

Illicit Drug Overdoses:

Fire First Responders on the Front Line in
Surrey and Vancouver, British Columbia



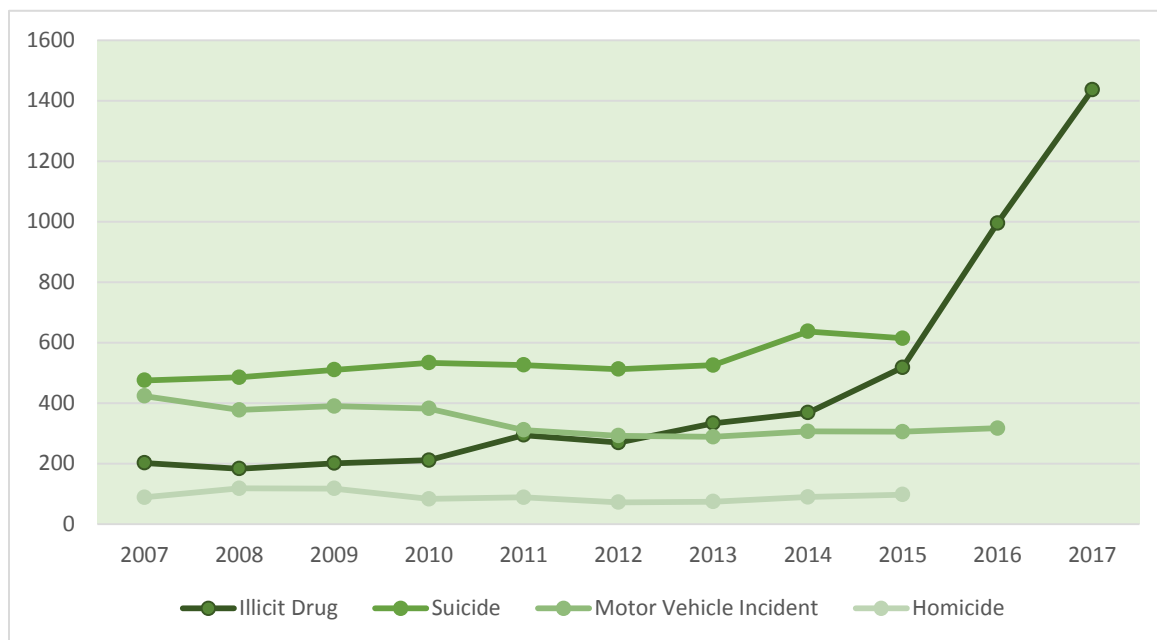
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Introduction

In February 2016, Surrey Fire Service and Vancouver Fire and Rescue Services implemented their naloxone administration protocol in response to unprecedented numbers of opioid-related overdose calls. Both departments initiated training protocols to facilitate the necessary licensing of firefighters to administer intermuscular injections. The report titled “A Response to Illicit Drug Overdoses: Naloxone Administration in Surrey and Vancouver, British Columbia” (2017) documented the perceptions of firefighters in both municipalities regarding training adequacy and experiences with overdose calls in the field. The report emphasized that: an inter-agency, collaborative and evidence-based response is required; firefighters felt adequately prepared to administer naloxone; and, there is an expressed interest in further medical response training. All of these directions were reiterated in the fire station discussions associated with the current project.

Chart 1: Major Cause of Unnatural Deaths in British Columbia in BC: 2007 to 2017¹



As Chart 1 highlights, the opioid continues to be a significant public health issue in British Columbia when compared to other major causes of unnatural death. The number of deaths in January and February of this year, have declined compared to those same months in 2017; however, they continue to be significantly higher than in those same months prior to the 2017 escalation (Table 1). As opioid related deaths continue to rise each year, the perceptions of firefighters at the busiest fire stations in Vancouver and Surrey with regard to the opioid crisis and their role in responding to these calls were the key issues explored through this project.

¹ BC Coroners Service. (2018). *Illicit Drug Overdose Deaths in B.C., January 1, 2008-February 28, 2018*.

Table 1: Illicit Drug Overdose Deaths by Month, British Columbia, 2008-2018

Month	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
January	18	23	16	24	20	20	23	42	86	146	126
February	8	15	14	24	17	21	38	31	60	122	102
March	17	10	15	25	25	33	28	31	76	131	
April	18	8	9	26	31	31	29	34	72	150	
May	18	19	22	22	19	28	40	41	50	140	
June	18	16	21	22	25	25	29	34	70	121	
July	24	19	23	33	29	38	25	37	74	118	
August	16	27	24	22	19	21	37	52	64	122	
September	12	16	20	22	16	28	31	47	60	92	
October	10	13	18	23	19	19	35	53	78	98	
November	9	18	18	27	28	31	28	50	141	107	
December	15	17	11	24	21	38	25	68	162	99	
Total	183	201	211	294	269	333	368	520	993	1446	228
Average	15.3	16.8	17.6	24.5	22.4	27.8	30.7	43.3	82.8	120.5	N/A

Table 2 highlights that 83% of those dying from overdoses are male and that 78.8% of overdoses are among those 30-49 years of age. Importantly, from a public perception point of view, 20% of those deaths were among youth (10-29 years of age).

Table 2: BC Overdose Deaths by Gender and Age: 2007 to 2017²

Gender	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 ³
Female	49	55	49	82	75	79	86	102	198	255	43
Male	134	146	162	212	194	254	282	418	795	1,191	195
Total	183	201	211	294	269	333	368	520	993	1,446	228

Age Group	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 ⁴
10 to 18	6	2	4	4	5	6	3	5	12	23	2
19 to 29	36	46	49	74	61	94	83	117	208	270	52
30 to 39	48	51	49	75	61	77	101	136	264	400	60
40 to 49	42	57	66	77	66	74	85	126	231	342	47
50 to 59	43	33	45	54	56	61	72	108	226	290	47
60 to 69	8	12	7	10	19	21	24	27	49	113	18
70 to 79	0	0	0	0	1	0	0	1	3	8	2
Total	183	201	211	294	269	333	368	520	993	1,446	228

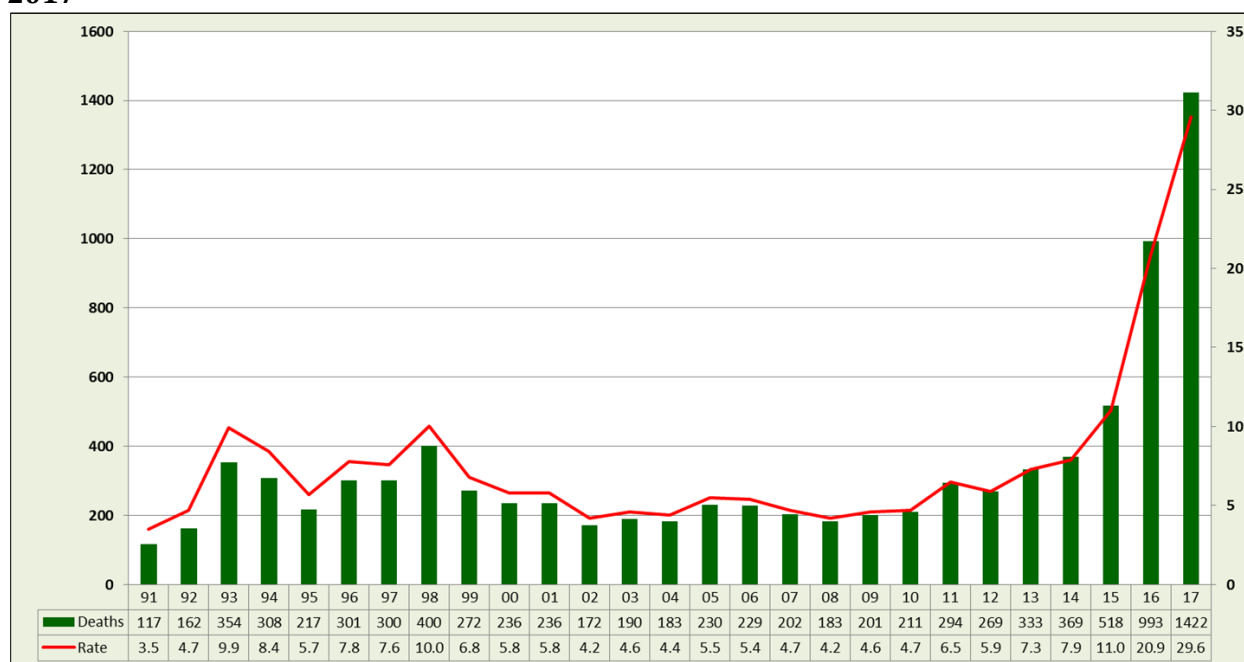
² BC Coroners Service. (2018). *Illicit Drug Overdose Deaths in B.C., January 1, 2008-February 28, 2018*.

³ Partial data

⁴ Partial data

In British Columbia, the numbers continued their upward trajectory with a 46% increase in overdose deaths in 2017 over 2016 (Chart 2).⁵ Overall, overdose deaths in B.C. have increased by 690% from 2008 to 2017.

Chart 2: Illicit Drug Overdose Deaths and Death Rate Per 100,000 Population in BC: 1991 to 2017⁶



⁵ BC Coroners Service (2018). *Illicit Drug Overdose Deaths in B.C., January 1, 2008-February 28, 2018*.

⁶ BC Coroners Service (2018), *Illicit Drug Overdose Deaths in BC: January 1, 2008 – February 28, 2018*.

Understanding the Context: Surrey and Vancouver

Illicit Drug Overdoses

Vancouver and Surrey have led the province in numbers of overdose deaths over the last ten years (2007-2017) representing 25% and 12% of the overdose deaths respectively in 2017 (Table 3). Also instructive is that as Health Services Delivery Areas, Vancouver overdose death rates are 53.8 per 100,000 as compared to the provincial rate of 30.1. In the Fraser South Area, in which Surrey is the major municipality, the rate is 27.9 overdose deaths per 100,000.⁷

Table 3: Illicit Drug Overdose Deaths by Top Townships of Injury: 2007 to 2017⁸

Township	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 ⁹
Vancouver	38	60	42	69	65	80	101	136	234	365	52
Surrey	20	23	33	42	44	36	44	76	121	176	36
Victoria	29	13	13	17	17	25	20	22	69	91	20
Kamloops	7	7	10	2	5	8	7	7	44	39	9
Kelowna	2	5	9	14	8	12	12	19	48	75	8
Prince George	2	4	1	6	10	7	10	12	19	22	8
Burnaby	12	8	9	10	10	13	11	16	39	44	7
New Westminster	4	2	6	6	3	5	9	12	10	24	7
Langley	6	2	3	10	5	10	10	10	30	36	6
Nanaimo	2	6	4	8	6	20	16	18	29	51	<5
Abbotsford	4	4	10	16	7	10	7	26	38	49	<5
Courtenay	1	2	1	2	1	4	2	4	10	13	<5
Richmond	1	3	4	4	1	3	3	6	14	27	<5
Chilliwack	4	2	2	8	8	6	6	10	12	23	<5
Vernon	1	4	6	7	1	11	6	8	12	20	<5
Other Township	50	56	58	73	78	83	104	138	264	391	54
Total	183	201	211	294	269	333	368	520	993	1,446	228

Over the last three years (2015-2017), the percentage of overdoses resulting in death in Surrey remained relatively steady at 4.7% (2015), 4.6% (2016), and 6.2% (2017) (Table 4).

Table 4: Drug Overdoses, Surrey, January 1, 2015 to December 31, 2017¹⁰

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
2015	129	123	92	130	122	121	140	152	120	136	166	175	1606
2016	234	205	215	234	208	213	233	178	158	201	278	266	2623
2017	253	202	219	328	330	231	225	252	220	183	160	198	2801

⁷ BC Coroners Service (2018), *Illicit Drug Overdose Deaths in BC: January 1, 2008 – February 28, 2018*.

⁸ BC Coroners Service (2018), *Illicit Drug Overdose Deaths in BC: January 1, 2008 – February 28, 2018*.

⁹ Partial data

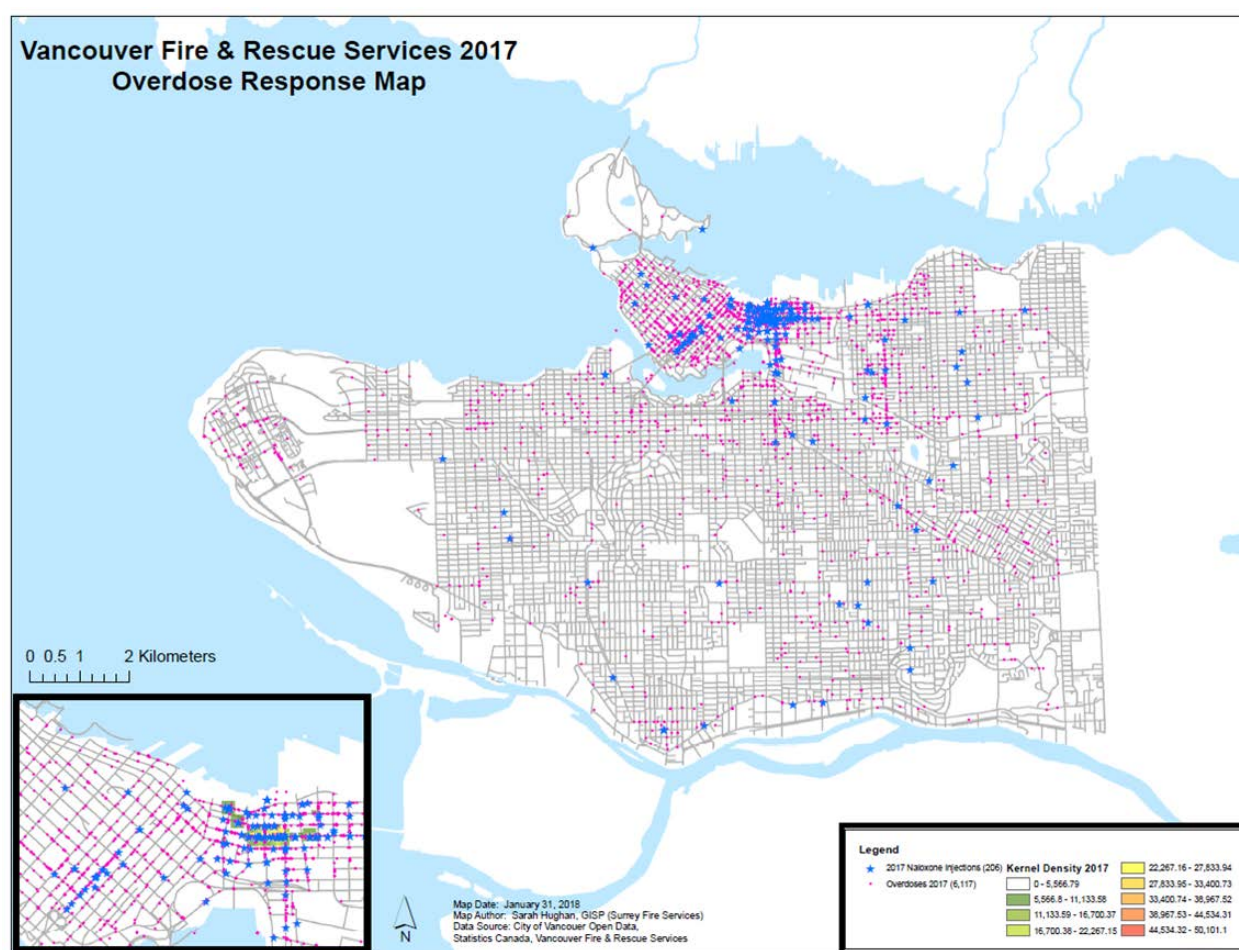
¹⁰ Surrey Fire Service Information Management System (FDM)

Table 5: Drug Overdoses, Vancouver, January 1, 2015 to December 31, 2017¹¹

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
2015	180	138	174	195	173	210	217	264	231	236	260	258	2536
2016	255	281	258	276	250	305	310	329	373	508	745	794	4684
2017	614	504	556	671	633	535	555	462	420	385	358	424	6117

In Vancouver, the percentage of overdoses that resulted in death remained relatively stable at 5.4% (2015), 5.0% (2016) and 6.0% (2017). An important note is that in both municipalities, the numbers of overdoses in October, November and December of 2017 were significantly lower than in the same months in 2016 (Table 5).

Map 1: Clustering of Vancouver Overdoses and Naloxone Administration, 2017



¹¹ Vancouver Fire and Rescue Services Information Management System

Maps 1 and 2 vividly illustrate two key observations in terms of fire first responders and opioid-related overdoses. First, there are pronounced hotspots in both municipalities that are critical in the resource allocation and stress management narrative but also to be expected given community profiles. These areas represent the centralization of the crisis and consequently the service delivery model response. Second, overdoses are occurring in all neighbourhoods in both Surrey and Vancouver leading some to reference this proliferation as the hidden epidemic.

Map 2: Clustering of Surrey Overdoses and Naloxone Administration, 2017

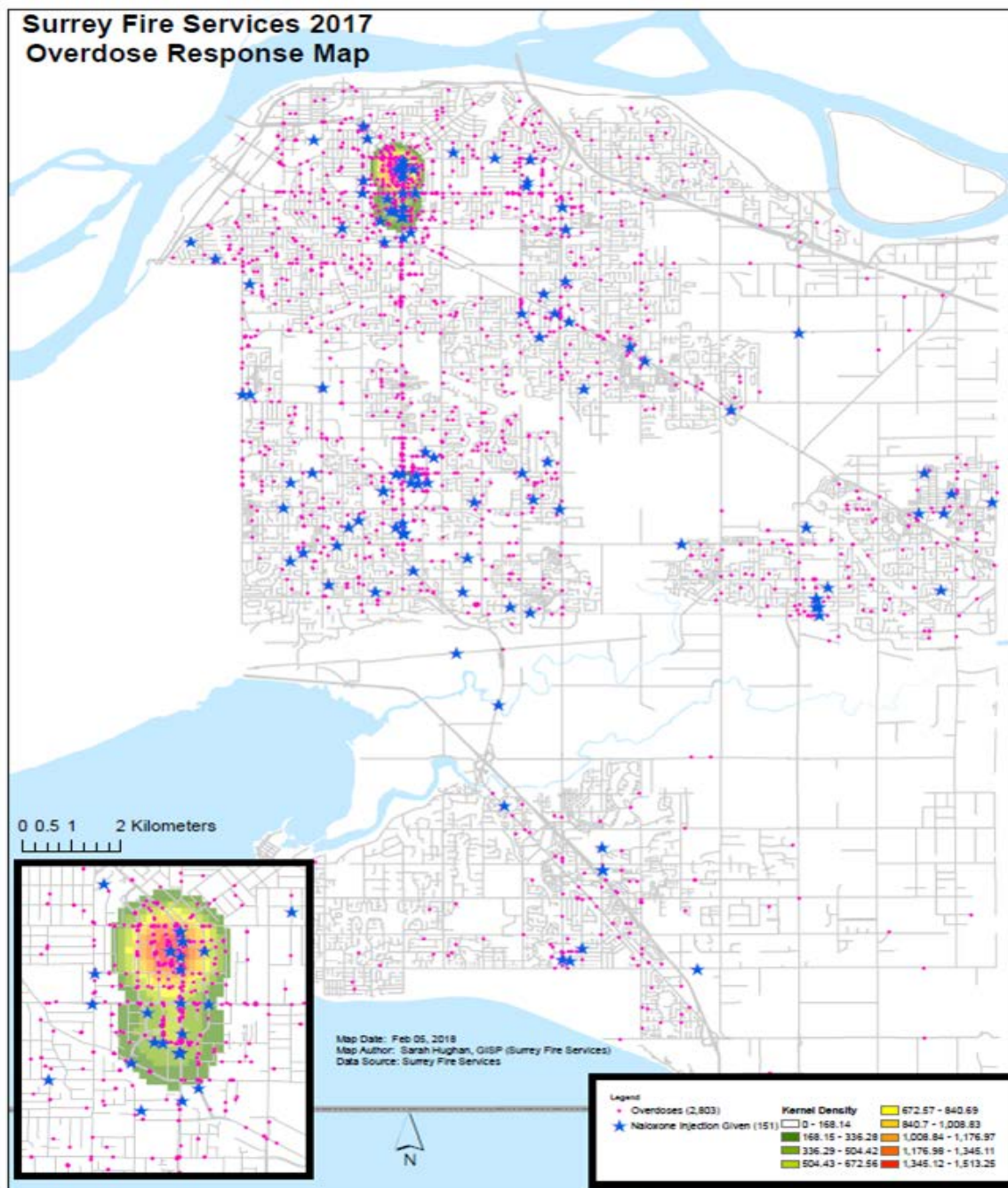
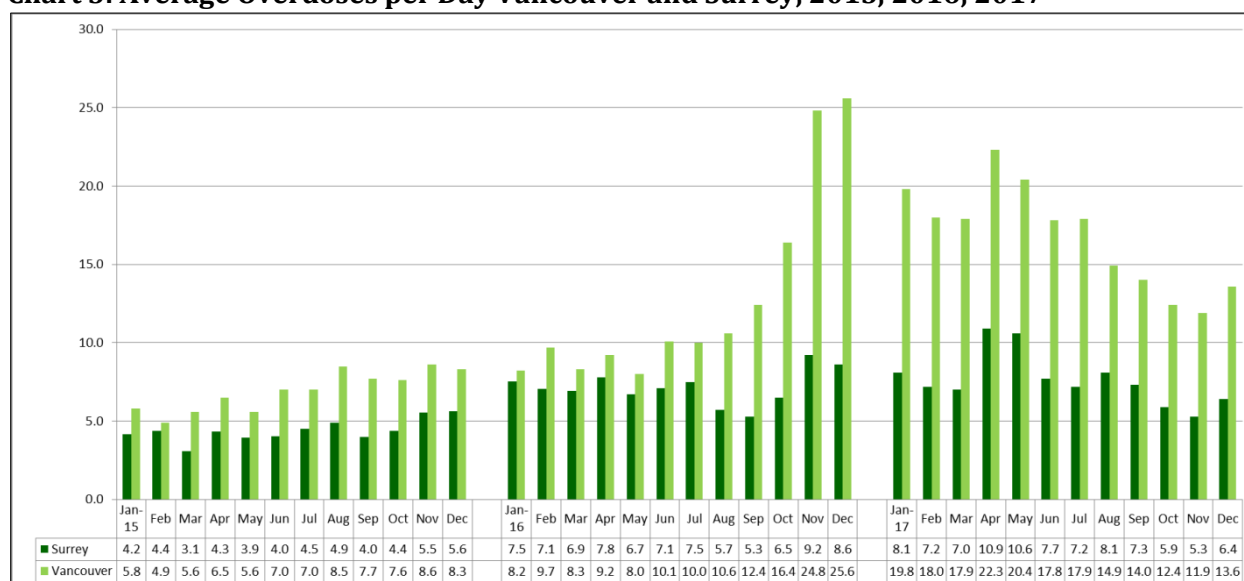


Chart 3: Average Overdoses per Day Vancouver and Surrey, 2015, 2016, 2017¹²



While the average number of overdoses per day in Vancouver and Surrey is significant, both municipalities are experiencing some declines signifying a downward trend (chart 3).

Fentanyl

Table 6 highlights the role of fentanyl in the opioid overdose crisis. According to the BC Coroners Service “fentanyl or its analogues were detected in approximately 81% of illicit drug overdose deaths” in B.C. in 2017.¹³

Table 6: Fentanyl-Detected Deaths by Top Townships of Injury, 2012-2017¹⁴

Township	2012	2013	2014	2015	2016	2017	Total
Vancouver	1	5	22	32	153	280	493
Surrey	3	4	8	11	75	139	240
Victoria	0	3	2	8	53	77	143
Kelowna	0	0	1	6	38	67	112
Nanaimo	0	8	12	9	27	40	96
Abbotsford	0	1	1	6	22	40	70
Burnaby	0	3	0	6	27	32	68
Langley	1	1	5	6	19	32	64
Kamloops	0	1	2	3	31	31	68
Maple Ridge	0	3	7	12	20	26	68
Other Township	7	21	31	53	205	392	709
Total	12	50	91	152	670	1,156	2,131

¹² BC Coroners Service (2018), *Illicit Drug Overdose Deaths in BC: January 1, 2008 – February 28, 2018*.

¹³ BC Coroners Service (2017), *Fentanyl-Detected Illicit Drug Overdose Deaths, January 1, 2012 – December 31, 2017*.

¹⁴ BC Coroners Service (2017), *Fentanyl-Detected Illicit Drug Overdose Deaths, January 1, 2012 – December 31, 2017*.

Emergency Response

The majority of calls responded to by Surrey and Vancouver fire services are medical calls and in that regard, it is essential that response times and response differentials continue to be an important part of any assessment of the need for and response of fire service first responders in regard to the opioid crisis. The initial impetus for naloxone delivery by first responders was to provide a more rapid intervention in the administration of naloxone.

Chart 4: Average Response Times Comparison between Surrey Fire Service and BC Ambulance Services, 2015, 2016, 2017¹⁵

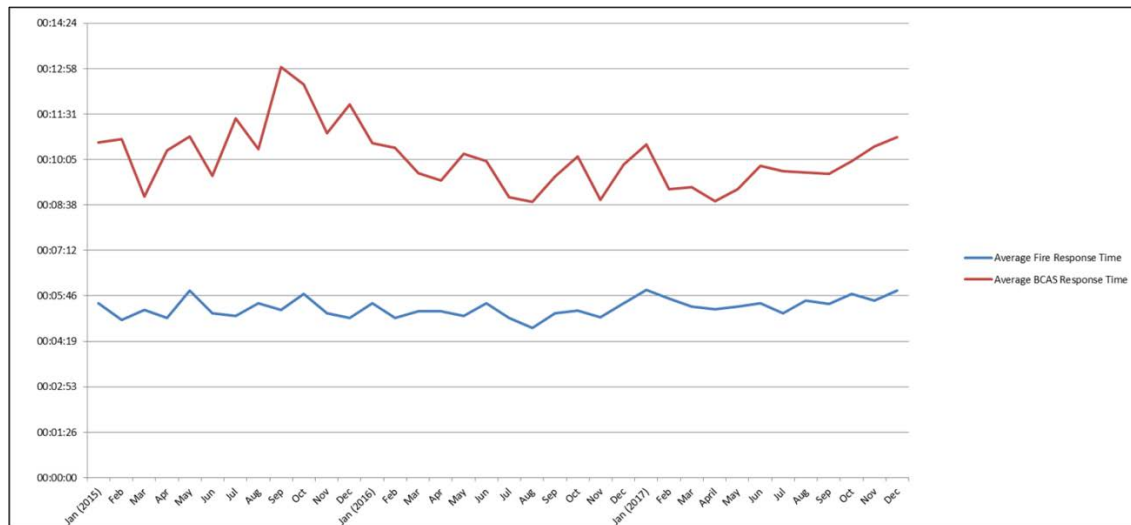
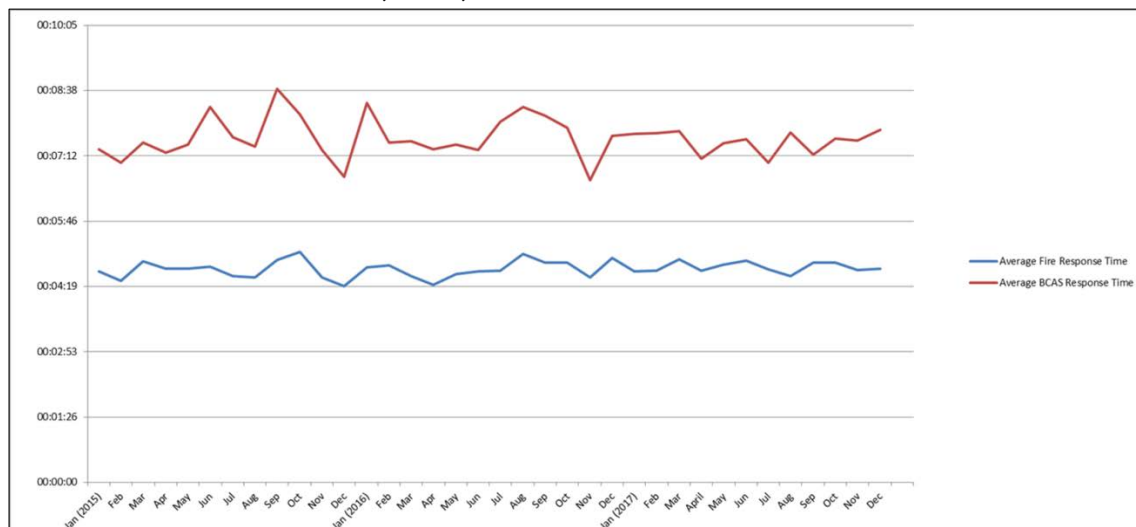


Chart 5: Average Response Times Comparison between Vancouver Fire and Rescue Services and BC Ambulance Services: 2015, 2016, 2017¹⁶



¹⁵ Surrey Fire Service Information Management System (FDM)

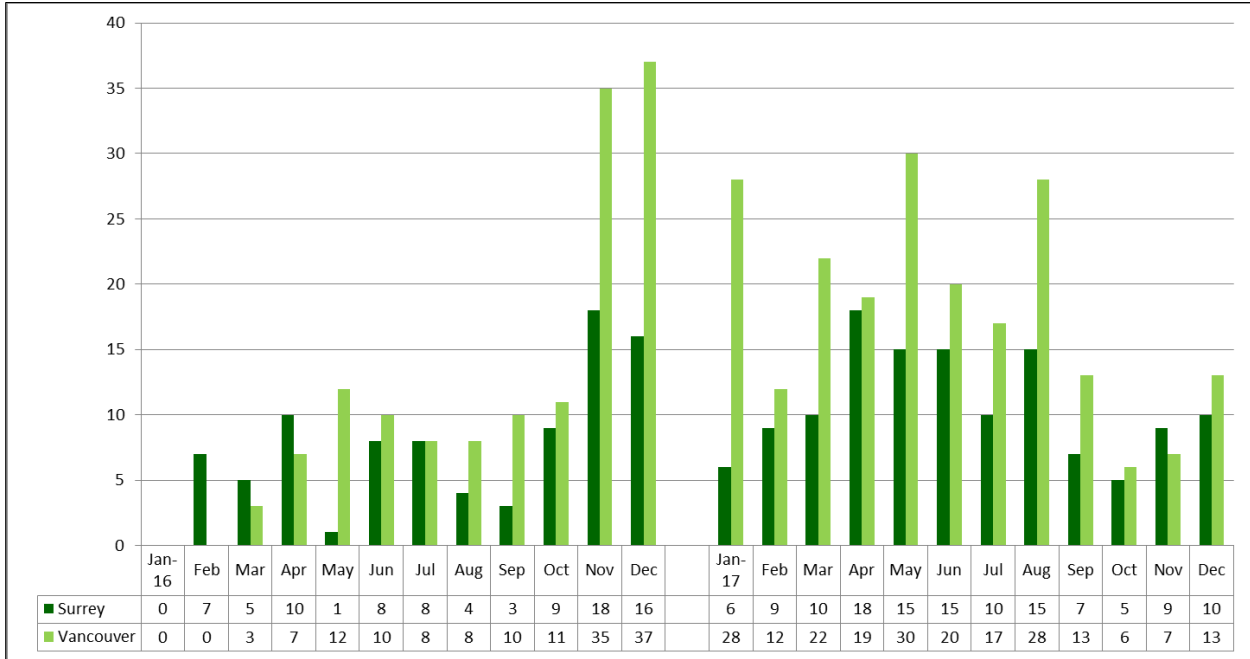
¹⁶ Vancouver Fire and Rescue Services Information Management System

There are notable differences between the average response times of BCAS in Vancouver and Surrey. Not surprisingly, both municipalities face greater challenges with respect to ambulance wait times in the summer months (Charts 4 and 5).

Naloxone Administration

Based on the patterns of naloxone administration highlighted in Maps 1 and 2, a more extensive examination of the geographical patterns within each municipality may be instructive.

Chart 6: Vancouver and Surrey Naloxone Administrations: 2016 & 2017¹⁷



Overall, the picture presented by the Coroners Service and other data sources is one characterized by a persistent, significant and complicated opioid problem in British Columbia.

¹⁷ Surrey Fire Service Information Management System, Vancouver Fire and Rescue Services Information Management System

Discussion of Key Issues Raised by Fire First Responders

The key themes that were raised in station discussions revolved around awareness, physical safety, stress, fire first responder role, and a characterization of the crisis.

Awareness

The need for increased awareness and in some cases more extensive education was raised consistently and in reference to a wide range of issues. Firefighters described a perceived lack of knowledge among the general public in relation to:

- the extent and nature of the opioid crisis and particularly fentanyl risks;
- overdose symptoms and naloxone administration protocols;
- the proper use of 911 as only one of many services available within the provincial health matrix; and,
- the nature of the duties, responsibilities, and scene circumstances associated with fire first responders.

Particular sub-populations were identified as potentially benefitting from a more strategic engagement with these issues, including new Canadians.

Physical Safety

A consistent theme in the fire station discussions revolved around participants' impressions about risks to their personal safety. These concerns were related to work conditions prevalent in overdose calls characterized by: hazards such as used needles, unsanitary conditions, and drug exposure; aggressive patients post naloxone administration; and, challenging treatment conditions making the administration of naloxone through intramuscular injections more precarious.

Physical safety concerns of firefighters are echoed and arguably reinforced in the professional literature leading to a re-framing and maintenance of the firefighter as hero narrative in relation to the risks associated with opioid-related overdose calls. While there is evidence that a relatively small proportion of those administered to react aggressively and/or violently the concerns with respect to scene management may exacerbate that perception of risk among first responders and consequently increase their stress. In addition to issues related to their personal safety, there were consistent concerns raised regarding the safety of their family members in regard to "bringing something home". Detailed information on safety protocols within the context of call realities and the risks that inform these protocols was suggested.

Stress

Participants consistently identified stress as a key issue and based on their contributions the stress levels experienced may be discussed as both directly and indirectly related to opioid-related overdose calls. Direct stressors related to scene management, incident-based frustration, hygiene, and safety. Indirect stressors emphasized a loss of purpose, a sense of hopelessness, and dissatisfaction with respect to the perception that their role is changing.

Participants described their feelings about overdose calls in the hotspots as ranging from "it's just another call and I treat it like any other" to "I feel disconnected, like what we do doesn't matter". Interestingly, this distancing was identified as stress inducing as opposed to a required, self-preservative distancing.

For those firefighters working in the epicentres of this crisis, exposure to the human toll of this issue is profound. In fact, “the consequences for emergency service personnel are often referred to as ‘compassion fatigue or secondary posttraumatic stress’. There is the PTS of the witness, the bystander, the observer. This is the trauma that comes from repeated proximity to trauma. This should be challenged. Trauma suffered by responders, while not the immediate trauma of the incident and often not physical, is the result of exposure to human suffering on the scale rarely witnessed by the rest of society”. While added resources has been an appropriate piece of the response to high call volume and associated stressors, it was noted in all discussions that if the calls are still out of the same stations then other stations and crews may be assisted by increased resources as they are not being pulled away from their areas, however, those high volume stations are still busy with tones sounding constantly.

Participants emphasized the cumulative impact of the stressors experienced and how the stressors are normalized as the job in an incident-based assessment of call impact. Both within and outside the profession of firefighting, research indicates that chronic stress may contribute to burnout, depression and PTSD. It is argued that “stigma and barriers to care are experienced by a significant proportion of first responders, which can potentially lead to delayed presentation in mental health care and therefore, increased risk of chronicity of post-trauma psychopathology for these groups”. In response to discussions of cumulative impact and chronic stress, participants talked about a range of everyday, station-based strategies including: a greater organizational appreciation for downtime; possible dispersion of “other duties” based on factors such as call volume; an examination of how light duties might be reconfigured to address stress points; and, “dogs in the stations”. Interestingly, Vancouver has recently launched a therapy dog program that members spoke favourably about as an attention to “the little things”. As well, physical, team-based activity in the stations was cited as important and was a particularly salient point of discussion in Vancouver as there have been recent changes in the accommodation and support for this form of stress relief and team building during shift. Conversations regarding Surrey’s long standing physical fitness program emphasized its importance.

Importantly, “first responders as a group are action-oriented, self-seeking mental health counseling for impairments arising from doing one’s job is not likely to be thought about. If anything, responders might focus on symptoms rather than developing a support group or seeking to process the critical incident(s). Even if counseling were sought, the reality of the work would leave limited time for processing one critical incident before a second call for assistance at the next critical incident is received”.

Based on station discussions, there continue to be significant barriers to seeking help to manage stress with many first responders “perceive[ing] or experience[ing] stigma as a significant barrier to seeking help for mental health concerns”. Within a professional culture that is hyper-masculine, hero-centric and veteran-centric it is even more difficult to reach out for help. Participants described an improving culture based on greater organizational engagement on varying sources of stress; however, there was a significant range in opinions on the degree of change that is still required and the most effective strategies to promote the necessary change.

Role

Bridging experiences of stress to the firefighter role often revolved around a shifting and somewhat precarious narrative with tensions expressed in relation to deservedness of help and a framing of blameworthiness in some call situations. Additionally, concerns were raised that harm reduction strategies serve to enable users further exacerbating the problem.

Importantly firefighters described feeling engaged in tasks and activities that are not why they joined the service and responding to calls that are at best resulting in their involvement in situations seemingly impervious to their actions. In support of these tensions, the literature indicates that “consider[ing] the conditions involved in various occupations. The demand-control model uses two dimensions, ‘decision latitude’ and ‘psychological demands’, thought to predict a broad range of health and behavioural outcomes. Decision latitude includes ‘skill discretion’ (the degree to which workers can use their individual skills and knowledge base), and ‘decision authority’ (how much workers are able to determine their own conditions)”. These two factors were repeatedly raised by participants in relation to call response frustrations. This tension between opioid-related calls and the firefighter role as making a difference was likened to the challenges confronted by the “grow-op situation” in the lower mainland years ago.

The Crisis: “It’s hard to watch”

In terms of practice and impact, the opioid crisis and drug addiction more generally are clearly beyond the scope of firefighters’ intervention protocols and to that end may feel beyond the purview of an examination of their experiences on the front-lines. However, these key threads surfaced repeatedly: the level of frustration as they see themselves as enabling; the questions regarding causation, remediation and resolution of “the problem”; and, the concern about their complicated feelings of compassion and their “end of rope” individualization of addiction. Interestingly, all of the station discussions in one way or another turned to a pondering of policy and programmatic needs and strategies beyond fire services including: harm reduction, social assistance, addiction treatment, and mental health. Questions were raised that highlight the perceived tension between harm reduction strategies and the normalization of drug use that seems to result in the calls that they are responding to on a regular basis, with one participant noting “when we fight a fire, we always have a plan B ... What’s the Plan B?”

These broader conversations should not be overlooked as they contribute in important ways to the dialogue about fire services’ response to this crisis.

Moving Forward

The purpose of this review was to explore the experiences of firefighters in relation to the current situation regarding illicit drug overdoses in Surrey and Vancouver. Given the issues and potential remedies raised by participants, the following may provide some starting points for further reflection and action:

Response

- Explore opportunities for the use of naloxone nasal spray. While intramuscular injections are currently the delivery method among most first responder organizations, the Canadian authorized version of naloxone nasal spray became available as of June 2017 and is viewed as a more appealing delivery method by many first responders due to the absence of a needle. However, there is some evidence to suggest that while both methods of delivery are effective, intramuscular injections may be more effective.¹⁸ Given these potentially competing interests, it is important that both Surrey and Vancouver work with the Provincial Health Authority to develop a model of continuous improvement for naloxone administration. There may be

¹⁸ Peprah, K. & N. Frey (2017). Intranasal and intramuscular naloxone for opioid overdose in the pre-hospital setting: A Review of comparative clinical and cost-effectiveness, and guidelines. Ottawa: CADTH; 2017 Mar (CADTH rapid response report: Summary with critical appraisal).

opportunities to have both options available and used based on scene and patient circumstances.

- Explore community-based opportunities for enhanced awareness-building regarding 911, 811, HealthLinkBC, medical clinics and other health system access points with the general public and particular constituencies such as seniors and new Canadians, through public libraries, community centres and other non-traditional venues.
- Develop a strategy to enhance firefighter abilities to respond to medical calls through strategies such as: enhanced training and/or licensing; cross-trained firefighter/paramedic on each fire apparatus, multi-sectoral partnerships with real time capabilities, enhanced inter-agency information sharing with respect to best practices¹⁹, and other strategies grounded in the experiences of other jurisdictions.
- Explore opportunities to work in partnership to enhance pre-existing programs and support the implementation of new and innovative programs. Inter-agency programs such as the Angel and Hope programs and other like initiatives emphasize first responder opportunities.²⁰ An example is Boston's *Knock and Talk* program which was launched in an effort to provide support and connect addicts and their significant other with treatment services. An intervention team makes contact with overdose patients as immediately after their overdose as possible. The team is made up of two specially trained and qualified firefighters and a harm reduction specialist. Importantly, the program found, after its pilot year that approximately three quarters of the individuals contacted were amenable to exploring treatment options.²¹ This tentative finding reflects research that indicates that post overdose there is a window of opportunity to promote treatment options to patients.

These types of multi-agency initiatives would merge effectively with the inter-sectoral harm reduction approaches being employed in the epicentres in both Surrey and Vancouver.

Fire First Responder Health

- Implement automatic station rotations at high volume stations. Vancouver has adopted this strategy at Station 2 and members enthusiastically endorsed its rationale and results. In considering station rotation strategies, a number of issues to be considered were raised, including:
 - Following-up with members who have rotated out of these stations to provide transition support where needed;
 - Acknowledging that while station rotations is an important strategy, peer monitoring and support is enhanced through longer working relationships;

¹⁹ Dumenco, L. et al. (2017). Proceedings from bridging health disparities to address the opioid epidemic: A symposium at the Warren Alpert Medical School of Brown University. *Rhode Island Medical Journal*, April, p. 16-18.

²⁰ Vancouver Police Department. (2017). The opioid crisis, the need for treatment on demand: Review and recommendations. <http://vancouver.ca/police/assets/pdf/reports-policies/opioid-crisis.pdf>

²¹ IAFF Fire Fighters, (2016). *Responding to the Opioid Crisis: The opioid epidemic knows no boundaries*.

- Exploring interest and logistics of having two home stations with varying call profiles that members alternate their shifts between when assigned to high call volume stations; and,
 - Considering time logged in high volume stations through temporary placements.
- Develop awareness and support opportunities for family members and significant others of firefighters based on both formal and informal networks. Seek input from family members on their needs, questions, and ideas for strategies. In regard to the information and awareness building for family members, Surrey conducts an information session for family and friends of new hires so that the job and the implications of the job can be more fully understood. Vancouver members thought there would be a role for a similar program if properly designed and delivered. There was also a general interest exploring strategies for “check-ins” beyond a new hire orientation and broader self-care education and opportunities for these support networks.
- Continue to develop stress identification and management strategies.
 - Review the criteria for automatic Critical Incident Stress Management (CISM) debriefings with attention to overdoses and cumulative impact;
 - Provide as much diversity on the CISM team as possible to maximize options for members to find someone they “feel comfortable with”;
 - In addition to hard copy forms for counselling referral being available from the CISM team, online access should be developed for those concerned about the stigma of help-seeking;
 - Increase opportunities to engage with high-risk repeat clients in non-emergency situations e.g. handing out food;
 - Develop appropriate and meaningful station check-ins by Battalion Chiefs and above;
 - Explore the potential to have a CISM team member assigned to each crew;
 - Strengthen, where appropriate, the integration of other departments’ best practices and IAFF initiatives in regard to integrative models of peer professional counselling; and,
 - Enhance self-care and awareness strategies for firefighters emphasizing a more holistic understanding of wellness as an emotional, physical, and mental state of being.

Understanding the Issue

- Develop awareness and education strategies for a number of different non FR constituencies including the general public, other service providers, and politicians regarding the role, responsibilities, challenges, and opportunities faced by firefighters.
- Support research aimed at developing best practices and evaluating initiatives once implemented. It is this work that plays “an important role in shaping future policy about

substance use and mental health disorders by reframing ideas through knowledge translation, formation of values, creation of new knowledge and adding to the quality of public discourse and debate”.²² For example, the ecosystem approach to the opioid crisis as a *wicked* problem provides an innovative and potentially instructive lens through which to examine current and potential efforts to respond to the varied and complex aspects of the crisis.²³

- Develop professional development and educational opportunities for firefighters with respect to the opioid crisis as an addictions issue grounded in the intersectionality of the user and the challenges faced by and within the social institutions charged with responding to the crisis.^{24,25} Many of the questions raised in the station discussions were framed within a desire to better understand:
 - How individuals have found themselves in these conditions;
 - How the research does and does not support many harm reduction strategies and effectiveness of said measures;
 - How first responders might play an increasingly important role in “identifying high-risk populations, conducting epidemiologic surveillance, and pinpointing geographic hotspots for drug overdoses”.²⁶

It is clear that naloxone administration, by both professionals and the general public, is a critical component to any response to this issue; however, any efforts to respond to this crisis must incorporate the varied and complex threads associated with harm reduction, mental health²⁷ and addiction services, fire fighter response challenges and opportunities within a best practices framework, and “must remain nimble and able to adapt to an ever-changing landscape”.²⁸

²² Morin, K. et al. (2017). The opioid crisis: past, present and future policy climate in Ontario, Canada. *Substance Abuse Treatment, Prevention, and Policy*, 12(45), 1-7.

²³ Bingham, K., Cooper, T., & Hough L. (2016). *Fighting the opioid crisis: An ecosystem approach to a wicked problem*. Deloitte University Press.

²⁴ Haug, N. et al. (2016). Assessment of provider attitudes toward #naloxone on Twitter. *Substance Abuse*, 37(1), 35. doi:10.1080/08897077.2015.1129390

²⁵ Braedley, S. (2015). Promising practices in emergency medical response at fire rescue services: Lessons from Winnipeg. <https://services.prod.iaff.org/ContentFile/Get/10076>

²⁶ Kinsman, J. et al. (2016). Fighting the Opioid Crisis from the Front Lines. *EMS World*, 45(10), 25-34.

²⁷ Morin, K. et al. (2017). The opioid crisis: past, present and future policy climate in Ontario, Canada. *Substance Abuse Treatment, Prevention, and Policy*, 12(45), 1-7.

²⁸ Fairbairn, N. et al. (2017). Naloxone for heroin, prescription opioid, and illicitly made fentanyl overdoses: Challenges and innovations responding to a dynamic epidemic. *International Journal of Drug Policy*, p. 177. doi:10.1016/j.drugpo.2017.06.005

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