Economic Insights

Employment and Social Assistance Receipt Among Overdose Fatalities in British Columbia

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by Grant Schellenberg, Yan Zhang, and Christoph Schimmele

This article in the Economics Insights series documents the employment histories and income sources of people who died of an illicit drug overdose in British Columbia from January 1, 2007, to December 31, 2016. The data are from the British Columbia (BC) Coroners Service and from administrative data files. The majority of people who died from an illicit drug overdose in British Columbia appear to have occupied a position of economic vulnerability for a considerable portion of their lives, characterized by low and decreasing employment and increasing reliance on social assistance. There are also marked differences in employment, earnings, and social assistance receipt between women and men, younger and older age groups, and between subsets of male overdose fatalities who had sustained, marginal, or near-absent levels of labour force attachment.

Introduction

From 2011 to 2016, there were over 2,350 fatalities from illicit drug overdoses1 in British Columbia (Statistics Canada 2018). The British Columbia (BC) Coroners Service (2018) reported that one-fifth of overdose decedents from 2016 to 2017 were people who occasionally used illicit drugs as opposed to people who regularly used drugs. In other jurisdictions, overdoses have been disproportionately concentrated among disadvantaged groups, but have also occurred across the socioeconomic spectrum (Cairncross et al. 2018; Ho 2017). This heterogeneity suggests that different points of intervention may be needed to effectively address the increase in fatal overdoses.

In the research literature, the sociodemographic characteristics and risk behaviours of people who use illicit drugs have received the most attention, and previous studies have also focused largely on marginalized groups (Fischer et al. 2005; Kerr et al. 2007; King et al. 2014). Information on the economic characteristics of people at risk of overdose remains sparser, particularly in terms of heterogeneity within this population and longitudinal profiles. This study begins to address these gaps by documenting the employment histories and income sources of people who died from an illicit drug overdose in British Columbia from January 1, 2007, to December 31, 2016. Differences in employment, earnings, and social assistance receipt are documented among men and women and across age groups, with emphasis placed on the strength of labour force attachment by different groups and over time.

A primary objective is to provide information that may be relevant to intervention strategies. "Points of contact" between people who use drugs and formal organizations, such as businesses and public sector agencies, are one consideration in such strategies. The results below offer some perspective on the prevalence of such contacts.

Data are from the BC Coroners Service and from administrative data files containing information on employment earnings and social assistance benefits. The linkage of these files was conducted through Statistics Canada's Social Data Linkage Environment (SDLE), which is a secure linkage environment for the creation of linked data files (Greenland 2018). The linkage was approved by senior management at Statistics Canada and complies with the agency's Directive on Microdata Linkage. Further information on the data sources and methods is provided in the "Data and methods" section, which can be found after the "Conclusions and implications" section.

Men and women

The study sample consists of 3,128 deceased individuals. Of these 3,128 decedents, 2,399 (77%) were men and 729 (23%) were women. Attachment to paid employment, as measured by receipt of T4 earnings (earnings obtained from the T4 Statement of Remuneration [T4] file), was lower among the male and female decedents in this study compared to the average population. In the one year prior to the year of death (noted as T-1), just under one-half (48%) of men and over onequarter (28%) of women had employment. In comparison, among British Columbian taxfilers aged 15 to 64 in 2015, 77% of males and 73% of females had employment, according to the same measure.

The British Columbia (BC) Coroners Service defines illicit drug overdoses as cases involving street drugs (i.e., controlled and illegal drugs such as fentanyl, heroin, cocaine, and methamphetamine); prescription medications not prescribed to the decedent; and combinations of medications prescribed to the decedent and street drugs and/or diverted prescription medications (BC Coroners Service 2018).

Among decedents, attachment to paid employment was stronger among men than women. In each year from T-5 to T-1, about one-half (48% to 51%) of men had some level of employment while this was the case for less than one-third (28% to 32%) of women. Among those employed, average annual earnings were about two times higher among men (\$30,000) than women (\$15,000).

From a longitudinal perspective, results over the five years prior to death show that 28% of men had employment in all five years (Table 1-1). With average annual earnings of \$42,200, this group appears to have had substantial and sustained attachment to paid employment while the situation was quite different for all other decedents. Overall, 14% of women were employed in all five years, with average annual earnings of

Table 1-1
Selected income characteristics of decedents over the five years prior to death — T4 earnings

	•	Men			Women		
Number of years with T4 earnings	Percentage	Mean annual T4 earnings	Mean cumulative T4 earnings	Percentage	Mean annual T4 earnings	Mean cumulative T4 earnings	
	percent	2016 c	onstant dollars	percent	2016 c	onstant dollars	
0	28.9			51.0			
1	10.5	7,300	7,300	11.5	4,800	4,800	
2	10.3	11,300	22,700	7.1	4,800	9,500	
3	10.0	16,200	48,500	8.4	8,800	26,400	
4	12.4	19,400	77,400	8.2	11,100	44,500	
5	27.9	42,200	211,200	13.7	22,000	109,800	

^{...} not applicable

Source: Statistics Canada, linked Longitudinal Worker File, 1989 to 2015, T5007 file, 2006 to 2015, and BC Coroners Service data, 2007 to 2016.

Table 1-2
Selected income characteristics of decedents over the five years prior to death — Social assistance (SA) income

	Men			Women		
Number of years with SA income	Percentage	Mean annual SA income	Mean cumulative SA income	Percentage	Mean annual SA income	Mean cumulative SA income
	percent	2016 co	nstant dollars	percent	2016 co	onstant dollars
0	44.8			22.5		
1	8.4	3,100	3,100	4.1	4,000	4,000
2	6.4	4,300	8,700	8.5	5,500	10,900
3	8.0	5,300	15,900	7.3	6,000	18,000
4	6.7	6,100	24,500	8.0	7,100	28,600
5	25.7	9,100	45,400	49.7	10,000	50,000

^{..} not applicable

Source: Statistics Canada, linked Longitudinal Worker File, 1989 to 2015, T5007 file, 2006 to 2015, and BC Coroners Service data, 2007 to 2016.

Table 1-3
Selected income characteristics of decedents over the five years prior to death — T4 earnings and/or social assistance (SA) income

		Men			Women	_
Number of years with T4 earnings and/or SA income	Percentage	Mean annual income	Mean cumulative income	Percentage	Mean annual income	Mean cumulative income
	percent	2016 c	onstant dollars	percent	2016 c	onstant dollars
0	7.4			5.3		
1	5.3	8,100	8,100	3.2	6,200	6,200
2	6.3	13,400	26,700	5.2	5,900	11,800
3	8.1	13,700	41,100	6.9	8,100	24,200
4	13.0	17,600	70,200	9.9	8,900	35,500
5	59.9	25,800	129,000	69.5	13,100	65,700

^{...} not applicable

Source: Statistics Canada, linked Longitudinal Worker File, 1989 to 2015, T5007 file, 2006 to 2015, and BC Coroners Service data, 2007 to 2016.

\$22,000. At the other end of the distribution, one-half (51%) of women did not have employment in any of the previous five years. A further 19% of women had employment in just one or two years, with annual earnings averaging less than \$5,000.

Participation in formal employment was weak or absent for some 70% of female decedents. This was the case for one-half of men: 29% had no employment and 21% had employment in one or two years out of the five-year period. Given that most female decedents did not have paid employment, workplace-based interventions would likely not have reached many of them. Among those with employment, the largest share (25%) worked in accommodation and food services. This accounted for 13% of all female decedents, reflecting their low rates of employment.

In terms of social assistance, one-half of women received social assistance income in every year over the five years preceding death, and another 8% received it in four of the five years. About one-quarter of men received social assistance in every year over the five years preceding their death, and just under 7% received it in four of the five years.

The results are consistent with those of Richardson et al. (2010) and Amundsen (2015), who reported low levels of employment and high levels of social assistance reliance among people who use drugs as well as people who died from an overdose. The results are also consistent with the point that women who regularly use illicit drugs tend to encounter greater barriers to formal employment than their male counterparts (Richardson et al. 2010; DeBeck et al. 2007). Finally, the socioeconomic diversity observed by Amundsen (2015) and Ho (2017) is evident, perhaps most notably by the subsets of male decedents who had sustained, marginal, or low levels of labour force attachment.

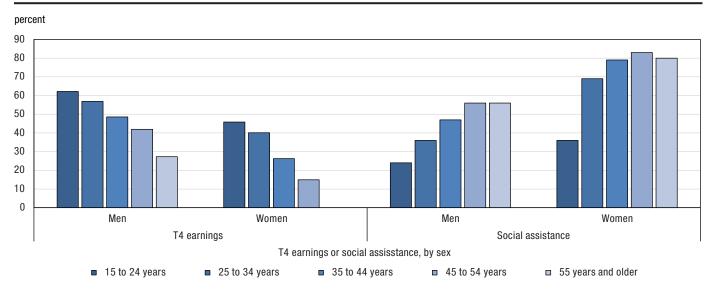
Age groups

The age at which decedents died is another dimension across which labour force ties and social income receipt varied. Chart 1 shows the shares of male and female decedents in each age group who received T4 earnings or social assistance benefits in the year prior to death. The steady decline in employment across successive age groups is clear, as is the steady increase in social assistance receipt.

Further analysis is needed to determine what accounts for the decline in employment across age groups; however, the results are consistent with the argument that regular substance use gradually erodes the capacity for work. For example, Bachi et al. (2017) provide evidence that biological aging is accelerated in people who regularly use drugs, increasing their susceptibility to chronic illness and disabilities, while other studies observe that poor health is a principal barrier to obtaining employment for such people (Bauld et al. 2010; Sutton et al. 2004). In the present study sample, only male decedents under 35 years of age had employment rates above 50% in the year prior to death.

The right-hand portion of Chart 1 shows a noticeably higher rate of social assistance receipt among women and the 35-and-older age groups. About 80% of women aged 35 and older and 70% of those aged 25 to 34 received such benefits in the year prior to death. Over one-half of men aged 35 and older did so as well. This shows the prevalence of contact between these groups and provincial and other benefit-granting agencies, insofar as "contact" is meaningfully captured by receipt of income support benefits. Benefit-granting agencies were not as prevalent a point of contact for younger male decedents (those who died before age 35) as about one-third of them received

Chart 1
Percent of decedents receiving T4 earnings or social assistance benefits in year *T*-1, by sex and age at death



social assistance income in T-1. In contrast, employers were a more prevalent point of contact. Of the young male decedents with employment, the largest share (29%) worked in the construction sector. This accounted for 24% of all young male decedents regardless of employment status. 2,3

Among male decedents who died at age 35 and older, less than half had employment in T-1. Again, among those who did, the largest share (24%) worked in the construction sector (Table 2). This accounted for 17% of all older male decedents regardless of employment status. By comparison, 13% of British Columbian males aged 15 to 54 received T4 earnings from construction. The construction industry in British Columbia employs over 110,000 male employees⁴ across many trades, employers and job sites.

Shorter- and longer-term perspectives

A further issue is whether the economic characteristics of overdose decedents changed markedly in the years prior to death. For instance, were precipitous declines in employment or earnings evident that might suggest withdrawal from paid employment and increasing economic vulnerability over this period?

Among decedents aged 25 and older, the incidence of employment declined by 6 to 7 percentage points from *T*-5 to

T-1 among men within age groups, and by 4 to 7 percentage points among women within age groups (Chart 2). Notably, among those with employment, average annual earnings did not exhibit a clear decline from *T*-5 to *T*-1. This suggests that labour force withdrawal occurred through a transition from employment to non-employment rather than through reductions in annual hours worked. It bears noting that, overall, the magnitude of employment declines were not so large (nor consistent in the case of earnings) as to suggest widespread withdrawal from paid employment.

Nonetheless, social assistance receipt increased markedly over the five-year period, particularly among people who died at younger ages (Chart 3). Among decedents aged 15 to 24, social assistance receipt increased five-fold among men (from 5% to 24%) and three-fold among women (from 12% to 36%). Among decedents aged 25 to 34, the incidence of receipt increased by 11 percentage points among men and 18 percentage points among women. Increases were smaller among people who died at older ages, in part because social assistance receipt was generally prevalent by that point.

Evidence over the longer term provides a more comprehensive perspective on the workforce attrition and economic marginalization of overdose decedents. To document this, male decedents were grouped by age at death into five-year

Table 2
Percent of decedents by main industry of employment in the five years prior to death

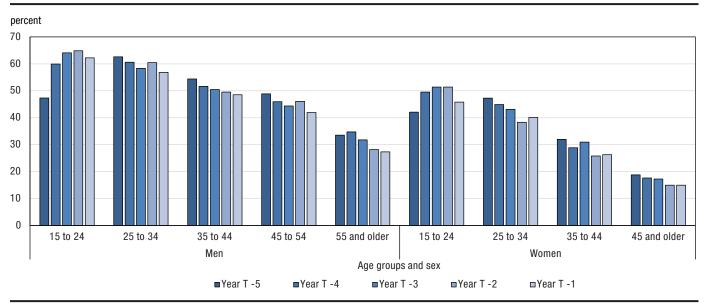
	Male overdose decedents who died before age 35		Male overdose who died at a	Male British Columbia	
	Percentage of those with T4 employment	Percentage of all decedents	Percentage of those with T4 employment	Percentage of all decedents	residents aged 15 to 54 with T4 earnings (>\$500) in 2015
	,		percent		_
Industry					
Construction	28.8	24.4	24.3	16.8	13.2
Administrative and support, waste management and remediation services	8.4	7.1	13.7	9.5	5.2
Manufacturing	10.2	8.6	11.6	8.0	9.5
Accommodation and food services	11.5	9.8	6.3	4.4	8.3
Retail trade	9.5	8.1	5.6	3.9	11.6
Transportation and warehousing	4.5	3.8	8.4	5.8	6.4
Other industries	27.0	22.9	30.0	20.7	45.8
Total employed in the five years prior to death	100.0	84.7	100.0	68.9	100.0
Not employed in the five years prior to death		15.3		31.1	
Total		100.0		100.0	

^{...} not applicable

Source: Statistics Canada, linked Longitudinal Worker File, 1989 to 2015, T5007 file, 2006 to 2015, and BC Coroners Service data, 2007 to 2016.

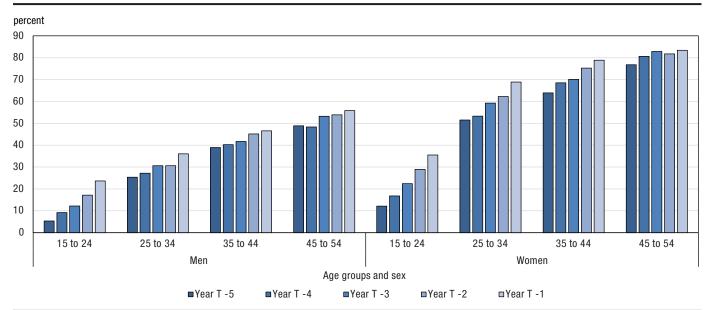
- 2. For this measure, all T4 earnings observed from *T*-5 to *T*-1 were allocated to the industry of employment, and the main industry of employment over the five years was identified as that in which the largest share of T4 earnings were earned. Under this approach, the study found that 25.8% of male decedents worked in construction over the period and that 23.6% of the male decedents who had the T4 jobs with the highest earnings worked in construction.
- 3. This over-representation may be attributable to many reasons. For example, the prevalence of short-term or project-specific jobs and flexible work may provide employment opportunities for job seekers.
- 4. This number of construction workers refers to all males aged 15 to 54 employed in the construction industry (with T4 earnings) in British Columbia. The total number of male construction workers is likely even higher, since this measure excludes the self-employed and people aged 55 and older.
- 5. Patterns were different among decedents aged 15 to 24, as the share with employment increased over the period. This is consistent with broader patterns of youth transitions among the general population (Galarneau, Morissette, and Usalcas 2013).

Chart 2
Percent of decedents receiving T4 earnings, by sex, age at death, and year relative to death



Source: Statistics Canada, linked Longitudinal Worker File, 1989 to 2015, T5007 file, 2006 to 2015, and BC Coroners Service data, 2007 to 2016.

Chart 3
Percent of decedents receiving social assistance income, by sex, age at death, and year relative to death



Source: Statistics Canada, linked Longitudinal Worker File, 1989 to 2015, T5007 file, 2006 to 2015, and BC Coroners Service data, 2007 to 2016.

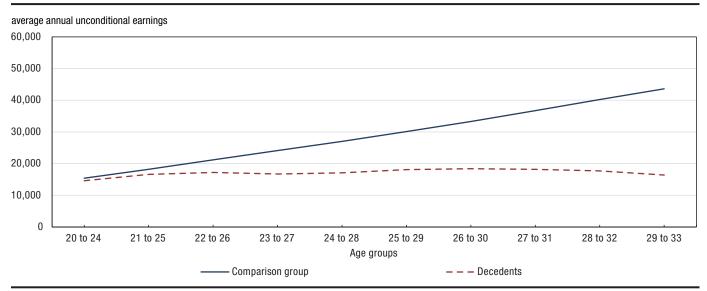
categories (e.g., aged 30 to 34, 35 to 39), and the average annual unconditional T4 earnings of each age group was calculated for each of the 18 years preceding death (i.e., T-18 to T-1). Average unconditional earnings—calculated as average annual T4 earnings of all decedents regardless of whether

they had employment—provide a useful summary measure reflecting both the incidence of employment and the average earnings received. Given the focus on labour force attachment, the analysis is limited to male decedents. Comparison groups

^{6.} For younger decedents, earnings were tracked back to age 20 to 24. This excludes teenagers, many of whom did not yet have paid employment, from the analysis.

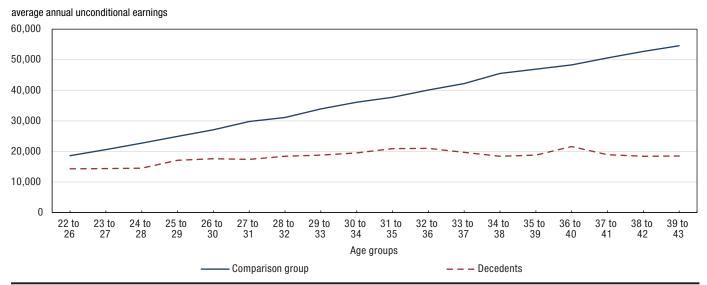


Chart 4
Average annual unconditional T4 earnings among male decedents aged 30 to 34 and a comparison group of male taxfilers



Source: Statistics Canada, linked Longitudinal Worker File, 1989 to 2015, T5007 file, 2006 to 2015, and BC Coroners Service data, 2007 to 2016.

Chart 5
Average annual unconditional T4 earnings among male decedents aged 40 to 44 and a comparison group of male taxfilers



Source: Statistics Canada, linked Longitudinal Worker File, 1989 to 2015, T5007 file, 2006 to 2015, and BC Coroners Service data, 2007 to 2016.

of British Columbian men who were the same age as the decedents were drawn from the general population of taxfilers.

As shown in Chart 4, the difference in average unconditional earnings among male decedents aged 30 to 34 and the comparison group was less than \$1,000 at age 20 to 24, but widened to over \$27,000 by age 29 to 33. In slightly different terms, the average unconditional earnings of male decedents declined from 95% to 38% of those of the comparison group

over the observation period. The pattern was much the same among male decedents aged 40 to 44 (Chart 5), with the difference in unconditional earnings widening from just over \$4,000 in their early twenties to over \$36,000 by their late thirties and early forties. In percentage terms, the average unconditional earnings of these male decedents declined from 77% to 34% of those of the comparison group.

Conclusions and implications

The majority of decedents in this study appear to have occupied a position of economic vulnerability for a considerable portion of their lives, characterized by no or little formal employment and increasing reliance on social assistance over time. Observed incomes were generally modest or low.

However, within the context of economic marginalization, heterogeneity is evident. Considerable differences in the labour force attachment and social assistance receipt are observed between men and women, and across age groups. In addition, while most decedents were economically vulnerable, a subset of the male population had sustained employment and substantial earnings over the five years prior to death. This latter group appears to be distinct from all other overdose decedents.

This heterogeneity may be important with respect to intervention strategies. Employers and workplaces, particularly those in the construction sector, are points of intervention that warrant consideration for reaching younger men. The study observed that one in four male overdose decedents who died before age 35 worked in this sector in the years prior to their deaths. Given low rates of employment among female overdose decedents and for most male overdose decedents in older age groups, interventions geared toward employers and workplaces may offer less promise. Contact between these groups and social service agencies were more prevalent.

The inclusion of additional administrative data files in subsequent research could be helpful in providing a more complete picture of income sources and other potential points of intervention. For example, overdose decedents may be over-represented among recipients of Canada Pension Plan Disability benefits given their age (i.e., non-seniors), low rate of employment, and possible health problems. Similarly, more detailed information on social assistance benefits is available from provincial files than from T5007 Statements of Benefits, such as month of last benefit receipt relative to month of death. This information could be helpful in piecing together key transitions among atrisk populations. Beyond income alone, a more comprehensive assessment of points of contact could be provided by looking at interactions with social service agencies, the criminal justice system, and health care providers.

Data and methods

Five administrative data files were linked together for this analysis. First, the universe of people who died of a confirmed illicit drug overdose in British Columbia from January 1, 2007, to December 31, 2016, was drawn from the British Columbia (BC) Coroners Service Database. Second, information on the paid employment of decedents was drawn from the T4 Statement of Remuneration (T4) file. Employers are required to complete and submit T4 slips for employees paid over \$500 in a tax year or for whom Canada Pension Plan or Quebec Pension Plan contributions, employment insurance benefits, or income taxes were deducted. Third, information on social assistance benefits received was drawn from the T5007 Statements of Benefits (T5007) file. Provincial and other benefit-granting agencies are required to submit T5007 slips for payments over \$500 made to beneficiaries in a tax year. Social assistance refers to payments to people for basic needs (food, clothing, and shelter) and is based on a means, needs, or income test. Fourth, information on industry of employment of T4 recipients was drawn from the Longitudinal Employment Analysis Program (LEAP) maintained by Statistics Canada. Finally, the T1 Family File was used to produce earnings trajectories for a comparison group of taxfilers in the general population of British Columbia.

Both the T4 and T5007 files are submitted directly to the Canada Revenue Agency (CRA) by the payers. No action on the part of employees or beneficiaries is required to be included in these files. Hence, these sources provide information that is both comprehensive and robust. Information on other government transfers, such as employment insurance and Canada Pension Plan Disability benefits, and other sources of market income, such as self-employment, are not available in the linked analytical file.

The study sample consists of 3,128 people, 2,399 males and 729 females. Age refers to a person's age group at death. The year of death is identified as year *T*, while years prior to the year of death are identified as *T*-1, *T*-2, and so on. Incidence of employment is defined as the share of T4 earners of over \$500 (from all jobs) among all decedents in a given year. Total observed income is defined as the sum of T4 earnings and social assistance income. All earnings and income estimates are calculated on an annual basis and expressed in 2016 constant dollars.



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