

Public Perception of Fracking

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In a 2012, comic Scott Adams' Dilbert character listens as the CEO outlines project "Fracking Awesome" to trigger earthquakes and pollute the water under a competitor's headquarters, highlighting the rapid spread of negative perception towards fracking in American popular culture. Data mining more than one billion news articles and a million hours of television spanning the past decade, we find that fracking first entered mainstream media consciousness in Fall 2009. Since then, articles and media comments on fracking increased to peak in mid-2013 after which they have steadily declined to a 5-year low with both public and media losing interest. Total web searches about fracking have closely tracked media coverage, with bursts of searches in response to an earthquake or proposed fracking project and with searching tending to be geographically localized to those in the affected area.

Around the world, search interest about fracking mainly originates in countries either considering or operating fracking projects, including South Africa, the UK, Canada, New Zealand, Ireland and Germany, while within the US, the states Colorado, North Dakota, West Virginia, Wyoming, Montana, Oklahoma and Pennsylvania all have high search interest. Television coverage of fracking has been dominated by CSPAN congressional hearings and several major ad campaigns. In Fall 2011, ExxonMobile ran more than 850 ads on national networks supporting fracking, while in Fall 2016 three political candidates, including Bernie Sanders, ran more than 500 ads against fracking. Perhaps most intriguingly, mainstream media coverage of fracking is found to have started with groundwater contamination fears, which accounted for more than 80% of all fracking stories from 2009-2011. This decreased to 50% through 2014, where it has remained to present, while concerns over earthquakes have never accounted for more than 10%-20% of coverage, despite several high-profile incidents in which fracking was publicly cited as a possible cause. Similarly, online imagery of fracking especially emphasizes the perceived risk of drinking water contamination. In short, from its debut in the public consciousness, fracking has been synonymous with the image of deadly chemicals poisoning the public's water, while earthquakes have received comparatively little attention, though media and web focus appears to be shifting from water to broader perceived environmental risks.

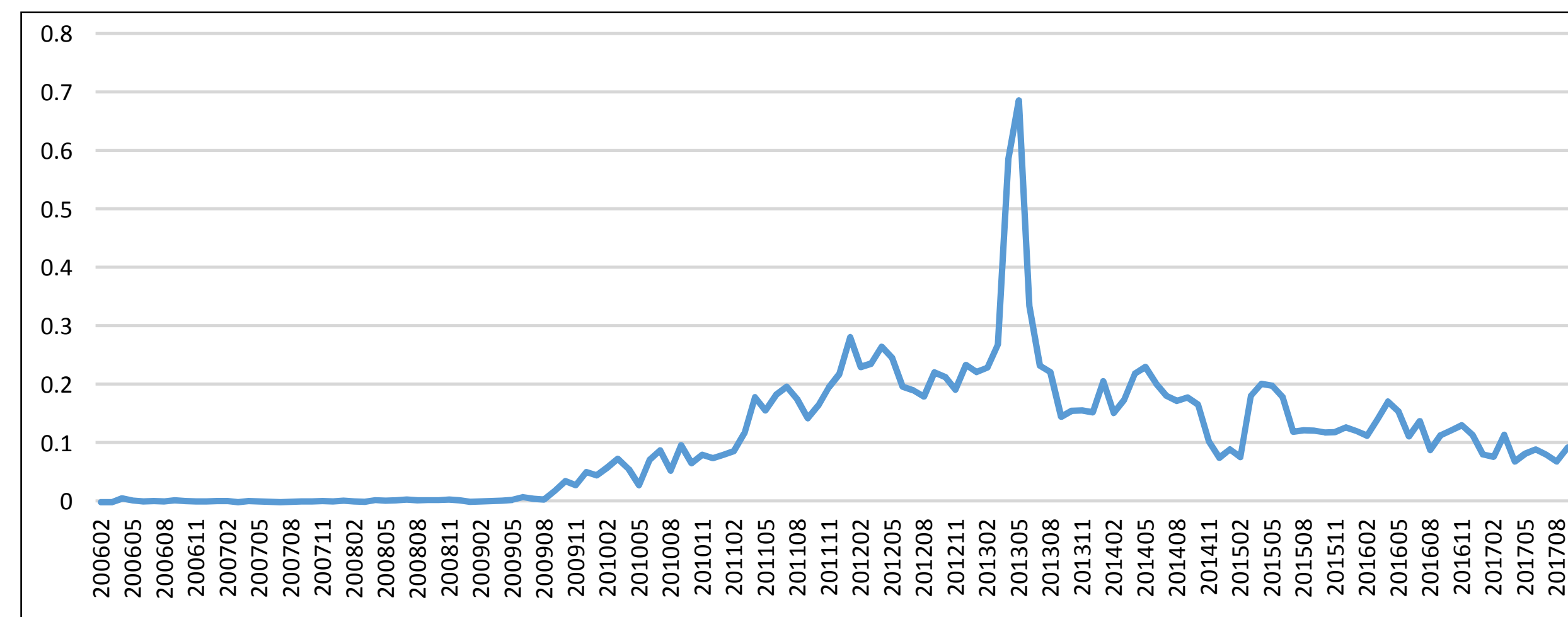


Figure 1 The open data GDELT Project (<https://www.gdeltproject.org/>) monitors global news media in all countries of the world in more than 100 languages across print, broadcast and online mediums. Examining the more than one billion online news articles monitored by the GDELT Project covering 2006 to present shows that the English language mainstream media did not begin to really start talking about "fracking" or "hydraulic fracturing" until the latter half of 2009, ramping up to a sharp peak in May 2013 as the US Interior Department proposed new rules on fracking on public lands and has slowly and steadily decreased through present to 2010 levels (Y axis is the percent of all English language online news coverage monitored by GDELT that contained either of the keywords). In short, fracking is simply fading from the news.

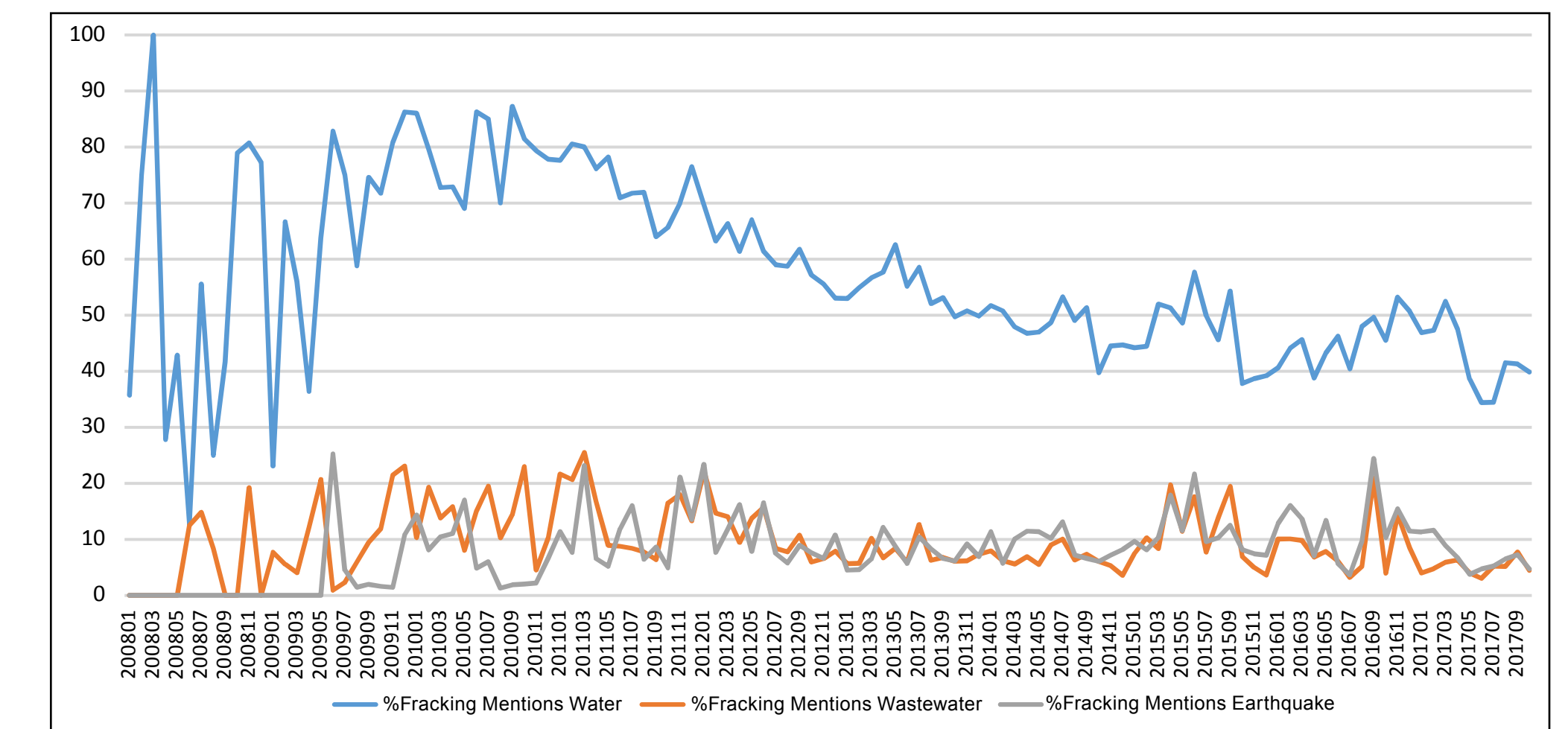


Figure 2 Looking at just English language online news coverage of fracking, this chart shows what percent of articles that mention fracking also mention "water", "wastewater" and/or "earthquake(s)". Here it is clear that much of the initial coverage of fracking centered on possible water contamination, reaching as high as 80-90% of all coverage through early 2011, before falling to around half of all coverage today. Earthquakes relating to fracking have never garnered more than 10-20% of coverage and has held essentially even with coverage of fracking wastewater. Online news coverage has not used the scientific phrase "induced seismicity" sufficiently often to warrant inclusion in this graph. In short, news coverage of fracking over the past decade has focused on concerns about drinking water contamination, rather than concerns that it is causing increased earthquakes.

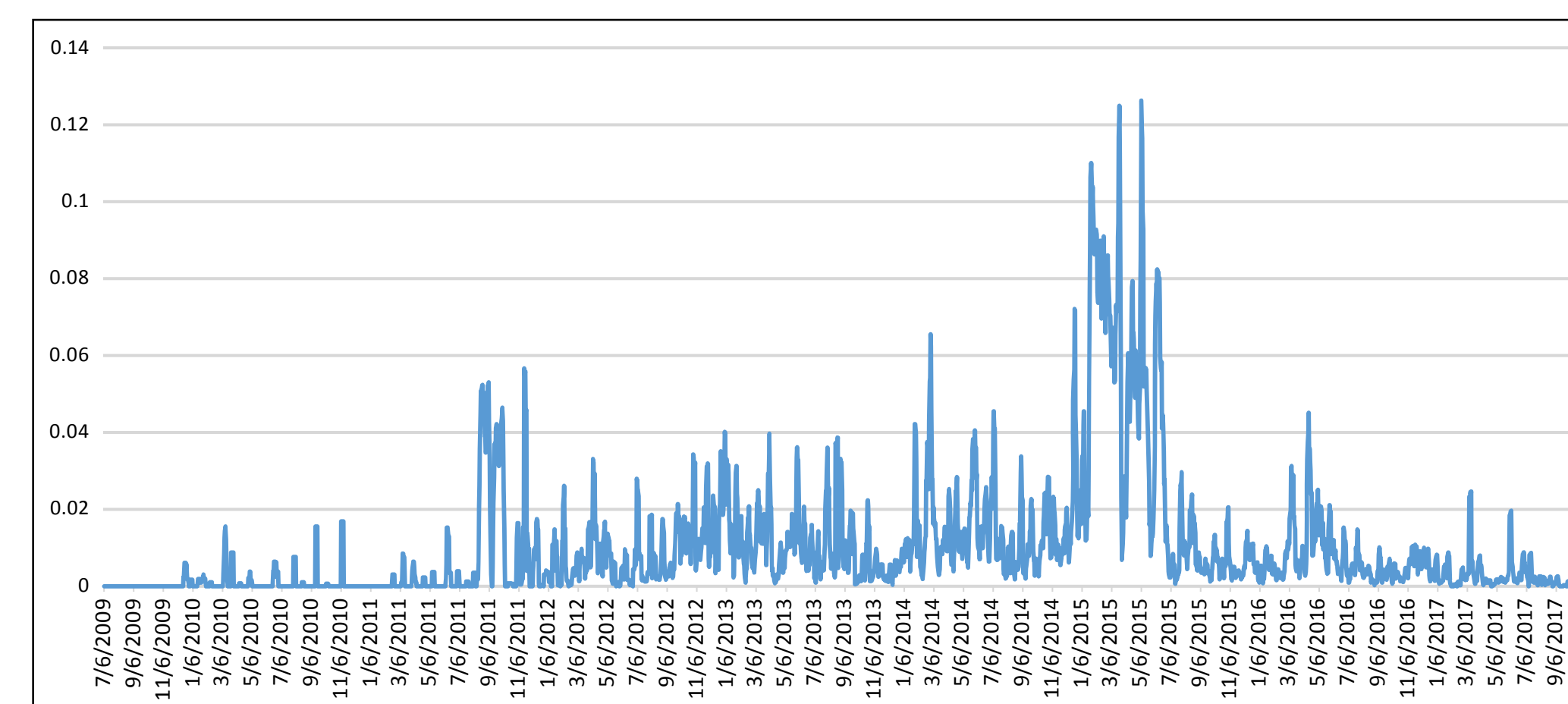


Figure 3 Using data from the Internet Archive's Television News Archive (<https://archive.org/details/tv/>), major national US television news networks (CNBC, CNN, FOX Business, FOX News, MSNBC) have paid comparatively little attention to fracking since the start of the data in July 2009, with most coverage coming in the form of paid advertisements (Y axis is the percent of closed captioning sentences across those five networks that mentioned "fracking" or "hydraulic fracturing"). In fact, the first real burst of television mentions comes in August to October 2011 as part of an ExxonMobile ad campaign and the highest sustained period of coverage was in the first six months of 2015 through an American Petroleum Institute campaign.

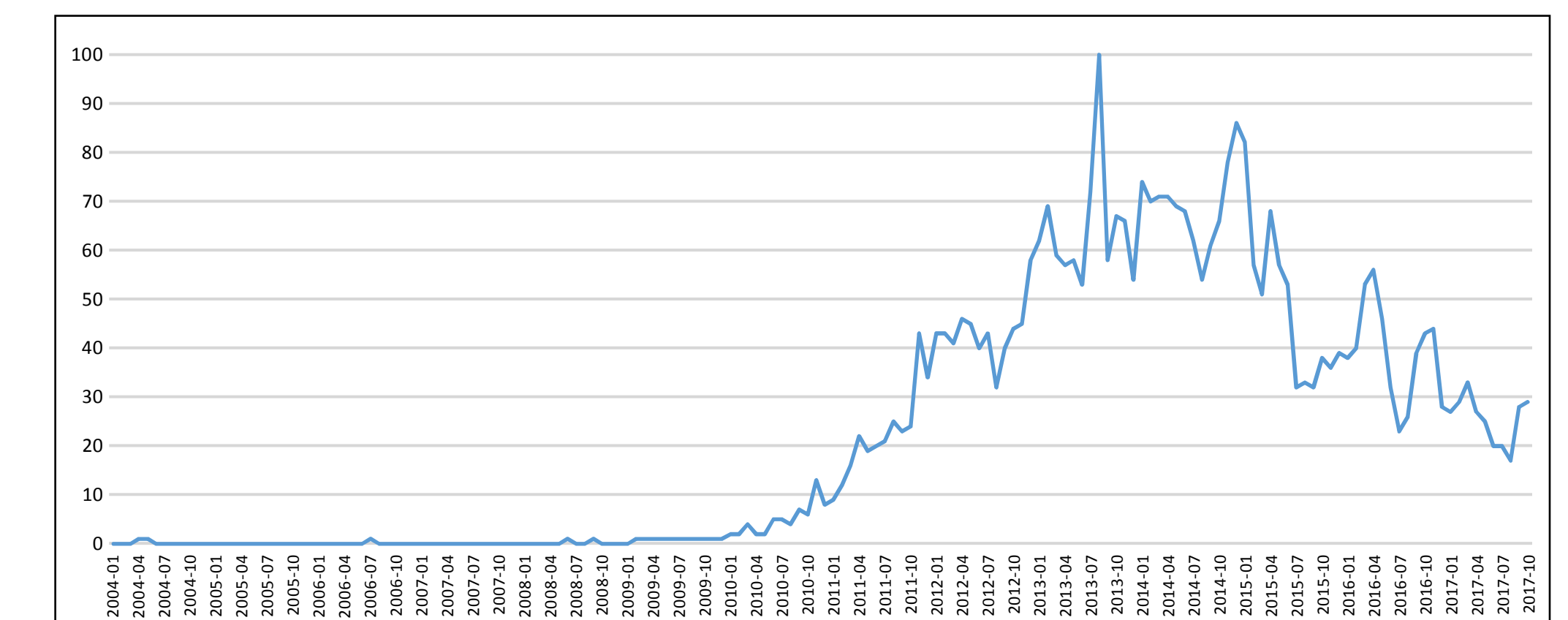


Figure 4 Using data from Google Trends (<https://trends.google.com/trends/>), English language Google search interest for "fracking" as a whole largely mirrors news interest, with the first real searches coming in early 2009 before beginning to rapidly ramp up through 2010, reaching a peak in mid-2013 and decreasing through present (Y axis reflects "search interest", with 100% indicating the point of greatest search activity).

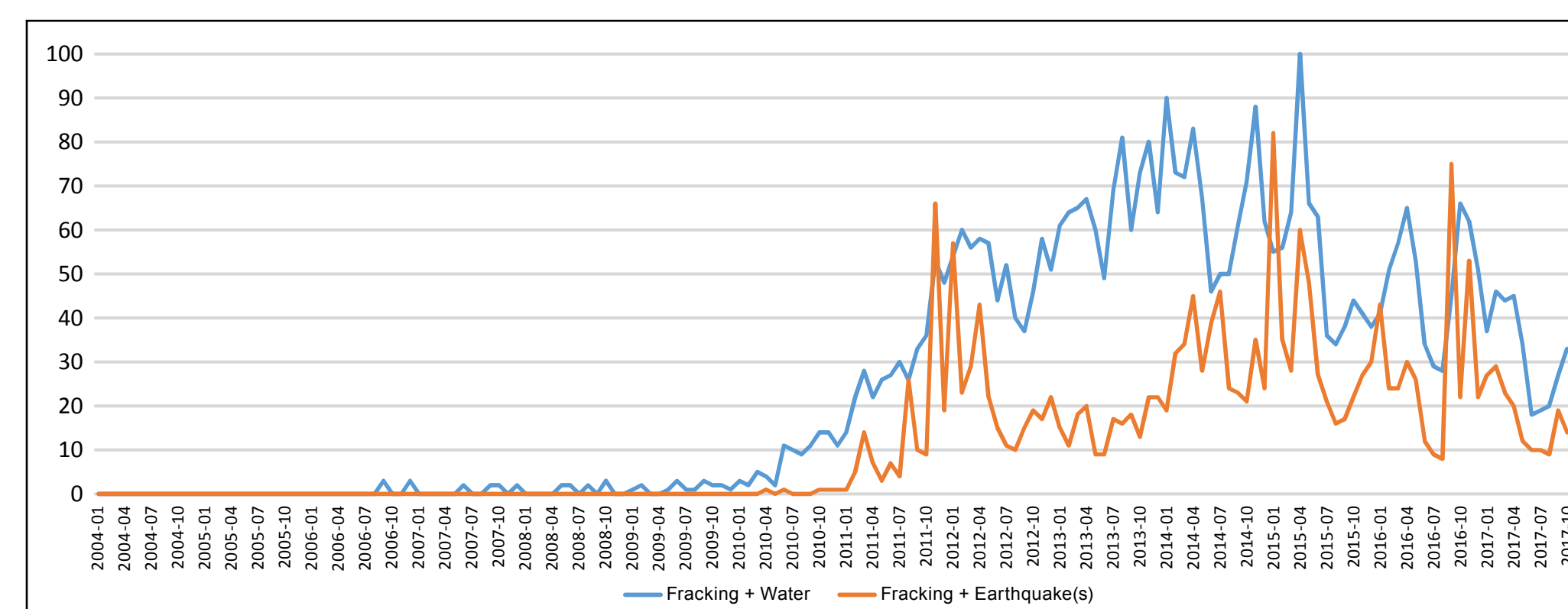


Figure 5 Only around 1-2% of all English Google searches for fracking mentioned water or earthquakes, but among those, it is clear that as a whole water concerns have dominated issue-specific fracking searches. However, during three periods (November 2011 to May 2012 (the Oklahoma City 5.6 earthquake), January-June 2015 (Texas earthquakes) and September-December 2016 (Oklahoma earthquake and shutdown)), earthquake-related fracking searches exceeded those relating to water. Earthquake-related searches appear to be highly correlated with specific events and fade quickly, while water-related searches seem to be a constant interest, though they have been decreasing rapidly since the middle of 2015.

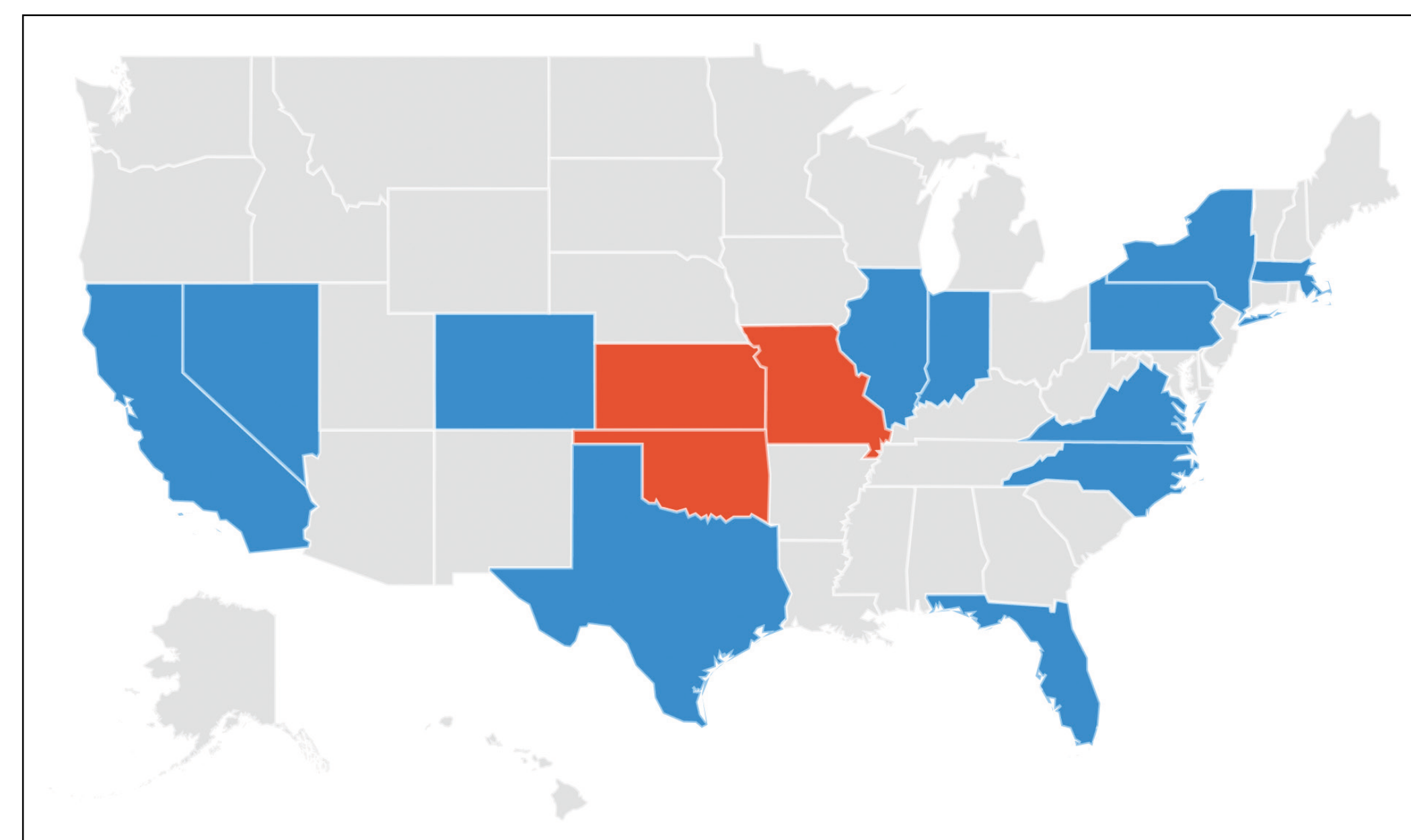


Figure 6 This map shows Google searches that combined both "fracking" and either "water" or "earthquakes". Red states are those that searched more often about fracking and earthquakes, while blue states are those that searched more often about fracking and water. Grey states did not have sufficient search interest in fracking combined with either water or earthquakes (though may have searched about fracking by itself).

KEY TAKEAWAYS

Here are the most important takeaways:

- Online media coverage of fracking as a whole really began in late 2009, hit peak in May 2013 and has trended steadily downward since, to 2010 levels.
- From the beginning, online media coverage of fracking centered on water contamination, not earthquakes.
- Television news coverage has not paid much attention to fracking, with most bursts of mentions coming from paid ad campaigns.
- 98-99% of Google searches about fracking do not mention water or earthquakes and are instead definitional searches where people are trying to learn more about what fracking is. Of those fracking searches that do mention earthquakes or water, water dominates, though during three periods earthquakes received substantial attention. Earthquake-fracking related Google searches seem to be in reaction to specific news and in the US are centered in three states.

Acknowledgments

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