

Critical Infrastructure Protection Initiative @ Dalhousie University

Convergence, Variation and Volatility in H1N1 Coverage in Four National Newspapers

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Abstract

In many respects, H1N1 was the same problem at the same time across the globe. This phenomenon therefore allows us to control variables and in so doing examine variation and convergence in responses to risk more closely. Here we compare and contrast media coverage of H1N1 in four opinion-leading broadsheets from four different countries: the *Australian* (Australia), the *Globe and Mail* (Canada), the *Daily Telegraph* (UK) and the *New York Times* (US). We reviewed 1199 articles about H1N1. We found convergence in the publication rate, and variation in the volume of coverage, the tone of the headlines, the subjects that were examined, the volatility of publication and the performance assessment of the respective domestic governments. Part of the variation can be explained by individual broadsheet editorial positions and style. The research demonstrates that the media plays a powerful role in amplifying and / or attenuating risk; this role can have a strong influence in the manner in which lay people understand the threat, which in turn dictates how the health sector must respond. Despite universal claims about the Risk Society (Beck 1992) and the rise of global media (Feldman 2004), however, international risk events are interpreted within a national, if not local, context. Recognizing the media's role as a social amplifier, public health officials need to work with the press and prepare them for highly emotive stories, which can trigger health scares that can potentially undermine important health operations. The rise of social media will make variation in media reporting an even greater challenge in managing future pandemics.

Keywords: H1N1, pandemics, media coverage

Introduction

Ostensibly, H1N1 was the same problem at the same time across the globe. This phenomenon allows us to control many variables and in so doing examine variation and convergence in responses to risk more closely. For the purposes of this paper, we compare and contrast media coverage of H1N1 in four leading broadsheets from four different countries: the *Australian* (Australia), the *Globe and Mail* (Canada), the *Daily Telegraph* (UK) and the *New York Times* (US). This paper is underpinned by the assumption that that media plays a dual role in society: the media reflects the flavor of public debate and also influences it (Hood et al 2001, Stehr 1994, Castells 1996, van Dijk 2006 cited Tulloch and Zinn 2011). As a result, an examination of media coverage of H1N1 allows us to see what issues were part of the public discourse at the time of the pandemic. It also allows us to see how media can amplify and attenuate risks and in so doing influence a potentially volatile public.

This paper is organized in the following manner. We start with a review of the academic literature of media coverage of vaccines and health scares, including the emerging literature on social media in this context. We then include a statement about methods of data collection and analysis. Our media analysis includes: volume of coverage, tone of the headlines, rate and volatility of publication and performance assessment of government and the health sector contained within the articles. Each newspaper we have selected is an opinion leader in its country. We acknowledge that, while influential, the newspapers are subject to editorial bias which constrains any generalizations that we may make about the extent to which they reflect the views of civil society in each of their respective countries. This is particularly so in countries like the US and UK in which there are numerous broadsheets in the market, each with a distinctive editorial view.

This research is part of a larger project that examines media and government responses to disasters, crises and emergencies. We have included some of the media analysis that we have done of other events in order to provide some additional perspective on H1N1. While we do not propose the other events are perfect comparators with H1N1, we feel that the other events show patterns in media coverage that the media coverage of H1N1 sometimes followed and sometimes did not. These similarities and differences allowed us to draw more meaningful observations about media coverage of H1N1 in each of these four newspapers.

In our analysis of H1N1 media coverage we observed patterns that we had seen before: the publication rate across the four newspapers is strikingly similar, and the *Daily Telegraph* typically has more alarming headlines than the others. There was also some variation across the four newspapers in H1N1 coverage and in how the H1N1 coverage compared to other events we have examined. The volume of coverage is quite atypical, for example: all four papers covered the story extensively and for several months; the *New York Times* (NYT) (unusually) had more coverage than the other papers and by a considerable margin. Moreover, government performance was assessed quite differently across the newspapers. The G&M had several negative assessments of government whereas the NYT had on the balance more positive coverage of government. The health sector as a whole received a mix of positive and negative assessments, which essentially netted to neutral.

Given the global nature of the risk and the considerable international attention given to H1N1, what is perhaps more surprising is the lack of cross-referencing between newspapers. At times there were similar issues that arose within each country that could have provided insights and forewarning to other nations but the media by and large failed to report these issues. We also observed different degrees of volatility in press coverage. The NYT coverage was extensive, consistent and not as alarming as the other newspapers. In the case of the *Globe and Mail* (G&M), in particular, the high volume and alarming coverage contradicted past publication patterns.

Media plays a powerful role in amplifying and / or attenuating risk; this role can have a strong influence in the manner in which lay people understand the threat, which in turn dictates how the health sector must respond. Even ‘button-down’ broadsheets can become alarmist, which can influence public response. The research demonstrates that despite universal claims about the Risk Society (Beck 1992) and the rise of global media (Feldman 2004), international risk events are interpreted within a national, if not local, context. The death of a seemingly healthy child in Canada just as a limited amount of vaccine became available provided a glimpse into how different media coverage can be across papers, and how overwhelming a response to a pandemic can become if the pandemic were understood to be serious. As social media becomes more popular and gains legitimacy, health information will be even further fragmented and more difficult to control. Such decentralized information exchange will create a significant challenge for health officials for future pandemics.

Old and New Media, Public Anxiety and H1N1

Much of the academic literature that focuses on media coverage of health scares has centred on the media’s capacity to influence uptake of vaccines or other preventative measures. The media potentially plays an important role in shaping public opinion about vaccines. In 1998, Wakefield *et al.* published a now famous article in *the Lancet* (Wakefield *et al.* 1998) that associated the MMR vaccine with the onset of autism in children. The paper received extensive coverage from the British press (Jefferson 2000, Taylor *et al.* 1999) which was followed by a decline in the MMR vaccine uptake (Offit and Coffin 2003) which put the UK at risk for decreased immunity and disease resurgence (Jefferson 2000). The media’s response to Wakefield’s research is not surprising. Researchers have noted the media’s propensity to report the dramatic over the common but more dangerous (Combs and Slovic 1978, Soumerai *et al.* 1992), its tendency to sensationalize (Johnson and Cavello 1987), and sensationalize the most negative aspects of events, in particular (Wahlberg and Sjoberg 2000).

The relationship between people’s anxiety level and their willingness to engage in preventative or containment measures is well documented (Tausczik *et al.* 2012, Hilton and Smith 2010, Jones and Salathé 2009). Government recommendations during a pandemic are more likely to be followed by those who perceive the risk of infection to be greater. On the surface this appears to be good news for government health officials. Unfortunately, the relationship between people’s anxiety and the probability of them dying or becoming debilitated by a threat is quite weak (Jones and Salathé 2009). People often feel anxious about the wrong things.

People are increasingly turning to the internet for information about health. Close to half of all Americans use the internet to find information about their symptoms, conditions and potential treatments (Brownstein *et al.* 2009). An American study conducted during the H1N1 outbreak found that the Internet was the preferred source for information about the virus (Jones and Salathé 2009). Search terms coupled with IP addresses can be used by health authorities for surveillance purposes; this information has reduced the time it takes to identify an outbreak (Brownstein *et al.* 2009) and the information people need to deal with it (Henrich and Holmes 2011). During the H1N1 pandemic online monitors first noticed an increase in flu related online activity on Wikipedia, followed by increased activity on blogs (Tausczik *et al.* 2012). Online activity can also be used to monitor public anxiety levels, as it is reflected in the way people write online (Tausczik *et al.* 2012).

There has been a growing focus on the role of Internet media coverage and social technology more generally in emergencies (Hughes and Pelan 2010). In traditional science journalism knowledge was generated by experts; now, in *Web 2.0* (Stanyer 2008), which includes comments boxes, tweets and blog sites, there is not necessarily a dominant narrative; the narrative is diffuse; and knowledge is generated through a more interactive dynamic between experts and lay views (Oh *et al.* 2012, Secko 2011).

There are advantages to more interactive communication between professional media and the public. Researchers have been careful to note that there is no ‘one view’ about risks among the public. Risk perception is mediated through social context (Boholm 2009, Slovic *et al.* 2004, Frewer 2004, Alaszewski 2005, Cottle 1998). It has been argued that risk perception among populations varies by gender (Drottz-Sjoberg 1991), education (Kraus *et al.* 2001, Rundmo, 1999) degree of expertise in the subject matter (Slovic 1987, Brun 1994), cultural orientation (Kahan *et al.* 2010), as well as a variety of emotive factors (Baron *et al.*, 2000, Rundomo & Moen, 2006). (Preceding references in this paragraph taken from Rundmo & Moen 2006.) Therefore what one might consider important, newsworthy or even dangerous and alarming is subject to interpretation. In this sense, a more inclusive interactive discussion between experts and lay people has merit (Renn 2008).

At the same time, more interaction between experts and laypeople does not necessarily lead to a better result. Content analysis of comment sections in three major Canadian newspapers during H1N1 concluded that many people who commented on H1N1 stories mistrusted the government, and also mistrusted the media (Renn 2008). The authors noted that people are more apt to comment if they feel discontent, which gives a skewed view of public opinion. In a similar study of the EU, researchers found that that when presented with scientific information the media often presented that information in a balanced way (Duncan 2009) yet the balance can be undermined by overly negative on-line commenters (Secko *et al.* 2011).

The pervasiveness of the social media such as twitter and its use during emergencies also raise questions about its accuracy and influence (Hughes and Palen 2009). A study that analyzed close to 6000 tweets all relating to H1N1 concluded that over half of the tweets shared information about H1N1 resources and over 20% shared personal experiences. This data is

consistent with tweet analysis during other emergencies (Chew and Eysenbach 2010). Yet Twitter has been criticized for lacking rigour – tweets are not referenced, and they are often declarative which can mislead readers into thinking they are factual.

At present, the move to social media is only partial. Despite the growing prominence of social media, research suggests that people still wish to confirm health information with more traditional sources (Jones and Salathé 2009). When people want to know about a health issue, traditional broadsheets can confirm beliefs.

An examination of traditional broadsheet media coverage of risk therefore offers some important insights. First, notwithstanding the fact individual perception may vary, researchers have consistently noted that most people base their perceptions about risk primarily on information presented in the media (Fischhoff 1985, Stehr 1994, Castells 1996, Kitzinger and Reilly 1997, van Dijk 2006 as cited in Tulloch and Zinn 2011). Hood *et al.* argue that high circulation newspapers do not necessarily reflect public opinion, but they do assume that it reflects “the flavour of the public debate, not least because opinion leaders read such sources” (2001, p. 93). Print media also has the advantage of being a stable document that is updated usually every 24 hours. So while researchers may not be able to monitor how the story changes by the minute – as one might be able to do by researching TV or social media – researchers can monitor the progress of the story on a 24 hour basis, in the same way that one might research TV or social media stories at 24 hour intervals. Looking at the daily paper also has the advantage of looking at a source that has eliminated many errors in reporting that happen throughout the day during an event – and can run amok on new forms of social media, for instance.

Despite considerable attention, many questions about H1N1 and government and social responses to it remain unresolved (Waterer *et al.* 2010), including the role the media played. During the pandemic, Rachul *et al.* (2011), for example, found that the Canadian media seemed not to indulge in overly pessimistic coverage that often accompanies dramatic events like health crises. They concluded that, on the balance, coverage of both the H1N1 vaccine and the Canadian vaccination program were positive with very little emphasis being placed on negative side effects of the vaccine. The seriousness of contracting H1N1 and the potential consequences associated with the virus received relatively more attention in the coverage of the event. Laing (2011), on the other hand, argued that the Canadian media were alarmist, and focused disproportionate attention on government errors and highly emotive issues.

If we accept broadsheet coverage is an important social amplifier, then it presents important opportunities to examine the extent and manner to which these sources framed and amplified the risk as well as how government was perceived to perform during this event. The comparative aspect is useful, and thus far absent from the academic literature. By comparing the newspapers’ coverage of H1N1 with other emergencies covered by the same newspaper, it allows us to place the coverage—and key terms like ‘alarming’ or ‘extensive’ or ‘volatile’ or ‘sporadic’ or ‘negative’—in comparative perspective, and determine what, if anything, about H1N1 was unique compared to these other events.

When we compare H1N1 coverage across newspapers, it also allows us to see how each newspaper - and to an extent, their governments and health officials – responded to this threat.

When we examine the differences, in particular, we see more clearly the impact of context on reporting, and its subsequent impact on how health officials must contend with issues. Finally, it can also provide insight into the opportunities and constraints on cross national learning through media coverage.

Method

We reviewed 1857 newspaper articles from four different newspapers; 1199 were about H1N1 in particular. The remaining articles were about other emergency events that we examined in his research project, as identified in figure 1. We accessed the coverage of these events by using the Factiva database to search within a leading national newspaper in each country: the *Australian*, the G&M, and the *Daily Telegraph* and the NYT. These are all high-distribution newspapers and opinion leaders in each of the respective countries.² We identified our sample by drawing on all articles that appeared in the period of one year following the date at which each event began and that included in the article the term(s) most commonly used to refer to the event. We eliminated any articles that were clearly not principally about the event. These types of events tend to appear in large numbers of articles during the year in which they occurred for instance but the references to the events are often ‘asides’ in articles that are principally about something else.

For the analysis of the headlines, we drew on the analytical framework of Rowe, Frewer and Sjoberg (2000), which examines not only volume but also media tone and content when considering how risks are communicated to the public (Rowe *et al.* 2007). Headlines were categorized in one of four ways: alarming; reassuring; alarming and reassuring; neither alarming nor reassuring. The articles were classified at two different times. All non-H1N1 articles were classified during February and March 2010. All H1N1 articles were classified in January and February 2011. We reduced the impact of the bias in assessments by using several strategies. As noted, we assessed all the articles during a short and fixed period of time. We also developed a standard template and applied it to all articles. All results were stored in an Access database that we developed and maintain. One research assistant classified all non-H1N1 articles in the *Australian*; one classified all non-H1N1 articles in the G&M; one classified all non-H1N1 articles in the *Daily Telegraph*; and one classified the NYT. For the H1N1 articles, one researcher was assigned to each newspaper to classify articles. The group also met at the start and periodically to review articles together to introduce some level of consistency. Finally, a second research assistant double coded independently 10% of the articles, as noted below.

For analysis of the content of the articles, we counted the number of articles that referred to various key terms. The key search terms were selected based on conventional items that were relevant to public administration and risk management. We also determined whether key actors—such as government and owners and operators in critical sectors, including the health sector—were assessed positively, negatively or neutrally. (N/A was also an option.) To summarize the performance data, a value of + 1 was assigned to each article that was on the balance a positive assessment for each key sector and a value of -1 to each article that was on the balance a negative assessment. (Neutral assessments were given 0.) We then calculated the total

² Local media coverage may well yield different results but they are not part of this particular research project.

net sum, adding the number of positive and negative assessments together. When assessing government performance, each order of government was assessed separately. In other words, if one article has a negative assessment of both the federal and provincial government, then it is assessed -2.

Inter-rater reliability

To test the inter-rater reliability of all aspects of coding, ten per cent (n=186) of the 1857 articles were double coded independently of the original coders. Using Cohen's kappa coefficient we found an inter-rater reliability agreement of $k = .80$ for tone of the headlines, and $k = .66$ for government performance assessment. This corresponds to a substantial level of agreement.

H1N1 Media Analysis

Volume of Coverage

Media Coverage of Selected Critical Infrastructure / Emergency Management Events

Figure 1 shows the number of articles on the selected event that were published during the 365 day period following the start of the event. The number represents the total number of articles that appeared in one national newspaper from the country in which the event occurred. Countries include Australia, Canada, the UK and the US. Events include natural disasters, industrial failures (built environment and chemical spills), food contamination, terrorist conspiracies and H1N1. Sources - Australian events: the *Australian*; Canadian events: the *G&M*; UK events: the *Daily Telegraph*; and US events: the *NYT*. All events are post 9/11. We see H1N1 has considerably more coverage than any other event but there is considerable variation in H1N1 media coverage between the four newspapers.

Figure 1. Media Coverage of Selected Events

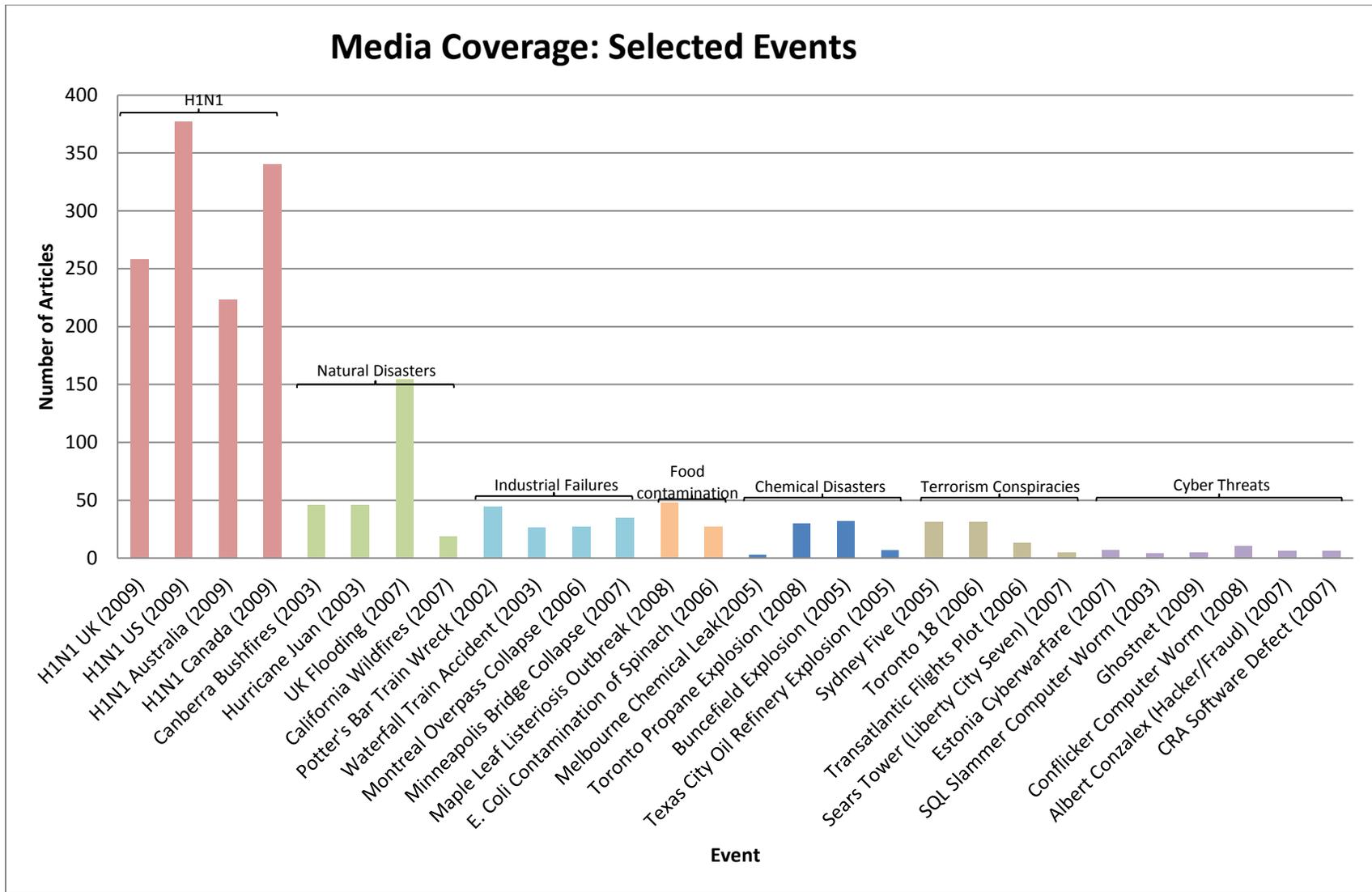
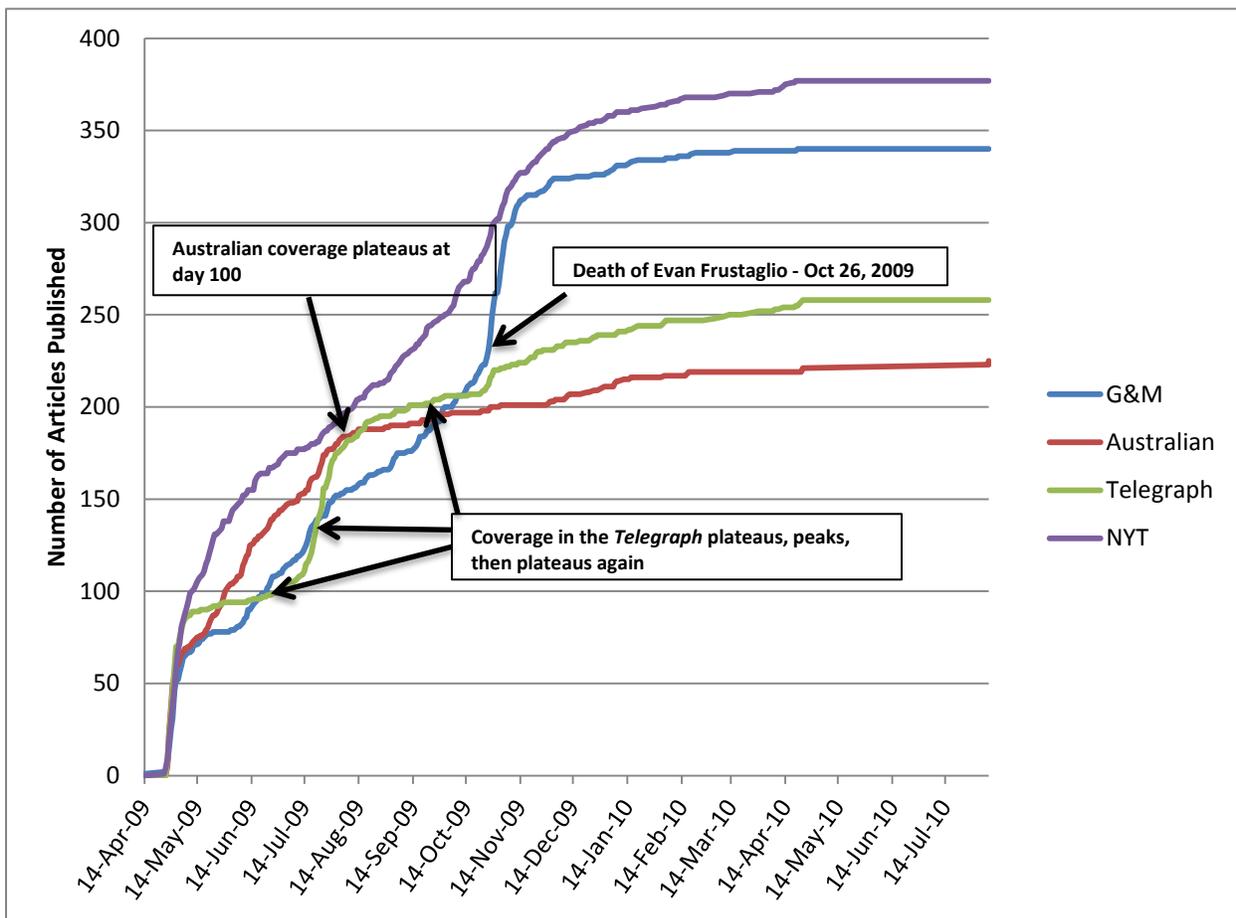


Figure 2 illustrates the accumulative number of articles published by each of the four newspapers over a one year period following the first article, published on 14 April 2009. NYT had published the most articles by the end of the third week and continued to publish the most throughout the remainder of the 365 day period. A similar pattern is exhibited in all four newspapers, which is a steep rise in the number of publications in the first four weeks and a reduced publications rate over the last 3 months. There are, however, clear differences in the publication rates: the NYT is the most consistent over the middle period; the *Australian* has the most dramatic reduction in stories after day 100; the *Daily Telegraph* has a peak and plateau pattern to its coverage; and the G&M shows a significant spike in October, following the death of a 13 year-old-boy, Evan Frustaglio, just as a limited amount of the vaccine became available.

Figure 2. Number of Articles published between 14 April 2009 and 13 April 2010. Each paper shows different patterns.



Tone of Headlines

Each headline was categorized as either: alarming; alarming and reassuring; neither alarming nor reassuring; or reassuring. We calculated the number of articles that had an alarming headline as a percentage of those that were either alarming or reassuring, which is summarized in the table below. Regarding H1N1, the *Australian* has more alarming headlines than it normally has but this is likely due to the fact that the flu season in Australia occurs between May and September. In other words, Australia was faced with the pandemic immediately, without a vaccine. This distinction explains a number of the deviations we see in the *Australian*. Australian aside, despite H1N1 having such a large number of articles, the percentage of alarming headlines for H1N1 follows the patterns that each of the other newspaper has shown before. The *Daily Telegraph* tends to have more alarming headlines; the NYT and the G&M less so. We note that the sample size for some of the other events is small.

Table 1. Tone of Headlines: 22 Critical Infrastructure/ Emergency Management Events

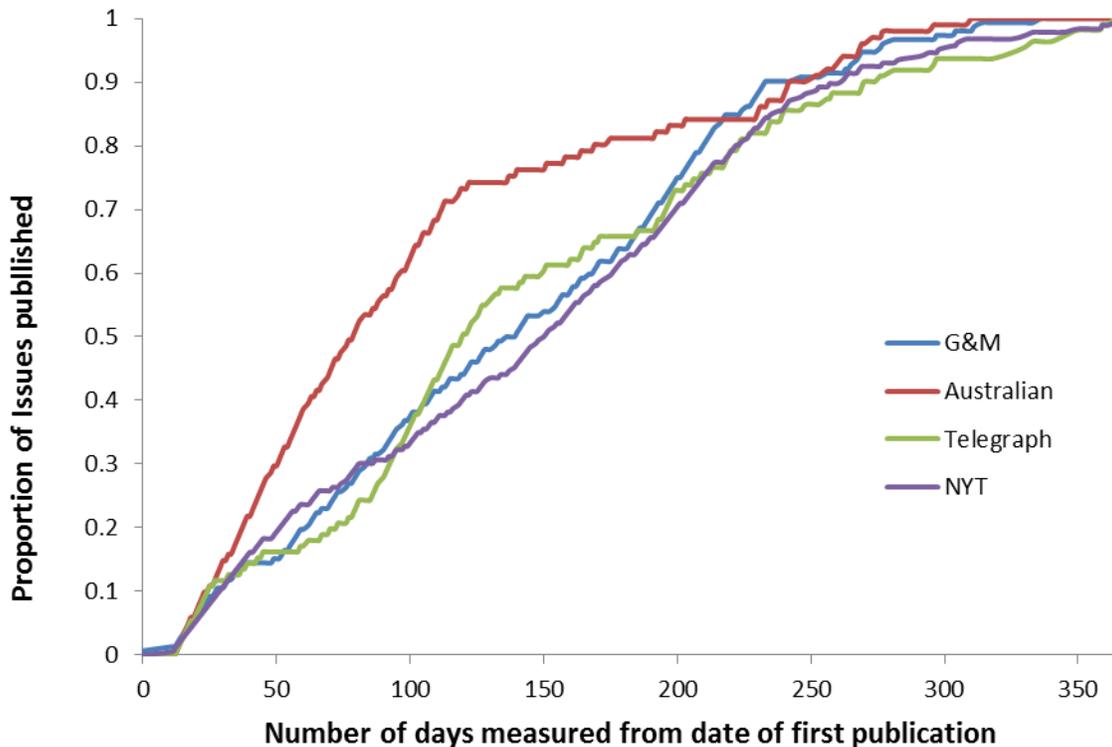
Event	Number of Alarming Headlines	Number of Reassuring Headlines	Percentage of Alarming Headlines
H1N1			
H1N1 Australia (the <i>Australian</i>)	127	24	84.11%
H1N1 Canada (the G&M)	157	64	71.04%
H1N1 UK (the <i>Daily Telegraph</i>)	172	28	86.00%
H1N1 US (the NYT)	123	63	66.13%
Natural Disasters			
2003 Canberra Bushfires (the <i>Australian</i>)	22	8	73.33%
Hurricane Juan (the G&M)	25	11	69.44%
2007 UK Flooding (the <i>Daily Telegraph</i>)	93	10	90.29%
2007 California Wildfires (the NYT)	10	1	90.91%
Industrial Failures			
Waterfall Train Accident (the <i>Australian</i>)	11	3	78.57%
Minneapolis Bridge Collapse (I-35W Mississippi River Bride)	11	3	78.57%

(the NYT)			
Montreal Bridge Collapse (De la Concorde Overpass) (the G&M)	15	5	75.00%
Potters Bar Rail Accident (the <i>Daily Telegraph</i>)	28	1	96.55%
Chemical			
Toronto Propane Explosion (the G&M)	18	6	75.00%
Melbourne Chemical Leak (the <i>Australian</i>)	2	0	100%
Buncefield Explosion (the <i>Daily Telegraph</i>)	16	7	69.57%
Texas City Oil Refinery Explosion (the NYT)	4	1	80.00%
Terrorist Conspiracies			
Sydney Five (the <i>Australian</i>)	10	3	76.92%
Toronto 18 (the G&M)	10	7	58.82%
Transatlantic Flights Plot (the <i>Daily Telegraph</i>)	9	1	90.00%
Sears Tower (Liberty City Seven) (the NYT)	1	1	50.00%
Food Safety			
Maple Leaf Listeriosis Outbreak (the G&M)	29	9	76.32%
E. Coli Contamination of Spinach (the NYT)	14	3	82.35%

Publication Rate

Figure 3 illustrates the publication rate of issues carrying the H1N1 story over the year, starting at 14 April 2009 and ending 13 April 2010. We see from the figure that by day 100 the *Australian* had published 62% of its issues with coverage of H1N1 compared to 37% for the G&M, 36% for the *Daily Telegraph* and 33% for the NYT. Figure 3 also shows that by day 79 the *Australian* had published half of its issues that would cover H1N1 within the year. In contrast, the *Daily Telegraph* published half of its issues by day 120, the G&M by day 136 and the NYT by day 150. It is also striking how similar the publication rates are over the year for the G&M, the *Daily Telegraph* and the NYT. We see particularly strong similarities between the G&M and the NYT. With the *Daily Telegraph* we see an increase in its publication rate about day 100. Also noteworthy is that the publication rate appears linear up to day 200, which suggests a constant publication rate of issues.

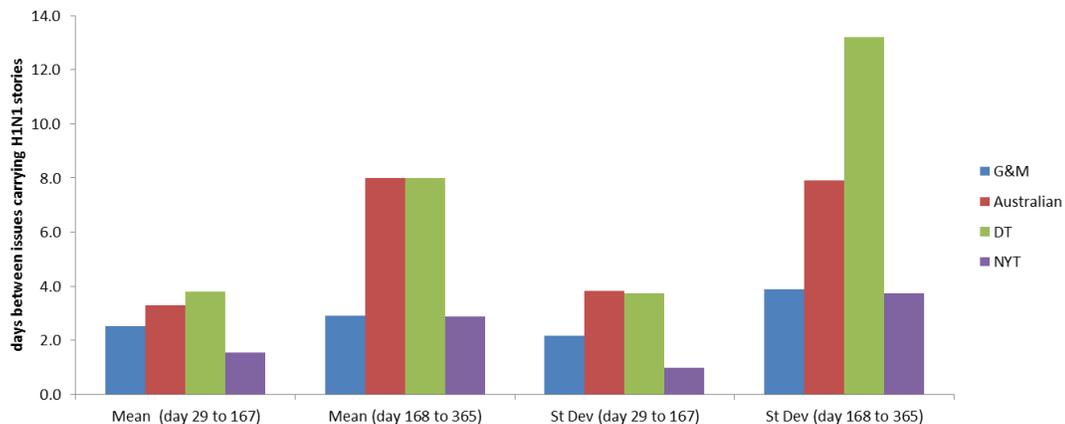
Figure 3. The cumulative proportion of issues with at least one H1N1 article published between 14 April 2009 and 13 April 2010. The G&M, the NYT and the *Daily Telegraph* are very similar. The *Australian* publishes a greater proportion of its articles early in the year.



Volatility

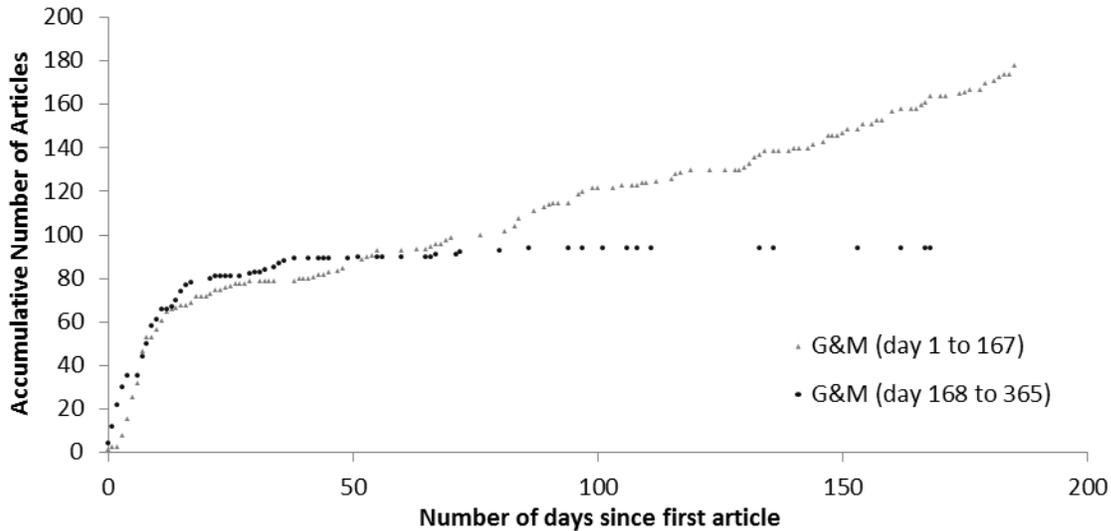
Figure 4 includes summary statistics that show the number of days *between* issues that include articles on H1N1 for each of the four newspapers. In other words, the figure shows the number of consecutive days, on average, in which the newspapers did not publish stories about H1N1. The first four weeks of the story have been removed from these statistics because the publication rate over this period was dramatically different, as we saw in Figure 1. The data have been partitioned into an early period (day 29 to day 167) and a late period (day 168 and beyond). The mean days between publications that include H1N1 articles for the NYT and the G&M are very similar in both periods. In contrast, the story seems to be winding down in the *Australian* and the *Daily Telegraph* when we compare the two periods. The standard deviation provides a measure of the volatility of the publications within these time periods. In the early period the NYT has the smallest standard deviation suggesting a more predictable pattern of coverage; one story typically appears every 1.5 days. The *Daily Telegraph* in the latter period has the greatest standard deviation of 13.2, suggesting a pattern in which the story is not covered for long periods of time (on average every 8 days) and then several consecutive issues in which the paper includes coverage.

Figure 4. Mean and standard deviation of the number of days *between* issues covering H1N1 across each of the four newspapers. The NYT and the G&M have similar statistics in both periods while the *Australian* and the *Daily Telegraph* are much larger in the second period.



While Figure 4 shows that the mean and the standard deviation between the G&M and the NYT were similar, their publication patterns were quite different. On day 167 the 13 year-old-boy, Evan Frustaglio, died from H1N1. At that point, the pattern in the accumulative number of articles published in the G&M followed a similar pattern as the first two weeks of the H1N1 story in April 2009. After the first two weeks following the first H1N1 article until day 167, the G&M had exhibited a predictable and constant level of coverage as seen in Figure 5.

Figure 5. Accumulative number of articles for the G&M after the death of Evan Frustaglio. It shows a very similar pattern as the first two weeks of the H1N1 story in April 2009.



Discussion about Broadsheet Coverage of H1N1

Social Amplification and Attenuation

Unlike the other events that we examined, with H1N1, the NYT had the most coverage, followed by the G&M, the *Daily Telegraph* and finally the *Australian*. The reason for the extensive coverage in the NYT is not especially clear. The public did not seem overly concerned. The vaccine participation rate, for example, was lower by a good margin in the US compared to any other country we examined.³ The increased coverage could perhaps be explained by proximity to ‘ground zero’ in Mexico. The US and Canada were obviously closest, and also were among the first countries to experience domestic cases of H1N1. SARS in Canada in 2003 and controversies over H5N1 vaccines in the US in 2004 may also have influenced the coverage in these two papers. The US also had a considerably larger death count than the other countries⁴. Finally, coverage in the NYT may also have been increased by the complexity of the

³ In the four countries we examined H1N1 vaccination rates varied considerably. In Australia the national vaccine uptake was approximately 18%, in the United States it was 23.9%, in the United Kingdom it was 37.6% and in Canada it was 41%. Due to irregularities in how vaccines are distributed and how vaccination rates are reported in different countries, it is difficult to compare these numbers conclusively. Reported vaccination rates also varied regionally within countries (Statistics Canada 2011; Morbidity and Mortality Weekly Report 2011; Department of Health and Aging, 2011; DH/HPA 2010).

⁴ Among the four countries we studied, the US reported the highest death rate by a large margin. Reported mortality rates vary widely by country and sometimes regionally within countries. Despite numerous reported deaths one Australian study cited no increase in deaths attributable to H1N1 in Australia, for example. Estimated deaths reported to the CDC in the United States range from approximately eight to eighteen thousand. The data that was collected during the pandemic is unreliable. The World Health Organization (WHO) requested that all laboratory

health care system in the US. The other countries have national health care programs in which health care responsibility is devolved largely to a regional government (provincial, state or devolved authority). While the US may have devolved health to the state level, the fact that there are 50 states coupled with the mix of public and private delivery models increased the complexity of the task and thus lends itself to increased controversy and media coverage.

An equally interesting insight with respect to volume is the consistency / volatility of coverage. The NYT provides the most consistent coverage followed by the G&M, the *Daily Telegraph* and the *Australian*.

The *Australian* case is an anomaly. After a very large initial peak in coverage through July with unusually alarming headlines, the *Australian* effectively stopped covering the story, which is why its overall count is relatively low compared to the other papers. This is not surprising given that the flu season occurs between May and October in Australia, and the pandemic did not materialize in any substantive way in Australia. Ironically, other than two articles in the G&M about the Australian case, the absence of H1N1 in Australia is not reported by any of the other newspapers. This is particularly surprising given the international nature of the pandemic and massive awareness campaign that was occurring at the WHO (2009).

If we remove the first 30 days from our analysis to account for the peculiarity of the Australian case, we see the *Daily Telegraph* becomes the most volatile. (Figure 4.) While the Telegraph's coverage was erratic throughout the year, it experienced a noticeable spike between mid-June and mid-August. There does not seem to be one particular event that triggered the spike but many of the stories during this period focus on families and family issues. The most common theme was vulnerable youth. There were articles on sick and dying children, children reacting to Tamiflu and school closures. There were also a significant number of stories on the decrease in Britons going on holiday due to H1N1-related concerns. There were also stories on the impact H1N1 would have on sporting events, like Wimbledon and football matches. There were also articles on safety concerns regarding pregnant women receiving the vaccine. After family related issues, the second most common theme was the economy and work-related issues. There were articles about employees not going to work, the flu being passed around at work, the impact the flu would have on the economy and the health sector's capacity to cope.

Like the *Australian*, the G&M also had an unusual pattern but not because of its flu season. In October 2009 and following the death of a seemingly healthy 13 year-old-boy, the G&M's coverage changed from mirroring the more consistent and predictable pattern that we see in the NYT to the more alarming and erratic pattern that we see in the *Daily Telegraph*. Evan Frustaglio died of H1N1 shortly after the Canadian flu season and vaccination program began.

confirmed deaths that occurred between April 2009 and August 2009 be reported. There were 18500 laboratory confirmed deaths during the H1N1 pandemic, but researchers believe this number underestimates the actual number of deaths. One model suggests there were over ten times that number of deaths (201,200).⁴ The numbers reported to the WHO have been questioned because not everyone who died from H1N1 was tested and the virus is not always detectable at the time of death. For these reasons the WHO mortality rates are likely an underestimation of the actual mortality rate (International death toll: Dawood *et al.* 2009; Australian death toll: Muscatello *et al.* 2010; UK death toll (England): Donaldson *et al.* 2010; US death toll: Shrestha *et al.* 2010; Canadian death toll: Gilmore and Hoffman 2010).

This event featured prominently in the (dramatically increased) media coverage we see in the G&M at the end of October. (Figure 2.) The story appeared on the front page of the G&M (as well as several other media outlets) with an image of a seemingly healthy boy. The dramatic event contributed to generating the extensive line-ups in front of vaccination community centres across the country in the days that followed (Laing 2011) and a series of negative performance assessments of government for its inability to respond to the event.

The death of Frustaglio amplified the event, and arguably reframed it. Until that time, H1N1 was unfolding as other health scares had unfolded, such as SARS, which is to say that yes, it received considerable media coverage but it had little direct impact on people's lives. People acknowledged that H1N1 was serious but most people failed to act on it. Public opinion polls of Canadians at the time show that as the flu season and vaccination program drew closer fewer and fewer Canadians said that they would be getting the vaccine. In July 62% said they would, but by October this number had dropped to 49% and was continuing to trend downwards (Mittelstaedt 2009). The Frustaglio case underscores the intractable problem of the power of 'the one' (Power 2002, Slovic 2011)—the phenomenon that one vulnerable person can prompt a strong emotional reaction in others, and in so doing skew people's sense of probability.

There were other child deaths. Indeed, children were vulnerable to contracting H1N1. Days before Frustaglio died a Canadian teenage girl died of H1N1, which did not generate much coverage until after Frustaglio's death. In her case she had suffered from other illnesses and a weak immune system. The coverage in the G&M contrasts significantly with the other papers in this respect. As noted, the *Daily Telegraph* also included coverage of the death of a child but there were only four in total. The death occurred in June, and prior to the release of the vaccine. The *Australian*, too, rarely reported the death of children, and when it did so it did not focus on the specifics of one child. There is one exception in Australia which prompted two articles in the *Australian* about the death of one child.

Ironically, the US experienced more deaths of young people due to H1N1, estimated to be 1,282 under the age of 18, than the other three countries put together⁵ yet there is no discernible spike in the NYT coverage. In the NYT, 15 articles noted the death of a child or children; the coverage in the NYT was not as emotive as the coverage was in the G&M of Frustaglio, which included stories about the grieving parents and the days leading up to Frustaglio's death. The G&M articles tended to include interviews with friends and relatives of the deceased rather than experts. 12 of the 16 articles in the G&M that refer to a child's death refer to Frustaglio. In the NYT, children were rarely named, personal details rarely provided. If a child had underlying health issues or disabilities, which was frequently the case, the detail was usually noted. Moreover, the reference was often embedded in a much larger story, which did not necessarily have an alarming headline.

This second spike in coverage in the G&M coupled with the deviation from its normal tone arguably combined to have a strong impact. The research suggests that even a 'button-down' broadsheet is susceptible to highly emotive coverage if the right conditions are met, and

⁵ See footnote 4

that deviations from past patterns of coverage can prompt strong reactions. The death of Frustaglio just as a limited supply of vaccine became available was a perfect storm, and very unlucky from an operational standpoint for Canadian health officials.

There are two important implications for public health officials. First, this event signals that public health officials need to work with the press and prepare them for these more emotive stories, and encourage the press to place them in a more appropriate context. Researchers have noted that story placement and probability data can help reduce the anxiety-generating nature of a story, for example (Barnes *et al.* 2008). Secondly and relatedly, it suggests that public health officials need to have a more adaptive capacity in their operations. Laing (2011) notes that Ontario health communication officials failed to prepare a more flexible communications plan. Barker (2012) notes that the pre-event governance structure in the UK, for example, led to heightened anxiety and pre-determined responses to H1N1, which fails to incorporate a more sensitive and adaptive capacity. It remains a curiosity why Canadian health officials seemed unprepared to respond to a surge in public demand for the vaccine following the death of a young person, particularly given that health officials had repeatedly warned of the vulnerability of young people.

Selected Administrative Arguments

While the domestic health sector tended to receive neutral assessments from each of the respective newspapers (i.e. a mix of positive and negative, netting to zero),⁶ assessments of governments varied more dramatically. The G&M included several negative assessments of government (-113); the *Daily Telegraph* and *Australian* had moderately negative assessments (-35 and -41, respectively); and the NYT had an overall positive assessment of government performance (+17). (See methods section for note on methodology.) This is in stark contrast to the performance assessment coverage we see in stories about the other events, and particularly in the stories in the *Daily Telegraph*. The *Daily Telegraph* assessed government performance very negatively in the other events we considered. For H1N1, however, the G&M was twice as likely to publish a negative performance assessment of the federal government as the *Daily Telegraph* was of the government in London.

Hood and Jackson (1991) note that three types of arguments are typically made about administration: efficiency arguments; fairness and accountability arguments; and learning and stability arguments. While ostensibly these types of claims appeared across all of the newspapers we examined, there is considerable variation in the evidence that each of the newspapers point to when making these arguments. The section below highlights the more commonly made arguments; it is not an exhaustive list of commentaries.

With respect to *efficiency arguments*, all newspapers criticized at different times the governments' lack of coordination within their own countries. Health care in each country is delivered by myriad public agencies and different orders of government; considerable coordination was required, especially with respect to establishing common standards. All newspapers had stories on the pharmaceutical companies that produced the vaccine. These

⁶ The NYT gave the most positive assessments of the domestic health sector (+14) followed by the G&M (+1), the *Daily Telegraph* (-3) and the *Australian* (-8). See methods section for further notes on methodology.

stories typically focused on the problems associated with monopoly service provision, the concentration of power in multinationals, allegations of corruption at the WHO and delays in the production of the vaccine.

There were also several but different *fairness and accountability arguments*. The G&M referred to social and economic elites – such as professional hockey players and hospital board members – seemingly jumping the queue and receiving vaccines before the general population. In contrast, the NYT had stories on the individual rights of nurses to refuse mandatory vaccinations. Both the *Australian* and the G&M featured arguments concerning access to adequate health care for Aboriginals in their respective countries. H1N1 occurred frequently and more seriously among Aboriginal populations, particularly in the first wave of the illness. In one incident, Health Canada was criticized for sending an oversupply of polyethylene bags (cadaver bags or “body bags”) to remote First Nation communities in Northern Manitoba as part of a shipment of medical supplies. Initially the media reported that several reserves had received an over-supply. Further investigation revealed, however, that in fact only one reserve received the over-shipment. Thirty-eight body bags were delivered to the nursing station at Wasagamack First Nation; all contained full post-mortem kits. In a symbolic protest, northern First Nations leaders returned bags to a Health Canada office in Winnipeg. Garden Hill First Nation Chief David Harper called the deliveries an insult (Alphonso and Ha 2009).

With respect to *stability and learning arguments*, the papers drew comparisons with past health scares. Nearly ten percent of the articles in the G&M contained references to SARS, for example, which had been a significant event in Toronto. The NYT also included references to the US government’s difficulty in securing sufficient vaccines in 2004 for H5N1 and the much larger Swine flu operation that the US government mounted in the 1970s. The *Daily Telegraph* also had numerous stories about the risks for pregnant mothers if they receive the vaccine, which might be traced to the heightened awareness of the dangers associated with vaccines due to the Wakefield / MMR incident.

Conclusion

If broadsheets offer insight into the flavor of public debate, then a comparison of national broadsheets across four countries allows us to examine how this public debate can vary even if the risk or threat is ostensibly the same. By the same token, while these papers are opinion leaders they do not represent the views of everyone in the country. The media coverage gives us a good impression of the public discourse but it is not exhaustive, particularly when one refers only to one broadsheet in each country.

If we look first at what the papers had in common, we observe the following. First—and perhaps not surprisingly—what’s ‘new’ makes news. All papers had a spike in coverage at the outset of H1N1; events like the death of Evan Frustaglio also provided a spike in coverage. Second, all newspapers covered the story quite extensively for months. Thirdly, local events matter; they receive considerable coverage in the seemingly international events. Finally, editorial decisions also matter. We saw that each newspaper treated the death of children differently, for example. Arguably the decision by the G&M – as well as other Canadian news

outlets – to cover the death of Evan Frustalgio in such an emotive manner contributed to the strong public reaction when the vaccine program started.

Despite these similarities, there was considerable variation in H1N1 coverage across the four newspapers. There was variation in the volume of coverage, the tone of the headlines, the subjects that were examined, the volatility of publication and the performance assessment of the respective governments.

The research allows us to draw lessons for health officials working in all four countries. First, the research shows different patterns of coverage with which health officials must contend during a major event—from high volume and consistent to erratic and alarming. Secondly, and notwithstanding the patterns that emerged among some papers, the research shows how fickle even ‘button-down’ press coverage can be, and by extension, how fragile and unpredictable the population can be on these highly emotional issues. Thirdly, it alerts us to the fact that media coverage of global risks is interpreted in a local manner and therefore any interpretation of media coverage must take local events and interpretations into account. Fourthly, the research shows that experts continue to struggle to anticipate layviews of risk. Health officials must adopt a more dynamic and adaptive health communications plan that can help them to meet surge and retrenchment actions, and deal with a more erratic press – from the broadsheets to the even less certain world of social media. Recognizing the media’s role as a social amplifier, public health officials need to work with the press and prepare them for highly emotive stories, which can trigger health scares that can potentially undermine important health operations. The rise of social media will make this variation and fragmentation of media coverage an even greater challenge in managing future pandemics.

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