Representations of cycling in metropolitan newspapers - changes over time and
differences between Sydney and Melbourne, Australia

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Abstract

Background: Cycling is important for health, transport, environmental and economic reasons. Newspaper reporting of cycling reflects and can influence public and policy maker attitudes towards resource allocation for cycling and cycling infrastructure, yet such coverage has not been systematically examined.

Methods: The Factiva electronic news archive was searched for articles referring to cycling published in four major metropolitan newspapers – two in Sydney and two in Melbourne, Australia, in selected years from 1998 until 2008. After excluding articles not about cycling, there were 61 articles published in 1998, 45 in 1999, 51 in 2003, 82 in 2007 and 87 in 2008. Each article was coded for positive or negative orientation, and for framing of cyclists and cycling. Inter-rater reliability was calculated on a sample of 30 articles.

Results: Over the past decade there has been an increase in the reporting of cycling in the major newspapers in Sydney and Melbourne, with a significant increase in reporting of cycling in Melbourne in later years. Recent reporting of cycling was generally positive, equally focused on benefits such as health and the environment. Three quarters of negative stories involved injury or death of a cyclist. The Sydney based The Daily Telegraph reported the most negative stories. We found positive framing of ‘cycling’ was more widespread than negative, whereas framing of ‘cyclists’ was more negative than positive.

Conclusions: Quantity of reporting of cycling varies over time and by newspaper, and even by two newspapers in different cities owned by the same media agency. Editorial
policies appear to reflect developments in the different cities, with increases in positive reporting of cycling in Melbourne following increases in cycling in that city. Negative cycling newspaper stories may deter people from considering cycling as a transport option, but real physical or political improvements to the cycling environment may be necessary before coverage becomes more positive.
Background

Cycling is the fourth most popular recreation in Australia, with bicycles increasingly used as transport across the country [1]. About a million new bicycles are sold in Australia each year, and cycling confers substantial health benefits as a form of regular physical activity that is accessible to people of all ages [2-5].

Despite its popularity, the growth of cycling for recreation and transport is potentially limited by the availability of infrastructure that enables it to be performed easily and safely. Of interest to advocates of cycling, therefore, are the perceptions of the public and of policy makers towards this activity, because of the bearing these perspectives have on the planning and investments needed to support cycling. Researching the portrayal of cycling in the media can shed light on the climate of beliefs and values in which policies that support or hinder cycling are made. News media coverage has particular salience because it can shape public understandings of issues and influence policy and behaviours [6-10].

The limited research undertaken on the news reporting of cycling has identified both positive and negative framings of cycling that have shifted across time within different societies. Following the emergence of the bicycle in the mid 19th century, the media drew attention to the wonder and amazement that was generated by this new machine. Early users of the bicycle were also viewed in some quarters with scorn, with Mackintosh observing that many newspapers portrayed cyclists as hoodlums of ill manner [11].
The 1890s have been described as the ‘golden era’ of cycling [12-15]. As bicycles became cheaper and more user-friendly, interest grew to the point where entire sections of newspapers were dedicated to bicycle news [12, 16]. According to Hammond [13], the economic benefits generated by bicycle advertising swiftly transformed both press and public attitudes:

_Bicycle interests allocated thousands of dollars annually to instruct the public about the lightness, swiftness, strength and beauty of their product… In return, by running editorials and regular columns on the wheel, plus special articles by bicycle enthusiasts and medical men, the press and magazines made cycling an increasingly more discussed and respectable activity._

In the early 20th century, media reporting of cycling declined as the motor car became more popular [17] even though the actual number of cyclists continued to grow [18]. News reporting focused more on cycling as sport and less on its utilitarian values [19]. Some researchers have also noted that in car-centric societies, images of cyclists are dominated by negative representations [20]. According to Bogdanowicz [21]:

_Where the bicycle is featured in UK newsprint it’s frequently characterised as a mode of transport for eccentrics or ‘tree-huggers’. Columns or programmes about “Lycra clad fascists” and “Lycra nazis” are re-cycled on a regular basis by newspaper columnists and radio shock-jocks._

Bogdanowicz [21] and Horton [19] argue that there has been an emergence in recent years of biases against cycling in the news media due to the economic and cultural dominance of the automotive industry and their advertising power within the news media. More positive reporting of cycling, however, has also been documented.
Fincham, for example, reports that many positive stories have an ‘emphasis on the health benefits of cycling coupled with the perception of freedom that is associated with cycling’ [22].

Because of the importance of cycling, in health, transport, environmental and economic terms, further research about the way that this has been framed in news media in recent years is needed. The news media, and newspapers particularly, warrant investigation because they are a primary source of information [23] that can reflect and reinforce community attitudes. The news media also play an important agenda setting function, by influencing what people think about [6] and attitudes to issues [10]. The higher up the news agenda an issue is, the more likely it is to be seen as important by the public [6]. Thus the prominence and type of news coverage cycling receives is likely to be shaping public understandings of cyclists and cycling and is of importance to the uptake of cycling and public policy support for cycling.

This study aims to investigate how cycling and cyclists have been represented in Australian newspapers over the past decade. It examines the frequency of cycling related news stories in major metropolitan newspapers, the way cycling and cyclists are framed by news stories, and variations in the representations of cycling over time, by type of newspaper, and by geographical location.

**Methods**

Our study draws on social construction of reality theory which explains how individuals use news texts and other information to make sense of the world [24] and uses content analysis [25, 26] to examine the nature of newspaper coverage of cycling.
and the dominant frames [7, 27] used to portray cycling and cyclists. Initial frames
were identified from a focus group study on perceptions of cyclists [28], however
coding allowed for new frames to be identified in the newspaper sample. This study
was designed to discover how the two separate but related constructs of ‘cycling’ and
‘cyclists’ are portrayed in the news and whether there are differences between Sydney
or Melbourne’s newspapers.

**Sample**

The news coverage analysed was limited to newspaper articles from *The Sydney
Morning Herald, The Daily Telegraph* (Sydney), *The Age* (Melbourne) and *The
Herald Sun* (Melbourne). These are the major newspapers in the two largest cities in
Australia, with a potential reach of almost half the Australian population. *The Sydney
Morning Herald* and *The Age* are broadsheet newspapers and both published by
Fairfax Media. The two tabloid newspapers, *The Daily Telegraph* (Sydney), and the
*Herald Sun* (Melbourne), are owned by News Ltd.

The Factiva electronic news archive [29] was searched for articles referring to cycling
[search terms Rst=(AGEE OR HERSUN OR DAITEL OR SMHH) AND hd=(cycling
OR cyclist OR bicycl* OR bike)] published in selected publications in the years 1998,
1999, 2003, 2007, 2008. These years were selected to cover a decade, and to provide a
data point in the middle to allow examination of any trend. This search generated 104
the articles, a number were removed as they did not meet eligibility criteria (for
e example, they were stories about motorbikes, stationary exercise bikes, non-news
items). Sports news, letters to the editor and news in brief items were also excluded.
After exclusions the samples for each year were 61 articles in 1998, 45 in 1999, 51 in 2003, 82 in 2007 and 87 in 2008.

**Inter-rater reliability**

One coder reviewed all downloaded articles, and coded all eligible articles according to the coding frame. A second coder (BS) reviewed a random sample of 30 (approximately 10%) of these articles. Inter-rater reliability was assessed using percent agreement between coders.

To simplify the statistical analysis, articles from 1998 and 1999 were treated as one period, as were articles from 2007 and 2008. To test whether there were differences in the frequency of reports over time and by city, the chi square statistic was used. To examine changes in whether the overall article was positive, or negative, over time or by city, logistic regression analyses were used, with time and city simultaneously included in the models.

**Results**

Inter-rater agreement on coding was high, with the overall classification of articles as positive, neutral or negative scoring 83% agreement. For identification of positive and negative frames of cycling and cyclists there was lower agreement at 67% - the lower score reflecting the much wider range of frames for allocation.

**Trends in news coverage of cycling**

There was an overall increase in the frequency of newspaper stories about cycling in Melbourne and Sydney from 1998 to 2008 and slightly more frequent reporting of
cycling in Melbourne (54.3%) than in Sydney (45.7%). Over the 10-year period the number of cycling-related stories significantly increased in Melbourne ($\chi^2 = 6.37$, p=0.04) (see Table 1).

Due to the greater increase in news stories in Melbourne than Sydney, there was a decline in the proportion of items that were published in Melbourne newspapers in the study period. As shown in Table 1, this was due to less reporting of cycling by *The Daily Telegraph* (with a small increase in *The Sydney Morning Herald*). There was more than double the amount of reporting of cycling in 2007-08 in Melbourne by *The Age* compared to earlier periods.

Table 2 shows that there was an increase in stories about cycling that were classified as positive over the last decade, but with the largest increase in the last few years. This pattern is mirrored by a decrease in overall negative stories. There was no change in the frequency of neutral stories. Overall, there were slightly more positive news stories about cycling than negative stories.

When individual newspapers were examined, *The Daily Telegraph* in Sydney had the lowest frequency of positive stories (18.3%), and *The Sydney Morning Herald* had the highest (62.2%), a significant difference ($\chi^2 = 38.59$, p<0.01). In the *Herald Sun* 38.3% of stories about cycling were positive compared with 57.1% in *The Age*. When
the total number of stories was considered, there were more than twice as many stories in *The Daily Telegraph* (*n*=104) as in *The Sydney Morning Herald* (*n*=45).

The tabloid newspapers had more negative stories than the broadsheet newspapers. *The Daily Telegraph* in Sydney had the highest frequency of negative stories (57.7%, *n*=60), more than four times that of *The Sydney Morning Herald* (15.6%, *n*=7). The *Herald Sun* in Melbourne (*n*=36) with 33.6 per cent negative stories, had a higher proportion of negative stories than *The Age* (21.4%, *n*=15).

Of the negative stories (*n*=122), almost three quarters (73.0%) were about injury or death to cyclists. The next most common topic was the bad behaviour of the cyclist (20.5% of negative stories). There was variation among the newspapers in how they reported negative stories. There was more frequent reporting of death and injury in the tabloid newspapers (80% of the negative articles in *The Daily Telegraph* and 70.3% in the *Herald Sun*) compared to the broadsheet newspapers (60% of the negative articles in *The Sydney Morning Herald* and 65% in *The Age*).

**News angles**

The most common news angle was injury to cyclist(s) (13.2% of articles), followed by death of cyclist(s) (10.7%) (see Table 3). About 10% of the news angles were about moves to support cycling or expressions of support for cycling. This ‘support for cycling’ news angle became more frequent over time (from zero in 1998 to 23 in 2008). However, stories about people objecting to cycling or moves to facilitate cycling also rose over time (from one in 1998 to 9 in 2008). Cyclists committing misdemeanors on and off the road was the fourth most common news angle (7.4%),
however this kind of story fell from 10 in 1998 to 1 in 2008. There were few (n=15) stories about celebrities riding bicycles, but these became more frequent over time. There were also very few stories about cycle tourism (3.4%), but again these became more frequent. The angle ‘cyclists kill pedestrians’ appeared to peak around specific events: for example 8 of the 10 stories of this kind appear in the 2007 sample. In a similar fashion, drivers who were charged with killing cyclists gained extra news media attention (with a peak of eight stories of this kind in 2003).

Insert Table 3 about here

**Framing of cycling**

As shown in Table 4 the dominant framing of cycling was that cycling is dangerous to cyclists (161 instances, present in 49.4% of articles). One in ten stories also carried the frame that cycling is dangerous to non-cyclists. However, the framing coding detected many more (510) instances of positive framing of cycling than negative (308 instances). Analysis of change in the framing over time showed that all positive frames were trending upwards especially ‘deserving of support’ and ‘cycling is popular’. While there were fewer instances of negative framing of cycling, all negative framings, except risk to cyclists, were also found to be rising in prevalence.

The dominant positive frame of cycling was that of cycling ‘deserving support’ (present in 27.6% of articles) (Table 4). This frame is evoked by words and phrases which portray cycling as deserving of community/government support or neglected by society/government. The frame of cycling being ‘popular’ was the next most frequently found frame (present in 22.4% of articles), followed by ‘social’ benefits
(17.5%), improving ‘quality of life’, ‘environmental’ benefit (15.6%), ‘health’ benefits (13.8%), ‘fun’ (13.2%), ‘convenient’ (11.7%), and ‘saves money’ (10.4%).

The trend for all positive frames was upwards, with the frames of ‘deserving support’ and ‘cycling is popular’ increasing more than other positive framing of cycling. ‘Social benefits’ of cycling showed the next steepest rise, followed by ‘environmental’ and ‘health benefits’. In 1998, positive framing of cycling was dominated by ‘cycling is popular’ (11.5% of articles) ‘deserving’ (11.5%) and ‘fun’ (11.5%). In 1999, deserving of support (17.8%), social benefits (13.3%) and environmental benefits (11.1%) dominated positive framings of cycling. In 2003, the dominant positive framings of cycling concerned it being ‘fun’ (17.6%), ‘popular’ (15.7%) and ‘convenient’ (13.7%). In 2007, ‘popular’ (30.5%) rose to the top, followed by ‘deserving support’ (26.8%) and ‘health benefits’ (21.9%). By 2008, the key positives messages were that cycling is ‘deserving of support’ (54%), ‘popular’ (32.2%) and ‘confers environmental benefits’ (32.2%). The year 2008 was distinguished by the presence of the frame of ‘deserving of support’ in more than half of all articles (54%). The ‘health benefit’ frame rose from 4.9% in 1998 to a peak of 21.9% in 2007, falling slightly in 2008 to 16.1% when it was overtaken by ‘environment’. ‘Environmental benefit’ varied between 6.6% and 11.1% until 2008 when almost one third of articles carried the environmental benefits of cycling frame (32.2%).

The dominant negative framing of cycling was that cycling is ‘dangerous’ to cyclists (present in 49% of articles) (see Table 4). One in ten articles carried the frame that cycling is a ‘danger to non-cyclists’. Framing of cycling as ‘difficult’ or ‘bad for the
urban environment’ was present in 8% of articles each, and the frames of cycling as ‘unpopular’ or ‘costly’ were in 5% of articles each. Ten per cent of articles carried other negative framings of cycling.

By far the most dominant negative framing of cycling was ‘risk to cyclists’. Although the prevalence of this frame fell slightly, this remained by far the most common negative frame. In 1998, cycling was framed negatively as a risk to cyclists (57.4% of articles conveyed this frame) and as ‘difficult’ (3.3%) and ‘unpopular’ (3.3%). The frame of ‘risk to others’ was present, but only in 1.6% of articles. By 1999, negative framing of cycling conveys the message that it is a ‘risk to cyclists’ (55.6%) and the prevalence of the ‘risk to others’ frame rose to 11.1%. In 2003, the dominant negative framing of cycling was again ‘risk to cyclists’ (43%), with the ‘risk to others’ framing declining to just 1.9% of articles. In 2007, the dominant negative frames of cycling was ‘risk to cyclists’ (43.9%), which was followed by ‘risk to others’ (14.6%) and ‘negative impact on urban environment’ (11%). In 2008, ‘risk to cyclists’ was still the most widespread negative framing of cyclists (49.4%), while ‘negative urban impact’ rose to 16% and ‘risk to others’ to 14.9%. The framing of cycling as having a negative impact on urban environments increased the most (from 1.6% in 1998 to 16.1% in 2008).

Insert Table 4 about here

*Framing of cyclists*
The analysis detected remarkably few (n=58) instances of positive framings of cyclists (as opposed to cycling) (see Table 5). Negative framings of cyclists (n=107) were detected almost twice as often as positive framings of cyclists. The negative frames of cyclists in this sample paints a picture of cyclists who are ‘irresponsible lawbreaker’, ‘pariahs’ and ‘dangerous to other’, a message delivered with greater frequency than the positive story of cyclists as ‘brave’, ‘harmless’, ‘healthy’ and ‘safety conscious’.

In 1998, one in five (22.9%) articles carried a negative framing of cyclists. These frames were found in 48.9% of articles in 1999, 21.6% in 2003, 33% in 2007 and 38% in 2008. The most dominant frame, ‘irresponsible lawbreakers’, was present in every year, (between five and 11 instances) with a peak of 11 (13.4%) in 2007. Negative portrayals of cyclists developed from ‘irresponsible lawbreakers’, ‘pariahs’, ‘dangerous’, ‘inconvenient’, ‘badly behaved’ ‘extremists’ in 1998 to ‘irresponsible lawbreakers’, who were ‘dangerous’, ‘pariahs’, ‘inconvenient’, ‘extremists’ who are ‘in the minority’ in 2008.

The prevalence of positive framings of cyclists rose from 11.5% of the 61 articles in 1998 to 26.7% in 1999, slumped in 2003 and 2007 (7.8% and 9.8% respectively), and rose to 31% in 2008. In 1998, cyclists were framed as ‘brave’, ‘safety conscious’, ‘charitable’ and active ‘campaigners’ for better public transport. In 1999, the ‘healthy’ frame emerged. In 2008, ‘bravery’ was the leading frame (11 uses), followed by ‘harmless’ (5) and ‘safety conscious’ (1). Among the ‘other’ frames found in 2008 were instances of cyclists as image conscious and as outraged by restrictions on taking bikes on trains.
Discussion

Over the past decade there has been an increase in the quantity of newspaper coverage of cycling in the two main newspapers in Sydney and Melbourne, with a significant increase in Melbourne in recent years. More recent reporting of cycling has been generally positive, with the Sydney tabloid paper *The Daily Telegraph* reporting the most negative stories. Negative stories were predominately about death or injury to cyclists. Death and injury to cyclists are the two most common news angles, and are the main ways that cycling draws news media attention.

There were large increases (42%) in cycling in Melbourne between 2001 and 2006, reported in the Australian Bureau of Statistics journey to work statistics [30], compared with modest increases in Sydney (8%). This increase in cycling in Melbourne appears to have been followed by positive reporting of cycling in Melbourne. Negative newspaper stories about cycling may deter people from considering cycling as a transport option, but real physical or political improvements to the cycling environment may be necessary before more positive coverage is reported.

The results highlight cycling as an under-appreciated, deserving of support, fun and popular activity which generates social, environmental, health and economic benefits. However, many articles also framed cycling as dangerous to cyclists and non-cyclists and, to a lesser extent, as difficult, bad for the urban environment, unpopular and
costly. Given the powerfully negative sentiments sometimes circulating in opinion pages and blogs, it is somewhat surprising to find many more instances of positive frames of cycling than negative. This information is tempered by the findings that almost half of all articles frame cycling as a risk to cyclists and that death, injury and danger were the main ways in which cycling attracted news media attention.

While the prevalence of positive framing of cyclists was low, it appears to be rising, with the dominant positive framing of ‘cyclists are brave’ detected almost four times as frequently in 2008 as in 1998. However, between one-fifth and one-half of the articles carried a negative framing of cyclists in every year studied. While our study shows widespread use of positive framing of cycling, cyclists are portrayed negatively in a substantial subset of coverage (33% on average) and this trend is upwards.

The way that news stories were framed builds a picture of cyclists as irresponsible, law-breaking, dangerous ‘others’ who behave badly and cause problems for society out of proportion to their numbers. Although there were about three times the number of negative framing of ‘cycling’ compared to negative framing ‘of cyclists’, the focus on the label of ‘cyclist’ tends to connote an image of people who cycle as different from the rest of the population. Perhaps it conjures images of Lycra wearing groups or people wearing fluorescent clothing that is somehow alien to the mainstream, and therefore easier to dismiss or deride. As Koorey [31] says:

‘When it comes to cycle planning and policy, all parties involved (politicians, policy-makers, practitioners, advocates) should remember that they are providing for “cycling”, not “cyclists”. The former term is an activity that virtually anyone can do under the right circumstances (and hence should be
planned for), whereas the latter often gives connotations of a relatively small bunch of “weird” people who only ever cycle.’

Overall, framing of cyclists was more negative than positive, which may create barriers for people to cycle for transport who do not identify themselves as a ‘cyclist’. Greig [32] found that the majority (over 70%) of people who ride bikes at least occasionally do not self-identify as _cyclists_ and for others the term has negative connotations, suggesting that the term cyclist should be avoided in communications promoting cycling to the non-cycling public and motorists.

A limitation of the study is that we excluded opinion pieces. They were excluded because they are often written to provoke readers, and do not necessarily reflect popular norms (although do represent some sub-group views). Negative opinion pieces on cyclists in the news have been identified by some cycling advocates as inflaming driver aggression and violence against cyclists [33,34]. Furthermore, Komanoff [35] and Mayrhofer [36] have argued that news articles on cycling crashes are more likely to blame and stereotype cyclists as reckless risk-takers rather than develop a more balanced or neutral approach to reporting crashes. Basford and colleagues’ [28] study of driver attitudes towards cyclists found that ‘drivers saw cyclists as an “out group”, and blamed them accordingly for what was seen as negative behaviour, whilst exonerating members of the “in group”, namely themselves and other drivers. Hence, the practice of stereotyping cyclists within the broader culture finds its way into the news media, just as the news media can legitimise and reinforce such stereotypes.
Other limitations include that we did not sample all years (due to resource constraints) or more newspapers. The analysis is restricted to the main Australian cities of Sydney and Melbourne, but may not represent newspapers in other capital cities. Excluding sports coverage may have removed a body of positive coverage of cycling. However, cycling for transport and recreation has greater public health importance and was the focus of this study.

**Conclusions**

This paper is the first internationally to document how cycling is represented in newspapers and to examine changes in newspaper reporting of cycling over time and by capital city newspapers. Coverage appears to reflect developments in cycling in different locations, but specific newspapers still have editorial policies that range widely on the positive-negative spectrum. Unfavourable news reporting of cyclists and cycling may deter people from considering cycling as a transport option, however physical or political improvements to the cycling environment may be necessary before coverage becomes more positive.

**Competing interests**

The author(s) declare that they have no competing interests.

**Authors’ contributions**

All authors contributed to the design, analysis and writing of the manuscript.

**Acknowledgements**

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Table 1: Frequency of news stories concerning cycling by city and newspaper, 1998-2008

<table>
<thead>
<tr>
<th></th>
<th>Sydney</th>
<th>Melbourne</th>
<th>Total</th>
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<tr>
<td></td>
<td>Daily Telegraph</td>
<td>SMH*</td>
<td>All</td>
</tr>
<tr>
<td>1998-99</td>
<td>45 42.5</td>
<td>12 11.3</td>
<td>57 53.8</td>
</tr>
<tr>
<td>2003</td>
<td>19 37.3</td>
<td>7 13.7</td>
<td>26 51.0</td>
</tr>
<tr>
<td>2007-08</td>
<td>40 23.7</td>
<td>26 15.4</td>
<td>66 39.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>104 31.9</strong></td>
<td><strong>45 13.8</strong></td>
<td><strong>149 45.7</strong></td>
</tr>
</tbody>
</table>

*Sydney Morning Herald
Table 2: Frequency of positive and negative reporting of cycling by city and over time

| City      | Positive (N=128) | Negative (N=118) | \( \chi^2 \) | p-
<table>
<thead>
<tr>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>Melbourne</td>
<td>81 45.8</td>
<td>51 28.8</td>
<td>6.86</td>
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<tr>
<td>Sydney</td>
<td>47 31.5</td>
<td>67 45.0</td>
<td>9.14</td>
</tr>
</tbody>
</table>

\( \chi^2=6.86, \ p<.01 \)
\( \chi^2=9.14, \ p<.01 \)

| Year       | Positive | Negative | \( \chi^2 \) | p-
<table>
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<tr>
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<tr>
<td>1998-99</td>
<td>32 30.2</td>
<td>48 45.3</td>
<td>8.38</td>
</tr>
<tr>
<td>2003</td>
<td>17 33.3</td>
<td>19 37.3</td>
<td>6.47</td>
</tr>
<tr>
<td>2007-08</td>
<td>79 46.8</td>
<td>51 30.2</td>
<td>6.47</td>
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### Table 3: News angles* by type from 1998 to 2008

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<tr>
<th></th>
<th>1998</th>
<th>1999</th>
<th>2003</th>
<th>2007</th>
<th>2008</th>
<th>Total</th>
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<tr>
<td>Injured cyclist(s)</td>
<td>13</td>
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<td>7</td>
<td>6</td>
<td>8</td>
<td>43</td>
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<tr>
<td>Killed cyclist(s)</td>
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<td>0</td>
<td>14</td>
<td>10</td>
<td>35</td>
<td>10.7</td>
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<tr>
<td>Supporting cycling</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>7</td>
<td>23</td>
<td>33</td>
<td>10.1</td>
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<tr>
<td>Misbehaving</td>
<td>10</td>
<td>2</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>24</td>
<td>7.4</td>
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<td>Cycling event</td>
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<td>6</td>
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<td>6.4</td>
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<tr>
<td>Driver punished for collision with cyclist</td>
<td>2</td>
<td>4</td>
<td>8</td>
<td>3</td>
<td>0</td>
<td>17</td>
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<td>Celebrity cycling</td>
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<td>4</td>
<td>6</td>
<td>15</td>
<td>4.6</td>
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<td>Cycle tourism</td>
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<td>3</td>
<td>5</td>
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<tr>
<td>Cyclist kills pedestrian</td>
<td>0</td>
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<td>1</td>
<td>8</td>
<td>0</td>
<td>10</td>
<td>3.1</td>
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<tr>
<td>Impeding cycling</td>
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<td>1</td>
<td>4</td>
<td>9</td>
<td>15</td>
<td>4.6</td>
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<tr>
<td>Bike facilities improved</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>1</td>
<td>15</td>
<td>4.6</td>
</tr>
<tr>
<td>Stealing bikes</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>8</td>
<td>2.5</td>
</tr>
<tr>
<td>Other</td>
<td>13</td>
<td>17</td>
<td>12</td>
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<td>24.2</td>
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<tr>
<td>Total</td>
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<td>45</td>
<td>51</td>
<td>82</td>
<td>87</td>
<td>326</td>
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</tr>
</tbody>
</table>

* The news angle of a story is the aspect of an issue which triggers the news coverage. It is usually shown in the headline and/or the first paragraph.
Table 4: Positive and negative frames of *cycling* in news stories*

<table>
<thead>
<tr>
<th>Positive frames</th>
<th>N</th>
<th>%</th>
<th>Negative frames</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deserves more support</td>
<td>90</td>
<td>27.6</td>
<td>Risk (to cyclists)</td>
<td>161</td>
<td>49.4</td>
</tr>
<tr>
<td>Popular</td>
<td>73</td>
<td>22.4</td>
<td>Risk (to non-cyclists)</td>
<td>32</td>
<td>9.8</td>
</tr>
<tr>
<td>Quality of life benefits</td>
<td>57</td>
<td>17.5</td>
<td>Urban impact is negative</td>
<td>25</td>
<td>7.7</td>
</tr>
<tr>
<td>Environmental benefits</td>
<td>51</td>
<td>15.6</td>
<td>Difficult</td>
<td>25</td>
<td>7.7</td>
</tr>
<tr>
<td>Promotes health</td>
<td>45</td>
<td>13.8</td>
<td>Unpopular</td>
<td>17</td>
<td>5.2</td>
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<tr>
<td>Fun</td>
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<td>13.2</td>
<td>Costly</td>
<td>16</td>
<td>4.9</td>
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<tr>
<td>Convenient</td>
<td>38</td>
<td>11.7</td>
<td>Other</td>
<td>32</td>
<td>9.8</td>
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<tr>
<td>Economical</td>
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<td>10.4</td>
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<td></td>
<td></td>
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<tr>
<td>Other</td>
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<td>24</td>
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</tbody>
</table>

*N=326, each story may contain more than one frame*
Table 5: Positive and negative frames of *cyclists* in news stories*

<table>
<thead>
<tr>
<th>Positive frames</th>
<th>N</th>
<th>%</th>
<th>Negative frames</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brave</td>
<td>24</td>
<td>7.4</td>
<td>Irresponsible lawbreakers</td>
<td>38</td>
<td>11.7</td>
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<tr>
<td>Harmless</td>
<td>7</td>
<td>2.1</td>
<td>Pariahs</td>
<td>14</td>
<td>4.3</td>
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<tr>
<td>Healthy</td>
<td>4</td>
<td>1.2</td>
<td>Danger to others</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>Safety conscious</td>
<td>3</td>
<td>0.9</td>
<td>Extremists</td>
<td>10</td>
<td>3.1</td>
</tr>
<tr>
<td>Other</td>
<td>20</td>
<td>6.1</td>
<td>Inconvenient</td>
<td>9</td>
<td>2.8</td>
</tr>
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<td></td>
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<td>1.8</td>
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<td></td>
<td></td>
<td>11</td>
<td>3.4</td>
</tr>
</tbody>
</table>

*N=326, each story may contain more than one frame*