

Letter, while this underestimate most assuredly affects an estimate of the risk difference, it may not affect the relative risk of suicide attempts. Therefore, we believe that it is safe to conclude that while the diagnostic data reported in our study¹ most likely underestimate the true prevalence of suicide attempts and the risk difference, it is probably a reasonable estimate of the relative risk of suicide attempts in the children of parents who use opioids on a regular basis. We also note that our sample was based on parents and children with private health insurance and the rate is likely to be lower than in a general emergency department sample, which includes patients with public health insurance and no health insurance. For example the background rate of acute liver injury based on *International Classification of Diseases, Ninth Revision* code 570 was 4 times higher in Medicaid claims data relative to claims based on people with private health insurance (ie, the same Market-Scan data used in our article).³ Future work that studies suicidal behavior using medical records may benefit from augmenting estimates of the prevalence of suicidal behavior from diagnostic codes with the use of natural language processing to identify cases of suicidal behavior that are documented in the medical record but are not reflected in the diagnostic code.

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Ignoring Data Delays Our Reaction to Emerging Public Health Tragedies Like *13 Reasons Why*

To the Editor We applaud Niederkrotenthaler and colleagues¹ for adding another layer of evidence that *13 Reasons Why* is harming the public by pushing some individuals toward sui-

cide. However, their dismissal of some of the earliest evidence on this subject deserves a revision not because it undermines their central claim but because it makes it even stronger and can make psychiatric epidemiology more actionable in the future.

Our October 2017 study in *JAMA Internal Medicine*² provided the first evidence for what some suspected at the time but for which there were no data: *13 Reasons Why* increases suicidal outcomes. Google queries reflective of suicide ideation increased substantially immediately after the show's release. This included searches for "how to commit suicide" (up 26%), "commit suicide" (up 18%), and "how to kill yourself" (up 9%). While the authors make reference to our study, they dismiss it as simply tracking the show's popularity and excluded the study when presenting a detailed summary of all "available studies that present quantitative findings" in Table 1.¹

Dismissing search query surveillance undermines our scientific principles to rely on data when making health care decisions. One of the added values of search query surveillance over traditional sentinel surveillance is timeliness. *13 Reasons Why* aired for an additional 646 days between the publication of our study² and the study by Niederkrotenthaler and colleagues.¹ Another added value is mining search queries allows psychiatric researchers to understand what people are thinking and when they are thinking it across billions of observations without any obtrusive instruments. Therefore, it follows that suicide search trends are correlated with actual suicides,³ something the authors' findings, and the 6 additional studies they make reference to, also attest to by mirroring our earlier conclusion. Such correlations also extend to many other health phenomena. For instance, search queries for HIV predicted increases in HIV testing more than a year before traditional data were available.⁴

Should our attitude be to discount available early data when the consequence is more suicides? Imagine if the public health community promoted our early results; might Netflix have been compelled to act sooner?

An openness, rather than dismissiveness, to search query surveillance (and other novel big media data⁵) in the future will potentially make the public health community more responsive to the acute needs of the public it serves. The next time we are faced with an emerging crisis that can only be clarified with data, a well-executed search query-derived study might again provide the earliest empirical evidence and should be taken as a serious call to action.

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In Reply In their Letter, Leas et al, who, to our knowledge, published the first study on possible effects of *13 Reasons Why* on suicide-related internet search behavior,¹ point out the necessity to use new methodological approaches to improve public health surveillance and responses to emerging public health threats such as *13 Reasons Why*. We wholeheartedly agree with the scientific points made in their Letter, although we are a bit puzzled that our reference to their work, including highlighting it in our discussion, however briefly, was viewed as a dismissal of their contribution to evidence on the impact of *13 Reasons Why*.

Indeed, we had tried to make it clear that our study,² which examined suicide mortality, confirmed concerns arising from earlier, more readily available proxy measures of harm, including Google searches. We had not emphasized Google searches in our introduction given a large study with data from several countries previously published by our research group revealed that data retrieved from Google Trends were not a valid indicator of subsequent suicides.³ A possible explanation may be that most studies examining such associations typically focus on a limited time frame and a limited geographic region, and little is understood about Google's algorithm.

However, as already speculated previously,³ the study by Ayers et al¹ seems to confirm that, while data from Google Trends might not be a valid indicator of suicide rates in general, it might be a useful marker of suicide when it comes to specific major (media) events such as *13 Reasons Why*. Such events appear to trigger a considerable volume of searches and were in some cases, including *13 Reasons Why*, indeed predictive of subsequent increases in suicides. This is a highly relevant finding that ought to be taken seriously in the context of any future high-profile events related to suicide.

A 2017 editorial⁴ in the *BMJ* by members of our research group highlighted that prior experience and the early data by Ayers et al¹ clearly underscored the need for an immediate broad collaborative effort to minimize the risk of self-harm resulting from *13 Reasons Why*. This editorial was only 1 among many highly critical statements from experts as well as national and international organizations released in the immediate aftermath of the show's airing. While we agree that our 2 studies strongly suggest that in the future, early indicators such as Google search data should be taken seriously, the larger

issue for the suicide prevention community seems to be that for far too long, Netflix has failed to take any meaningful action to prevent further harm. Their recent decision to remove Hannah's graphic suicide scene was certainly important and long overdue but does not address many other issues in season 1. A robust and unequivocal response is called for, including going beyond *13 Reasons Why*, to ensure that organizational and industry standards prevent unnecessary deaths from ever occurring again. In addition to strong public health surveillance, a proactive collaboration with the entertainment industry is now needed more than ever. Portrayals of suicidality in entertainment media can be both safe and helpful to viewers if they are consistent with safe reporting recommendations.^{5,6}

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CORRECTION

Errors in Abstract, Statistical Analysis, and Results: In the Original Investigation titled "Prediction of Sex-Specific Suicide Risk Using Machine Learning and Single-Payer Health Care Registry Data From Denmark,"¹ published online October 23, 2019, there were errors in the Abstract, Statistical Analysis, and Results. In the Abstract, the following sentence should have been removed: "For example, stress disorders among unmarried men older than 30 years were important factors for suicide risk in the presence of depression (risk, 0.54)."

In the second paragraph of the Statistical Analysis, the number of predictor variables given as 2554 should have been 2564. In the first and second paragraphs of the Random Forest section of the Results, predictors enumerated as