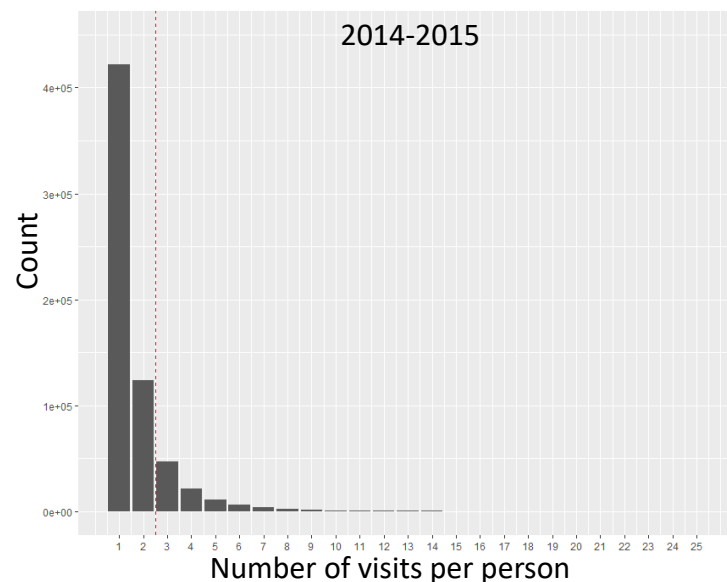
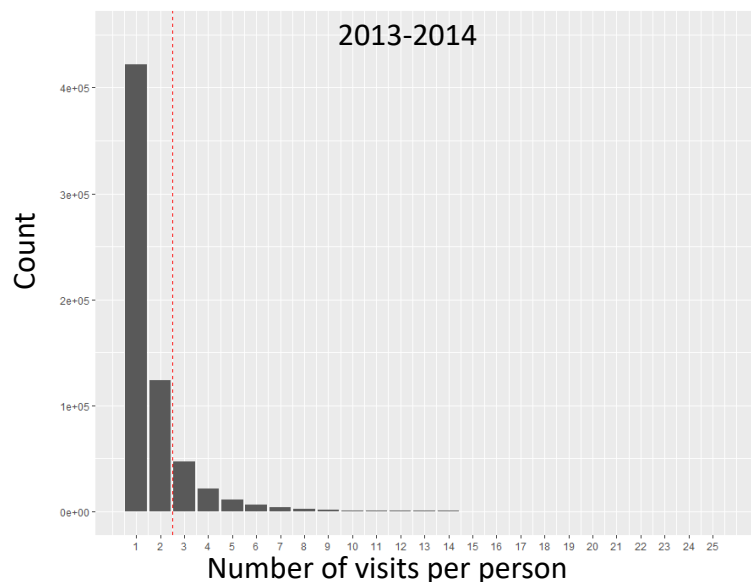
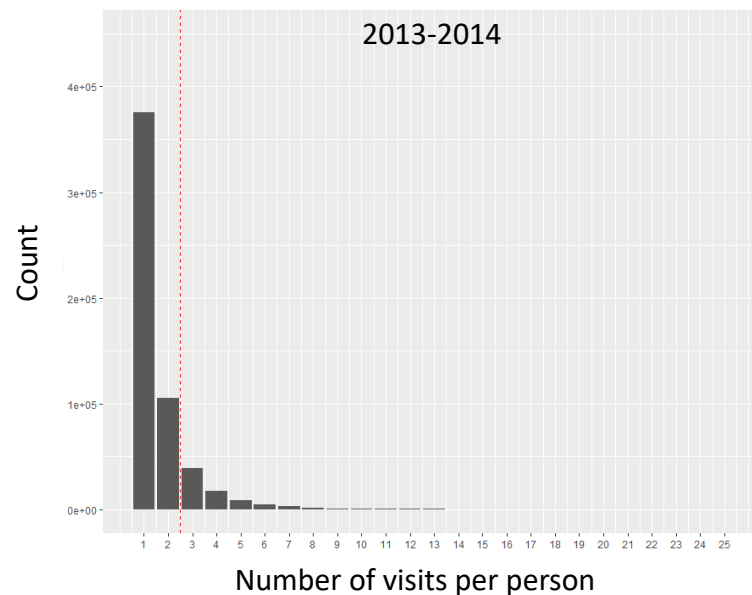
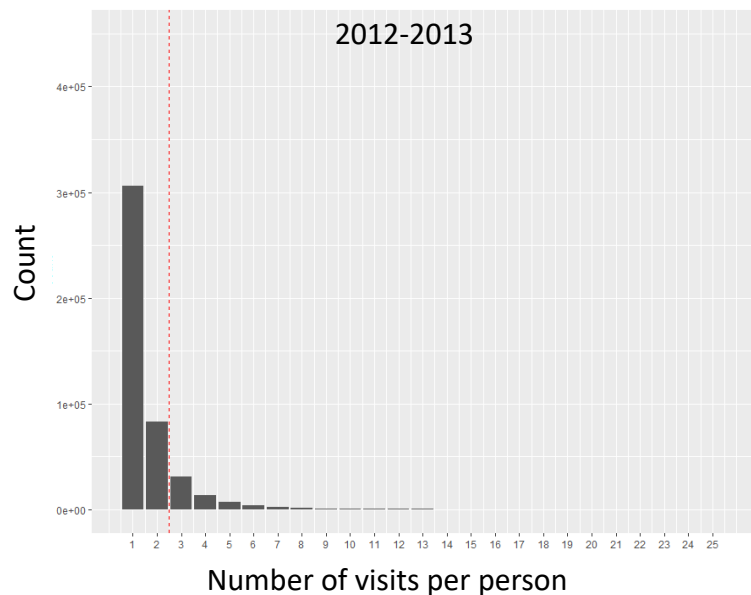


Appendix 1 (as supplied by the authors): Supplemental material

Supplemental Figure S1: Histogram Of Visit Numbers For Top 10% Frequent User Patients From April 1<sup>st</sup> 2012-March 31<sup>st</sup> 2016 (# Visits >25 Make Up <1% Of Total Visits)



**Supplemental Table S1: Breakdown of Diagnoses of Mental Health-Related ED Visits Made By All Frequent Users and Those Under 60**

<b><u>All Frequent Users</u></b>	<b>2012-2013 N (%)</b>	<b>2013-2014 N (%)</b>	<b>2014-2015 N (%)</b>	<b>2015-2016 N (%)</b>
<b><u>Number of mental health disorders</u></b>	13,344	19,103	24,023	28,391
Mental disorders due to known physiological conditions (F01-F09)	672 (5.0)	1,067 (5.6)	1,617 (6.7)	1,626 (5.7)
Mental and behavioral disorders due to psychoactive substance use (F10-F19)	4,629 (34.7)	6,592 (34.5)	8,202 (34.1)	10,807 (38.1)
Schizophrenia, schizotypal, delusional, and other non-mood psychotic disorders (F20-F29)	2,229 (16.7)	3,089 (16.2)	3,841 (16.0)	4,387 (15.5)
Mood [affective] disorders (F30-F39)	2,099 (15.7)	2,859 (15.0)	3,428 (14.3)	3,448 (12.1)
Anxiety, dissociative, stress-related, somatoform and other nonpsychotic mental disorders (F40-F48)	2232 (16.6)	3520 (18.4)	4499 (18.7)	5226 (18.4)
Behavioral syndromes associated with physiological disturbances and physical factors (F50-F59)	37 (0.3)	53 (0.3)	51 (0.2)	34 (0.1)
Disorders of adult personality and behavior (F60-F69)	213 (1.6)	349 (1.8)	361 (1.5)	377 (1.3)
Intellectual disabilities (F70-F79)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Pervasive and specific developmental disorders (F80-F89)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Behavioral and emotional disorders with onset usually occurring in childhood and adolescence (F90-F98)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Unspecified mental disorder (F99)	1,233 (9.2)	1,574 (8.2)	2,024 (8.4)	2,486 (8.8)
<b><u>Frequent Users Under 60 Years Old</u></b>				
<b><u>Number of mental health disorders</u></b>	11,225	15,565	19,345	23,153
Mental disorders due to known physiological conditions (F01-F09)	118 (1.1)	164 (1.1)	234 (1.2)	197 (0.9)
Mental and behavioral disorders due to psychoactive substance use (F10-F19)	4,083 (36.4)	5,705 (36.7)	7,140 (36.7)	9,431 (40.7)
Schizophrenia, schizotypal, delusional, and other non-mood psychotic disorders (F20-F29)	2,051 (18.3)	2,837 (18.2)	3,533 (18.3)	4,046 (17.5)
Mood [affective] disorders (F30-F39)	1,819 (16.2)	2,432 (15.6)	2,894 (15.0)	2,877 (12.4)

Anxiety, dissociative, stress-related, somatoform and other nonpsychotic mental disorders (F40-F48)	1,809 (16.0)	2,674 (17.2)	3,399 (17.6)	4,042 (17.5)
Behavioral syndromes associated with physiological disturbances and physical factors (F50-F59)	34 (0.3)	52 (0.3)	48 (0.2)	31 (0.1)
Disorders of adult personality and behavior (F60-F69)	199 (1.8)	320 (2.1)	335 (1.7)	361 (1.6)
Intellectual disabilities (F70-F79)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Pervasive and specific developmental disorders (F80-F89)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Behavioral and emotional disorders with onset usually occurring in childhood and adolescence (F90-F98)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Unspecified mental disorder (F99)	1,112 (9.9)	1,381 (8.9)	1,762 (9.1)	2,168 (9.4)
<b><i>Number of Opioid Prescriptions in Pharmanet</i></b>				
Total number of prescriptions (AHFS* 28:08:08)	188,528 (8.4)	207,180 (7.8)	226,270 (7.5)	216,247 (6.8)
Number of opioid prescriptions per person, median (Q1, Q3)	1 (1, 2)	1 (1, 2)	1 (1, 2)	1 (1, 2)
Max number of opioid prescriptions per person	9	12	9	8

\*Footnote: abbreviation: American Hospital Formulary Service (AHFS).

**Supplemental Table S2: Characteristics Of ED Visits Made By Frequent Users By Age Category**

<b>Top five ED Visit Diagnostic Categories (non missing), by age category</b>	<b>April 1<sup>st</sup> 2012- March 31<sup>st</sup> 2013</b>	<b>April 1<sup>st</sup> 2013- March 31<sup>st</sup> 2014</b>	<b>April 1<sup>st</sup> 2014- March 31<sup>st</sup> 2015</b>	<b>April 1<sup>st</sup> 2015- March 31<sup>st</sup> 2016</b>
	<b>N (%)</b>	<b>N (%)</b>	<b>N (%)</b>	<b>N (%)</b>
<b>Ages: 18-29</b>				
<b># of patients</b>	48,981	61,376	75,918	80,168
Symptoms, signs and abnormal clinical and laboratory findings (XVIII)	7,075 (14.4)	10,228 (16.7)	13,086 (17.2)	13642 (17.0)
Injury, poisoning and certain other consequences of external causes (XIX)	6,449 (13.2)	8,276 (13.5)	10,821 (14.3)	11,723 (14.6)
Mental and behavioural disorders (V)	3,200 (6.5)	4,658 (7.6)	5,969 (7.9)	6,915 (8.6)
Disease of the genitourinary system (XIV)	2,615 (5.3)	3,383 (5.5)	4,376 (5.8)	4,618 (5.8)
Factors influencing health status and contract with health services (XXI)	1,824 (3.7)	2,588 (4.2)	3,812 (5.0)	3,779 (4.7)
NA	18,598 (38.0)	19,324 (31.5)	21,321 (28.1)	22,342 (27.9)
<b>Ages: 30-39</b>				
<b># of patients</b>	40442	51388	62230	67332
Symptoms, signs and abnormal clinical and laboratory findings (XVIII)	6,098 (15.1)	8,573 (16.7)	10,932 (17.6)	11,666 (17.3)
Injury, poisoning and certain other consequences of external causes (XIX)	4,636 (11.5)	6,250 (12.2)	7,842 (12.6)	8,778 (13.0)
Mental and behavioural disorders (V)	2,673 (6.6)	3,849 (7.5)	4,818 (7.7)	5,911 (8.8)
Disease of the genitourinary system (XIV)	2,278 (5.6)	3,001 (5.8)	3,736 (6.0)	3,866 (5.7)
Factors influencing health status and contract with health services (XXI)	1,853 (4.6)	2,381 (4.6)	3,344 (5.4)	3,488 (5.2)
NA	13,844 (34.2)	14,676 (28.6)	15,605 (25.1)	16,452 (24.4)
<b>Ages: 40-49</b>				
<b># of patients</b>	42,660	50,686	61,007	63,744
Symptoms, signs and abnormal clinical and laboratory findings (XVIII)	6,809 (16.0)	9,010 (17.8)	11,027 (18.1)	11,479 (18.0)
Injury, poisoning and certain other consequences of external causes (XIX)	4,829 (11.3)	6,219 (12.3)	7,910 (13.0)	7,981 (12.5)
Mental and behavioural disorders (V)	2,922 (6.8)	3,699 (7.3)	4,655 (7.6)	5,296 (8.3)

Diseases of the musculoskeletal system and connective tissue (XIII)	2,220 (5.2)	2,858 (5.6)	3,489 (5.7)	3,728 (5.8)
Factors influencing health status and contract with health services (XXI)	1,988 (4.7)	2,620 (5.2)	3,459 (5.7)	3,424 (5.4)
NA	14,189 (33.3)	13,792 (27.2)	14,686 (24.1)	14,946 (23.4)
<b>Ages: 50-59</b>				
<b># of patients</b>	43,822	54,928	66,577	72,159
Symptoms, signs and abnormal clinical and laboratory findings (XVIII)	7,024 (16.0)	9,811 (17.9)	12,097 (18.2)	12,761 (17.7)
Injury, poisoning and certain other consequences of external causes (XIX)	4,467 (10.2)	6,088 (11.1)	7,551 (111.3)	8,418 (11.7)
Mental and behavioural disorders (V)	2,430 (5.5)	3,359 (6.1)	3,903 (5.9)	5,031 (7.0)
Diseases of the musculoskeletal system and connective tissue (XIII)	2,175 (5.0)	2,960 (5.4)	3,842 (5.8)	4,094 (5.7)
Factors influencing health status and contract with health services (XXI)	1,867 (4.3)	2,562 (4.7)	3,590 (5.4)	3,808 (5.3)
NA	15,393 (35.1)	15,699 (28.6)	17,402 (26.1)	17,932 (24.9)
<b>Ages: 60-69</b>				
<b># of patients</b>	35,862	45,176	57,453	61,694
Symptoms, signs and abnormal clinical and laboratory findings (XVIII)	5,978 (16.7)	8,289 (18.3)	11,025 (19.2)	11,696 (19.0)
Injury, poisoning and certain other consequences of external causes (XIX)	3,014 (8.4)	4,083 (9.0)	5,417 (9.4)	5,620 (9.1)
Diseases of the circulatory system (IX)	1,690 (4.7)	2,632 (5.8)	3,452 (6.0)	3,512 (5.7)
Diseases of the Respiratory system (X)	1,588 (4.4)	2,350 (5.2)	3,062 (5.3)	3,573 (5.8)
Factors influencing health status and contract with health services (XXI)	1,273 (3.5)	2,108 (4.7)	3,032 (5.3)	3,177 (5.1)
NA	13,245 (36.9)	13,242 (29.3)	14,840 (25.8)	15,713 (25.5)
<b>Ages: 70+</b>				
<b># of patients</b>	72,249	92,188	11,9669	12,7506
Symptoms, signs and abnormal clinical and laboratory findings (XVIII)	12,016 (16.6)	17,633 (19.1)	24,216 (20.2)	26,003 (20.4)
Diseases of the circulatory system (IX)	46,08 (6.4)	7,281 (7.9)	10,092 (8.4)	10,701 (8.4)

Injury, poisoning and certain other consequences of external causes (XIX)	5,314 (7.4)	7,474 (8.1)	10,025 (8.4)	10,599 (8.3)
Diseases of the respiratory system (X)	3,219 (4.4)	4,705 (5.1)	6,692 (6.6)	7,421 (5.8)
Diseases of the digestive system (XI)	2,677 (3.7)	4,182 (4.5)	5,474 (4.6)	5,732 (4.5)
NA	30,243 (41.9)	29,189 (31.7)	32,907 (27.5)	34,720 (27.2)

**Footnote:** \*Population from Government of BC  
(<https://www2.gov.bc.ca/gov/content/data/statistics/people-population-community/population/population-estimates>), abbreviations: Emergency Department (ED)