico flattened as scale of earthquake damage emerges*. [Online]. [Accessed 1st October 2019]. Available from: <https://www.theguardian.com/world/2017/sep/21/entire-towns-in-mexico-flattened-as-scale-of-earthquake-damage-emerges>

Lamble, L. 2017. *Historic change to aid rules allows use of funding when lives are at stake*. [Online]. [Accessed 1st July 2019]. Available from: <https://www.theguardian.com/global-development/2017/nov/01/historic-change-aid-rules-funding-when-lives-at-stake>

Landale, J. 2017a. *Hurricane Irma: UK's aid budget cannot be spent on overseas territories*. [Online]. [Accessed 1st July 2019]. Available from: <https://www.bbc.co.uk/news/uk-41258435>

Landale, J. 2017b. *UK territories eligible for development aid*. [Online]. [Accessed 1st July 2019]. Available from: <https://www.bbc.co.uk/news/uk-41825682>

McGrath, T. 2016. *UN blacklisted Saudi coalition for killing children in Yemen — then abruptly changed its mind*. [Online]. [Accessed 4th February 2020]. Available from: <https://www.pri.org/stories/2016-06-07/un-blacklisted-saudi-coalition-killing-children-yemen-then-abruptly-changed-its>

McVeigh, K. and Rankin, J. 2017. *British public helps to raise £50m in 22 days for east Africa hunger crisis*. [Online]. [Accessed 2nd April 2019]. Available from: <https://www.theguardian.com/global-development/2017/apr/06/british-public-donates-72m-east-africa-yemen-hunger-disasters-emergency-committee>

Methven, N. 2017. *'I go home and weep': Hell of working on front line of cash-strapped NHS exposed*. [Online]. [Accessed 12th November 2019]. Available from: <https://www.mirror.co.uk/news/uk-news/i-go-home-weep-hell-9586910>

Miller, A. and Crane, E. 2017. *Faces of the missing: British Virgin Islands declares state of emergency as 27 residents go missing in Hurricane Irma and total death toll rises to 24*. [Online]. [Accessed 2nd April 2019]. Available from: <https://www.dailymail.co.uk/news/article-4864012/Irma-pummels-Turks-Caicos-175mph-winds.html>

Moore, J. 2016. *U.N. Blacklists Saudi Coalition Over Child Deaths in Yemen Air Strikes*. [Online]. [Accessed 3rd February 2020]. Available from: <https://www.newsweek.com/un-blacklists-saudi-arabia-over-deaths-hundreds-children-yemen-air-strikes-466118>

NBC News. 2017. *5.6 million ordered to evacuate Florida as Hurricane Irma approaches*. [Online]. [Accessed 22nd September 2019]. Available from: <https://www.nbcnews.com/news/weather/video/5-6-million-ordered-to-evacuate-florida-as-hurricane-irma-approaches-1042917443545>

Nelson, N. and Small, N. 2017. *As NHS hospitals struggle we test how A&E departments perform in other countries*. [Online]. [Accessed 1st July 2019]. Available from: <https://www.mirror.co.uk/news/uk-news/nhs-hospitals-struggle-test-how-9624728>

Newey, S. 2019. *New cholera tracking tool could provide more accurate picture of outbreaks*. [Online]. [Accessed 1st July 2019]. Available from: <https://www.telegraph.co.uk/global-health/science-and-disease/new-cholera-tracking-tool-could-provide-accurate-picture-outbreaks/>

Oliphant, R. and Connor, N. 2017. *Britain to stop training Burmese military until Rohingya crisis is resolved*. [Online]. [Accessed 8th November 2019]. Available from: <https://www.telegraph.co.uk/news/2017/09/19/britain-stop-training-burmese-military-rohingya-crisis-resolved/>

Rajan, A. 2019. *Guardian records first operating profit since 1998*. [Online]. [Accessed 26th September 2019]. Available from: <https://www.bbc.co.uk/news/entertainment-arts-48111464>

Ratcliffe, R. 2017. *Yemeni children infected by cholera at rate of one every 35 seconds*. [Online]. [Accessed 1st July 2019]. Available from: <https://www.theguardian.com/global-development/2017/jun/14/in-yemen-a-child-is-now-infected-by-cholera-every-35-seconds>

Reuters. 2016. *Saudi Arabian allies pressured UN chief to issue blacklist reversal, sources say*. [Online]. [Accessed 31st January 2020]. Available from: <https://www.theguardian.com/world/2016/jun/08/saudi-arabia-united-nations-blacklist-yemen-ban-ki-moon>

Robson, S. 2017. *Brit sisters missing after Hurricane Irma wiped out Barbuda 'alive and well and helping evacuation efforts'*. [Online]. [Accessed 1st October 2019]. Available from: <https://www.mirror.co.uk/news/world-news/brit-sisters-missing-after-hurricane-11131778>

Safi, M. 2017. *Aung San Suu Kyi defends her handling of Myanmar violence*. [Online]. [Accessed 29th March 2019]. Available from: <https://www.theguardian.com/world/2017/sep/07/aung-san-suu-kyi-defends-handling-myanmar-violence-rohingya>

Sanchez, R. 2017. *Yemen cholera epidemic: A child infected 'every 35 seconds', as death toll nears 1,000*. [Online]. [Accessed 1st July 2019]. Available from:

<https://www.telegraph.co.uk/news/2017/06/14/child-yemen-infected-cholera-every-35-seconds-death-toll-nears/>

Scott, P. 2017. *NHS in crisis? The charts that show how health service performance hit record lows in December*. [Online]. [Accessed 29th March 2019]. Available from: <https://www.telegraph.co.uk/news/2017/02/09/nhs-crisis-charts-show-health-service-performance-hit-record/>

Slovic, P. and Slovic, S. 2015. *The Arithmetic of Compassion*. *The New York Times*.

Snyder, M. 2017. *Unanswered questions from Yemen's Cholera Outbreak*. [Online]. [Accessed 30th June 2019]. Available from: <https://www.outbreakobservatory.org/outbreakthursday-1/9/28/2017/unanswered-questions-from-yemens-cholera-outbreak>

Staff writers and wires. 2017. *Footage of PNG authorities storming Manus Island to clear 400 men*. [Online]. [Accessed 22nd September 2019]. Available from: <https://www.news.com.au/world/pacific/png-army-sent-in-to-clear-100-men-from-manus-island/news-story/294b2ee9672f14250c19d92dfc2efe3b>

The Guardian. 2017. *The Guardian view on Yemen: a catastrophe that shames Britain*. [Online]. [Accessed 2nd April 2019]. Available from: <https://www.theguardian.com/world/commentisfree/2017/nov/17/the-guardian-view-on-yemen-a-catastrophe-that-shames-britain>

UN News. 2016a. *'If you want to protect your image, protect children,' Ban tells debate on war-affected children*. [Online]. [Accessed 31st January 2020]. Available from: <https://news.un.org/en/story/2016/08/535932-if-you-want-protect-your-image-protect-children-ban-tells-debate-war-affected>

UN News. 2016b. *Yemen: Ban removes Saudi-led coalition from report on conflict-affected children, pending joint review*. [Online]. [Accessed 31st January 2020]. Available from: <https://news.un.org/en/story/2016/06/531412-yemen-ban-removes-saudi-led-coalition-report-conflict-affected-children-pending>

UN News. 2017. *Half of all health facilities in war-torn Yemen now closed; medicines urgently needed – UN*. [Online]. [Accessed 22nd September 2019]. Available from: <https://news.un.org/en/story/2017/03/554212-half-all-health-facilities-war-torn-yemen-now-closed-medicines-urgently-needed>

UN News. 2019. *More than half of world's refugee children 'do not get an education', warns UNHCR*. [Online]. [Accessed 1st December 2019]. Available from: <https://news.un.org/en/story/2019/08/1045281>

Walker, D., The Guardian Online, URL (consulted 21 September 2003):. 2000. *Pssst... I've Got Something to Tell You*. [Online]. [Accessed 12th November 2019]. Available from: <http://www.guardian.co.uk/analysis/story/0,3604,345185,00.html>

Weaver, D. and Campbell, D. 2017. *A&E in England had worst delays ever in January, leak suggests*. [Online]. [Accessed 1st July 2019]. Available from: <https://www.theguardian.com/society/2017/feb/09/ae-in-england-sees-worst-ever-delays-in-january-leak-suggests>

Wintour, P. 2017a. *British territories hit by Irma 'too wealthy' to receive aid budget funds*. [Online]. [Accessed 1st July 2019]. Available from: <https://www.theguardian.com/world/2017/sep/13/uk-to-provide-further-25m-aid-to-hurricane-irma-hit-bvi-and-anguilla>

Wintour, P. 2017b. *Saudis must lift Yemen blockade or 'untold' thousands will die, UN agencies warn*. [Online]. [Accessed 2nd April 2019]. Available from: <https://www.theguardian.com/world/2017/nov/16/lift-yemen-blockade-to-save-children-un-agencies-tell-saudis>

Wintour, P. 2017c. *UK urges changes to international aid rules to help hurricane-hit islands*. [Online]. [Accessed 1st July 2019]. Available from: <https://www.theguardian.com/politics/2017/sep/14/uk-seeks-way-to-use-aid-budget-for-hurricane-hit-territories>

My Interviews

- J1. 2019. *Interview with I1*.
- J2. 2019. *Interview with I1*.
- J3. 2019. *Interview with I1*.
- J4. 2019. *Interview with I1*.
- J5. 2019. *Interview with I1*.
- J6. 2019. *Interview with I1*.
- J7. 2019. *Interview with I1*.
- J8. 2019. *Interview with I1*.
- J9. 2019. *Interview with I1*.
- J10. 2019. *Interview with I1*.
- J11. 2019. *Interview with I1*.
- J12. 2019. *Interview with I1*.
- J13. 2019. *Interview with I1*.
- J14. 2019. *Interview with I1*.
- J15. 2019. *Interview with I1*.
- J16. 2019. *Interview with I1*.

Online interviews

- Ball, J. 2013. *Interview with Boyle, S*.
- Bentley, E. 2016. *Interview with Ciobanu, M*.
- Brkić, G. 2018. *Interview with Lopes, E*.
- Burn-Murdoch, J. 2016. *Interview with ItsAllJournalism*.
- Cairo, A. 2016. *Interview with Derivative, P*.
- Calver, T. 2019. *Interview with CUSP*.
- Chalabi, M. 2019. *Interview with Davies, I*.
- Cox, A. 2015. *Interview with Bertini, E. and Stefaner, M*.
- Dubas-Fisher, D. 2014. *Interview with Murray-Morris, S*.
- Elmer, C. 2016. *Interview with Lopes, E*.
- Johnson, L. 2019. *Interview with Kassel, M*.
- Lambrechts, M. 2016. *Interview with Winnie*.
- Lucero, M. 2016. *Interview with Heravi, B*.
- Maher, J. 2015. *Interview with Wagner, T*.
- McMinn, S. 2016. *Interview with Healy, A*.
- Obermayer, B. 2019. *Interview with Primeaux, E*.
- Ottaviani, J. 2019. *Interview with Matthews, K. and Van Hoozer, N*.
- Ottewell, D. 2019. *Interview with Mahal, P*.
- Roberts, J. 2018. *Interview with Henriksson, T*.
- Rogers, S. 2019. *Interview with Gambini, L*.
- Wisniewska, A. 2016. *Interview with Ciobanu, M*.
- Zehr, A. 2018. *Interview with Podcasts, L*.

Other Primary Sources

Allison, S. 2014. *Putting a Number on Suffering*. [Online]. [Accessed 15th July 2019]. Available from: <https://www.politicsweb.co.za/archive/putting-a-number-on-suffering>

BBC. 2017a. *BBC Editorial Values*. [Online]. [Accessed 1st June 2017]. Available from: <http://www.bbc.co.uk/editorialguidelines/>

Blunt, I., Edwards, N. and Merry, L. 2015. *What's behind the A&E crisis?* Nuffield Trust.

British Red Cross. 2017. *Red Cross calls on government to allocate funds for health and social care*. [Accessed 25th November 2017]. Available from: <http://www.redcross.org.uk/About-us/News/2017/January/Red-Cross-calls-on-government-to-allocate-funds-for-health-and-social-care>

British Red Cross. 2019. *News, views and media*. [Online]. [Accessed 1st July 2019]. Available from: <https://www.redcross.org.uk/about-us/news-and-media>

Cangialosi, J.P., Latto, A.S. and Berg, R. 2017. *NATIONAL HURRICANE CENTER TROPICAL CYCLONE REPORT*. NHC.

Cangialosi, J.P., Latto, A.S. and Berg, R. 2018. *Hurricane Irma*. National Hurricane Centre Tropical Cyclone Report.

CARE International. 2018. *Suffering in Silence: the 10 most under-reported humanitarian crises of 2017*. CARE International.

Clarke, M., Jansen, J. and Allen, C. 2019. *Robust evidence for an evidence-based approach to humanitarian action*. [Online]. [Accessed 9th July 2019]. Available from: <https://www.enonline.net/fex/53/robustevidence>

Comscore. 2019. *Latest Rankings*. [Online]. [Accessed 26th September 2019]. Available from: <https://www.comscore.com/Insights/Rankings>

Crisp, J. 1999. *Who Has Counted the Refugees? UNHCR and the Politics of Numbers*. Geneva: UNHCR.

Cutts, M. 1999. *The humanitarian operation in Bosnia, 1992-1995: dilemmas of negotiating humanitarian access*. Geneva: UNHCR.

DAC. 2017. *DAC HIGH LEVEL COMMUNIQUÉ: 31 OCTOBER 2017*. DAC.

De Waal, A. 2007. *Deaths in Darfur: Keeping Ourselves Honest*. [Online]. [Accessed 9th June 2020]. Available from: <https://africanarguments.org/2007/08/16/deaths-in-darfur-keeping-ourselves-honest/>

Department of Global Communications. 2019. *About Us*. [Online]. [Accessed 20th November 2019]. Available from: <https://www.un.org/en/sections/departments/department-global-communications/about-us/index.html>

DfID. 2017. *Statistics on International Development 2017*. DfID.

Dyer, O. 2017. *Yemen's cholera epidemic may have peaked, says WHO*. [Press release]. [Accessed 30th June 2019]. Available from: <https://www.bmj.com/content/357/bmj.j3131>

Ebizmba. 2019. *Top 15 Most Popular News Websites | September 2019*. [Online]. [Accessed 26th September 2019]. Available from: <http://www.ebizmba.com/articles/news-websites>

eDEWS. 2017. *Yemen: Cholera Response*. *Weekly Epidemiological Bulletin*. WHO.

Elliott, J. and Sullivan, L. 2015. *How the Red Cross Raised Half a Billion Dollars for Haiti and Built Six Homes*. [Online]. [Accessed 22nd July 2019]. Available from: <https://www.propublica.org/article/how-the-red-cross-raised-half-a-billion-dollars-for-haiti-and-built-6-homes>

Evidence Aid. 2019. *About Us*. [Online]. [Accessed 15th July 2019]. Available from: <https://www.evidenceaid.org/who-we-are/>

Fast, L. and Waugaman, A. 2016. *Fighting Ebola with Information: learning from the use of data, information, and digital technologies in the West African Ebola Outbreak Response*. Washington DC: USAID.

FEWSN. 2017. *Yemen Food Security Outlook, October 2017 to May 2018*. FEWSN.

GTFCC. 2017. *Interim Guidance Document on Cholera Surveillance*. Global Task Force on Cholera Control.

Guardian News. 2011. *Editorial Guidelines*. [Online]. [Accessed 4th September 2019]. Available from: https://www.scribd.com/document/273521476/Editorial-Guidelines#download&from_embed

Halliday, T. and Carruthers, B. 2005. *The Recursivity of Law: Global Norm Making and National Law-Making in the Globalization of Corporate Insolvency Regimes*. American Bar Foundation.

Health Cluster Yemen. 2017. *Integrated Response Plan: Yemen Cholera Outbreak*.

Humpherson, E. 2017.

Iacobucci, G. 2019. *A&E doctors urge NHS not to abandon four hour target*. [Online]. [Accessed 3rd March 2020]. Available from: <https://www.bmj.com/content/364/bmj.l455.full>

IFRC. 2005. *Chapter 6: Humanitarian media coverage in the digital age*. [Online]. [Accessed 29th April 2020]. Available from: <https://www.ifrc.org/en/publications-and-reports/world-disasters-report/wdr2005/wdr-2005---chapter-6-humanitarian-media-coverage-in-the-digital-age/>

IPC Global Partners. 2012. *IPC. Technical Manual Version 2.0: Evidence and Standards for Better Food Security Decisions*. Rome: FAO.

IPC South Sudan. 2017. *Key IPC Findings: January-July 2017*. [Online]. [Accessed 29th September 2019]. Available from: https://reliefweb.int/sites/reliefweb.int/files/resources/IPC_South_Sudan_Key%20Messages_Feb2017.pdf

McCartney, M. 2018. *When a crisis is the predictable outcome of poor policy making*. [Press release]. Available

MSF. 2017. *MSF survey estimate that at least 6,700 Rohingya were killed during the attacks in Myanmar*. [Accessed 16th October 2018]. Available from: <https://www.msf.org/myanmarbangladesh-msf-surveys-estimate-least-6700-rohingya-were-killed-during-attacks-myanmar>

Neal, S. 2012. *Working Paper Number 25. The measurement of neonatal mortality: how reliable is demography and household survey data?* ESRC Centre for Population Change.

NHS Digital. 2019. *Hospital Episode Statistics (HES)*. [Online]. [Accessed 22nd September 2019]. Available from: <https://digital.nhs.uk/data-and-information/data-tools-and-services/data-services/hospital-episode-statistics>

NHS England. 2016. *Data Quality: guidance for providers and commissioners*. NHS England.

NHS England. 2017. *A&E Attendances and Emergency Admissions*. NHS England.

NHS England. 2018. *Winter Daily SitRep 2017-18 Data*. [Online]. [Accessed 1st July 2019]. Available from: <https://www.england.nhs.uk/statistics/statistical-work-areas/winter-daily-sitreps/winter-daily-sitrep-2017-18-data/>

NHS England. 2019. *A&E Attendance and Emergency Admissions*. [Online]. [Accessed 1st July 2019]. Available from: <https://www.england.nhs.uk/statistics/statistical-work-areas/ae-waiting-times-and-activity/ae-attendances-and-emergency-admissions-2018-19/>

NHS Improvement. 2019. *New time-saving data collection system*. [Press release]. Available from: <https://improvement.nhs.uk/news-alerts/new-time-saving-data-collection-system/>

NOAA. 2019. *FAQs*. [Online]. [Accessed 1st July 2019]. Available from: <https://www.aoml.noaa.gov/hrd/tcfaq/D4.html>

OCHA. 2017. *South Sudan*. [Online]. [Accessed 15th May 2017]. Available from: <http://www.unocha.org/south-sudan>

OCHA. 2019. *Humanitarian Coordination Leadership*. [Online]. [Accessed 22nd December 2019]. Available from: <https://www.unocha.org/our-work/coordination/humanitarian-coordination-leadership>

OECD. 2014. *DAC List of ODA Recipients: Effective for reporting on 2014, 2015, 2016 and 2017 flows*. [Online]. [Accessed 1st July 2019]. Available from: http://www.oecd.org/dac/financing-sustainable-development/development-finance-standards/DAC_List_ODA_Recipients2014to2017_flows_En.pdf

OECD. 2019a. *Development Assistance Committee (DAC)*. [Online]. [Accessed 1st July 2019]. Available from: <http://www.oecd.org/dac/development-assistance-committee/>

OECD. 2019b. *Official development assistance – definition and coverage*. [Online]. [Accessed 1st July 2019]. Available from: <http://www.oecd.org/dac/stats/officialdevelopmentassistancedefinitionandcoverage.htm>

OECD. 2019c. *Where: Global reach*. [Online]. [Accessed 1st July 2019]. Available from: <http://www.oecd.org/about/members-and-partners/>

OFCOM. 2017. *News consumption in the UK: 2016*.

OFCOM. 2018. *News Consumption in the UK: 2018*. OFCOM.

RAIOT Collective. 2016. *Measuring earthquake - a short guide to Richter Scale*. [Online]. [Accessed 22nd September 2019]. Available from: <https://www.raiot.in/measuring-earthquakes-a-short-guide-to-richter-scale/>

Relief Web. 2017. *Haiti: cholera outbreak - 2010-2017*. [Online]. [Accessed 30th June 2019]. Available from: <https://reliefweb.int/disaster/ep-2010-000210-hti>

Rorty, R. 1999. *Phony Science Wars*. [Online]. [Accessed 16th February 2020]. Available from: <https://www.theatlantic.com/magazine/archive/1999/11/phony-science-wars/377882/>

Save The Children. 2017. *YEMEN CHOLERA EPIDEMIC INFECTING ONE CHILD EVERY MINUTE*. [Press release]. [Accessed 28th June 2019]. Available from: <https://www.savethechildren.org.uk/news/media-centre/press-releases/yemen-cholera-epidemic-infecting-one-child-every-minute>

Save The Children and Watchlist. 2017. *No Justice for Yemen's Children? Save the Children & Watchlist*.

Scott, C. 2017. *Many newsrooms have data teams but few reporters have formal data training, study finds*. [Online]. [Accessed 17th November 2019]. Available from: <https://www.journalism.co.uk/news/many-newsrooms-have-data-teams-but-few-reporters-have-formal-data-training-study-finds-/s2/a706759/>

Spiegel, P.B., Ratnayake, R., Hellman, N., Lantagne, D.S., Vevers, M., Ngwa, M. and Wise, P. 2018. *Cholera in Yemen: a case study of epidemic preparedness and response*. Johns Hopkins.

Stoddard, A., Harmer, A., Harver, K., Taylor, G. and Harvey, P. 2015. *The State of the Humanitarian System*. London: ALNAP/ODI.

The Health Foundation. 2019. *NHS winter pressures*. [Online]. [Accessed 1st July 2019]. Available from: <https://www.health.org.uk/news-and-comment/featured-content/nhs-winter-pressure>

The New Humanitarian. 2017. *Ten humanitarian stories to look out for in 2017*. [Online]. [Accessed 29th January 2020]. Available from:

<http://www.thenewhumanitarian.org/analysis/2017/01/02/ten-humanitarian-stories-look-out-2017>

The NHS National Medical Director. 2019. *Clinically-led Review of NHS Access Standards Interim Report from the NHS National Medical Director*. NHS.

UN Secretary General. 2017. *Children and armed conflict - report of the Secretary-General (A/72/361-S/2017/821) [EN/AR]*. United Nations.

UNDP. 2017. *UNDP Regional Director “fully committed” to recovery in Antigua & Barbuda*. [Press release]. [Accessed 1st July 2019]. Available from: <http://www.bb.undp.org/content/barbados/en/home/presscenter/articles/2017/12/14/undp-regional-director-fully-committed-to-recovery-in-antigua-barbuda.html>

UNHCR. 2017. *Australia urged to ensure protection, assistance and solutions for refugees on Manus Island*. [Online]. [Accessed 22nd September 2019]. Available from: <https://www.unhcr.org/uk/news/briefing/2017/11/5a1465d14/australia-urged-ensure-protection-assistance-solutions-refugees-manus-island.html>

UNHCR. 2018. *Global report: 10 most under-reported humanitarian crises of 2017*. [Online]. [Accessed 29th January 2020]. Available from: <https://www.unhcr.org/uk/news/press/2018/1/5a659f6ca/global-report-10-under-reported-humanitarian-crises-2017.html>

UNICEF. 2006. *THE 2004 INDIAN OCEAN TSUNAMI DISASTER. EVALUATION OF UNICEF'S RESPONSE (EMERGENCY AND INITIAL RECOVERY PHASE). INDONESIA*. UNICEF.

UNICEF. 2017a. *Mexico earthquakes humanitarian situation report*. UNICEF.

UNICEF. 2017b. *Statement by UNICEF Executive Director, Anthony Lake, WFP Executive Director, David Beasley and WHO Director-General, Dr. Tedros Adhanom Ghebreyesus, following their joint visit to Yemen*. [Press release]. [Accessed 1st July 2019]. Available from: https://www.unicef.org/yemen/media_12124.html

UNICEF. 2017c. *UNICEF Yemen Humanitarian Situation Report (December 2017) [EN/AR]*. [Online]. [Accessed 22nd September 2019]. Available from: <https://reliefweb.int/sites/reliefweb.int/files/resources/UNICEF%20Yemen%20Humanitarian%20Situation%20Report%20-%20Year%20End%202017.pdf>

United Nations. 2002. *Substantive Questions: role of the Department of Public Information in United Nations peacekeeping*.

UNOCHA. 2017. *The Rohingya Crisis in Numbers*. United Nations.

UNOCHA. 2020. *Republic of South Sudan 2017 (Humanitarian response plan)*. [Online]. [Accessed 29th April 2020]. Available from: <https://fts.unocha.org/appeals/538/summary>

US Department of State. 1991. *World Refugee Report*. Washington DC.

Vladislavjević, N. and Voltmer, K. 2017. *Media framing of democratisation conflicts in Egypt, Kenya, Serbia and South Africa: a content analysis*. MeCoDEM.

White, B.T. 2015. *17 years in a refugee camp: on the trail of a dodgy statistic*. [Online]. [Accessed 29th November 2019]. Available from: <https://singularthings.wordpress.com/2015/07/04/17-years-in-a-refugee-camp-on-the-trail-of-a-dodgy-statistic/>

WHO. 2017a. *Cholera*.

WHO. 2017b. *Outbreak update – Cholera in Yemen, 19 July 2018*. [Online]. [Accessed 1st July 2019]. Available from: <http://www.emro.who.int/pandemic-epidemic-diseases/cholera/outbreak-update-cholera-in-yemen-19-july-2018.html>

WHO. 2017c. *Yemen - Cholera Response - 31st December 2017*. [Online]. Available from: http://www.emro.who.int/images/stories/yemen/Yemen_Cholera_Response_-_Weekly_Epidemiological_Bulletin_-_W52_2017_28Dec_25-Dec_3129.pdf?ua=1

- WHO. 2017d. *YEMEN: cholera outbreak response*. WHO.
- WHO. 2017e. *YEMEN: cholera outbreak. Daily epidemiology update: 13 June 2017*.
- WHO. 2017f. *Yemen: Cholera Suspected Cases (From 27 April - 6 July 2018)*. WHO.
- WHO. 2019a. *Cholera case fatality ratio (%)*. [Online]. [Accessed 30th June 2019]. Available from: https://www.who.int/gho/epidemic_diseases/cholera/situation_trends_case_fatality_ratio/en/
- WHO. 2019b. *Global Health Observatory (GHO) data*. [Online]. [Accessed 30th June 2019]. Available from: https://www.who.int/gho/epidemic_diseases/cholera/en/
- World Bank. 2019. *GNI per capita, PPP (current international \$)*. [Online]. [Accessed 1st July 2019]. Available from: <https://data.worldbank.org/indicator/ny.gnp.pcap.pp.cd?view=map>

Secondary Sources

- Adams, W.C. 1986. Whose Lives Count? TV coverage of natural disasters. *Journal of Communication*. **36**(2), pp.113-122.
- Ahmad, M.I. 2016. The Magical Realism of Body Counts: How Media Credulity and Flawed Statistics Sustain a Controversial Policy. *Journalism*. **17**(1), pp.18-34.
- Ajana, B. 2017. Digital health and the biopolitics of the Quantified Self. *Digital Health*.
- Allan, S. 2005. *Journalism: critical issues*. Berkshire, England: Open University Press.
- Alleyne, M.D. 2003. *Global Lies? Propaganda, the UN and World Order*. Hampshire, UK: Palgrave.
- Alonso, W. and Starr, P. 1987. *The politics of numbers*. New York: Russell Sage Foundation.
- Anderson, C.W. 2018. *Apostles of Certainty: data journalism and the politics of doubt*. Oxford: Oxford University Press.
- Andersson, R. and Weigand, F. 2015. Intervention at Risk: the vicious cycle of distance and danger in Mali and Afghanistan. *Journal of Intervention and Statebuilding*. **9**(4), pp.519-541.
- Arendt, H. 1990. *On Revolution*. Harmondsworth: Penguin.
- Aviles, L.A. 2016. The Art of Public Policy Statisticians: the case of the Puerto Rico pension reform report. *Caribbean Studies*. **44**(1-2), pp.47-68.
- Azman, A., Lessler, J., Luquero, F.J., Bhuiyan, T.R. and AUTHORS, A.I.O. 2019. Estimating cholera incidence with cross-sectional serology. *Science Translational Medicine*. **11**(480), pp.1-10.
- Bannister, F. and Connolly, R. 2011. The trouble with transparency: a critical review of openness in e-government. *Policy & Internet*. **3**(1), pp.1-30.
- Bannister, F. and Connolly, R. 2014. ICT, public values and transformative government: A framework and programme for research. *Government information quarterly*. **31**, pp.119-128.
- Bantimaroudis, P. and Ban, H. 2003. Covering the Crisis in Somalia: Framing choices by The New York Times and The Manchester Guardian. In: Reese, S.D., et al. eds. *Framing Public Life*. Mahwah, NJ: Lawrence Erlbaum Associates, pp.175-184.
- Barnett, M. 2005. Humanitarianism transformed. *Perspective on Politics*. **3**(4), pp.723-740.
- Barnett, M. 2013. Humanitarian governance. *Annual Review of Political Science*. **16**, pp.379-398.
- Barnhurst, K.G. and Mutz, D. 1997. American Journalism and the Decline in Event-Centered Reporting. *Journal of Communication*. **47**(4).

- Barnoy, A. and Reich, Z. 2019. The When, Why, How and So-What of Verifications. *Journalism Studies*.
- Beck, U. 1992. *Risk Society*. London: SAGE.
- Bell, M. 1998. The Journalism of Attachment. In: Kieran, M. ed. *Media Ethics*. London: Routledge, pp.15-22.
- Berger, G. 2009. The Poverty of Journalism and the Politics of Reporting Poverty Statistics in South Africa. In: *Nordicom 6159*.
- Berkowitz, D. and Nossek, H. 2006. Telling "our" story through news of terrorism. *Journalism Studies*. **7**(5), pp.691-707.
- Berkowitz, D. and TerKeurst, J.V. 2006. Community as interpretive communication: rethinking the journalist-source relationship. *Journal of Communication*. **49**(3), pp.125-137.
- Berman, E.P. and Hirschman, D. 2018. The Sociology of quantification: where are we now? *Contemporary Sociology*. **47**(3), pp.257-266.
- Berry, F.J. 1967. A Study of Accuracy in Local News Stories of Three Dailies. *Journalism Quarterly*. **44**, pp.482-490.
- Bertot, J., Gorham, U., Jaeger, P., Sarin, L.C. and Choi, H. 2014. Big data: Open government and e-government: Issues, policies and recommendations. *Information Policy*. **19**, pp.5-16.
- Bertot, J., Jaeger, P.T. and Grimes, J.M. 2010. Using ICTs to create a culture of transparency: E-government and social media as openness and anti-corruption tools for societies. *Government information quarterly*. **27**(3), pp.264-271.
- Best, J. 2001. *Damned Lies and Statistics*. London: University of California Press.
- Best, J. 2008. Birds - Dead and Deadly: Why numeracy needs to address social construction. *Numeracy*. **1**(1).
- Bhuta, N., Malito, D.V. and Umbach, G. 2018. Introduction: Of Numbers and Narratives—Indicators in Global Governance and the Rise of a Reflexive Indicator Culture. In: Bhuta, N., et al. eds. *The Palgrave Handbook of Indicators in Global Governance*. Cham, Switzerland: Palgrave Macmillan, pp.1-29.
- Bilsborrow, R., Hugo, G., Oberai, A.S. and Zlotnik, H. 1997. *International Migration Statistics: Guidelines for Improving Data Collection Systems*. Geneva: International Labour Organisation.
- Bird, C. 2005. How I Stopped Dreading and Learned to Love Transcription. *Qualitative Inquiry*. **11**(2), pp.226-248.
- Bird, S. 2009. Tabloidization: What is it, and does it really matter? *The changing faces of journalism*. London: Routledge, pp.50-60.
- Boltanski, L. 1999. *Distant Suffering: morality, media and politics*. Cambridge: Cambridge University Press.
- Boorstin, J.D. 2002[1961]. *The Image*. New York: Atheneum.
- Borges-Rey, E. 2016. Unravelling Data Journalism. *Journalism Practice*. **10**(7), pp.833-843.
- Borges-Rey, E. 2017. Towards an epistemology of data journalism in the devolved nations of the United Kingdom: Changes and continuities in materiality, performativity and reflexivity. *Journalism*. pp.1-18.
- Bounegru, L., Venturini, T., Gray, J. and Jacomy, M. 2017. Narrating Networks: Exploring the affordances of networks as storytelling devices in journalism. *Digital Journalism*. **5**(6), pp.699-730.
- Boyd-Barrett, O. 1980. *The International News Agencies*. London: Constable.
- Boyles, J.L. and Meyer, E. 2017. Newsrooms accommodate data-based news work. *Newspaper Research Journal*. **38**(4), pp.428-438.

- Bradshaw, P. 2015. *Data Journalism Heist: How to get in, get the data, and get the story out - and make sure nobody gets hurt*. E-book.
- Brand, R. 2008. The Numbers Game: a case study of mathematical literacy at a South African newspaper. *Communicatio: South African Journal for Communication Theory and Research*. **34**(2), pp.210-221.
- Brandão, R.F. 2019. Challenging Data-Driven Journalism. *Journalism Practice*. **13**(8), pp.927-930.
- Braun, V. and Clarke, V. 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology*. **3**(2), pp.77-101.
- Brayne, S. 2017. Big data surveillance: The case of policing. *American Sociological Review*. **82**(5), pp.977-1008.
- Brinkmann, S. and Kvale, S. 2008. Ethics in qualitative psychological research. In: Willig, C. and Stainton-Rogers, W. eds. *The SAGE Handbook of Qualitative Research in Psychology*. New Delhi: SAGE, pp.263-279.
- Broersma, M. 2010. Journalism as performative discourse. *Journalism and Meaning-Making Reading the Newspaper*. pp.15-35.
- Bryman, A. 2012. *Social Research Methods*. Oxford: Oxford University Press.
- Bunce, M. 2019. Humanitarian Communication in a Post-Truth World. *Journal of Humanitarian Affairs*. **1**(1), pp.49-55.
- Bunce, M., Scott, M. and Wright, K. 2019. Humanitarian Journalism. In: Carpenter, C. ed. *Encyclopaedia of Journalism Studies*. Oxford: Oxford University Press.
- Calhoun, C. 2010. The idea of emergency: humanitarian action and global (dis)order. In: Fassin, D. and Pandolfi, M. eds. *Contemporary States of Emergency*. New York: Zone Books, pp.29-58.
- Camacho, A., Bouhenia, M., Alyusfi, R., Alkohani, A., Naji, M.M., de Radiguès, X., Abubakar, A., Almoalmi, A., Seguin, C., Sagrado, M., Poncin, M., McRae, M., Musoke, M., Rakesh, A., Porten, K., Haskew, C., Atkins, K., Eggo, R., Azman, A., Broekhuijsen, M., Saatcioglu, M., Pezzoli, L., Quilici, M., Al-Mesbahy, A., Zagaria, N. and Luquero, F. 2018. Cholera epidemic in Yemen, 2016-18: an analysis of surveillance data. *Lancet Global Health*. **6**(6), pp.680-690.
- Carlson, M. 2015. Metajournalistic discourse and the meanings of journalism: Definitional control, boundary work, and legitimation. *Communication Theory*. **26**(4), pp.349-368.
- Caspar, M. and Hellman, C.D. 1959. *Kepler*. London: Abelard-Schuman.
- Charnley, M.V. 1936. Preliminary Notes on a Study of Newspaper Accuracy. *Journalism Quarterly*. **13**, pp.394-401.
- Chouliaraki, L. 2006. *Spectatorship of Suffering*. London: SAGE.
- Chouliaraki, L. 2013. *The Ironic Spectator*. London: Polity Press.
- Clarke, A. and Francoli, M. 2017. Permanent Campaigning and Digital Government. In: Marland, A., et al. eds. *Permanent Campaigning in Canada*. Vancouver: UBC Press, pp.298-321.
- Clarke, A. and Margetts, H. 2014. Governments and citizens getting to know each other? Open, closed, and big data in public management reform. *Policy & Internet*. **6**(4), pp.393-417.
- Coddington, M. 2015a. Clarifying Journalism's Quantitative Turn: a typology for evaluating data journalism, computational journalism, and computer-assisted reporting. *Digital Journalism*. **3**(3), pp.331-348.
- Coddington, M. 2015b. *Telling second-hand stories: news aggregation and the production of journalistic knowledge*. Doctor of Philosophy thesis, The University of Texas.

- Coddington, M. 2019. *Aggregating the News: second-hand knowledge and the erosion of journalistic authority*. New York: Columbia University Press.
- Cohen, S. 2001. *States of Denial: knowing about atrocities and suffering*. New Jersey: Wiley.
- Cohen, S., Hamilton, J.T. and Turner, F. 2011. Computational journalism. *Communications of the ACM*. **54**(10), pp.66-71.
- Cohn, V. and Cope, L. 2011. *News and Numbers: A Writer's Guide to Statistics*. Hoboken, NJ: John Wiley & Sons.
- Connell, I. 1998. Mistaken Identities: Tabloid and Broadsheet News Discourse. *Javnost – The Public*. **5**(3), pp.11-31.
- Cottle, S. 2009. *Global Crisis Reporting*. Berkshire: Open University Press.
- Coumou, D. and Rahmstorf, S. 2012. A decade of weather extremes. *Nature Climate Change*. **2**, pp.491-496.
- Cozma, R. and Kozman, C. 2015. The Syrian Crisis in the News. *Journalism Practice*. **9**(5), pp.669-686.
- Cresswell, J.W. and Plano Clark, V. 2011. *Designing and Conducting Mixed Methods Research*. Thousand Oaks, CA: SAGE.
- Curran, J. 2010. The future of journalism. *Journalism Studies*. **11**(4), pp.464-476.
- Curtin, P.A. and Maier, S.R. 2001. Numbers in the Newsroom: a qualitative examination of a quantitative challenge. *Journalism and Mass Communication Quarterly*. **78**(4), pp.720-738.
- Cushion, S., Lewis, J. and Callaghan, R. 2017. Data Journalism, Impartiality and Statistical Claims. *Journalism Practice*. **11**(10), pp.1198-1215.
- Dahlgren, P. and Chakrapani, S. 1982. The Third World on TV News: Western ways of seeing the "other". In: Adams, W.C. ed. *Television Coverage of International Affairs*. Norwood, NJ: Ablex, pp.45-65.
- Dahmen, N.S. 2015. Data visualization and the future of journalism. In: Felle, T., et al. eds. *Data journalism: Inside the global future*. Suffolk, England: Abramis, pp.275-281.
- Daston, L. and Galison, P. 2007. *Objectivity*. Cambridge, MA: MIT Press.
- Davies, N. 2009. *Flat Earth News*. London: Vintage.
- Davis, A. 2009. JOURNALIST–SOURCE RELATIONS, MEDIATED REFLEXIVITY AND THE POLITICS OF POLITICS. *Journalism Studies*. **10**(2), pp.204-219.
- Davis, P.J. and Hersh, R. 1986. *Descartes' Dream*. Orlando, FL: Harcourt Brace Jovanovich.
- De Blasio, E. and Selva, D. 2016. Why choose open government? Motivations for the adoption of open government policies in four European countries. *Policy & Internet*. **8**(3), pp.225-247.
- De Waal, A. 1997. *Famine crimes: politics & the disaster relief industry in Africa*. Bloomington, IN: Indiana University Press.
- de Waal, A. 2005. *Famine that Kills: Darfur, Sudan*. Oxford: Oxford University Press.
- Deacon, D. 2007. Yesterday's Papers and Today's Technology. *European Journal of Communication*. **22**(1), pp.5-25.
- Dear, P. 1995. *Discipline & Experience*. Chicago: University of Chicago Press.
- deMarraise, K. 2004. Qualitative Interview Studies: Learning through experience. In: deMarraise, K. and Lapan, S.D. eds. *Foundations for Research: methods of inquiry in education and the social sciences*. London: Routledge, pp.51-68.
- Desrosières, A. 1991. How to Make Things Which Hold Together: social science, statistics and the state. In: Wagner, P., et al. eds. *Discourses on Society*. London: Kluwer Academic Publishers, pp.195-218.

- Desrosières, A. 1998. *The Politics of Large Numbers: a history of statistical reasoning*. Cambridge, MA: Harvard University Press.
- Desrosières, A. 2001. How Real are Statistics? Four Possible Attitudes. *Social Research*. **68**(2), pp.339-355.
- Dijkzeul, D., Hilhorst, D. and Walker, P. 2013. Introduction: evidence-based action in humanitarian crises. *Disasters*. **37**(1), pp.1-19.
- Dijkzeul, D. and Sandvik, K.B. 2019. A World in Turmoil: governing risk, establishing order in humanitarian crises. *Disasters*. **43**, pp.S85-S108.
- Dilnot, A. and Blastland, M. 2008. *The Tiger That Isn't*. London: Profile Books.
- Donsbach, W. and Büttner, K. 2005. Boulevardisierungstrend in deutschen Fernsehnachrichten. *Publizistik*. **50**(1), pp.21-38.
- Dorling, D. and Simpson, S. 1999. *Statistics in Society: the arithmetic of politics*. London: Arnold.
- Drake, S. 1957. *Discoveries and opinions of Galileo*. New York: Double Day.
- Du, Y.R., Zhu, L. and Cheng, B.K.L. 2019. Are Numbers Not Trusted in a “Post-Truth” Era? An Experiment on the Impact of Data on News Credibility. *Electronic News*. pp.1-17.
- Dunleavy, P. 2016. Big data and policy learning. In: Stoker, G. and Evans, M. eds. *Evidence-Based Policy Making in the Social Sciences: Methods That Matter*. Bristol: Policy Press, pp.143–168.
- Dunleavy, P., Margetts, H., Bastow, S. and Tinkler, J. 2006. New public management is dead—long live digital-era governance. *Journal of public administration research and theory*. **16**(3), pp.467-494.
- Dunleavy, P. and Margetts, H.Z. 2010. The Second Wave of Digital Era Governance. In: *APSA 2010 Annual Meeting Paper*.
- Eberstadt, N. 1995. *The Tyranny of Numbers – Mismeasurement and Misrule*. Washington: The AEI Press.
- Ecker-Ehrhardt, M. 2018. IO public communication and discursive inclusion: how the UN reported the Arms Trade Treaty process to a global audience. *Journal of International Relations and Development*. pp.1-29.
- Elden, S. 2007. Governmentality, calculation, territory. *Environment and Planning: Society and Space*. **25**(3), pp.562-580.
- Eldridge II, S. and Franklin, B. 2019. Introduction: Introducing the complexities of developments in Digital Journalism Studies. In: Eldridge II, S. and Franklin, B. eds. *The Routledge Handbook of Developments in Digital Journalism Studies*. London: Routledge.
- Enli, G. 2015. *Mediated Authenticity: how the media constructs reality*. New York: Peter Lang.
- Entman, R.M. 1993. Framing: toward clarification of a fractured paradigm. *Journal of Communication*. **43**(4), pp.51-58.
- Eramian, L. 2019. Neutral evaluators or testimonial connoisseurs? Valuing and evaluating reconciliation in post-genocide Rwanda. *Social Anthropology*. **27**(3), pp.531-546.
- Erickson, K., Perez, J.R. and Perez, F.R. 2018. What is the Commons Worth? Estimating the Value of Wikimedia Imagery by Observing Downstream Use. In: *Open Symposium '18: The 14th International Symposium on Open Collaboration, Paris, France*.
- Ericson, R.V. 1998. How Journalists Visualize Fact. *The ANNALS of the American Academy of Political and Social Science*. **560**(1), pp.83-95.

- Espeland, W. 2015. Narrating Numbers. In: Rottenburg, R., et al. eds. *The World of Indicators: the making of governmental knowledge through quantification*. Cambridge: Cambridge University Press, pp.56-75.
- Espeland, W. and Sauder, M. 2007. Rankings and Reactivity: How Public Measures Recreate Social Worlds. *American Journal of Sociology*. **113**(1), pp.1-40.
- Esser, F. 1999. 'Tabloidization' of News: A Comparative Analysis of Anglo-American and German Press Journalism. *European Journal of Communication*. **14**(3), pp.291–324.
- Fassin, D. 2007. Humanitarianism: a nongovernmental government. In: Feher, M. ed. *Nongovernmental Politics*. New York: Zone Books, pp.149–160.
- Federspiel, F. and Ali, M. 2018. The cholera outbreak in Yemen: lessons learned and way forward. *BMC Public Health*. **18**(1338), pp.1-8.
- Feenberg, A. 2011. Modernity, Technology and the Forms of Rationality. *Philosophy Compass*. **6**(12), pp.865-873.
- Fenton, N. 2010. NGOs, New Media and the Mainstream News: news from everywhere. In: Fenton, N. ed. *New Media, Old News: journalism and democracy in the digital age*. London: SAGE, pp.153-169.
- Fielding, N. 1996. Qualitative Interviewing. In: Gilbert, N. ed. *Research Social Life*. London: SAGE, pp.135-153.
- Fioramonti, L. 2013. *Gross Domestic Problem: the politics behind the world's most powerful number*. London: ZED Books.
- Fioramonti, L. 2014. *How Numbers Rule the World*. London: ZED Books.
- Fioramonti, L., Coscieme, L. and Mortensen, L.F. 2019. From gross domestic product to wellbeing: How alternative indicators can help connect the new economy with the Sustainable Development Goals. *The Anthropocene Review*. **0**(0).
- Flegg, G. 2002. *Numbers: Their History and Meaning*. New York: Dover Publications.
- Foucault, M. 1964. *Madness and Civilization*. New York: Vintage Books.
- Foucault, M. 1972. *The Archaeology of Knowledge*. New York: Pantheon Books.
- Foucault, M. 1984. What is Enlightenment? In: Rabinow, P. ed. *The Foucault Reader*. New York: Pantheon Books.
- Foucault, M. 1991. Governmentality. In: G Burchell, C. and Gordon, P.M. eds. *The Foucault Effect: Studies in Governmentality*. Chicago: Univ. Chicago Press, pp.87–104.
- Franklin, B. 2012. The Future of Journalism: developments and debates. *Journalism Studies*. **13**(5-6).
- Franklin, B. and Eldridge II, S. 2017. *The Routledge Companion to Digital Journalism Studies*. London: Routledge.
- Franklin, B., Hamer, M., Hanna, M., Kinsey, M. and Richardson, J.E. 2005. Journalism of attachment. In: Franklin, B., et al. eds. *SAGE Key Concepts: key concepts in journalism studies*. London: SAGE, pp.126-126.
- Franks, S. 2006. How Famine Captured the Headlines. *Media History*. **12**(3), pp.291-312.
- Franks, S. 2008. Getting Into Bed with Charity. *British Journalism Review*. **19**(3), pp.27-32.
- Franks, S. 2010. The Neglect of Arica and the Power of Aid. *International Communication Gazette*. **72**(1), pp.71-84.
- Franks, S. 2013. *Reporting Disasters: famine, aid, politics and the media*. London: Hurst.
- Frosh, P. 2011. Phatic morality: Television and proper distance. *International Journal of Cultural Studies*. **14**(4), pp.383-400.

- Frost, K., Frank, E. and Maibach, E. 1997. Relative risk in the news media: a quantification of misrepresentation. *American Journal of Public Health*. **87**(5), pp.842-845.
- Fukuda-Parr, S. and McNeill, D. 2019. Knowledge and Politics in Setting and Measuring the SDGs: introduction to special issue. *Global Policy*. **10**(1), pp.5-15.
- G. Kibreab. 1985. *African Refugees: Reflections on the African Refugee Problem*. Trenton, NJ: Africa World Press.
- Gaddy, G.D. and Tanjong, E. 1986. Earthquake Coverage by the Western Press. *Journal of Communication*. **36**(2), pp.105-112.
- Galdieri, C. 1999. *Bad Habits: six ways statisticians undercut their stories*. New York: Project for Excellence in Journalism.
- Galtung, J. 1986. On the role of the media in worldwide security and peace. In: Varis, T. ed. *Peace and Communication*. San Jose, Costa Rica: Universidad para La Paz, pp.249-266.
- Galtung, J. 1998. Friedensjournalismus: Was, warum, wer, wie, wann, wo? In: SchmidtRegener, W.K.a.I. ed. *Krieg, Nationalismus, Rassismus und die Medien*. Munster: Lit, pp.3-20.
- Galtung, J. and Ruge, M.H. 1964. The Structure of Foreign News: presentation of the Congo, Cuba and Cyprus Crises in Four Norwegian Newspapers. *Journal of Peace Research*. **2**(1), pp.64-91.
- Galtung, J. and Ruge, M.H. 1965. The structure of foreign news: The presentation of the Congo, Cuba and Cyprus crises in four Norwegian newspapers. *Journal of peace research*. **2**(1), pp.64-91.
- Gamson, W.A. and Modigliani, A. 1989. Media Discourse and Public Opinion on Nuclear Power: A Constructionist Approach. *American Journal of Sociology*. **95**(1), pp.1-37.
- Gans, H.J. 1979. *Deciding What's News: a study of CBS Evening News, NBC Nightly News, Newsweek, and Time*. Evanston, IL: Northwestern University Press.
- Gans, H.J. [1978]2004. *Deciding What's News*. 25th Anniversary Edition ed. Evanston, IL: Northwestern University Press.
- George, A.L. and Bennett, A. 2005. *Case Studies and Theory Development in the Social Sciences*. Cambridge, Mass: MIT Press.
- Gibbons, T. 1998. Aspiring to Pluralism: the constraints of public broadcasting values on the deregulation of British media ownership. *Cardozo Arts and Entertainment Law Journal*. **16**, pp.475-500.
- Giddens, A. and Pierson, C. 1998. *Conversations with Anthony Giddens: Making Sense of Modernity*. Stanford, CA: Stanford University Press.
- Gierycz, D. 2010. From Humanitarian Intervention (HI) to Responsibility to Protect (R2P). *Criminal Justice Ethics*. **29**(2), pp.110-128.
- Gigerenzer, G., Swijtink, Z., Porter, T., Daston, L., Beatty, J. and Kruger, L. 1989. *The Empire of Chance: how probability changed science and everyday life*. Cambridge: Cambridge University Press.
- Gitlin, T. 1980. *The Whole World is Watching*. Berkeley, CA: University of California Press.
- Godler, Y. and Reich, Z. 2013. How Journalists "Realize" Facts. *Journalism*. **7**(6), pp.674-689.
- Godler, Y. and Reich, Z. 2017. Journalistic evidence: cross-verification as a constituent of mediated knowledge. *Journalism*. **18**(5), pp.558-574.
- Graves, L. 2016. *Deciding What's True: The Rise of Political Fact-Checking in American Journalism*. New York: Columbia University Press.

- Gray, J. and Bounegru, L. 2019. What a difference a dataset makes? Data journalism and/as data activism. In: Evans, J., et al. eds. *Data in Society*. Bristol: Policy Press, pp.365-374.
- Gray, J., Bounegru, L. and Chambers, L. 2012. *The Data Journalism Handbook*. Sebastopol, CA: O'Reilly Media.
- Hacking, I. 1975. *The Emergence of Probability: a philosophical study of early ideas about probability, induction and statistical inference*. Cambridge: Cambridge University Press.
- Hacking, I. 1990. *The Taming of Chance*. Cambridge: Cambridge University Press.
- Hacking, I. 2016. *Logic of Statistical Inference*. Cambridge: Cambridge University Press.
- Hall, S. 1982. The rediscovery of "ideology": Return of the repressed in media studies. In: Gurevitch, M., et al. eds. *Culture, society and the media*. London: Methuen.
- Hall, S. 1997. Discourse, power and the subject. In: Hall, S. ed. *Representation: cultural representations and signifying practices*. Milton Keynes: Open University, pp.41-45.
- Hall, S., Critcher, C., Jefferson, T. and Roberts, B. 1978. *Policing the Crisis*. London: The MacMillan Press.
- Hallin, D.C. 1986. *The Uncensored War: The Media and Vietnam*. New York: Oxford University Press.
- Hanitzsch, T. 2004. Journalists as peacekeeping force? Peace journalism and mass communication theory. *Journalism Studies*. **5**(4), pp.483-495.
- Hanna, R. and Oliva, P. 2016. Implications of Climate Change for Children in Developing Countries. *The Future of Children*. **26**(1), pp.115-132.
- Hanusch, F. 2008. VALUING THOSE CLOSE TO US: A comparison of German and Australian quality newspapers' reporting of death in foreign news. *Journalism Studies*. **9**(3), pp.341-356.
- Hanusch, F. 2010. *Representing Death in the News: Journalism, Media and Mortality*. New York: Palgrave Macmillan.
- Harcup, T. and O'Neill, D. 2017. What is News? News values revisited (again). *Journalism Studies*. **18**(12).
- Harrell-Bond, B. 1998. Camps: Literature Review. *Forced Migration Review*. **2**, pp.22-23.
- Harrell-Bond, B., Voutira, E. and Leopold, M. 1992. Counting the Refugees: gifts, givers, patrons and clients. *Journal of Refugee Studies*. **5**(3-4), pp.205-225.
- Harris, J., Leiter, K. and Johnson, S. 1981. *The Complete Reporter*. 4th ed. New York: Macmillan.
- Harrison, G. 2010. Practices of Intervention: repertoires, habits, and conduct in neoliberal Africa. *Journal of Intervention and Statebuilding*. **4**(4), pp.433-452.
- Harrison, P. and Palmer, R. 1986. *News out of Africa: from Biafra to Band Aid*. London: Hilary Shipman.
- Harrison, S. 2016. Journalists, numeracy and cultural capital. *Numeracy*. **9**(2).
- Hendrie, B. 1997. Knowledge and Power: a critique of an international relief operation. *Disasters*. **21**(1), pp.57-76.
- Heravi, B.R. 2019. 3Ws of Data Journalism Education. *Journalism*. **13**(3), pp.349-366.
- Herman, E.S. and Chomsky, N. 2002. *Manufacturing consent: the political economy of the mass media*. New York: Pantheon.
- Hermida, A. 2015. Nothing but the truth: redrafting the journalistic boundary of verification. In: Carlson, M. and Lewis, S. eds. *Boundaries of Journalism: professionalism, practices and participation*. New York: Routledge, pp.37-50.

- Hewitt, C. 1996. Estimating the Number of Homeless: media representation of an urban problem. *Journal of Urban Affairs*. **18**, pp.431-448.
- Hojjer, B. 2004. The Discourse of Global Compassion: The Audience and Media Reporting of Human Suffering. *Media, Culture and Society*. **26**(4), pp.513-531.
- Houston, J.B., Pfefferbaum, B. and Rosenholtz, C.E. 2012. Disaster News: Framing and Frame Changing in Coverage of Major U.S. Disasters, 2000-2010. *Journalism & Mass Communication Quarterly*. **89**(4), pp.606-623.
- Howe, P. and Devereux, S. 2004. Famine intensity and magnitude scales: a proposal for an instrumental definition of famine. *Disasters*. **28**(4), pp.353-372.
- Hullman, J. and Diakopoulos, N. 2011. Visualization Rhetoric: Framing Effects in Narrative Visualization. *Institute of Electrical and Electronics Engineers*. **17**(12), pp.2231-2240.
- Iyengar, S. 1991. *Is anyone responsible?: How television frames political issues*. Chicago, IL: University of Chicago Press.
- Jacobsen, K.L. 2017. On Humanitarian Refugee Biometric and New Forms of Intervention. *Journal of Intervention and Statebuilding*. **11**(4), pp.529-551.
- Jacobsen, K.L. and Fast, L. 2019. Rethinking access: how humanitarian technology governance blurs control and care. *Disasters*. **43**(S2), pp.S151-S168.
- Janssen, M. and Hoven, J.v.d. 2015. Big and Open Linked Data (BOLD) in government: A challenge to transparency and privacy? *Government information quarterly*. **32**(4), pp.363-368.
- Jaworski, A., Fitzgerald, R. and Morris, D. 2004. Radio Leaks - Presenting and Contesting Leaks in Radio News Broadcasts. *Journalism*. **5**(2), pp.183-202.
- Jerolmack, C. and Khan, S. 2014. Talk is cheap: ethnography and the attitudinal fallacy. *Sociological Methods & Research*. **43**(2), pp.178-209.
- Jerven, M. 2013. *Poor Numbers: how we are misled by African development statistics and what to do about it*. New York: Cornell University Press.
- John, I.D. 1992. Statistics as rhetoric in psychology. *Australian Psychologist*. **27**(3), pp.144-149.
- Johnstone, R.D. 1990. *Numbers in the Bible: God's design in biblical numerology*. Grand Rapids, MI: Kregel.
- Jones, B., Kavanagh, D., Moran, M. and Norton, P. 2007. *Politics UK*. 6th ed. London: Pearson Education.
- Jones, R. and Jones, B. 2019. Atomising the News: The (In)Flexibility of Structured Journalism. *Digital Journalism*. **7**(8), pp.1157-1179.
- Jongsma, C. 2001. Mathematization and Modern Science. *Faculty Work: Comprehensive List*.
- Joye, S. 2009. The hierarchy of global suffering: a critical discourse analysis of television news reporting on foreign natural disasters. *The Journal of International Communication*. **15**(2), pp.45-61.
- Katchergin, O. 2015. How Many Learning Disabled Are There? The rhetorical power of statistics in the Is-raeli discourse on learning disabilities. *Open Journal of Social Sciences*. **3**(9), pp.155-166.
- Kempf. 2007. Peace journalism: a tightrope walk between advocacy journalism and conflict coverage. *Conflict & Communication*. **6**(2), pp.1-9.
- Kennedy, H., Hill, R.L. and Aiello, G. 2016. The Work that Visualisation Conventions Do. *Information, Communication & Society*. **19**(6), pp.715-735.
- Kilyeni, A. 2013. The Rhetoric of Numbers in Print Advertisements for Cosmetics. *Scientific Bulletin of the Politehnica University of Timisoara. Transactions on Modern*

- Languages / Buletinul Stiintific al Universitatii Politehnica din Timisoara. Seria Limbi Moderne.* **12**(1/2), pp.17-26.
- Kitchin, R. 2014. *The Data Revolution: Big Data, Open Data, Data Infrastructures and Their Consequences*. London: SAGE.
- Kitsuse, J.I. and Cicourel, A.V. 1963. A Note on the Uses of Official Statistics. *Social Problems.* **11**(2), pp.131-139.
- Knight, M. 2015. Data journalism in the UK: a preliminary analysis of form and content. *Journal of Media Practice.* **16**(1), pp.55-72.
- Knutson, T.R., Held, I., McBride, J.L., Chan, J., Emanuel, K., Holland, G., Landsea, C., Kossin, J.P., Srivastava, A.K. and Sugi, M. 2010. Tropical Cyclones and climate change. *Nature Geoscience.* **3**, pp.157-163.
- Koetsenruijter, W. 2011. Using Numbers in News Increases Story Credibility. *Newspaper Research Journal.* **32**(2), pp.74-82.
- Koetsenruijter, W. 2018. Numbers in the News: more ethos than logos? In: Nguyen, A. ed. *News, Numbers and Public Opinion in a Data-Driven World*. London: Bloomsbury Publishing, pp.177-190.
- Kossin, J.P., Emanuel, K. and Vecchi, G. 2014. The poleward migration of the location of tropical cyclones maximum intensity. *Nature.* **509**, pp.349-352.
- Kovach, B. and Rosenstiel, T. 2007. *The Elements of Journalism: What News people Should Know and the the Public Should Expect*. New York: Three Rivers Press.
- Krippendorff, K. 2004a. *Content Analysis: an introduction to its methodology*. 2nd ed. London: SAGE.
- Krippendorff, K. 2004b. Reliability in content analysis: some common misconceptions and recommendations. *Human Communication Research.* **30**, pp.411-433.
- Krippendorff, K. 2011. Agreement and information in the reliability of coding. *Communication Methods and Measures.* **5**(2), pp.93-112.
- Krippendorff, K. 2018. *Content Analysis: An Introduction to its Methodology*. London: SAGE.
- Kuhn, T.S. 1970. *The Structure of Scientific Revolutions*. London: University of Chicago Press.
- Kurunmaki, L., Mennicken, A. and Miller, P. 2016. Quantifying, Economising, and Marketising: Democratising the Social Sphere? *Sociologie du Travail.* **58**(4), pp.390-402.
- Laclau, E. 1990. *New Reflections on the Revolution of Our Time*. London: Verso.
- Lacy, S., Watson, B.R., Riffe, D. and Lovejoy, J. 2015. Issues and Best Practices in Content Analysis. *Communication Studies Faculty Publications and Presentations.* **8**, pp.1-36.
- Latour, B. 1986. Visualization and Cognition: thinking with eyes and hands. *Knowledge and Society.* **6**, pp.1-40.
- Latour, B. 2004. Why has critique run out of steam? From matters of fact to matters of concern. *Critical Inquiry.* **30**, pp.225-248.
- Lawrence, P.G. and Brun, M.C. 2011. NGOs and HIV/AIDS Advocacy in India: identifying challenges. *South Asia: Journal of South Asian Studies.* **34**(1), pp.65-88.
- Lazarsfeld, P.F. 1961. Notes on the History of Quantification in Sociology--Trends, Sources and Problems. *Isis.* **52**(2), pp.277-333.
- Lee, E. and Kim, Y. 2016. Effects of infographics on news elaboration, acquisition, and evaluation: Prior knowledge and issue involvement as moderators. *New Media & Society.* **18**, pp.1579-1598.

- Leeuw, F.L. 2012. On the contemporary history of experimental evaluations and its relevance for policy making. In: Rieper, O., et al. eds. *The Evidence Book: concepts, generation, and use of evidence*. New Brunswick, NJ: Transaction Publishers.
- Lewis, J. 1999. The opinion poll as a cultural form. *International Journal of Cultural Studies*. **2**(2), pp.199-221.
- Lewis, J. and Graham, J. 2007. Research participants' views on ethics in social research: issues for research ethics committee. *Research Ethics Review*. **3**, pp.73-79.
- Lewis, J., Williams, A. and Franklin, B. 2008. A Compromised Fourth Estate? *Journalism Studies*. **9**(1), pp.1-20.
- Lewis, N., McAdams, M. and Stalph, F. 2020. Data Journalism. *Journalism & Mass Communication Educator*. **75**(1), pp.16-21.
- Lippmann, W. 1965. *Public Opinion*. New York: Free Press.
- Livingston, C. and Voakes, P.S. 2005. *Working With Numbers and Statistics: A Handbook for Journalists*. London: Lawrence Erlbaum.
- Lowrey, W. and Hou, J. 2018. All forest, no trees? Data journalism and the construction of abstract categories. *Journalism*.
- Lugo-Ocando, J. 2015. *Blaming the Victim*. London: Pluto Press.
- Lugo-Ocando, J. and Brandão, R.F. 2016. Stabbing News: articulating crime statistics in the newsroom. *Journalism Practice*. **10**(6), pp.715-729.
- Lugo-Ocando, J. and Harkins, S. 2017. *Poor News: media discourses of poverty in times of austerity. Discourse, Power and Society*. London: Rowman & Littlefield International.
- Lugo-Ocando, J. and Hernandez-Toro, M. 2015. Public Relations and Humanitarian Communication: from persuasion to the creation of a community of equals. In: L'Etang, J., et al. eds. *The Routledge Handbook of Critical Public Relations*. London: Routledge, pp.226-234.
- Lugo-Ocando, J. and Lawson, B. 2018. Poor Numbers, Poor News. In: Nguyen, A. ed. *News, Numbers and Public Opinion in a Data-Driven World*. London: Bloomsbury Publishing, pp.62-77.
- Lugo-Ocando, J. and Nguyen, A. 2015. The State of Data and Statistics in Journalism and Journalism Education: issues and debates. *Journalism*. **17**(1), pp.3-17.
- Lugo-Ocando, J. and Nguyen, A. 2017. *Developing News: global journalism and the coverage of the 'third world' development*. London: Routledge.
- Lule, J. 2001. *Daily News, Eternal Stories*. New York: Guildford Press.
- Machill, M. and Beiler, M. 2009. The importance of the internet for journalistic research. *Journalism Studies*. **10**(2), pp.178-203.
- Magin, M. and Stark, B. 2015. Explaining national differences of tabloidisation between Germany and Austria: Structure, conduct and performance. *Journalism Studies*. **16**(4), pp.577-595.
- Maier, S.R. 2002. Numbers in the News: a mathematical audit of a daily newspaper. *Journalism Studies*. **3**(4), pp.507-519.
- Maier, S.R. 2003. Numeracy in the Newsroom. *Journalism and Mass Communication Quarterly*. **80**(4), pp.921-936.
- Maier, S.R. 2019. News coverage of human rights: investigating determinants of media attention. *Journalism*. **0**(0), pp.1-17.
- Mamdani, M. 2007. The Politics of Naming: genocide, civil war, insurgency. *London Review of Books*. **29**(5), pp.5-8.
- Manning, P. 2001. *News and News Sources: a critical introduction*. London: SAGE.
- Maras, S. 2013. *Objectivity in Journalism*. Cambridge: Polity Press.

- Margetts, H. and Dunleavy, P. 2013. The second wave of digital-era governance: a quasi-paradigm for government on the Web. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*. **371**(1987).
- Matthes, J. 2009. What's in a Frame? A content analysis of media framing studies in the world's leading communication journals. *Journalism & Mass Communication Quarterly*. **86**(2), pp.349-367.
- Maxwell, D. and Fitzpatrick, M. 2012. The 2011 Somalia famine: Context, causes, and complications. *Global Food Security*. **1**(1), pp.5-12.
- Mayer-Schönberger, V. and Cukier, K. 2013. *Big Data: A Revolution That Will Transform How We Live, Work, and Think*. Eamon Dolan/Houghton Mifflin Harcourt.
- McAdams. 2019. Teaching data journalism and computational skills. In: *World Journalism Education Congress, Paris*. pp.1-15.
- McCarthy, M. and Carter, R. 2004. "There's millions of them": hyperbole in everyday conversation. *Journal of Pragmatics*. **36**, pp.149-184.
- McCloskey, D. 1987. Rhetoric within the citadel: statistics. In: *Argument and Critical Practice: Proceedings of the Fifth SCA/AFA Conference on Argumentation, Annandale, VA*. Speech Communication Association, pp.485-490.
- McFarland, D.A., Lewis, K. and Goldberg, A. 2016. Sociology in the era of big data: The ascent of forensic social science. *The American Sociologist*. **47**(1), pp.12-35.
- McLachlan, S. and Golding, P. 2000. Tabloidization in the British Press: a quantitative investigation into changes in British Newspapers, 1952-1997. In: Sparks, C. and Tulloch, J. eds. *Tabloid Tales: Global Debates over Media Standards*. Oxford: Rowman & Littlefield Publishers, pp.75-90.
- McManus, J.H. 1995. A Market-based Model of News Production. *Communication Theory*. **5**(4), pp.301-338.
- Merry, S. 2016. *The seductions of quantification: measuring human rights, gender violence, and sex trafficking*. Chicago, IL: The University of Chicago Press.
- Merry, S., Davis, K.E. and Kingsbury, B. 2015. *The Quiet Power of Indicators*. New York: Cambridge University Press.
- Mertz, D. 1980. On Galileo's Method of Causal Proportionality. *Studies in History and Philosophy of Science*. **2**(3), pp.229-242.
- Meyer, P. 1973. *Precision Journalism*. 4th Edition ed. London: Rowman & Littlefield Publishers Ltd.
- Michell, J. 2003. Epistemology of Measurement: The Relevance of its History for Quantification in the Social Sciences. *Social Science Information*. **42**(4), pp.515-534.
- Miller, P. 2001. Governing by numbers: why calculative practices matter. *Social Research*. **68**(2), pp.379-396.
- Miller, P. and Hopwood, A.G. 1994. *Accounting as Social and Institutional Practice*. Cambridge: Cambridge University Press.
- Mills, A. 2018. What are the threats and potentials of big data for qualitative research? *Qualitative Research*. **18**(6), pp.591-603.
- Mills, C. 1959. *The Sociological Imagination*. New York: Oxford University Press.
- Minichiello, V., Aroni, R., Timewell, E. and Alexander, L. 1990. *In-Depth Interviewing: Researching People*. Hong Kong: Longman Cheshire.
- Moeller, S. 1999. *Compassion Fatigue*. London: Routledge.
- Morris, S.S., Neidecker-Gonzales, O., Carletto, C., Munguia, M., Medina, J.M. and Wodon, Q. 2002. Hurricane Mitch and the Livelihoods of the Rural Poor in Honduras. *World Development*. **30**(1), pp.49-60.
- Mutsvairo, B., Bebawi, S. and Borges-Rey, E. 2019. *Data Journalism in the Global South*. Palgrave McMillan.

- Nueundorf, K. 2017. *The Content Analysis Guidebook*. London: SAGE.
- O Grada, C. 2009. *Famine: a short history*. Oxford: Princeton University Press.
- Ojo, A. and Heravi, B. 2018. Patterns in Award Winning Data Storytelling. *Digital Journalism*. **6**(6), pp.693-718.
- Olsson, C. 2015. Interventionism as Practice: On 'Ordinary Transgressions' and their Routinization. *Journal of Intervention and Statebuilding*. **9**(4), pp.425-441.
- Otto, L., Glogger, I. and Boukes, M. 2016. The Softening of Journalistic Political Communication: A Comprehensive Framework Model of Sensationalism, Soft News, Infotainment, and Tabloidization. *Communication Theory*. **27**(2), pp.136-155.
- Palau-Sampio, D. 2016. Reference press metamorphosis in the digital context: clickbait and tabloid strategies in Elpais. com. *Communication & Society*. **29**(2).
- Paterson, C., Lee, D., Saha, A. and Zoellner, A. 2016. Production Research: continuity and transformation. In: Paterson, C., et al. eds. *Advancing Media Production Research*. Basingstoke: Palgrave, pp.3-19.
- Paterson, C. and Sreberny, A. 2004. Introduction - shouting from the rooftops. In: Paterson, C. and Sreberny, A. eds. *International News in the 21st Century*. Hants, UK: John Libbey Publishing, pp.3-30.
- Patton, M. 1990. *Qualitative Evaluation and Research Methods*. Beverly Hills, CA: SAGE.
- Peleg, S. 2007. In defense of peace journalism: a rejoinder. *Conflict & Communication*. **6**(2), pp.1-9.
- Peters, J.D. 2001. "The Only Proper Scale of Representation": the politics of statistics and stories. *Political Communication*. **18**(4), pp.433-449.
- Petty, N.J. 2012. Ready for a paradigm shift? Part 2: Introducing Qualitative Research Methodologies and Methods. *Manual Therapy*. **17**(5), pp.378-384.
- Philipsen, D. 2015. *The Little Big Number. How GDP came to rule the world and what we can do about it*. Princeton, NJ: Princeton University Press.
- Picard, R.G. 2004. Commercialism and Newspaper Quality. *Newspaper Research Journal*. **25**, pp.54-65.
- Porter, T. 1986. *The Rise of Statistical Thinking, 1820-1900*. Princeton University Press: Princeton, NJ.
- Porter, T. 1995. *Trust in Numbers: the pursuit of objectivity in science and public life*. Princeton, NJ: Princeton University Press.
- Porter, T. 2003. Statistics and Statistical Methods. In: Porter, T.M. and Ross, D. eds. *The Cambridge History of Science: Eighteenth-Century Science*. Cambridge: Cambridge University Press, pp.238-250.
- Power, M. 1994. *The Audit Explosion*. London: Demos.
- Prevost, J.-G. 2009. *A Total Science: statistics in Liberal and Fascist Italy*. London: McGill-Queen's University Press.
- Punch, K.F. 2014. *Introduction to Social Research*. London: SAGE.
- Rahmato, D. 1987. *Famine and Survival Strategies. A case study from north eastern Ethiopia*. Unpublished.
- Randall, S., Coast, E. and Leone, T. 2011. Cultural constructions of the concept of household in sample surveys. *Population Studies*. **65**(2), pp.217-229.
- Redden, J. 2011. Poverty in the News. *Information, Communication & Society*. **14**(6), pp.820-849.
- Redden, J. 2015. Big data as system of knowledge: Investigating Canadian governance. In: Elmer, G., et al. eds. *Compromised Data: From Social Media to Big Data*. New York: Bloomsbury, pp.17-39.

- Redden, J. 2018. Democratic governance in an age of datafication: Lessons from mapping government discourses and practices. *Big Data & Society*. **5**(2).
- Reese, S.D. 2003. Prologue - Framing Public Life: a bridging model for media research. In: Reese, S.D., et al. eds. *Framing Public Life*. Lawrence Erlbaum Associates: Mahwah, NJ.
- Reich, Z. 2011. SOURCE CREDIBILITY AND JOURNALISM: Between visceral and discretionary judgment. *Journalism Practice*. **5**(1), pp.51-67.
- Reich, Z. and Barnoy, A. 2016. Reconstructing production practices through interviewing. In: Witschge, C., et al. eds. *The SAGE Handbook of Digital Journalism*. London: SAGE, pp.477-493.
- Robinson, P. 2002. *The CNN Effect: the myth of news, foreign policy and intervention*. London: Routledge.
- Robinson, P., Brown, R., Goddard, P. and Parry, K. 2005. War and Media. *Media, Culture & Society*. **27**(6), pp.951-959.
- Robinson, S., Williams, G., Parnami, A., Kim, J., McGregor, E., Chandler, D. and Mazalek, A. 2014. Storied numbers: Supporting media-rich data storytelling for television. In: *Proceedings of the 2014 ACM International Conference on Interactive Experiences for TV and Online Video*.
- Roeh, I. and Feldman, S. 1984. The Rhetoric of Numbers in Front-Page Journalism: how numbers contribute to the melodramatic in the popular press. *Text. Interdisciplinary Journal for the Study of Discourse*. **4**(4), pp.347-368.
- Romano, C. 1986. The Grisly Truth About Bare Facts. In: Manoff, R.K. and Schudson, M. eds. *Reading the News*. New York: Pantheon Books, pp.38-78.
- Root, B. 2013. Statistics and Data in Human Rights Research. In: *ASIL Proceedings 107th Meeting, 3rd to 6th April 2013, Washington, DC*. The American Society of International Law, pp.65-68.
- Rorty, R. 1991. *Objectivity, Relativism and Truth*. Cambridge: Cambridge University Press.
- Rosenau, J.N. 1995. Governance in the Twenty-First Century. *Global Governance*. **1**(1).
- Rottenburg, R. and Merry, S. 2015. A world of indicators: the making of governmental knowledge through quantification. In: Rottenburg, R. and Merry, S.E. eds. *The World of Indicators: the making of governmental knowledge through quantification*. Cambridge: Cambridge University Press.
- Roy, B. 1993. Decision science or decision-aid science. *European Journal of Operational Research*. **66**, pp.184-203.
- Ruigrok, N. 2008. Journalism of attachment and objectivity: Dutch journalists and the Bosnian War. *Media, War & Conflict*. **1**(3), pp.393-313.
- Ryfe, D.M. 2016. Production Research: continuity and transformation. In: Paterson, C., et al. eds. *Advancing Media Production Research*. Basingstoke: Palgrave, pp.38-52.
- Sampaio-Dias, S. 2016. *Reporting Human Rights*. New York: Peter Lang.
- Sandvik, K.B. and Jacobsen, K.L. 2016. *UNHCR and the Struggle for Accountability: technology, law and results-based management*. Abingdon: Routledge.
- Scherling, J. 2019. A tale of two cities: A comparative study of media narratives of the battles for Aleppo and Mosul. *Media, War & Conflict*.
- Schlesinger, P. 1990. Rethinking the sociology of journalism: source strategies and the limits of media-centrism. In: Ferguson, M. ed. *Public Communication: The New Imperatives*. London: SAGE, pp.61-83.

- Schönbach, K. 2000. Does tabloidization make German local newspapers successful. In: Sparks, C., et al. eds. *Tabloid tales: Global debates over media standards*. Oxford: Rowman & Littlefield Publishers, pp.63-74.
- Schudson, M. 1978. *Discovering the News*. New York: Basic Books.
- Scott, D. 2005. Colonial governmentality. *Anthropologies of modernity: Foucault, governmentality, and life politics*. pp.23-49.
- Scott, J.C. 1999. *Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven: Yale University Press.
- Scott, M. 2015. Distant Suffering Online: the unfortunate irony of cyber-utopian narratives. *International Communication Gazette*. **77**(7), pp.637-653.
- Scott, M. 2017. How not to write about writing about Africa. In: Bunce, M., et al. eds. *Africa's Media Image in the 21st Century: from the heart of darkness to Africa rising*. Oxon: Routledge, pp.40-51.
- Scott, M., Bunce, M. and Wright, K. 2018. *The State of Humanitarian Journalism*. Norwich: University of East Anglia.
- Sen, A. 1986. *Food, Economics and Entitlements*. [Manuscript]. At: Helsinki, WIDER Working Papers (1986-2000).
- Servaes, J. 2007. *Communication for Development and Social Change*. London: SAGE.
- Shapiro, I. 2010. Evaluating Journalism: Towards an Assessment Framework for the Practice of Journalism. *Journalism Practice*. **4**(2), pp.143-162.
- Shapiro, I., Brin, C., Bedard-Brule and Mychajlowycz, K. 2013. Verification as a Strategic Ritual. *Journalism Practice*. **7**(6), pp.657-673.
- Shiva, V. 1998. Western Science and its Destruction of Local Knowledge. In: Rahnama, M. and Bawtree, V. eds. *The Post-Development Reader*. London: Zed Books, pp.161-167.
- Silverstone, R. 2003. Proper Distance: towards and ethics for cyberspace. In: Liestol, G., et al. eds. *Innovations*. Cambridge, MA: MIT Press, pp.469-490.
- Silverstone, R. 2007. *Media and Morality: on the rise of the Mediapolis*. Cambridge: Polity.
- Singer, E. and Endreny, P.M. 1993. *Reporting on Risk: how the mass media portray accidents, diseases, disasters, and other hazards*. New York: Russell Sage.
- Skovsgaard, M. 2014. A Tabloid mind? Professional values and organisational pressures as explanations of tabloid journalism. *Media, Culture & Society*. **36**(2), pp.200-218.
- Slovic, P. 2007. If I Look At the Mass I Will Never Act: psychic numbing and genocide. *Judgement and Decision Making*. **2**(2), pp.79-95.
- Slovic, P. 2012. Psychic Numbing and Mass Atrocity. In: Shafir, E. ed. *The Behavioral Foundations of Public Policy*. Princeton: Princeton University Press.
- Smillie, I. and Minear, L. 2004. *The charity of nations: humanitarian action in a calculating world*. Sterling, VA: Kumarian Press.
- Smith, P. 2006. The politics of UK television policy: the making of Ofcom. *Media, Culture & Society*. **28**(6), pp.929-940.
- Soothill, K. and Grover, C. 1997. Research Note: A Note on the Computer Searches of Newspapers. *Sociology*. **31**(3), pp.591-596.
- Southall, H., Evans, J. and Ruane, S. 2019. General Introduction. In: Evans, J., et al. eds. *Data in Society*. Bristol: Policy Press, pp.1-8.
- Splendore, S. 2016. Quantitatively Oriented Forms of Journalism and Their Epistemology. *Sociology Compass*. **10**(5), pp.343-352.

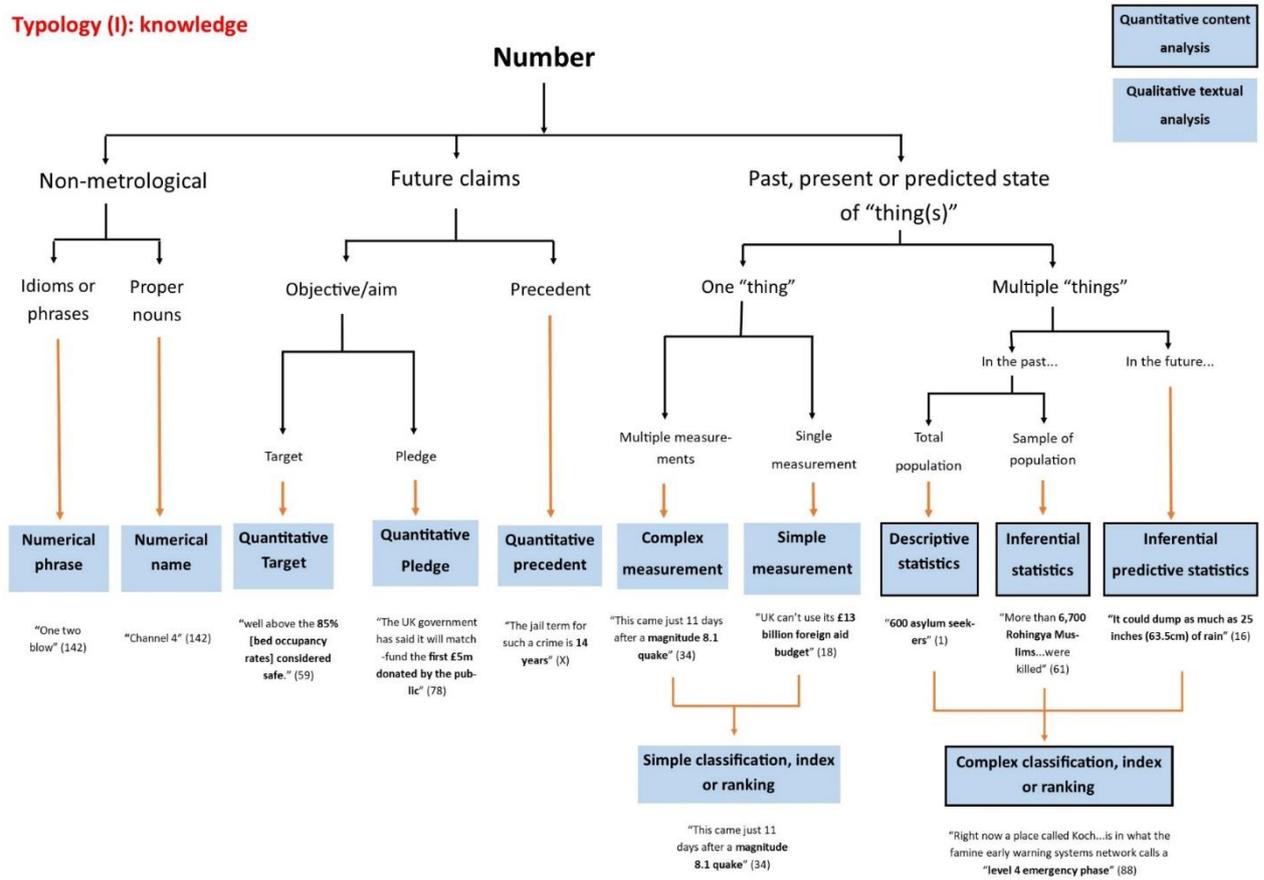
- Spohn, W. 2002. The Many Facets of the Theory of Rationality. *Croatian Journal of Philosophy*. **2**(3), pp.249-264.
- Stalph, F. 2018. Classifying Data Journalism. *Journalism Practice*. **12**(10), pp.1332-1350.
- Stalph, F. 2019. Hybrids, materiality, and black boxes: Concepts of actor-network theory in data journalism research. *Sociology Compass*. pp.1-13.
- Star, S.L. 1999. The Ethnography of Infrastructure. *American Behavioral Scientist*. **3**, pp.377-391.
- Star, S.L. and Bowker, G.C. 1999. *Sorting Things Out: Classification and Its Consequences*. Cambridge, MA: MIT Press.
- Starr, S. 2016. The Odds of Justice: Actuarial Risk Prediction and the Criminal Justice System. *CHANCE*. **29**(1), pp.49-51.
- Stevens, H. 2019. Open data, closed government: Unpacking data. gov. sg. *First Monday*. **24**(4).
- Stigler, S.M. 1986. *The History of Statistics*. Cambridge, MA: Harvard University Press.
- Stupart, R. and Strelitz, L. 2016. Framing famine: an analysis of media coverage of the 2011 famine in Somalia. *African Journalism Studies*. **37**(1), pp.100-119.
- Tenenboim-Weinblatt, K. and Baden, C. 2018. Journalistic transformation: how source texts are turned into news stories. *Journalism*. **19**(4), pp.481-499.
- Thurman, N. and Fletcher, R. 2019. Has Digital Distribution Rejuvenated Readership? *Journalism Studies*. **20**(4), pp.542-562.
- Till, C. 2014. Exercise as Labour: Quantified Self and the Transformation of Exercise into Labour. *Societies*. **4**(3), pp.446-462.
- Tuchman, G. 1972. Objectivity as Strategic Ritual: an examination of newsmen's notions of objectivity. *American Journal of Sociology*. **77**(4), pp.660-679.
- Tuchman, G. 1978. *Making News: A study in the Construction of Reality*. New York: Free Press.
- Tunney, S. and Thomas, J. 2015. Public access to NHS financial information: From a freedom of information regime to full open-book governance? *Social Theory & Health*. **13**(2), pp.116-140.
- Tunney, S. and Thomas, J. 2019. Accountable care? An analysis of national reporting on local health and social care service integration. *Social Theory & Health*. **17**, pp.331-347.
- Tzifakis, N. and Huliaras, A. 2015. The perils of outsourcing post-conflict reconstruction: donor countries, international NGOs and private military and security companies. *Conflict, Security & Development*. **15**(1), pp.51-73.
- Uribe, R. and Gunter, B. 2004. Research note: the tabloidization of British Tabloids. *European Journal of Communication*. **19**(3), pp.387-402.
- Van Belle, D.A., Rioux, J. and Potter, D.M. 2004. *Media, Bureaucracies and Foreign Aid: a comparative analysis of the United States, the United Kingdom, Canada, France and Japan*. London: Palgrave Macmillan.
- van Dijk, T. 2000. New(s) Racism: a discourse analytical approach. In: Cottle, S. ed. *Ethnic minorities and the media: changing cultural boundaries*. Philadelphia: Open University Press, pp.33-49.
- Van Leeuwen, T. 2008. *Discourse and Practice: News Tools for Critical Discourse Analysis*. Oxford: Oxford University Press.
- Van Witsen, T. 2018. How Journalists Establish Trust In Numbers And Statistics: Results From An Exploratory Study. In: *Iowa State University Summer Symposium on*

- Science Communication, 2018: Understanding the Role of Trust and Credibility in Science Communication.*, Iowa State University.
- Van Witsen, T. 2019. How Daily Journalists Use Numbers and Statistics: The Case of Global Average Temperature. *Journalism Practice*.
- Verpoorten, M. 2005. The Death Toll of the Rwandan Genocide: A Detailed Analysis for Gikongoro Province. *Population*. **60**, pp.331-367.
- Waisbord, S. 2009. Advocacy Journalism in a Global Context. In: Wahl-Jorgensen, K. and Hanitzsch, T. eds. *The Handbook of Journalism Studies*. New York: Routledge, pp.371-385.
- Wasserstein, R. and Lazar, N. 2016. The ASA Statement on p-Values: Context, Process, and Purpose. *The American Statistician*. **70**(2), pp.129-133.
- Watts, M. 2003. Development and governmentality. *Singapore journal of tropical geography*. **24**(1), pp.6-34.
- Weiss, T.G. 2013. *Humanitarian Business*. Cambridge: Polity.
- Weiss, T.G. and Thakur, R. 2010. *Global Governance and the UN: an unfinished journey*. Bloomington and Indianapolis: Indiana University Press.
- Westerstahl, J. and Johansson, F. 1994. Foreign News: News Values and Ideologies. *European Journal of Communication*. **9**(1), pp.71-89.
- Westfall, R. 1980. *Never At Rest: A biography of Isaac Newton*. Cambridge: Cambridge University Press.
- Whaites, A. 2000. NGOs, disasters, and advocacy: caught between the Prophet and the Shepherd Boy. *Development in Practice*. **10**(3-4), pp.506-516.
- Worthy, B. 2015. The impact of open data in the UK: Complex, unpredictable, and political. *Public Administration*. **93**(3), pp.788-805.
- Wright, K. 2018. *Who's Reporting Africa Now? Non-Governmental Organisations, Journalists, and Multimedia*. London: Peter Lang.
- Zelizer, B. 1992. *Covering the body: The Kennedy assassination, the media, and the shaping of collective memory*. Chicago: University of Chicago Press.
- Zelizer, B. 2004. When Facts, Truth, and Reality are God-Terms: on journalism's uneasy place in cultural studies. *Communication and Critical/Cultural Studies*. **1**(1), pp.110-119.
- Zelizer, B. and Allan, S. 2010. *Keywords in news and journalism studies*. London: McGraw-Hill Education.
- Zillman, D. and Brosius, H.-B. 2000. *Exemplification in Communication: the Influence of Case Reports on the Perception of Issues*. Florence: Lawrence Erlbaum Associates.
- Zuberi, T. 2001. *Thicker Than Blood: how racial statistics lie*. Minneapolis, MN: University of Minnesota Press.

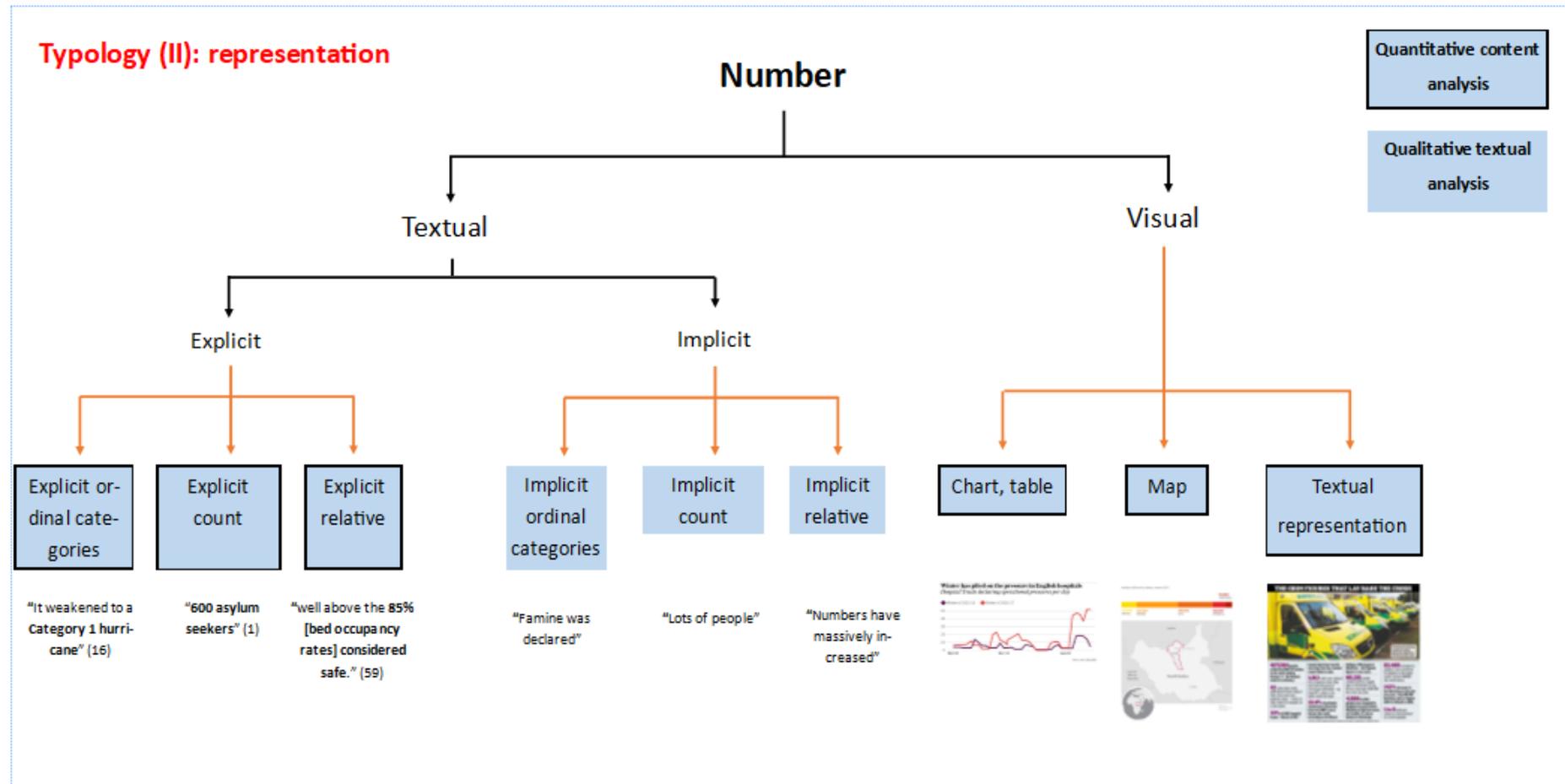
Appendices

Appendix 1

Typology (I): knowledge



Appendix 2



Appendix 3

Variable number	Variable name	KALPHA	0.90%	0.80%	0.70%	0.67%
4	Media outlet	0.9837	0	0	0	0
5	Word count	0.9723	0.0196	0	0	0
6	Type of item	0.7751	0.8838	0.5624	0.2371	0.1269
7	Name of author	0.8155	0.8817	0.3827	0.0609	0.0609
8	Region	0.907	0.4057	0.0019	0	0
9	Crisis I.D.	1	0	0	0	0
10	Type of crisis	1	0	0	0	0
11	Number of stats	0.9889	0	0	0	0
12	Framing	0.8468	0.8544	0.2498	0.0175	0.0072
13	Type statistic	0.9334	0.1469	0.0045	0	0
14	Stat in headline	1	0	0	0	0
15	Statistics challenged	0.7567	0.806	0.5835	0.3513	0.1832

Table X: Inter-coder reliability scores per variable

Appendix 4

Interview schedule

1. How did your journalistic or personal background lead you to report on crises/disasters?

2. When did you start reporting on this particular crisis/disaster? What were your reasons for doing so?

3. Do you cover other stories that are not crisis or disaster related?

4. I thought this article was interesting to read, can you walk me through the process of writing it?

4.1. Why was it important for you to write this article?

4.2. Where did the idea to write this article come from?

4.3. What was the context to writing this article?

5. Where did these statistics come from? Did you create them yourself, ask for them or were you provided them by a source?

If given by a source...

5.1.1. Did you trust the organisation who provided you the statistics?

5.1.2. How long before you wrote the article, did you receive the statistics?

5.1.3. Did you feel confident in using the statistics you were provided?

If produced themselves...

5.2.1. Why is it important for you to use datasets to create your own numbers?

5.2.2. Do you see the statistics you create as different to the statistics you are given by a source?

If asked for them...

5.3.1. Why did you need these statistics to write this article?

5.3.2. Did you know which organisation to ask for the statistics?

6. How important were the statistics when you were writing this article?

6.1. Why are statistics important when covering a crisis/disaster?

6.2. How can numbers help convey the importance of a crisis/disaster?

6.2. Are there other crises/disasters that you've reported on where statistics were more or less important than in this article?

7. How important was this [CHOOSE ONE > personal testimonies, images, videos, anecdotes, interviews] when you were writing this article?

7.1. How does this [CHOOSE ONE > personal testimonies, images, videos, anecdotes, interviews] differ/relate to the statistics you used?

7.2. How are statistics different to [CHOOSE ONE > personal testimonies, images, videos, anecdotes, interviews] in this story?

8. Are there any other parts of your crisis/disaster reporting that we haven't covered?

9. What do you think about statistics and journalism in general?

10. Does your organisation have any guidelines on the use of statistics?

Appendix 5

Name of journalist	Organisation (at time of interview)?	Data journalist?	Identify as...	Year
Mona Chalabi	Freelance	Yes	Data illustrator and journalist	2019
Bastian Obermayer	International Consortium of Investigative Journalists (ICIJ).	No	Investigative journalist (who uses data)	2019
David Dubas-Fisher	Trinity Mirror	Yes	Sports data journalist	2014
John Burn-Murdoch	Financial Times	Yes	Data visualisation journalist	2016
Alberto Cairo	Freelance/Academic	Yes	Data journalist	2016
Amanda Cox	New York Times	Yes	Graphics Editor of The Upshot, NYT & Lecturer	2015
Simon Rogers	Google News	Yes	Data Editor at Google News Lab	2019
Aleksandra Wisniewska	Financial Times	Yes	Interactive data journalist	2016
Elliot Bentley	Wall Street Journal	Yes	Graphics Editor	2016
Megan Lucero	The Times and the Sunday Times	Yes	Data Journalism Editor	2016
James Ball	Guardian	Yes	Data Journalist	2013
Janet Roberts	Reuters	Yes	Data Journalism Editor	2018

Maarten Lambrechts	Freelance	Yes	Data Journalist	2016
Gordon Brkic	Freelance	No	Journalist with interest in data-driven journalism	2018
Lizzie Johnson	San Francisco Chronicle	No	General assignment reporter	2019
Christina Elmer	Spiegel Online	Yes	Head of Data Journalism	2016
Jacqui Maher	BBC News Labs	Yes	Interactive journalist	2015
David Ottewell	Reach	Yes	Head of Data Journalism	2019
Angelo Zehr	Swiss Radio and Television	Yes	Data journalist	2018
Sean McMinn	CQ Roll Call	Yes	Data journalist	2016
Jacopo Ottaviani	Code for Africa	Yes	Chief Data Officer	2019
Tom Calver	BBC News	Yes	Data Journalist	2019

Appendix 7

		Categories	
Part I >>> unit = the article			
Basic information			
1	Article ID		1-500
2	Month		MM
3	Day		DD
4	Media outlet	1	The Guardian
		2	The Mirror
		3	The Telegraph
		4	The Daily Mail
		5	BBC
5	Word count	1	0-250
		2	251-500
		3	501+
6	Type of item	1	News article
		2	Op-ed
		99	Other
7	Name of author included?	1	Yes
		2	No
8	Region	1	Africa
		2	Asia
		3	Middle East
		4	Latin America
		5	North America
		6	Oceania
		7	Europe
		99	Other
9	Crisis ID	1	Manus Island
		2	Hurricane Irma
		3	La Puebla earthquake
		4	NHS winter crisis

		5	Rohingya refugee crisis
		6	South Sudan Famine
		7	Yemen
10	What type of humanitarian crisis?	1	Natural
		2	Man-made
		98	Other
		99	N/A
Part II >>> item = the statistic in the text			
11	Numbers of statistics in article	1	0
		2	1-3
		3	4-6
		4	7 or more
12	Framing	1	Problem
		2	Cause
		3	Solution
		98	Other
13	Type of statistic used the most	1	People, population and community
		2	Nature
		3	Economics, Government, humanitarian operations and infrastructure
14	Statistic in headline?	1	Yes
		2	No
15	Statistics challenged?	1	Yes
		2	No