

Supplementary Material

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Income-Based Disparities in Opioid Prescription Dispensing Among Public Drug Plan Beneficiaries in Canada from 2010 To 2018: A Population-Based and Sex-Stratified Retrospective Study

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Conflicts of Interest

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Supplementary Material 1: Plans and Programs in the National Prescription Drug Utilization Information System (NPDUIS) Database

Jurisdiction	Plan/Program
Alberta	Non-Group
	Seniors
	Palliative Care
British Columbia	Permanent Residents of Licensed Residential Care Facilities
	Recipients of B.C. Income Assistance
	Cystic Fibrosis
	Children in the At Home Program
	No-Charge Psychiatric Medication Program
	Fair PharmaCare
	BC Palliative Care Drug Plan
	Smoking Cessation
	Employment and Income Assistance
Manitoba	Personal Home Care/ Nursing Homes
	Palliative Care
	Pharmacare
Saskatchewan	Universal Program
Ontario	Ministry of Community and Social Services (MCSS)
	MOHLTC Ontario Drug Benefit Program (ODB)
	The Foundation Plan
	The 65Plus Plan
Newfoundland and Labrador	The Access Plan
	Assurance Plan
	Select Needs/Cystic Fibrosis Plan
	Select Needs/Growth Hormone Plan

	Diabetes Control Program
	Family Health Benefit Program
	Immunization Program
	High Cost Drugs Program
	Nursing Home
Prince Edward Island	Seniors Drug Cost Assistance Program
	Sexually Transmitted Diseases (STD)
	Children-In-Care/Financial Assistance
	Quit Smoking Program
	Catastrophic Drug Program
	Opioid Replacement Therapy Drug Program
	Generic Drug Program
	Children's Drug and Optical Plan
Yukon Territory	Chronic Disease Program
	Pharmacare

Supplementary Material 2: Annual opioid consumption among all individuals, males and females aged 65 years and older, from FY 2010/11 to FY 2018/19, in public prescription drug programs across seven provinces in Canada.

Patient's FSA income quintile	FY	+65 (both sexes)			+65 (males)			+65 (females)		
		Annual MME	Population	Annual MME per capita	Annual MME	Population	Annual MME per capita	Annual MME	Population	Annual MME per capita
1 (lowest)	2010-11	1413401515.0 0	547685	2580.68	348933599.10	256100	1362.49	1064467916.0 0	291510	3651.57
1 (lowest)	2011-12	1383823967.0 0	547685	2526.68	313225393.10	256100	1223.06	1070598574.0 0	291510	3672.6
1 (lowest)	2012-13	1530796180.0 0	547870	2794.09	394741328.10	256185	1540.84	1136054852.0 0	291605	3895.87
1 (lowest)	2013-14	1501548977.0 0	543340	2763.55	429971186.40	254000	1692.8	1071577790.0 0	289255	3704.61
1 (lowest)	2014-15	1473187746.0 0	547870	2688.94	434397291.60	256185	1695.64	1038790455.0 0	291605	3562.32
1 (lowest)	2015-16	1440347306.0 0	547970	2628.51	396121745.30	256240	1545.9	1044225561.0 0	291650	3580.41
1 (lowest)	2016-17	1179858419.0 0	547995	2153.05	281131490.90	256250	1097.1	898726928.20	291665	3081.37
1 (lowest)	2017-18	824326806.60	547995	1504.26	216275461.40	256250	844	608051345.20	291665	2084.76
1 (lowest)	2018-19	687257450.60	547995	1254.13	211237031.00	256250	824.34	476020419.60	291665	1632.08
2	2010-11	3182307491.0 0	731215	4352.08	873438893.40	335265	2605.22	2308868598.0 0	395960	5831.07
2	2011-12	3212844303.0 0	731705	4390.9	876617055.70	335520	2612.71	2336227247.0 0	396200	5896.59
2	2012-13	3312764263.0 0	731705	4527.46	989887925.90	335520	2950.31	2322876337.0 0	396200	5862.89
2	2013-14	3251459858.0 0	731705	4443.68	956420463.00	335520	2850.56	2295039395.0 0	396200	5792.63
2	2014-15	3180749776.0 0	731710	4347.01	944925475.70	335520	2816.3	2235824300.0 0	396205	5643.1
2	2015-16	2939126904.0 0	731695	4016.87	893340140.70	335515	2662.59	2045786763.0 0	396195	5163.59
2	2016-17	2505517222.0 0	731695	3424.26	721741426.30	335515	2151.15	1783775796.0 0	396195	4502.27
2	2017-18	1715867688.0 0	731695	2345.06	500002070.80	335515	1490.25	1215865617.0 0	396195	3068.86
2	2018-19	1328829962.0 0	731705	1816.07	399127914.80	335520	1189.58	929702047.00	396200	2346.55
3	2010-11	5238787403.0 0	959550	5459.63	1409534629.0 0	438075	3217.56	3829252773.0 0	521435	7343.68

3	2011-12	5205760713.0 0	959550	5425.21	1464423554.0 0	438075	3342.86	3741337159.0 0	521435	7175.08
3	2012-13	5181329087.0 0	959550	5399.75	1593785178.0 0	438075	3638.16	3587543909.0 0	521435	6880.14
3	2013-14	5172569781.0 0	959550	5390.62	1680783638.0 0	438075	3836.75	3491786143.0 0	521435	6696.49
3	2014-15	4964237508.0 0	959550	5173.51	1673927062.0 0	438075	3821.1	3290310446.0 0	521435	6310.11
3	2015-16	4679813309.0 0	959550	4877.09	1630709059.0 0	438075	3722.44	3049104250.0 0	521435	5847.53
3	2016-17	4136953494.0 0	959550	4311.35	1450416231.0 0	438075	3310.89	2686537263.0 0	521435	5152.2
3	2017-18	2984056455.0 0	959550	3109.85	959813693.70	438075	2190.98	2024242761.0 0	521435	3882.06
3	2018-19	2360178633.0 0	959550	2459.67	768930380.20	438075	1755.25	1591248252.0 0	521435	3051.67
4	2010-11	6430555190.0 0	1055975	6089.69	1837638630.0 0	481720	3814.74	4592916561.0 0	574220	7998.53
4	2011-12	6464511928.0 0	1056050	6121.41	1967940754.0 0	481755	4084.94	4496571174.0 0	574255	7830.27
4	2012-13	6445386036.0 0	1056050	6103.3	2051214535.0 0	481755	4257.8	4394171501.0 0	574255	7651.95
4	2013-14	6384164865.0 0	1056050	6045.32	2092755173.0 0	481755	4344.02	4291409692.0 0	574255	7473
4	2014-15	6112213910.0 0	1056050	5787.81	2082382542.0 0	481755	4322.49	4029831368.0 0	574255	7017.49
4	2015-16	5577806757.0 0	1056050	5281.76	1936266623.0 0	481755	4019.19	3641540134.0 0	574255	6341.33
4	2016-17	4693838908.0 0	1055900	4445.34	1593281654.0 0	481700	3307.62	3100557255.0 0	574165	5400.12
4	2017-18	3375200456.0 0	1056050	3196.06	1100847725.0 0	481755	2285.08	2274352731.0 0	574255	3960.53
4	2018-19	2649611936.0 0	1056050	2508.98	886895242.20	481755	1840.97	1762716693.0 0	574255	3069.57
5	2010-11	5518548060.0 0	803760	6865.92	1514630088.0 0	357395	4237.97	4003917972.0 0	446315	8971.06
5 (highest)	2011-12	5630421595.0 0	803760	7005.1	1576481119.0 0	357395	4411.03	4053940476.0 0	446315	9083.14
5 (highest)	2012-13	5644004917.0 0	803760	7022	1694348211.0 0	357395	4740.83	3949656706.0 0	446315	8849.48
5 (highest)	2013-14	5636588667.0 0	803760	7012.78	1773142738.0 0	357395	4961.3	3863445929.0 0	446315	8656.32
5 (highest)	2014-15	5352624732.0 0	803760	6659.48	1704276242.0 0	357395	4768.61	3648348491.0 0	446315	8174.38
5 (highest)	2015-16	5011063711.0 0	803760	6234.53	1673936731.0 0	357395	4683.72	3337126980.0 0	446315	7477.07
5 (highest)	2016-17	4223862565.0 0	803760	5255.13	1501024828.0 0	357395	4199.9	2722837737.0 0	446315	6100.71
5 (highest)	2017-18	2882067418.0 0	803760	3585.73	1037062268.0 0	357395	2901.73	1845005150.0 0	446315	4133.86
5 (highest)	2018-19	2287759210.0 0	803760	2846.32	865922503.60	357395	2422.87	1421836707.0 0	446315	3185.72

Supplementary Material 3: Annual opioid consumption among all individuals, males and females of the entire population, from FY 2010/11 to FY 2018/19, in public prescription drug programs across three provinces in Canada (BC, SK, and MB).

Patient's FSA income quintile	FY	Entire population (both sexes)			Entire population (males)			Entire population (females)		
		Annual MME	Population	Annual MME per capita	Annual MME	Population	Annual MME per capita	Annual MME	Population	Annual MME per capita
1 (lowest)	2010-11	505060623.1	927478	544.55	150982409.3	458440	329.34	354078213.7	469030	754.92
1 (lowest)	2011-12	460191662.8	927478	496.18	144347770.2	458440	314.87	315843892.6	469030	673.4
1 (lowest)	2012-13	531005449.8	928652	571.8	134699975.9	459045	293.44	396305473.9	469595	843.93
1 (lowest)	2013-14	451670822.6	899387	502.2	145569146.2	444835	327.24	306101676.4	454535	673.44
1 (lowest)	2014-15	495328631.6	928652	533.38	149474049.8	459045	325.62	345854581.9	469595	736.5
1 (lowest)	2015-16	494973478.6	928652	533	139479136	459045	303.85	355494342.6	469595	757.02
1 (lowest)	2016-17	362747808.5	928652	390.62	88686283.87	459045	193.2	274061524.7	469595	583.61
1 (lowest)	2017-18	292258264.4	928652	314.71	82721543.27	459045	180.2	209536721.1	469595	446.21
1 (lowest)	2018-19	256184300.4	928652	275.87	81263286.93	459045	177.03	174921013.4	469595	372.49
2	2010-11	1052349585	1139479	923.54	355795964.6	554645	641.48	696553620.2	584810	1191.08
2	2011-12	1048424146	1143193	917.1	375952908.1	556555	675.5	672471237.6	586615	1146.36
2	2012-13	1266573607	1143193	1107.93	455288690	556555	818.05	811284916.8	586615	1382.99
2	2013-14	1118673906	1143193	978.55	374195997.6	556555	672.34	744477908.4	586615	1269.11
2	2014-15	1043528213	1143346	912.7	361507445	556630	649.46	682020768.1	586695	1162.48
2	2015-16	925436510.5	1143193	809.52	316629697.6	556555	568.91	608806812.9	586615	1037.83
2	2016-17	799222666.6	1143193	699.11	270222975.4	556555	485.53	528999691.2	586615	901.78
2	2017-18	703389317.5	1143193	615.28	260104812	556555	467.35	443284505.5	586615	755.67
2	2018-19	632153962	1143193	552.97	248806777.5	556555	447.05	383347184.5	586615	653.49
3	2010-11	2552391094	1710997	1491.76	1002288017	844040	1187.49	1550103077	866985	1787.92
3	2011-12	2513122145	1710997	1468.81	933079655.7	844040	1105.49	1580042489	866985	1822.46
3	2012-13	2550284542	1710997	1490.53	939663861.4	844040	1113.29	1610620681	866985	1857.73

3	2013-14	2499980748	1710997	1461.13	952862284.6	844040	1128.93	1547118464	866985	1784.48
3	2014-15	2496314520	1710997	1458.98	981158264	844040	1162.45	1515156256	866985	1747.62
3	2015-16	2310612727	1710997	1350.45	943834913.6	844040	1118.23	1366777813	866985	1576.47
3	2016-17	1994466815	1710997	1165.68	755631355.3	844040	895.26	1238835459	866985	1428.9
3	2017-18	1759989700	1710997	1028.63	641710118.8	844040	760.28	1118279581	866985	1289.85
3	2018-19	1543412041	1710997	902.05	569266753.1	844040	674.45	974145287.7	866985	1123.6
4	2010-11	2940258391	1828556	1607.97	1069726002	898715	1190.28	1870532389	929875	2011.6
4	2011-12	3200021189	1828697	1749.89	1265465516	898785	1407.97	1934555673	929945	2080.29
4	2012-13	3293123533	1828697	1800.8	1321681943	898785	1470.52	1971441590	929945	2119.96
4	2013-14	3312380924	1828697	1811.33	1361737839	898785	1515.09	1950643085	929945	2097.59
4	2014-15	3141418511	1828697	1717.85	1284047298	898785	1428.65	1857371213	929945	1997.29
4	2015-16	2867043372	1828697	1567.81	1171022384	898785	1302.89	1696020988	929945	1823.79
4	2016-17	2471069443	1828697	1351.27	990487762.5	898785	1102.03	1480581680	929945	1592.12
4	2017-18	2154104886	1828697	1177.95	863174710.8	898785	960.38	1290930175	929945	1388.18
4	2018-19	1848065604	1828697	1010.59	735151178.1	898785	817.94	1112914426	929945	1196.75
5	2010-11	2738676482	1413121	1938.03	1086681208	696915	1559.27	1651995274	716205	2306.6
5 (highest)	2011-12	2975907316	1413121	2105.91	1242182856	696915	1782.4	1733724460	716205	2420.71
5 (highest)	2012-13	3013492667	1413121	2132.51	1303095567	696915	1869.81	1710397099	716205	2388.14
5 (highest)	2013-14	3004895018	1413121	2126.42	1313367696	696915	1884.55	1691527323	716205	2361.79
5 (highest)	2014-15	2874321230	1413121	2034.02	1243653087	696915	1784.51	1630668143	716205	2276.82
5 (highest)	2015-16	2585560575	1413121	1829.68	1093240350	696915	1568.69	1492320226	716205	2083.65
5 (highest)	2016-17	2222517614	1413121	1572.77	973716258.4	696915	1397.18	1248801356	716205	1743.64
5 (highest)	2017-18	1816851893	1413121	1285.7	788787616.6	696915	1131.83	1028064277	716205	1435.43
5 (highest)	2018-19	1586274936	1413121	1122.53	697911531.9	696915	1001.43	888363403.6	716205	1240.38

**Supplementary Material 4: Linear regression analysis output of the trend of annual rate ratio
of opioid consumption between lowest and highest FSA income quintiles in public
prescription drug programs from FY 2010/11 to FY 2018/19, in public prescription drug
programs**

Population	Age	Sex	Variable	Slope	Standard Error	Slope lower 95%CI	Slope Upper 95%CI	P-value
Seven provinces in Canada (BC, AB, SK, MB, ON, NFL, and PEI)	65 years and older	Both sexes	Year	-0.05067	0.008996	-0.07195	-0.0294	0.0008
	65 years and older	Males	Year	0.006852	0.047726	-0.106	0.119706	0.8899
	65 years and older	Females	Year	-0.07203	0.008656	-0.0925	-0.05156	0.0001
Three provinces in Canada (BC, SK, and MB)	Entire population	Both sexes	Year	0.022601	0.039298	-0.07033	0.115526	0.5832
	Entire population	Males	year	0.111667	0.091909	-0.10566	0.328997	0.2638
	Entire population	Females	year	-0.0079	0.039573	-0.10148	0.085672	0.8474