

## RESEARCH NOTE / NOTE DE RECHERCHE

# Work-Related Deaths in Canada

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THE CANADIAN ASSOCIATION OF WORKERS' Compensation Boards of Canada (AWCBC), comprising workers' compensation boards (WCBCs) from each province and territory, annually publishes data on workplace fatalities across the country.<sup>1</sup> According to the AWCBC, from 2000 to 2016 there were 16,216 worker deaths, with a high of 1,098 fatalities in 2005 and a low of 852 in 2015. The average annual death toll during this period is 954. Approximately two-thirds of these fatalities are occupational disease related (e.g. cancer or systemic disease), most notably deaths from asbestos exposure, including asbestosis, pleural plaques, lung cancer, and mesothelioma. The remaining deaths stem from acute incidents causing fatal injuries, including transportation collisions, falls at construction sites, and being struck or crushed by machinery.

As troubling as the AWCBC's figures are in their own right, they tell only part of the story.<sup>2</sup> Take, for instance, a 2017 decision by Ontario's Workplace Safety

1. Established in 1919, the AWCBC is a non-profit organization that facilitates "the exchange of information" between provincial/territorial workers' compensation boards and commissions. In addition to reporting annual workplace injury and death statistics, it facilitates information sharing on workplace safety legislation and organizes conferences and symposia on various occupational health and safety matters. Association of Workers' Compensation Boards of Canada (AWCBC), *Connecting Members, Advancing Knowledge* (Toronto: AWCBC, n.d.), accessed 15 June 2018, [http://awcbc.org/wp-content/uploads/2015/06/AWCBC\\_BrochureEnglish\\_WEB.pdf](http://awcbc.org/wp-content/uploads/2015/06/AWCBC_BrochureEnglish_WEB.pdf).

2. Tavia Grant, "'We're Not Seeing the Truth': Inside the Hidden Dangers of the Canadian Workplace," *Globe & Mail*, 29 October 2017, <https://www.theglobeandmail.com/news/national/canadian-workplace-hidden-dangers/article36763608/>; Sean Tucker, "Work-Related Fatality and Injury Rates: A Comparison of Canadian Provinces and Territories," Faculty of Business, University of Regina, 25 April 2017, [https://www.uregina.ca/business/faculty-staff/faculty/file\\_download/2017%20Report%20on%20Workplace%20Fatalities%20and%20Injuries.pdf](https://www.uregina.ca/business/faculty-staff/faculty/file_download/2017%20Report%20on%20Workplace%20Fatalities%20and%20Injuries.pdf).

Insurance Board to re-examine 250 rejected compensation claims by former employees of the General Electric (GE) plant in Peterborough, Ontario. This decision followed reports that between 1945 and 2000, workers at the plant were “exposed to more than 3,000 toxic chemicals, including at least forty known or suspected to cause cancer, at levels hundreds of times higher than what is now considered safe.” Many workers contracted life-altering illnesses or died from diseases thought to result from these exposures.<sup>3</sup> In addition to revealing the dangers of working with harmful substances, the GE case points to the limits of official data on work-related deaths: namely, that there are untold fatalities never officially recognized by authorities.

In Canada, for a fatality to be counted in the AWCBC’s data it must be “founded,” meaning it must result “from a work-related incident (including disease) that has been accepted for compensation” by a WCB or commission.<sup>4</sup> When it comes to occupational disease, for instance, compensation boards do not recognize every disease as compensable. There is a long history of workers struggling for the inclusion of particular diseases in compensation schemes, and even if a disease is compensable, it does not ensure the filing of a claim for every death from said disease, nor does it equate to an automatic acceptance upon a claim’s submission. In some cases, it may be too difficult to prove the legally required connection between the disease and the victim’s work. In other cases, a worker and/or their family or loved ones might not recognize the disease as work related and thus not submit a claim – a situation complicated by the long latency period of many diseases – or doctors might attribute someone’s disease to lifestyle choices instead of the working conditions they faced decades earlier. The type of employment covered by compensation also varies by jurisdiction,<sup>5</sup> meaning the fatalities of some workers (e.g. self-employed or casual workers) are never officially recorded. In this sense, what gets counted matters. It shapes our understanding of the nature and extent of workplace safety issues in Canada, underestimating the actual number of people who lose their lives because of their employment.

This article critically interrogates the social construction of workplace fatality statistics in Canada by looking beyond official figures to generate, via various information sources, a more accurate estimate of the number of annual work-related deaths in this country. In so doing we do not intend to produce a definitive number of annual deaths at work – an impossibility given

3. Laurie Monsebraaten & Sara Mojtahedzadeh, “wsib to Review More Than 250 General Electric Plant Claims in Peterborough,” *Toronto Star*, 18 September 2017, <https://www.thestar.com/news/gta/2017/09/18/wsib-to-review-more-than-250-general-electric-plant-claims-in-peterborough.html>.

4. AWCBC, “National Work Injury/Disease Statistic Program (NWISP) Definitions,” accessed 20 January 2018, [http://awcbc.org/?page\\_id=4040](http://awcbc.org/?page_id=4040).

5. Rachel Cox & Katherine Lippel, “Falling through the Legal Cracks: The Pitfalls of Using Workers’ Compensation Data as Indicators of Work-Related Injuries and Illnesses,” *Policy and Practice in Health and Safety* 6, 2 (2008): 63–84.

the paucity of data sources. We also do not endeavour to scrutinize the reporting of workplace fatalities by WCBs per se,<sup>6</sup> even though we acknowledge the existing reporting scheme as an element in the social construction of fatality statistics. Instead, our goal is to examine the ways in which we officially conceptualize workplace fatalities, therein raising academic, political, and public awareness of this issue and related concerns regarding workplace health and safety regulation. In this sense we question whether official data regarding workplace fatalities are “complete” when set against a broader understanding of what constitutes death at work.<sup>7</sup>

The remainder of this article contains three sections. The first section documents the social construction of workplace fatality statistics and reviews previous attempts to estimate the number of work-related deaths. The second section reconstructs work-related fatality statistics in Canada by engaging a series of alternative data sources. As such, we contribute to the literature that documents a considerably greater number of work-related deaths than is reported via official data sources. The concluding section argues that the systematic underestimation of deaths at work obscures the range of harms that workers routinely face, effectively downplaying the seriousness of the matter and the need for the state to intervene through law and policy.

## The Social Construction of Fatality Statistics

RESEARCH IS AN INHERENTLY SOCIAL enterprise that is subject to assumptions about what constitutes “reality,” or even if it is possible to determine reality.<sup>8</sup> In this sense, official statistics are products of decisions made at particular times and within certain conjunctures about what is worthy of counting.<sup>9</sup> As George Emery suggests, what statistics “contain and omit reflects the concerns of their collectors and the particular arrangements for collection.”<sup>10</sup> This does not mean that official data have no “factual basis or theoretical importance” but that decisions made around the measurement of various phenomena do not occur in a vacuum.<sup>11</sup> Statistics are thus socially determined, making it important for us to unpack the conditions of their production.

6. Cox & Lippel, “Falling through the Legal Cracks”; Sylvie Guilbert, Carissa Tanzola & Lisa Bolton, “What Constitutes a Workplace Accident?” *Canadian Employment Law Today*, 4 May 2011, 3.

7. Steve Tombs, “Death and Work in Britain,” *Sociological Review* 47, 2 (1999): 345–367.

8. George Emery, *Facts of Life: The Social Construction of Vital Statistics, Ontario 1869–1952* (Montréal and Kingston: McGill-Queen’s University Press, 1993); Ted Palys, *Research Decisions: Quantitative and Qualitative Perspectives* (Toronto: Harcourt Brace Canada, 1997).

9. Emery, *Facts of Life*; John I. Kitsuse & Aaron V. Cicourel, “A Note on the Official Use of Statistics,” *Social Problems* 11, 2 (1963): 131–139.

10. Emery, *Facts of Life*, 3.

11. Kitsuse & Cicourel, “Official Use of Statistics,” 139.

As corporate crime researchers in the field of criminology, we routinely encounter the social construction of “facts” through the different priorities accorded official crime data versus information regarding crimes of the powerful. In Canada, as with most countries of the Global North, there is a robust system of official data on crime, victimization, and the administration of justice.<sup>12</sup> These data, dutifully collected and disseminated by state agencies, are treated as “fact” and appropriated for the formulation of state policies concerning particular social “problems.”<sup>13</sup> With relative ease, researchers can access this information to understand various aspects of crime and its control, allowing them to partake in relevant law and policy discussions, even if adopting a critical stance on existing control measures.<sup>14</sup> Homicide data, for instance, are considered relatively reliable “facts” given that police commonly investigate cases of suspicious death and exercise care when recording data on these offences.<sup>15</sup> This does not mean that crime data are “perfect” – crime statistics tell us more about dominant beliefs in society and the priorities of the criminal justice system than they do about crime per se.<sup>16</sup> For example, official crime statistics do not normally include corporate crimes, because these offences are rarely defined as “true” crimes and instead are routinely dealt with outside the criminal justice system. Workplace fatalities are a good example of serious harms that are often the result of a breach of the law (whether criminal or regulatory) and yet rarely appear in official crime statistics.<sup>17</sup> Our point is that official crime data receive great attention to ensure they provide as complete a picture as possible en route to informing public and academic dialogue and government policy decisions. The same cannot be said of workplace fatality data, the reporting of which is a by-product of a system that only records founded cases. This situation is akin to crime statistics only ever including solved homicides, therein leaving the impression that attempted murders, unsolved murders, or suspicious deaths are not a concern.

12. Vince Sacco, “News That Counts: Newspaper Images of Crime and Victimization Statistics,” *Criminologie* 33, 1 (2000): 203–223.

13. Catherine Girardeau, “Toward a System of Social Statistics,” *Social Science Information* 11, 3/4 (1972): 189–202.

14. Joel Best, “Innumeracy in Social Problems Construction: Missing Children, Vanishing Workers, and Other Statistical Claims,” *Argumentation* 8, 4 (1994): 367–376; Henry H. Brownstein, “The Social Construction of Crime Problems: Insiders and the Use of Official Statistics,” *Journal of Crime and Justice* 18, 2 (1995): 17–30.

15. We recognize, however, that this is not always the case considering that police do not always investigate cases involving missing and murdered Indigenous women and women sex workers.

16. Piers Beirne & James W. Messerschmidt, *Criminology: A Sociological Approach*, 6th ed. (Oxford: Oxford University Press, 2014).

17. Steve Tombs & David Whyte, *Safety Crimes* (Cullompton, England: Willan, 2007).

The differential priorities of official crime data compared with information about work-related deaths raise important questions as to why the state does not collect more accurate data on workplace fatalities. Three factors regarding the historical relationship between capitalism, corporations, and the state are instructive in this regard. First, the history of health and safety regulation is one in which workers have often faced blame for their own victimization. Underpinning this scenario is the historic belief that corporations were private property, and therefore what went on within a company was its owner's private business. What is more, workers were thought to be "free" to enter into working arrangements and thus by logic could leave any workplace they believed to be overly dangerous.<sup>18</sup> Employers and employees were also assumed to share common interests when it came to workplace safety matters, despite the reality that workers' demands for safe(r) workplaces are always seen as "inherently subversive" and ultimately interfering with the "logic of capital."<sup>19</sup> Pressures to collect more accurate fatality statistics are therefore less than ideal when unsafe workplaces are blamed on clumsy, lazy workers and not dangerous modes of production, the pressures of profitability within corporations, or the (in)decisions of senior executives and/or boards of directors.

Second, and relatedly, when thinking about the production of workplace safety data we would do well to recall that we are examining a capitalist state, with a vested interest in (re)securing the capitalist social formation.<sup>20</sup> Since investment in health and safety cuts into profits, it is a matter that often escapes serious government scrutiny, and any state response to concerns about workplace safety typically avoids unnecessarily impeding upon the interests of private enterprise.<sup>21</sup> Within this context we commonly see "soft law" regulatory approaches endorsed by the state that help sustain, not hinder, so-called free market environments.<sup>22</sup> As David Whyte notes, drawing from Gramsci, "states must always intervene in formally 'private' institutions to guarantee their smooth functioning, in ways that seek to stabilize the social order."<sup>23</sup> It

18. Lauren Snider, *Bad Business: Corporate Crime in Canada* (Toronto: Nelson Canada, 1993); Eric Tucker, "And Defeat Goes On: An Assessment of Third-Wave Health and Safety Regulation," in Frank Pearce & Lauren Snider, eds., *Corporate Crime: Contemporary Debates* (Toronto: University of Toronto Press, 1995), 245–267.

19. Vincent Navarro, "The Limitations of Legitimation and Fordism and the Possibility for Socialist Reforms," *Rethinking Marxism* 4, 2 (1991): 27–60.

20. Raymond Michalowski, William Chambliss & Ronald Kramer, eds., *State Crime in the Global Age* (Portland: Willan, 2010); Bob Jessop, *State Power* (Cambridge, Massachusetts: Polity Press); Leo Panitch, ed., *The Canadian State: Political Economy and Political Power* (Toronto: University of Toronto Press, 1977).

21. Steve Tombs, *Social Protection after the Crisis* (Bristol: Policy Press, 2017).

22. Sol Picciotto, "International Transformations of the Capitalist State," *Antipode* 43 (2010): 87–107.

23. David Whyte, "Regimes of Permission and State-Corporate Crime," *State-Corporate Crime*

follows, then, that the state does not do more to collect accurate data on work-related deaths for the same reason that it does not do more to enforce laws intended to prevent these very harms from happening in the first place. Put simply, producing data that accurately demonstrate the dangers of work would be bad for capitalism.

Third, there is the hegemonic belief that freedom and prosperity require sacrifice. The spirit of modern (neoliberal) capitalism is often hailed as “involving rational conduct in the form of disciplined work, careful calculation, and a willingness to sacrifice short-term gains for long-term gains.”<sup>24</sup> Corporate production of harm and law-breaking are routine outcomes of the way that business is conducted and are rarely intended to cause death, injury, or illness. Rather, risks to workers are taken with the knowledge that harm is likely to occur. These sacrifices are often explained away as unfortunate but inevitable aspects of work – things that “just happen” – because business organizations are believed to be fundamentally responsible social actors engaging in socially productive activities. From this perspective, the state may not collect more accurate data on work-related deaths because it is “common sense” that “accidents” happen. If what is good for the company is good for society, and what is good for the company is ignoring health and safety (in the sense that improved safety measures cut into profits), then the sacrificial deaths of workers as a result of unsafe work can also be seen as natural or necessary – at the very least, they are relatively easy to ignore.

For our purposes, the social construction of data is significant given that the AWCBC’s annual fatality numbers are generated via a system that was never intended to track workplace deaths, but instead to report the number of compensable workplace fatalities. In particular, these numbers can be traced back to the work of Justice William Meredith, appointed by the Ontario Conservative government in the early 1900s to lead a royal commission on workers’ compensation in Canada.<sup>25</sup> The Meredith Report, as it was known, outlined principles for a workers’ compensation system in which employees waived their right to sue their employers in exchange for no-fault compensation benefits. Benefit claims were to be awarded regardless of how the incident occurred, and no investigation into the incident was to occur for the purpose of assigning responsibility or liability.<sup>26</sup> Provincial laws following the Meredith

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3, 2 (2014): 237–246.

24. Dennis Keenan, *The Question of Sacrifice* (Bloomington: Indiana University Press, 2005).

25. Sir William Meredith, *Final Report on Laws relating to the Liability of Employers to Make Compensation to Their Employees for Injuries Received in the Course of Their Employment Which Are in Force in Other Countries, and as to How Far Such Laws Are Found to Work Satisfactorily* (Toronto: Osgoode Hall, 1913).

26. Terence G. Ison, “Reflections on the State of Workers’ Compensation and Occupational Health & Safety in the United States and Canada,” *Compensation & Benefits Review* 47,1 (2015): 27–38; Robert Storey, “Social Assistance or a Worker’s Right: Workmen’s Compensation and

Report's principles were passed in the early decades of the 20th century, and provincial/territorial WCBS formed soon thereafter to process and make decisions on workers' claims.<sup>27</sup> It is within this system of workers' compensation that we now witness the production of workplace injury and death statistics.<sup>28</sup> As a result, there is a significant "dark figure" when it comes to data on the *actual* number of deaths caused by, or related to, work in Canada.

### ***Previous Research on Workplace Fatality Statistics***

In the United Kingdom, Steve Tombs has critically examined the official statistics of the Health and Safety Executive (HSE) on occupational fatalities. Focusing on the HSE's Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR), Tombs argues that "indeterminate numbers" of fatalities are excluded from official data.<sup>29</sup> For instance, RIDDOR does not include deaths that occur in the course of sea fishing or that arise out of transport and communications, both of which are subject to separate legislation and enforced by organizations other than the HSE.<sup>30</sup> Tombs also considers inconsistencies in the recording of deaths as "natural" as opposed to "violent or unnatural," which initiates additional inquests and can impact which deaths are investigated and recorded as work related.<sup>31</sup> Additionally, he expresses concern with the underreporting of workplace fatalities involving the self-employed and workers in the "illegal" economy. Given these and other considerations, he argues that there were at least five times more fatal occupational injuries in the UK in 1996–97 alone than the HSE's headline figure of 320 deaths. Such information demonstrates that fatal injury data are structurally incomplete.

Hilda Palmer also challenges the HSE's headline figures on deaths at work, noting the exclusion of certain fatality data such as deaths at work reported to other agencies in the UK (e.g. those reported to the Maritime and Coastguard Agency); deaths caused by occupational illness; and workplace incidents resulting in the death of members of the public. Contrary to the HSE's claim of 229 worker deaths between 2007 and 2008, Palmer argues that there were 1,500 to

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the Struggle of Injured Workers in Ontario, 1970–1985," *Studies in Political Economy* 78 (2006): 67–91.

27. AWCBC, "About Workers' Compensation," accessed 16 July 2018, [http://awcbc.org/?page\\_id=57](http://awcbc.org/?page_id=57).

28. The AWCBC started collecting injury and fatality data in 1996. Prior to this (from 1982 to 1986), Statistics Canada collected national statistical information about workplace injury claims through its National Work Injury/Disease Statistics Program (NWISP). Counting the number of work-related fatalities through accepted worker's compensation claims is the only "official" method of estimating the number of work-related deaths in Canada.

29. Tombs, "Death and Work," 346.

30. Tombs, "Death and Work," 350.

31. Tombs, "Death and Work," 360.



1,600 fatalities if we include deaths relating to “road-traffic accidents involving at-work vehicles,” work-related suicides, and “non-workers killed by work activities.” In addition, while the HSE estimates that just over 10,000 workers die each year from a work-related disease, Palmer counters with claims of approximately “18,000 work-related cancer deaths a year,” 6,000 deaths from chronic obstructive pulmonary disease (COPD), and up to 20,000 deaths from heart disease caused by work. She concludes that it is essential to improve data on work-related deaths in order to “target resources and harness political will to tackle all the causes of injury and ill health.”<sup>32</sup>

Rory O’Neill, Simon Pickvance, and Andrew Watterson also address the inadequacy of HSE fatality statistics through their analysis of occupational cancer deaths.<sup>33</sup> The authors argue that the HSE bases its claim of 6,000 occupational deaths per year on “discredited” and outdated methodology. Of particular concern for O’Neill and his colleagues is the HSE’s exclusion of work-related breast cancers, nasopharyngeal cancers, and some lung cancers related to wood dust exposure.<sup>34</sup> Taking these and other omissions into account, the authors claim, would produce estimates of “at least 20,000 and possibly in excess of 40,000 new cases of work-related cancer every year.”<sup>35</sup> They further state that exposure levels will continue to rise as people work longer hours, therein potentially facing prolonged exposure to cancer-causing chemicals, and as we realize the effects of women’s exposure to carcinogens related to their increased role in the workforce over the last 40 years.<sup>36</sup>

In the United States, Steenland et al. draw data from 1997 national mortality statistics and published epidemiologic studies to calculate attributable fractions (AFs), or estimates of “the percentages of deaths attributable to occupation among causes ... known to have an occupational component.”<sup>37</sup> The authors estimate the total number of occupational illness deaths as 49,000 per year, with an estimated range of 26,000 to 72,000.<sup>38</sup> They also claim this is a conservative estimate given that they restricted their research to select

32. Hilda Palmer, “Work Related Deaths – What Is the True Picture?,” *Safety and Health Practitioner (SHP) Online*, 10 December 2008, <https://www.shponline.co.uk/the-whole-story>.

33. Rory O’Neill, Simon Pickvance & Andrew Watterson, “Burying the Evidence: How Great Britain Is Prolonging the Occupational Cancer Epidemic,” *International Journal of Occupational and Environmental Health* 13, 4 (2007): 428–436.

34. O’Neill, Pickvance & Watterson, “Burying the Evidence,” 431.

35. O’Neill, Pickvance & Watterson, “Burying the Evidence,” 428.

36. O’Neill, Pickvance & Watterson, “Burying the Evidence,” 434.

37. Kyle Steenland, Carol Burnett, Nina Lalich, Elizabeth Ward & Joseph Hurrell, “Dying for Work: The Magnitude of US Mortality from Selected Causes of Death associated with Occupation,” *American Journal of Industrial Medicine* 43, 5 (2003): 462.

38. Steenland et al., “Dying for Work,” 461.



diseases that are well established as being caused by work environments, therein excluding many contested or unfounded cases.<sup>39</sup>

Limited research in Canada attempts to address the problems with official fatality statistics. Michel Rossignol, for instance, examines the number of workplace fatalities in Québec by comparing the province's fatal injury data with coroners' death certificates. Looking across these databases, he uncovers 352 "observable" deaths in 1987–88, 57 of which were ineligible for compensation.<sup>40</sup> Reasons for denying compensation related to the victim's "non-participation in the compensation system," including 47 self-employed workers.<sup>41</sup> Using a capture-recapture statistical method,<sup>42</sup> Rossignol estimates that 33 work-related fatalities were not captured by either data source.

More recently, researchers in British Columbia looked at work-related deaths in vital statistics, coroner data, and hospital discharge records and then compared these to fatality data reported in the province's workers' compensation system. The goal was to determine the number of fatalities and injuries not "captured by workers' compensation."<sup>43</sup> The authors entered into agreements with relevant government agencies and departments to develop unique identifiers within each database. Doing so allowed them to compare fatality victims in each data set and determine which ones were not reported to the workers' compensation board. Between 1991 and 2009 the researchers found a total of 1,677 work-related fatalities across the different data sources, of which 1,264 were "captured as an accepted workers' compensation claim."<sup>44</sup> Coroners' statistics were the "most valid" in that this information contained the greatest level of specificity for the purpose of comparison with statistics from WorkSafeBC (the province's health and safety authority). Limiting themselves to this comparison, the authors found 880 work-related fatalities

39. Steenland et al. argue that all pneumoconiosis deaths – about 1,000 per year, including asbestosis, pneumoconiosis, and silicosis – are occupation related. What is more, work-related illness accounts for 15 per cent of deaths due to asthma; 14 per cent of COPD deaths; 6.3 to 18 per cent of all deaths due to coronary heart disease (CHD); 3 per cent of deaths from hepatitis C; and 5 per cent of deaths from tuberculosis. Steenland et al., "Dying for Work," 463, 471.

40. Michel Rossignol, "Completeness of Provincial Workers' Compensation Files to Identify Fatal Occupational Injuries," *Canadian Journal of Public Health/Revue Canadienne de Santé Publique* 85, 4 (1994): 245.

41. Rossignol, "Provincial Workers' Compensation Files," 246.

42. This method involved generating estimates based on comparing fatal injury and coroner data with population statistics on diseased persons. Rossignol, "Provincial Workers' Compensation Files," 245.

43. Mieke Koehoorn, Lillian Tamburic, Fangmei Xu, Hasanat Alamgir, Paul A. Demers & C. B. M. McLeod, "Characteristics of Work-Related Fatal and Hospitalised Injuries Not Captured in Workers' Compensation Data," *Occupational and Environmental Medicine* 72, 6 (2015): 413.

44. Koehoorn et al., "Workers' Compensation Data," 415.

between 1991 and 2009 across the two databases. Of this total, 107 (12.7 per cent) fatalities were not reported to the workers' compensation board.

Ongoing research by the Occupational Cancer Research Centre (OCRC) attempts to estimate the number of occupational cancer deaths in Canada. The OCRC, developed in collaboration with the United Steelworkers and funded by the Canadian Cancer Society, Cancer Care Ontario, and the Ontario Ministry of Labour, explores workplace exposures and occupational cancer (who is at risk and how this risk changes over time); researches the causes of cancer in the workplace; and examines ways to lower and prevent exposure and improve worker health. It also has a standing partnership with CAREX Canada, a national project tracking exposure to carcinogens in Canadian workplaces and communities. According to the OCRC, "approximately 60 occupational exposures have been classified as definite or probable human carcinogens (cancer-causing) and over a hundred more are suspected carcinogens." The OCRC also suggests that occupational exposures account for 20 to 30 per cent of cancers among blue-collar workers.<sup>45</sup>

A recent OCRC study seeks to establish the "number of cancers and cancer deaths occurring in Canada due to occupational exposure to carcinogens" and explore the associated human impact (death, illness) and economic costs. The study makes use of national and provincial cancer data, existing research on the cancer risks associated with workplace exposures, and estimates of exposure in Canada from a historical perspective. The OCRC estimates that "450,000 workers are exposed to solar radiation, which causes an estimated 1,400 non-melanoma skin cancer cases annually."<sup>46</sup> The report does not estimate the number of fatalities in Ontario due to occupational cancer every year.

Together the studies examined above demonstrate three interrelated issues regarding workplace fatality data that are germane for this article. First, the number of people who die each year from work-related incidents or illnesses/diseases is much higher than what is reported in official data. Second, owing to the fact that governments narrowly count deaths at work, there is a paucity of comprehensive and reliable data sources on this important issue; as such, researchers must generate their own estimates by cobbling together various and limited information sources. Third, the resulting underestimation of deaths at work produces a lack of evidence-based data to inform relevant law and policy development.<sup>47</sup> This situation means that current debates concerning how to combat work-related fatalities are woefully incomplete when it

45. Occupational Cancer Research Centre (OCRC), "About," accessed 15 June 2018, <http://www.occupationalcancer.ca/aboutocrc/>.

46. Cancer Care Ontario and OCRC, *Burden of Occupational Cancer in Ontario: Major Workplace Carcinogens and Prevention of Exposure* (Toronto: Cancer Care Ontario and OCRC, 2017), <http://www.occupationalcancer.ca/wp-content/uploads/2017/09/Burden-of-Occupational-Cancer-in-Ontario.pdf>.

47. Palmer, "Work Related Deaths."

**Table 1: Estimate of Annual Work-Related Deaths in Canada**

Work-related cause of death	Estimated fatalities	
	Injury fatalities	Occupational-disease fatalities
AWCBC's average from 2014–16 <sup>a</sup>	332	n/a
Commuting/Driving to and from work	466	n/a
Agricultural	64	n/a
Non-reporting/reporting errors	20	n/a
Non-working victims	90 <sup>b</sup>	n/a
Work-related suicides	n/a	400–789
Mesothelioma	n/a	485
Other cancers	n/a	5,959–8,939
COPD <sup>c</sup>	n/a	2,062
Estimated injury total	972	n/a
Estimated disease total	n/a	8,906–12,275
<b>ESTIMATED TOTAL</b>		<b>9,878–13,246</b>

<sup>a</sup> The AWCBC's statistics include only deaths from a traumatic incident or "accident." We exclude occupational diseases and cancers to avoid duplication with our revised numbers concerning these fatalities.

<sup>b</sup> This figure is based on TSB information and is thus a conservative estimate. There are a significant number of unknown cases that could also be included in this category.

<sup>c</sup> COPD (chronic obstructive pulmonary disease) refers to progressive and incurable lung diseases, including emphysema, chronic bronchitis, and refractory asthma.

comes to understanding the scope of the problem and the state and employer responsibility for its causes and remedies.

## Revisiting Canada's Work-Related Death Statistics

BUILDING ON THE AFOREMENTIONED research on work-related fatalities, we turn now to revisiting annual work-related death figures in Canada. In so doing, we follow a similar methodology used in previous studies in that we draw from a series of government data sources that contain relevant information, as well as academic and non-governmental research that estimates the proportion of illnesses/diseases with links to occupational exposures. We examine two broad categories of work-related fatalities and consider their (under)reporting: acute incidents/injuries causing death and occupational diseases/illnesses. Table 1 reports our revised estimate of annual work-related deaths in Canada, the details of which we explain below.

### ***Unreported Fatalities***

We first asked whether there are cases of workers fatally injured that are not recorded in official data. We examined three categories of fatalities in this regard: commuting deaths; reporting errors (i.e. deaths related to agricultural work and non-reporting of fatalities); and non-working victims of workplace incidents.

#### *Commuting Deaths*

In the UK, Tombs found that the HSE's "headline figure" excluded many transportation-related fatalities, such as truck drivers killed in collisions while on the job.<sup>48</sup> In Canada, the situation is different in that provincial workers' compensation schemes include deaths resulting from on-the-job transportation fatalities, meaning they should appear in the AWCBC's fatality data. There may still be some transportation fatalities not officially recorded (e.g. a worker driving to work in a company vehicle), but in general the AWCBC's data accurately report fatal collisions that occur during working hours.

What would happen if official data included commuting fatalities as occupational deaths? While we acknowledge the debate about whether these incidents are in fact work related, we nevertheless question their exclusion, considering that the only reason these people were on the road was to get to and from work. Furthermore, the conditions in which people commute is a potentially important work-related matter when considering that workers face increasingly longer working hours and precarious and stressful working conditions.<sup>49</sup> In this sense, conditions at work have a spillover effect in terms of workers' physical and emotional states while commuting to and from work. In one US case, a review board ruled that a worker was eligible for compensation after he was injured in a collision when driving home after working "twenty-seven straight hours." The board concluded that the "going and coming" rule, which denies workers' compensation in cases where a worker is injured or killed during his or her commute, did not apply given that the worker was "required" to work such long hours.<sup>50</sup> This ruling was exceptional in awarding compensation; many other cases undoubtedly do not realize such favourable outcomes. In another case, 6 people were killed and 35 injured when a public transportation bus collided with a train at a rail crossing in Ottawa in 2013.<sup>51</sup> While the bus driver's tragic death was considered work related, the other 5 victims, some of whom were commuting to work, would not have been

48. Tombs, "Death and Work"; see also Palmer, "Work Related Deaths."

49. Vicki Cooper & David Whyte, *The Violence of Austerity* (London: Pluto, 2017).

50. *Michael Haslam v. Modern Continental Construction Co., 2004*, Department of Industrial Accidents (DIA) Board No. 038582-01, 31 May 2018, <https://www.mass.gov/decision/michael-haslam-v-modern-continental-construction-co>.

51. Transportation Safety Board of Canada (TSB), "Railway Investigation Report R13T0192," 2015, <http://www.bst-tsb.gc.ca/eng/rappports-reports/rail/2013/r13t0192/r13t0192.asp>.

counted as such. An additional factor to consider is the culture of “presenteeism” that characterizes many contemporary workplaces. Presenteeism refers generally to “attending work while ill,”<sup>52</sup> but also includes such factors as the pressure to commute to work despite poor weather conditions – an important consideration in many parts of Canada with harsh winters.<sup>53</sup> Many workers thus lose their lives simply trying to get to and from work, and although these deaths occur outside of legally defined working hours (an ideologically based decision, not a fact), they nevertheless only occur because workers are on the roads at a time when many people are sick, tired, and/or distracted and roads are crowded and, in many instances, dangerous.

To get a sense of how many people die while commuting to and from work, we examined both Statistics Canada (StatCan) data on commuting patterns and Transport Canada (TC) data on motor vehicle fatalities. This information did not permit us to account for all of the ways that people commute to work (e.g. bike, walk, transit, personal vehicle) and whether there are fatalities related to these different modes of transportation. However, we did obtain TC data regarding the number of annual fatal motor vehicle collisions by the hour the incident occurred. We then compared this information to StatCan’s 2011 National Household Survey, which reported that roughly 15.4 million Canadians commuted to work. Of these commuters, just over 12 million (12,260,190) travelled by car or truck as either the driver (11,393,140) or passenger (867,050). Of the 15.4 million commuters, roughly 29 per cent (4,472,745) left home for work between 7:00 and 7:59 a.m.; another 22 per cent (3,397,085) left between 8:00 and 8:59 a.m.; and 18 per cent (2,782,690) left between 6:00 and 6:59 a.m. In total, a majority (10,652,520, or 69.2 per cent) of commuters left for work between 6:00 a.m. and 8:59 a.m.<sup>54</sup> There was no commensurate information to determine when these people returned home from work. In this case, we estimated the time of returning home based on an eight-hour workday.

Next, we examined TC’s National Collision Database, which contains information on “all police-reported motor vehicle collisions on public roads in Canada.”<sup>55</sup> In 2011, for instance, TC reported 194 motor vehicle fatalities that occurred between 6:00 a.m. and 8:59 a.m., which corresponds with StatCan’s commuting patterns; another 339 fatal collisions occurred between 3:00 and

52. Gary Johns, “Presenteeism in the Workplace: A Review and Research Agenda,” *Journal of Organizational Behaviour* 31, 4 (2010): 519–542.

53. “‘Culture of Presenteeism’ Blamed as Ottawans Travel to Work in Snowstorm,” *CBC News*, 16 February 2016, <https://www.cbc.ca/news/canada/ottawa/culture-presenteeism-blamed-snowstorm-1.3454258>

54. Statistics Canada (StatCan), *Commuting to Work: National Household Survey (NHS)*, 2011 (Ottawa: Ministry of Industry, 2013).

55. Transport Canada, “National Collision Database Online,” accessed 20 September 2017, <http://www.wapps2.tc.gc.ca/saf-sec-sur/7/ncdb-bndc/p.aspx?l=en>.

5:59 p.m., the time we estimated that many people would be returning home from work. Thus, in 2011, 533 fatal collisions occurred during the times when most people were commuting to and from work. If we look at the average number of motor vehicle fatalities from 2010 to 2014, using the same commuting times, we found an average of 199 fatalities occurred during the morning commute and an average of 350 fatalities occurred at the end of the workday. Expressed as an average, from 2010 to 2014 there were 549 annual fatal collisions that occurred during regular commuting hours.

What we do not know via the available information, however, is how many of these victims were in fact commuting to or from work or how many were already at work and driving at the time of the fatal incident, making them potentially eligible for workers' compensation and thus reported in official data. Even if we exclude the AWCBC's statistics on highway accidents, there remain considerable commuting fatalities with the *potential* to be work related. For instance, between 2013 and 2016, the AWCBC reported an average of 83 highway "accidents" (96 in 2013; 93 in 2014; 64 in 2015; and 79 in 2016). If we exclude these from our estimate of 549 annual collision fatalities, we are left with 466 fatalities.

Overall, we argue that approximately 466 annual collision fatalities have the *potential* to be work related. Even if some of these involve those who were at work at the time of the collision, and perhaps those not driving to or from work at the time, this should not result in a gross overestimation given that our figure excludes shift workers killed in collisions while commuting during nonstandard working hours. We argue it is reasonable to conclude that these commuters are at the greatest risk of driving while fatigued and in dangerous conditions, in comparison with those who work normal business hours.

#### *Non-reporting, Underreporting, or Reporting Errors*

Another area of potential underreporting of work-related fatalities caused by an acute, traumatic event is that of cases not covered by compensation schemes and those not reported as work-related (i.e. reporting errors). For instance, each workers' compensation scheme in Canada contains a list of excluded occupations, meaning the AWCBC data do not record fatalities in relation to these jobs. These excluded occupations vary by jurisdiction and include, for instance, self-employed workers, employees of private clubs, domestic help, and banking employees. Despite these exceptions, workers' compensation systems do cover a majority of the workforce. In British Columbia, for instance, almost 95 per cent of the province's workforce fall into this category.<sup>56</sup> According to Grant, this makes BC's coverage the highest in the country, with the average across Canada being 85 per cent of workers covered by workers' compensation.<sup>57</sup>

56. Koehoom et al., "Workers' Compensation Data," 414.

57. Grant, "Hidden Dangers."

### *Agriculture*

Agriculture is one of Canada's most hazardous industries.<sup>58</sup> As reported by the Canadian Agricultural Injury Reporting (CAIR) program, from 2003 to 2012 there were "843 agriculture-related fatalities in Canada, an average of eighty-four per year."<sup>59</sup> In previous years, there was an annual average of approximately 118 agriculture-related deaths. The decrease is largely due to the declining farm population, with fatality rates staying fairly constant.<sup>60</sup> Almost all (92 per cent) agriculture-related fatalities in Canada are work related, with the remaining deaths caused by other farm-related hazards (e.g. children killed on farm equipment while not working).<sup>61</sup> Considering this, we can report via CAIR an average of 77 (or 92 per cent of the overall average of 84 per year) work-related agricultural fatalities in Canada from 2003 to 2012.

Agriculture work is one category of employment that is not always covered by workers' compensation, owing to the fact that many farmers are self-employed and thus not eligible for compensation.<sup>62</sup> In Alberta, for instance, the average is approximately 18 agriculture deaths per year and these deaths do not appear in Workers' Compensation Board databases and death statistics.<sup>63</sup> To estimate the number of agriculture fatalities not officially reported, we compared the AWCBC's data with those reported by CAIR. Unfortunately, we did not have overlapping reporting years, which meant we had to compare averages over the respective years covered by each reporting regime. Take, for instance, the AWCBC's statistics from 2013 to 2015, which report an average of 13 fatalities in "agriculture and related services."<sup>64</sup> Compared with CAIR's aforementioned average of 77 work-related agricultural fatalities from 2003 to 2012, we found a difference of 64 fatalities not included in official data.<sup>65</sup>

58. Farm Safety Centre, "Farm Injury/Fatality Statistics in Canada," accessed 15 June 2018, <http://www.abfarmsafety.com/resources/statistics.htm>.

59. Canadian Agricultural Injury Reporting (CAIR), *Agriculture-Related Fatalities in Canada* (Edmonton: CAIR, 2016), 2, <http://www.cair-sbac.ca/wp-content/uploads/2017/02/CASA-CAIR-Report-English-FINAL-Web.pdf>.

60. At approximately 11.5 deaths per 100,000 population. CAIR, *Agriculture-Related Fatalities*, 15.

61. CAIR, *Agriculture-Related Fatalities*, 15.

62. Art Deane, "Some Canadian Workplace Injury and Fatality Facts," Human Development Consultants, Edmonton, 2012, <http://www.safethink.ca/resources/pdf/Canadian%20Workplace%20Injury%20and%20Fatality%20Facts.pdf>.

63. In 2014, there were 25 agriculture-related deaths that did not appear in AWCBC statistics. Deane, "Injury and Fatality Facts," n.p.

64. AWCBC, "NWISP Definitions."

65. CAIR's data did not include fatalities of migrant farm workers. Information regarding citizenship status would be highly valuable for future studies on work-related fatalities, particularly given the precarious and often dangerous working conditions faced by migrant farm workers. On the exploitation of migrant workers, see David Goutor, "Migrant Farm



### *Non-reporting of Fatalities*

In addition to the non-reporting of agricultural-related deaths, there are also inevitably further recording errors of an unknown scale. In general, there is little chance that a work-related fatality caused by a traumatic incident is not reported to health and safety authorities and, where appropriate, recorded in official data. After all, employers that are part of workers' compensation systems are required to report these incidents, and when it comes to fatalities, the authorities (e.g. regulators, police, firefighters, paramedics) are notified immediately because of the urgent need for medical attention. There are situations, however, in which someone dies on a job that is not covered by workers' compensation (including those described above) or there is some non-reporting on the part of a victim's family or loved ones and/or doctors/medical professionals, particularly in cases where the person does not die immediately from their injury or illness.<sup>66</sup>

In British Columbia, Koehoorn et al. concluded that between 1991 and 2009, 107 fatalities were not reported to workers' compensation, which equates to an average of 6 fatalities per year. Ideally, to establish a national "underreporting" figure we would need to replicate this research across Canada. However, this would require establishing appropriate agreements with each province and territory to compare and contrast workers' compensation fatality statistics with other official data sources (e.g. coroner's reports, hospital data, and vital statistics). Given that such an endeavour is beyond the scope of this article (and perhaps impossible without knowing the data capacities of each jurisdiction), we instead drew from Koehoorn et al.'s conclusions to develop a national "underreporting" estimate. We compared Koehoorn et al.'s average of 6 fatalities per year not reported in workers' compensation data with WorkSafeBC's fatality statistics from 1990 to 2014 (a total of 2,305 fatalities over 25 years).<sup>67</sup> If we adjust this number to include the 6 annual average unfounded fatalities as reported by Koehoorn et al., this number would rise to 2,455, or 150 additional fatalities. If we calculate this as a percentage of deaths not reported, we could say there were 6.1 per cent more fatalities each year in BC than were recorded in official data sources. Of course this figure would fluctuate depending on the actual number of non-reported fatalities in any given year relative to the number of fatalities reported by WorkSafeBC. Therefore, from 1990

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Workers Inhabit Precarious Working World," *Toronto Star*, 23 April 2012, [https://www.thestar.com/opinion/commentary/2013/04/23/migrant\\_farm\\_workers\\_inhabit\\_precarious\\_working\\_world.html](https://www.thestar.com/opinion/commentary/2013/04/23/migrant_farm_workers_inhabit_precarious_working_world.html); Kendra Strauss & Siobhan McGrath, "Temporary Migration, Precarious Employment and Unfree Labour Relations: Exploring the 'Continuum of Exploitation' in Canada's Temporary Foreign Worker Program," *Geoforum* 78 (2017): 199–208.

66. Koehoorn et al., "Workers' Compensation Data."

67. Koehoorn et al., "Workers' Compensation Data"; WorkSafeBC, *Statistics 2014* (Vancouver: WorkSafeBC, 2014), 13, <https://www.worksafebc.com/en/resources/about-us/annual-report-statistics/2014-stats?lang=en>. We focused only on WorkSafeBC's category of "deaths due to injury" to ensure we were consistent with Koehoorn et al.'s focus on fatal injuries.

to 1994, for instance, 542 “deaths due to injury” were officially recorded by WorkSafeBC. Using our average number of non-reported fatalities (6 per year) as our reference point, the underreporting rate for that period would be 5.5 per cent. In comparison, this rate would increase to 8.9 per cent from 2010 to 2014, the period in which WorkSafeBC recorded the lowest number of fatalities (337 fatalities).

Based on this information we adopted a conservative estimate of 6 per cent as a national figure of the underreporting of workplace fatalities. While it is difficult to extrapolate from this data to draw definitive conclusions about other jurisdictions, we might still reasonably argue that a similar rate of non-reporting exists across the country. We were confident using British Columbia as our benchmark given that it has the highest workers’ compensation coverage in the country, meaning it should result in the lowest number of “not covered” fatalities. So, for instance, from 2013 to 2015 the AWCBC reported an average of 339 work-related fatalities, restricting this number to injury fatalities only. If we assume a 6 per cent error rate, then we would need to add 20 fatalities to the AWCBC’s figure, producing a new total of 359 work-related fatalities. We recognize that this estimate may overlap with our figure concerning agriculture-related fatalities (i.e. that some fatalities will be counted in both); however, even if this is the case it does not produce a significant over-estimation given the overall low numbers in these categories.

### *Non-working Victims*

Previous research suggests that non-workers killed because of a workplace incident or disease should be included in official data.<sup>68</sup> Take, for instance, the women exposed to asbestos when their husbands/spouses brought this deadly substance home on their clothes after a day’s work.<sup>69</sup> There are also the non-workers killed as a result of a traumatic incident or disaster, such as with the sinking of the UK-based sea ferry, the *Herald of Free Enterprise*, outside the Belgian port of Zeebrugge in 1987, killing 193 passengers and crew members.<sup>70</sup> In Canada, the Lac-Mégantic rail disaster in 2013 is a troubling reminder of the dangers of unsafe work for non-workers. In this case, 47 people perished in a devastating explosion after a runaway train carrying crude oil derailed in the small town of Lac-Mégantic, Québec.<sup>71</sup> The non-working victims in both the *Herald of Free Enterprise* and the Lac-Mégantic cases would not be

68. Palmer, “Work Related Deaths”; Tombs & Whyte, *Safety Crimes*.

69. Devra Davis, *The Secret History of the War on Cancer* (New York: Basic Books, 2007).

70. Tombs & Whyte, *Safety Crimes*.

71. Bruce Campbell, *The Lac-Mégantic Disaster: Where Does the Buck Stop?* (Ottawa: Canadian Centre for Policy Alternatives, 2013).

included in official workplace fatality statistics despite their deaths being the direct result of a work-related incident.<sup>72</sup>

Beyond such high-profile disasters, deaths of non-workers are difficult to track, with no official data sources available to report these incidents. Unlike official crime data, where significant (albeit imperfect) information is available on crime victimization, there are no equivalent data about the victims of corporate offending who were not on the job at the time a law was breached, either regulatory or criminal, and a death occurred. To get a sense of the nature and scale of these fatalities would require combing through media reports to collect information on these events, assuming that media reporting actually exists (e.g. there may be no media reporting of a non-worker killed in an automobile collision involving an “at-work” vehicle).

In the UK, Palmer argues that non-workers should be included in official workplace fatality data, including members of the public killed by, for instance, “a scaffold collapse, train crashes, and work-related road-traffic accidents.” Unlike in Canada, the HSE does report deaths of members of the public, the total of which was 358 in 2007–2008. The majority of these deaths were “due to suicide, or trespass on to railways.” For Palmer, however, this number excludes the non-working victims in the other aforementioned scenarios (which she estimates to be an additional 95 fatalities) as well as the approximately 1,000 non-workers killed annually in “road-traffic accidents involving ‘at work’ vehicles.”<sup>73</sup> To some extent, our estimate of the number of workers killed in collisions while commuting to and from work would include some of the non-workers in Palmer’s figures (in this sense we suggest that some of these non-workers should be counted as work-related fatalities). There is little additional information in the Canadian context that would allow us to estimate the number of non-workers killed in collisions involving commercial vehicles.

Despite limited data, we did glean some information from the annual reporting of injury and fatality statistics in relation to air, rail, and marine vessels by the Transportation Safety Board of Canada (TSB). In 2016, for instance, the TSB reported 20 airline passenger fatalities. Looking at previous TSB reports, we found 18 fatalities involving passengers in 2015; 6 in 2014; 20 in 2013; and 22 in 2012.<sup>74</sup> This equates to an average of 17.2 passenger fatalities from 2012 to 2016. The TSB also reported 62 rail fatalities in 2016, which includes 16 crossing fatalities and 46 “trespasser” fatalities, which it defines as

72. We acknowledge the contested nature of this category and that it may fall outside of what some might consider to be examples of work-related fatalities. However, we maintain that it is important to include this category as a means of demonstrating the extent to which dangerous workplaces injure and kill both workers and non-workers, as well as to underscore the fact that workplace fatality statistics are social products.

73. Palmer, “Work Related Deaths.”

74. TSB, *Statistical Summary – Aviation Occurrences 2016*, accessed 15 June 2018, <http://www.tsb.gc.ca/eng/stats/aviation/2016/ssea-ssao-2016.asp>.

“accidents” involving “persons, primarily pedestrians, not authorized to be on railway rights-of-way and who are struck by rolling stock other than railway crossings.”<sup>75</sup> Finally, the TSB reported 7 marine fatalities in 2016, “down from a total of nineteen in 2015, down from the average of sixteen in 2011–2015 and the annual average of eighteen in 2006–2015.”<sup>76</sup>

We thus conclude the following based on the TSB’s five-year average for air, rail, and marine fatalities: 17 passenger aircraft fatalities; 59 railway fatalities; and 14 marine fatalities. Combined, these numbers generate a five-year average of 90 additional fatalities.<sup>77</sup> This is, undoubtedly, a conservative estimate given the many other unknown or undocumented scenarios of non-workers killed in work-related incidents not captured by these data.

### ***Occupational Diseases and Illnesses***

The second category of work-related fatalities we revisited is work-related diseases/illnesses. The International Labour Organization (ILO) estimates more than two million deaths worldwide resulting from a work-related disease. Six times more workers die each year from occupational diseases than from traumatic incidents in the workplace.<sup>78</sup> In Ontario alone, estimates are as high as 6,000 occupational-disease deaths annually.<sup>79</sup> For our purposes, we examine the following work-related diseases and illnesses: work-related suicides; occupational cancers; and occupational disease, with a particular focus on chronic obstructive pulmonary disease (COPD).

#### *Work-Related Suicides*

Work-related suicides are a burgeoning area of concern for researchers, workers’ rights groups, and organized labour. The issue gained prominence in France in the mid-2000s following a spate of work-related suicides, dubbed a

75. TSB, *Statistical Summary – Railway Occurrences 2016*, accessed 15 June 2018, <http://www.tsb.gc.ca/eng/stats/rail/2016/sser-ssro-2016.asp>.

76. TSB, *Statistical Summary – Marine Occurrences 2016*, accessed 15 June 2018, <http://www.bst-tsb.gc.ca/eng/stats/marine/2016/ssem-ssmo-2016.asp>.

77. These averages were calculated using data tables from TSB, *Statistical Summary – Aviation 2016*, <http://www.tsb.gc.ca/eng/stats/aviation/2016/ssea-ssao-2016-tbls.asp>; TSB, *Statistical Summary – Railway 2016*, table 9, “Trespasser Accidents by Province 2007–2016,” <http://www.tsb.gc.ca/eng/stats/rail/2016/sser-ssro-2016-tbls.asp#sser-ssro-2016-tbl-09>; and TSB, *Statistical Summary – Marine Occurrences 2016*, table 6, “Accidents, Fatalities and Serious Injuries by Accidents Type, 2007–2016,” <http://www.tsb.gc.ca/eng/stats/marine/2016/ssem-ssmo-2016-tbls.asp#ssem-ssmo-2016-tbl-06>.

78. International Labour Organization, “Psychological Risks and Work-Related Stress,” 2013, 1, [http://www.ilo.org/safework/areasofwork/workplace-health-promotion-and-well-being/WCMS\\_108557/lang--en/index.htm](http://www.ilo.org/safework/areasofwork/workplace-health-promotion-and-well-being/WCMS_108557/lang--en/index.htm).

79. Ontario Federation of Labour, “Fact Sheet: Why We Need a National Day of Mourning: April 28, 2014,” news release, 25 April 2014, <http://ofl.ca/dayofmourning2014-why-need-day-mourning/>.

“suicide epidemic” by the media.<sup>80</sup> One high-profile case involved the country’s telecom giant, France Télécom, after 69 employees committed suicide over a four-year period (2008 to 2011). The suicides followed significant job cuts (“22,000 jobs in three years”) and deteriorating working conditions characterized by “unmanageable workloads” and instances of managers humiliating, intimidating, and bullying employees.<sup>81</sup> In Canada, some suicides have been recognized by wCBS as being work related. In 2017, for instance, the Workers’ Compensation Board of Saskatchewan determined that a worker’s suicide was partly attributable to his working conditions and agreed to pay compensation to his widow.<sup>82</sup> Cases like this one, albeit limited in number, would appear in the AWCBC data as a compensable fatality.

Researchers argue that changes to employment relations in recent decades provide insight into the nature and prevalence of work-related suicides. Waters, Karanikolos, and McKee, for instance, cite working environments in the context of neoliberalism, including “deteriorating working conditions and increased job insecurity,” as precipitating factors in work-related suicides.<sup>83</sup> According to the authors, we can uncover work-related suicides by examining suicide notes in which the deceased specifically references working conditions as a causal factor as well as “symbolic” suicides where a person returns to their place of employment to take their own life.<sup>84</sup> As Waters, Karanikolos, and McKee argue, “when people feel they no longer have a voice in the workforce, they protest in other ways including, in the most extreme cases, by killing themselves.”<sup>85</sup>

Neoliberalism – with its unabashed commitment to private enterprise; all-or-nothing, take-no-prisoners approach to maximal corporate profits; minimal state regulation of business (unless the state’s intervention facilitates the private accumulation of wealth); and hyperindividualism that prioritizes personal wealth and accomplishment over collective solidarity – has profoundly changed employment relations. In addition to stagnating wages, leaving workers in massive debt as they seek other means (usually credit) to augment their dwindling income, work is increasingly demanding, precarious, part-time, and low paying. Precarious work alone contributes to workers’ increased

80. Sarah Waters, Marina Karanikolos & Martin McKee, “When Work Kills,” *Journal of Public Mental Health* 15, 4 (2016): 229.

81. Waters, Karanikolos & McKee, “When Work Kills,” 230.

82. Alicia Bridges, “Sask. Workers’ Comp. Decision Attributing Suicide to Workplace Could Lead to More Claims: Prof,” *CBC News*, 6 February 2018, <http://www.cbc.ca/news/canada/saskatchewan/workers-compensation-suicide-duhaime-saskatchewan-reaction-1.4522740>.

83. Waters, Karanikolos & McKee, “When Work Kills,” 230.

84. Waters, Karanikolos & McKee, “When Work Kills,” 229–230.

85. Waters, Karanikolos & McKee, “When Work Kills,” 232.

“stress, anxiety, sleep disorders, burnout and in some cases, suicide.”<sup>86</sup> Coupled with this is an erosion of workers’ rights and protections, including significant decreases in union representation, which puts workers in increasingly difficult positions when attempting to realize their already limited protections.<sup>87</sup> Increased pressures at work that, in some instances, result in worker suicide are thus part and parcel of the growing pressures that a vast majority of people now face under austerity-driven, neoliberal capitalism.<sup>88</sup>

Within this context, a growing literature examines the health effects of the 2007–2008 global financial crisis and resulting austerity policies. Countries like Greece, for instance, hit especially hard by the financial crisis and now facing strict austerity measures imposed by the European troika (European Union, International Monetary Fund, and European Central Bank), witnessed a 40 per cent increase in suicides from January to May 2011 compared with the previous year.<sup>89</sup> Reeve, McKee, and Stuckler examined economic suicides in Europe, the United States, and Canada following the 2008 global financial crisis. Acknowledging the range of factors contributing to suicide rates in any given country, and that the global economic recession did not uniformly impact mental health and suicide, the authors nevertheless found a period of declining suicide rates preceding the financial crisis, followed by significant increases after its onset. From 2007 to 2009, for instance, they found 7,950 additional suicides in Europe after the crisis compared with suicide rates prior to the recession. Canada’s suicide rate increased by 4.5 per cent (approximately 240 suicides) and the United States, whose suicide rate was on the rise prior to the recession, experienced a 4.8 per cent increase (approximately 4,750 additional suicides). The authors cite three factors that help to explain an increase in depression and suicide in post-recession countries: job loss, indebtedness (related to job loss), and mortgage foreclosures (again, relating to job loss and indebtedness).<sup>90</sup> In many respects, we can see all of these as work-related factors leading to the loss of life.

Routley and Ozanne-Smith studied work-related suicides in Victoria, Australia, between 2000 and 2007. Using a broad interpretation of work-related suicides – accounting for not only suicides at work but also those related to, for instance, job loss, problems finding employment, precariousness, and job stress/dissatisfaction – the researchers examine suicides reported in

86. Waters, Karanikolos & McKee, “When Work Kills,” 231.

87. Waters, Karanikolos & McKee, “When Work Kills,” 232.

88. Cooper & Whyte, *Violence of Austerity*.

89. Marina Karanikolos, Phillipa Mladovsky, Jonathan Cylus, Sarah Thomson, Sanjay Basu, David Stuckler, John P. Mackenbach & Martin McKee, “Financial Crisis, Austerity, and Health in Europe,” *Lancet* 381, 9874 (2013): 1327.

90. Aaron Reeves, Martin McKee & David Stuckler, “Economic Suicides in the Great Recession in Europe and North America,” *British Journal of Psychiatry* 205, 3 (2014): 246–247; see also Karanikolos et al., “Financial Crisis.”

the Victorian Work Related Fatality Database. They found 643 work-related suicides, representing 17 per cent of the 3,775 suicides reported during the seven-year period included in their study.<sup>91</sup> Meanwhile, in the United States there were 1,719 suicides in the workplace between 2003 and 2010; during the same period, 270,500 people “died by suicide outside of the workplace.”<sup>92</sup> Those working in law enforcement or farming, medical professionals, and soldiers were at higher risk of suicide compared with other occupations.<sup>93</sup> While researchers were unable to ascertain if workplace suicides were “motivated by work-related exposures or factors,” they nevertheless raised important questions regarding the increasingly blurred lines between work and home life and the need for employers to address the myriad mental health issues that workers routinely experience.<sup>94</sup> In many instances workers do not want to report their mental health issues to employers, owing to the overall stigma of mental illness in society and related concerns of losing their jobs.<sup>95</sup>

Overall, there is growing recognition that conditions at work significantly contribute to workers’ deteriorating mental health. At the very least, stressful working conditions add to the already heavy burden that many people face as they struggle to keep up with the demands of modern capitalism. If we work from the conservative premise that roughly 10 per cent<sup>96</sup> of all suicides are work related, we find approximately 400 work-related suicides in Canada each year. We arrive at this number by calculating the average number of suicides in Canada from 2009 to 2013. During this period there were 19,717 suicides, or an average of 3,943 suicides per year.<sup>97</sup> In their research on suicides in France, Waters, Karanikolos, and McKee note that one out of every five suicides (or 20 per cent) reported in that country are considered work related.<sup>98</sup> Using this as

91. Virginia H. Routley & Joan Ozanne-Smith, “Work-Related Suicide in Victoria, Australia: A Broad Perspective,” *International Journal of Injury Control and Safety Promotion* 19, 2 (2012): 131–134.

92. Hope M. Tiesman, Srinivas Konda, Dan Hartley, Cammie C. Menendez, Marilyn Ridenour & Scott Hendricks, “Suicides in US Workplaces, 2003–2010: A Comparison with Non-Workplace Suicides,” *American Journal of Preventive Medicine* 48, 6 (2015): 674–682.

93. Lindsay Holmes, “Workplace Suicides on the Rise, According to New Study,” *Huffington Post*, 17 March 2015, [http://www.huffingtonpost.ca/entry/workplace-suicide-rates\\_n\\_6879046](http://www.huffingtonpost.ca/entry/workplace-suicide-rates_n_6879046).

94. Tiesman et al., “Suicides in US Workplaces.”

95. Holmes, “Workplace Suicides.”

96. Given that research on this topic is still in its infancy, we arbitrarily chose 10 per cent as a low estimate simply to demonstrate the potential number of work-related suicides. This is a low (i.e. conservative) estimate compared with the limited research on the topic, which we cite below.

97. Statistics Canada, “Deaths and Age-Specific Mortality Rates, by Selected Grouped Causes,” table 13-10-0392-01, CANSIM (database), accessed 15 June 2018, <https://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/hlth66d-eng.htm>.

98. Waters, Karanikolos & McKee, “When Work Kills.”



a starting point, our Canadian data would change to 789 work-related suicides. A more conservative estimate of 670 work-related suicides results from using the 17 per cent standard set by Routley and Ozanne-Smith in their study of work-related suicides in Australia.<sup>99</sup> Overall, then, we submit that 400 to 789 suicides annually in Canada are *potentially* work related.

### *Occupational Cancers*

It is common knowledge in the occupational health and safety (OHS) literature that there are untold cancer-related deaths from occupational exposures. It is also common knowledge that many and ongoing challenges exist with establishing links between working environments and cancer. In addition to the long latency periods between occupational exposures and a cancer diagnosis (which results in many workers and medical professionals not linking a cancer to work exposures), there is a paucity of comprehensive research on this important issue.<sup>100</sup> The aforementioned work by the OCRC is thus vital in providing a better sense of the nature and extent of the links between cancer and work. In the interim, we are left with general estimates of the number of work-related cancer deaths. Below, we consider estimates relating to deaths caused by mesothelioma and to other cancer-related deaths from occupational exposures.

Mesothelioma is an aggressive cancer of the protective lining of many internal organs, primarily the lungs.<sup>101</sup> Its primary cause is the inhalation of asbestos dust and fibres in the workplace. It is “almost always fatal.”<sup>102</sup> For men, the majority (80 to 90 per cent) of mesothelioma cases are work related, while for women, only 20 to 30 per cent of cases fall into official work-related categories. Most mesothelioma claims submitted for compensation are accepted, although claim rates have been historically low.<sup>103</sup> Kirkham et al. suggest that low compensation rates are the result of several reporting factors, including older patients who might not make the connection between their cancer and previous work experiences.<sup>104</sup> Complicating the situation is that current asbestos-related illnesses are associated with exposures that occurred decades earlier.<sup>105</sup> In addition, some doctors may not ask a patient about their

99. Routley & Ozanne-Smith, “Work-Related Suicide.”

100. Tombs & Whyte, *Safety Crimes*.

101. Canadian Cancer Society, “What Is Mesothelioma?,” accessed 15 June 2018, <http://www.cancer.ca/en/cancer-information/cancer-type/mesothelioma/mesothelioma/>.

102. Tracy Kirkham, Mieke W. Koehoorn, Christopher B. McLeod & Paul A. Demers, “Surveillance of Mesothelioma and Workers’ Compensation in British Columbia, Canada,” *Occupational and Environmental Medicine* 68, 1 (2011): 30.

103. Kirkham et al., “Surveillance of Mesothelioma.”

104. Kirkham et al., “Surveillance of Mesothelioma,” 32–33.

105. CAREX Canada, “Preventing the Burden of Occupational Cancer in Canada: Stakeholder

work history – especially in cases involving women, given that mesothelioma is most often associated with male-dominated professions.<sup>106</sup> For the purposes of this article, however, we assume that all cases of mesothelioma are work related. In particular, many of the “non-workers” exposed to asbestos were family members of workers who unwittingly brought the deadly substance home in their hair or on their clothes.<sup>107</sup> Given that many of these victims were women working in the home to support their husbands/partners who worked outside the home, we argue that there is little moral basis for excluding these cases because they are a by-product of interrelated (inside and outside the home) working environments.<sup>108</sup>

CAREX Canada estimates that approximately 152,000 Canadians are exposed to asbestos in the workplace.<sup>109</sup> Recent StatCan figures indicate that the numbers of cases and deaths from mesothelioma continue to rise and do not appear to be waning.<sup>110</sup> In 2013, according to the Canadian Cancer Society, 595 Canadians were diagnosed with mesothelioma and 485 Canadians died from the disease.<sup>111</sup> Preliminary results from the OCRC show approximately 430 annual cases of mesothelioma (as well as 1,900 cases of lung cancer) attributable to occupational exposure.<sup>112</sup> However, many deaths from occupational diseases such as asbestosis are not included in the AWCBC data.<sup>113</sup> Using the Canadian Cancer Society’s 2013 figures, which cohere with our broad definition of work-related mesothelioma, we conclude that approximately 485 mesothelioma deaths occur annually.

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Symposium Report,” 31 March 2016, [http://www.carexcanada.ca/Burden\\_of\\_Occupational\\_Cancer\\_Symposium\\_Mar-31-2016\\_Final\\_Report.pdf](http://www.carexcanada.ca/Burden_of_Occupational_Cancer_Symposium_Mar-31-2016_Final_Report.pdf).

106. Kirkham et al., “Surveillance of Mesothelioma,” 32–33.

107. Davis, *Secret History*; Kirkham et al., “Surveillance of Mesothelioma.”

108. Owing to data limitations we were unable to determine the number of mesothelioma exposures that occurred outside of a legally constituted working scenario (e.g. someone who comes into contact with asbestos when renovating a home). We expect, however, that even if some of these cases are included in the data we use, the overwhelming majority of cases are those of workers and their family members and therefore do not detract significantly from our assertion that official statistics underestimate the number of mesothelioma-related deaths.

109. CAREX Canada, “Asbestos,” last modified June 2018, [http://www.carexcanada.ca/en/asbestos/#occupational\\_exposures](http://www.carexcanada.ca/en/asbestos/#occupational_exposures).

110. Kirkham et al., “Surveillance of Mesothelioma”; Sheryl Ubelacker, “Asbestos-Linked Cancer on the Rise: Statscan,” *Globe & Mail*, 21 January 2016, <http://www.theglobeandmail.com/news/national/asbestos-linked-cancer-on-the-rise-statscan/article28306005/>.

111. Canadian Cancer Society, “Mesothelioma Statistics,” accessed 15 June 2018, <http://www.cancer.ca/en/cancer-information/cancer-type/mesothelioma/statistics/>.

112. In 2013, the Canadian Cancer Society reported 485 deaths caused by mesothelioma. Canadian Cancer Society, “Mesothelioma Statistics.”

113. Deane, “Injury and Fatality Facts.”

In addition to mesothelioma deaths, we also sought estimates of the total number of cancer deaths caused by occupational exposure.<sup>114</sup> For instance, the Workers' Health and Safety Centre points to estimates that between 8 and 16 per cent of all cancers are work related.<sup>115</sup> Meanwhile, a report by Alberta Health Services estimates that 3 to 11 per cent of all cancer deaths may be caused by occupational exposures.<sup>116</sup> In the United Kingdom, the HSE uses AFs to estimate that 5.3 per cent (8,010) of all cancer deaths in Britain are work related.<sup>117</sup> However, O'Neill, Pickvance, and Watterson have criticized the HSE's narrow method of calculating work-related cancer deaths, arguing that cancer-related fatality rates are much higher than what is officially recorded.<sup>118</sup>

There are two general ways of estimating the number of work-related cancer deaths. The first attempts to evaluate actual exposure to carcinogens in the local population, using four steps: evaluating the proportion of the population that is likely exposed to hazardous agents in the workplace; obtaining estimates of absolute or relative risk for cancer associated with potential exposure levels; generating an "attributable fraction" (AF) – the proportion of cancer cases that can be linked with occupational exposure; and applying the AF to local cancer rates to generate the number of occupational cancers.<sup>119</sup> This represents the "gold standard" for occupational cancer studies. The second approach uses attributable fractions that have been developed in previous occupational cancer studies instead of generating new AFs through population-specific examinations. The AFs of one location are applied to cancer rates in another. Both approaches have their merits, and both are reliable, albeit to

114. We separated all other cancer deaths from mesothelioma deaths based on reports that the latter cases are not included in official tallies of cancer deaths in Canada, as per the Canadian Cancer Society website ("Cancer Statistics at a Glance," accessed 22 August 2018, <http://www.cancer.ca/en/cancer-information/cancer-101/cancer-statistics-at-a-glance/>) and personal correspondence with a representative from the Canadian Cancer Society (19 December 2017). This is further supported by the fact that the classification "type" number for mesothelioma (9050–9055) is not included in the types of malignant neoplasms recorded by Statistics Canada.

115. Workers' Health and Safety Centre, "Work-Related Injuries, Illnesses and Death Are Alarmingly Underreported," 26 April 2013, <https://www.whsc.on.ca/What-s-new/News-Archive/Work-related-injuries-illnesses-and-death-are-ala>.

116. M. R. Orenstein, T. Dall, P. Curley, J. Chen, A. L. Tamburrini & J. Petersen, *The Economic Burden of Occupational Cancers in Alberta* (Calgary: Alberta Health Services, 2010), 7, <https://www.albertahealthservices.ca/poph/hi-poph-surv-phids-economic-burden-occup-cancer-2010.pdf>.

117. Lesley Rushton, Sanjeev Bagga, Ruth Bevan, Terry Brown, John Cherrie, Phil Holmes, Lea Fortunato, et al. *The Burden of Occupational Cancer in Great Britain: Overview Report* (London: Health and Safety Executive, 2012), <http://www.hse.gov.uk/research/rpdr/rpdr931.pdf>.

118. O'Neill, Pickvance & Watterson, "Burying the Evidence."

119. Orenstein et al., *Occupational Cancers in Alberta*, 27–28; Steenland et al., "Dying for Work."

different degrees.<sup>120</sup> Owing to the limits of available data sources, we employ the second approach, using AFS identified in previous occupational cancer studies and applying these to cancer rates in Canada.<sup>121</sup> While this second option is less labour intensive, we also recognize that it is less specific than the first option given that exposure conditions can vary significantly over time, in different locations, and due to different regulatory circumstances.<sup>122</sup>

We used a range of estimates generated via previous studies, including a low-end estimate, a high-end estimate, and an average. According to a report by Alberta Health Services, the best estimate is generated by taking an average of all AFS for any given cancer site.<sup>123</sup> Even though the Alberta study focuses on the economic burden of occupational cancer and not the fatality rate, it nevertheless claims that an estimated 263 cancer deaths per year result from occupational exposure in Alberta alone.<sup>124</sup> The study's average estimate was that 5.5 per cent of all cancer deaths are caused by work, with a high-end estimate of 8 per cent. This compares to a range of 8 to 16 per cent reported by the Workers' Health and Safety Centre. To get a sense of the potential range of work-related cancer deaths in Canada, we compared different AFS with cancer mortality data produced by StatCan. We found just over 75,000 cancer deaths in 2013, with a five-year (2009 to 2013) average of 74,492 deaths.<sup>125</sup> Using the 8 per cent estimate, this results in 5,959 work-related cancer deaths, and using the 16 per cent estimate results in 11,919 fatalities. If we take the midpoint of this estimate (12 per cent), we calculate 8,939 work-related cancer deaths. Overall, we found a range of 5,959 to 11,919 cancer deaths annually that *might* be work related.

#### *Occupational Disease: Chronic Obstructive Pulmonary Disease*

In addition to cancer-related deaths are the countless diseases that produce untold work-related fatalities. Heart disease from years of exposure to stressful working conditions, asthma caused by occupational exposures, and COPD are just a few examples of the diseases that many workers routinely contract because of their work environments. Given the paucity of data sources regarding occupational diseases, we focused on just one category that has garnered some attention in the research: work-related deaths caused by COPD. According

120. Orenstein et al., *Occupational Cancers in Alberta*, 27–28.

121. Orenstein et al., *Occupational Cancers in Alberta*, 27–28.

122. Orenstein et al., *Occupational Cancers in Alberta*.

123. Orenstein et al., *Occupational Cancers in Alberta*, 26.

124. Orenstein et al., *Occupational Cancers in Alberta*, 30.

125. Statistics Canada, "Deaths and Mortality Rates (Age Standardizing Using 1991 Population), by Selected Grouped Causes [Archived]," table 13-10-0393-01, CANSIM (database), accessed 15 June 2018, <http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=1020552&&pattern=&stByVal=1&p1=1&p2=37&tabMode=dataTable&csid>.

to Steenland et al., COPD – which “encompasses several conditions, including chronic bronchitis, emphysema, and chronic airway obstruction” – has clear links to “occupational exposure.”<sup>126</sup> Palmer argues that 15 to 20 per cent of all COPD deaths are work related, while Steenland et al. put the estimate at 14 per cent.<sup>127</sup> Relying on a 15 to 20 per cent range, we looked at Canadian mortality data on COPD to estimate the number of these deaths that might be work related. While the AWCBC does not provide data on COPD deaths specifically, according to its 2016 data, 58 per cent of accepted fatality claims involving work-related diseases of the respiratory system were suffered by workers in the trades, transport, and equipment operator occupations.<sup>128</sup>

StatCan reports that, in 2011, COPD accounted for 4.4 per cent of all deaths in those aged 40 and older.<sup>129</sup> Looking at Canada’s overall mortality data for 2011, we found 234,357 deaths of men and women aged 40 and older.<sup>130</sup> Using this baseline, we determined that, of these deaths, 10,312 were from COPD. Based on the 2011 data, this would mean a range of work-related COPD deaths of 1,547 (based on 15 per cent of the 10,312 total COPD deaths) to 2,062 (based on 20 per cent).

A controversial aspect of COPD deaths is the effect of smoking. That is, is someone’s death caused by their smoking as opposed to working conditions, or both, with smoking cited as the primary cause based on a more individualistic model of cause of death (i.e. ignoring the synergistic elements that would also include occupational exposures)? StatCan estimates that 80 to 90 per cent of COPD deaths are caused by smoking, with the remaining deaths related to “exposure to dusts, gasses, fumes and vapours at work; exposure to second hand smoke; exposure to air pollution such as wood smoke and traffic-related pollutants; frequent lung infections as a child; and genetic factors.”<sup>131</sup> If we eliminate StatCan’s estimate that 80 per cent of COPD deaths are caused by smoking, we are left with 2,063 COPD deaths (10,312 minus 80 per cent or 8,250 smoking-related deaths). This is almost exactly the same number of fatalities based on the 20 per cent estimate cited above. We thus submit that just over 2,000 COPD deaths annually are a result of occupational exposures.

126. Steenland et al., “Dying for Work,” 465.

127. Palmer, “Work Related Deaths”; Steenland et al., “Dying for Work.”

128. AWCBC, *National Work Injury, Disease and Fatality Statistics, 2014–2016*, accessed 15 June 2018, [http://awcbc.org/?page\\_id=89](http://awcbc.org/?page_id=89).

129. Shirley Bryan & Tanya Navaneelan, “Deaths from Chronic Obstructive Pulmonary Disease in Canada, 1950 to 2011,” Statistics Canada – Catalogue no.82-624-X (Ottawa: Minister of Industry, November 2015), <http://www.statcan.gc.ca/pub/82-624-x/2015001/article/14246-eng.htm#a2>.

130. Statistics Canada, “Table 051-0001: Estimates of Population, by Age Group and Sex, for July 1 Canada, Provinces and Territories, Annual,” CANSIM (database), accessed 15 December 2017.

131. Bryan & Navaneelan, “Deaths from Chronic Obstructive Pulmonary Disease.”

## Conclusion: The Systematic Underreporting of Work-Related Deaths

THIS ARTICLE CRITICALLY EXAMINED official reporting of work-related fatalities in Canada. Our primary concern was that the AWCBC's annual reporting of workplace fatalities is not a source of information about the *actual* number of workers who die because of a work-related injury or illness/disease. Instead, it represents a system of counting the number of fatalities accepted for compensation by provincial/territorial WCBS. As such, the AWCBC's data are necessarily incomplete, therein underestimating the nature and extent of deaths at or from work. Our goal, therefore, is to demonstrate the social production of data in relation to workplace fatalities. We argue that what is counted matters because the data not only shape the perceived seriousness of the matter, but also set the parameters of relevant legal and policy debates and decisions.

Relying on a range of data sources, and adopting a broad definition of what constitutes a work-related fatality, we generated a revised estimate of the number of annual work-related fatalities. Based on our analysis, we estimate that the number of annual work-related fatalities in Canada is *at least* ten to thirteen times higher than the approximately 900 to 1,000 annual average fatalities reported by the AWCBC. This makes work-related fatalities one of the leading causes of death in this country.<sup>132</sup> Unfortunately, as previously noted, our estimate is necessarily constrained by the paucity of data and the limited research in the field. Also limiting our findings is the fact that we were unable to compare data across a single year, making it impossible to reconstruct official workplace fatality data for a specific period. Nevertheless, given ongoing research on the links between cancer and occupational exposures (notably the work currently being completed by the OCRC), and that our estimates of occupational-disease deaths only include data concerning COPD, there is good reason to believe that the number of work-related deaths is far greater than what we found.

Our conclusions will not surprise anyone researching OHS issues; there is broad recognition across the literature and within the union/labour movement that many more people die each year from a work-related incident or illness than what is officially recorded. However, our work in this article is only a starting point. At the very least, we hope to expose the systematic underestimation of work-related fatalities in Canada, a problem that only reinforces the historic belief that people are injured or sickened at work in limited (accidental) circumstances. From our perspective, this is a serious matter that requires further and immediate scrutiny.

132. See Statistics Canada, "Leading Causes of Death, Total Population, by Age Group," table 13-10-0394-01, CANSIM (database), accessed 15 December 2017, <http://www.statcan.gc.ca/tables-tableaux/sum-som/101/cst01/hlth36a-eng.htm>.

We believe that the federal government and its provincial/territorial counterparts need to work together to develop reliable methods and sources to track all work-related fatalities in Canada. This initiative should include further exploration of the categories of fatalities that we explore in this article, seeking insight from various researchers and union/labour groups about the ways in which these and related data could be captured on an annual basis. CAREX and OCRC researchers, for instance, could provide essential insights regarding data on occupational-disease fatalities. Likewise, mental health researchers could prove invaluable for unearthing data on work-related suicides. Consultation with union/labour groups would also be necessary given their extensive knowledge of the risks faced by workers across this country. In addition, these data must include important variables such as gender, race/ethnicity, and citizenship status, among others – information we were unable to glean from the available data sources. We know from previous research that marginalized and vulnerable workers bear the greatest burden of unsafe workplaces;<sup>133</sup> thus, knowing this information would be vital in tracking the scope of the problem.

Any effort at improving data collection on workplace fatalities is about much more than just making changes to the ways in which we count work-related deaths. Instead, it is an essential first step in documenting the scope of the problem and, subsequently, ensuring that relevant OHS laws and policies adequately target the underlying causes of unsafe workplaces. At the same time, this information will also prove invaluable to the various researchers, non-governmental organizations, and union/labour officials who are dedicated to finding ways of making workplaces safe(r). Failing to do so will only mean that countless workers will continue to die from simply trying to earn a living.

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133. Tombs & Whyte, *Safety Crimes*.