Let's make it a priority to improve injury data

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ABSTRACT
While injury researchers often complain about the lack of quality data, we don't do nearly enough to create and improve data systems.

'Everyone complains about the weather, but nobody does anything about it' Mark Twain (quoting Charles Dudley Warner).

In 1984, injury pioneer Sue Baker wrote that 'the biggest surprise for my students is the scarcity of good data'.[1] Unfortunately, not nearly enough has changed in the succeeding 35 years. Why? In large part because the injury field hasn't done enough to prioritise and push for improvements in the data.

All of us know that data are important, that without data there are no empirical studies, and with bad data, there are bad studies (no matter how sophisticated the analyses). Garbage in garbage out. We complain, but as a field, we don't do enough to change the situation.

How inadequate are the injury data? Currently, we don't have a surveillance system for the circumstances of many injury deaths, such as drowning or fall fatalities. Thus, we should not be at all surprised that these are two areas with the largest gaps between the size of the problem and both the amount of government funding and the number of journal articles on the subject.[2] Without good data, it is difficult to propose good studies needed to obtain funding, and difficult to write articles suitable for publication.

The data situation is worse for non-fatal injuries, where few good surveillance systems exist. We often don't have reliable information on the incidence, let alone the circumstances of non-fatal injuries.

The situation is particularly problematic for firearm injuries, where deliberate and often successful attempts have been made both to ensure that the government does not collect important data and to withhold from researchers much of the useful data that are collected.[3]

We know that the creation of a good surveillance system is the first step in the public health approach to injury prevention (IP). But too often we take our eye off the ball. Maybe it is because, while it is core to the public health mission, data infrastructure is just not a sexy issue. For example, while there are scores of courses at the Harvard T.H. Chan School of Public Health on how to analyse data, there are none focused on how to create, maintain and improve data systems. The same seems to be true for all the Harvard graduate schools.

I have been as at fault as anyone in not putting emphasis on improving injury data. For 40 years, two of the things I have told all my graduate students are: (a) the easiest and best way for you to write publishable journal articles (the dissertation requirement) is to find good data; there are innumerable hypotheses that you might like to test, but those typically require good data, and if the data are not available, it's going to be a tough slough to create them; and (b) one of the most important things you will learn when writing your dissertation is how bad the data are that you are analysing, and then you should realise that you are not an exception. Virtually, all the journal articles you have been reading have serious data limitations.

What did I never say? That maybe the students should think about why the data were unavailable or inadequate? Or that they should make it part of their mission as new injury professionals to help to create and improve those data systems? Yet, looking back on my injury career, probably my most important contribution to the field was not any of my journal articles, but the relatively minor role I played in the creation of the National Violent Death Reporting System (NVDRS).[4] This data system can play a foundational role in IP for centuries.

As a researcher, there have been many times I could have done more, reported more and made stronger suggestions about the data. For example, the National Crime Victimization Survey (NCVS) provides the best evidence about self-defence gun use, but while victims are asked twice about what they did during the crime, they are not asked specifically about using a firearm.[5] A direct question would be useful, as would a question about whether they are gun owners. I never suggested those two easy questions to NCVS.

I have been involved in studies that found large problems with national surveillance systems: Vital Statistics and Supplementary Homicide Reports substantially under-report legal intervention homicides[6]; Vital Statistics substantially under-reports unintentional firearm deaths of children[7 8] and NVDRS substantially under-reports intimate partner-involved homicides of children.[9] Assessing data quality is a good first step, but I have done little to help to further publicise the data problems for other researchers, nor helped in rectifying these problems.

A decade ago, I wrote a book on success stories in IP that highlighted the work of dozens of IP heroes.[10] While I emphasised the importance that good data (and good research) played in most of the successes, none of the heroes I included were experts in surveillance.

I am not the only researcher in the injury field who has paid insufficient attention to helping to create good data systems. I recently surveyed dozens of injury pioneers who, following the seminal Institute of Medicine report ('Injury in America') in the

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mid-1980s, worked to establish the injury field.[11] When I asked them about the field's accomplishments, many cited the creation of surveillance systems, such as CDC's WISQ, WONDER and the NVDRS. But when asked to give advice to new professionals, hardly anyone advised taking a role in creating, maintaining or improving injury data.

What can individual injury researchers and educators do to make a difference? You can do what I didn't do. You can spend a little more time talking with students about data deficiencies, and a lot more time in helping them to think about how the data might be enhanced, and how they might play a role in doing that.

You might even consider creating a course, or at least adding a class session focusing on data availability, data limitations, and, most important, ways to improve and promote the improvement of data systems.

At this late stage in my career, I am trying to finally do my part.[12] I have begun sending simple suggestions for improvement to surveillance managers and have been recommending that authors of empirical injury studies should be expected in the published articles to discuss data deficiencies and possible ways to improve the data.

Of course, many injury practitioners in federal, state and local health departments, along with some researchers, have worked hard to create and improve our existing data systems. Much has been achieved, often with little support or recognition. To mention just a few of the many accomplishments, internationally the WHO has created various injury surveillance guidelines as well as the International Classification of the External Cause of Injury that provides information on the causes and circumstances surrounding the injury. In the USA, the National Electronic Injury Surveillance System provides non-fatal injury data and CDC created guidelines for surveillance of specific issues, such as intimate partner violence. But given the vast improvements that can still be made in injury surveillance, as a field, we should provide more recognition and support for such activities. More awards focusing on surveillance would be nice.

Even small acknowledgements of the importance of surveillance work could help. At my school, each faulty member annually fills out a personal activity report for the dean, with sections for research publications, teaching, mentoring, school service and professional activities (they already know our funding success). It would be good if there were a section on data improvements (as well as a section for any evidence that our activities might actually have improved public health).

CONCLUSION

The first step in the public health approach for preventing injuries is to create useful data systems. All of us understand this, but as a field, we haven't always successfully taken that first step, nor at some fundamental level, have we sufficiently recognised that improving data systems is a crucial and ongoing process.

For academics, the fun part of research is analysing the data, to see what the world is really like. However, an even more important activity is creating and improving data systems so that we have detailed and accurate data to analyse. Injury educators should help to make sure that work on injury surveillance is expected and rewarded. In the future, long after the empirical findings are no longer relevant, the data system will be providing useful information waiting for analysis.

This essay is a call for the injury field, and injury educators, in particular, to ensure that more time and energy is spent trying to improve injury data systems. As educators of the next generation of injury researchers, we have an important role to play in this endeavour. I think the long-run payoff will be large.

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REFERENCES

1 Baker S, O'Neill B, Karpf RS. *The injury fact book*. Lexington Books, 1984.
2 Stark DE, Shah NH. Funding and publication of research on gun violence and other leading causes of death. *JAMA* 2017;317:84–5.
3 Hemenway D. Fight the silencing of gun research. *Nature* 2017;546:345–7.
4 Hemenway D, Barber CW, Gallagher SS, *et al*. Creating a national violent death reporting system: a successful beginning. *Am J Prev Med* 2009;37:68–71.
5 Hemenway D, Solnick SJ. The epidemiology of self-defense gun use: evidence from the National crime victimization surveys 2007-2011. *Prev Med* 2015;79:22–7.
6 Barber C, Azrael D, Cohen A, *et al*. Homicides by police: comparing counts from the National violent death reporting system, vital statistics, and supplementary homicide reports. *Am J Public Health* 2016;106:922–7.
7 Barber C, Hemenway D, Hochstadt J, *et al*. Underestimates of unintentional firearm fatalities: comparing supplementary homicide report data with the National vital statistics system. *Inj Prev* 2002;8:252–6.
8 Barber C, Hemenway D. Too many or too few unintentional firearm deaths in official U.S. mortality data? *Accid Anal Prev* 2011;43:724–31.
9 Adhia A, Austin SB, Fitzmaurice GM, *et al*. The role of intimate partner violence in homicides of children aged 2-14 years. *Am J Prev Med* 2019;56:38–46.
10 Hemenway D. *While we were sleeping: success stories in injury and violence prevention*. University of California Press, 2009.
11 Hemenway D. Building the injury field in North America: the perspective of some of the pioneers. *Inj Epidemiol* 2018;5:47–52.
12 Hemenway D. Firearms data, and an Ode to data systems. *Chance* 2018;31:7–11.