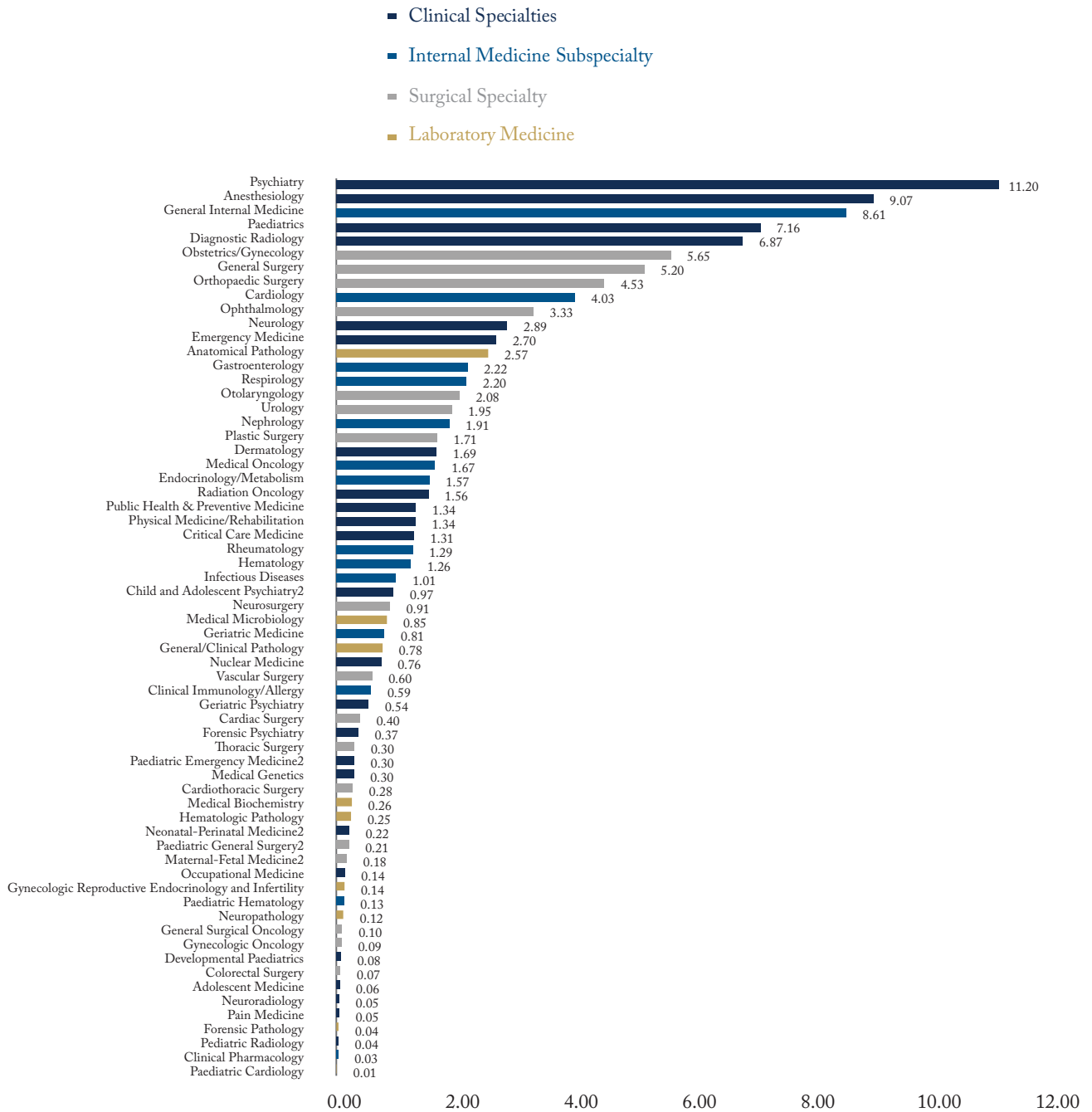


APPENDIX – HELP WANTED: HOW TO ADDRESS LABOUR SHORTAGES IN HEALTHCARE AND IMPROVE PATIENT ACCESS

by Rosalie Wyonch

Figure A1: Medical Specialists in Canada Per 100k Population (2019)



Sources: Author's calculations using data from Statistics Canada Tables 10-10-0116-01, 10-10-0118-01, and 36-10-0434-01.

Table A1: Healthcare Providers and Population Health Outcomes, by Country (2017 or most recent available)

	Total Remuneration (dollars)			Density (per million population)			Outcomes	
	General Practitioners	Specialists	Nurses	General Practitioners	Specialists	Nurses	Life Expectancy (population at birth)	Years Lost, /100 000 Population, Aged 75 Years Old
Australia	104,276.4	210,784.7	67,688.07	1.62	1.8	11.68	82.8	3,542.5
Austria	141,452.7	213,246		1.56	2.75	6.85	81.8	3,774.1
Belgium	138,724.4	331,161.9	59,503.17	1.14	1.9	10.96	81.7	4,078.2
Canada	158,208.1	249,004.3	56,978.96	1.3	1.42	9.96	82	4,164.3
Chile	86,438.17	154,471.3	55,271.96	1.25	1.2	2.72	80.4	5,068.2
Czech Republic		67,679.33	32,878.94	0.7	2.94	8.06	79.1	4,832.4
Denmark	142,659.2	140,505.3	58,891.1	0.8	1.76	9.95	81	3,926.3
Estonia	113,557.9	62,817.33	28,839.43	0.8	2.66	6.19	78.4	6,574.2
Finland	83,743.98	121,805.6	43,115.89	1.25	1.94	14.26	81.8	4,005.6
France	131,258.8	318,550.9	42,366.77	1.42	1.74	10.48	82.8	4,066.6
Germany	214,677	183,115.5	53,550.55	1	3.25	12.93	81	4,139
Greece		68,745.49	33,920.43	0.43	4.95	3.31	81.9	4,233.3
Hungary	50,341.94	63,858.48	25,803.08	0.7	2.62	6.51	76.2	6,942.3
Iceland	141,177.3	156,733.3	67,985.41	0.61	2.32	14.5	82.9	3,127.1
Ireland	164,696.2	208,182.8	64,242.2	1.82	1.43	12.16	82.3	3,656.3
Israel	174,749.7	319,684.1	60,914.24	0.98	2.31	5.08	82.9	3,311.5
Italy		102,997.4	43,992.36	0.89	3.1	5.8	83.4	3,132.3
Japan			45,236.23			11.34	84.2	3,076.9

Sources: OECD (2019) Health Care Resources, author's calculation.

Table A1: Continued

	Total Remuneration (dollars)			Density (per million population)			Outcomes	
	General Practitioners	Specialists	Nurses	General Practitioners	Specialists	Nurses	Life Expectancy (population at birth)	Years Lost, /100 000 Population, Aged 75 Years Old
Korea				0.63	1.71	6.91	82.7	3457.4
Luxembourg	192,027.5	704,587.3	108,928.1	0.9	2.09	11.72	82.4	3,109.5
Mexico	44,682.68	59,648.58	31,894.06	0.88	1.55	2.9	75	8,660.7
Netherlands	135,162.1	192,800.6	69,444.61	1.61	1.97	10.88	81.9	3,547.3
New Zealand		132,301.7	53,890.22	1.35	1.84	10.17	81.8	4093
Norway		99,381.28	54,743.32	0.87	1.98	17.67	82.8	3,198.8
Poland	58,518.93	37,851.26	29,660.88	0.42	1.96	5.1	77.7	6,438.7
Portugal	80,186.65	76,195.86	30,888.38	2.63	2.49	6.7	81.4	4,107.6
Slovak Republic	64,594.16	27,513.92	0.68	2.3	9.92	81.5	4,089.2	
Slovenia	87,935.95	87,744.84	40,288.2	0.76	2.53	5.74	83.5	3,280.5
Spain	92,167.43	104,814.5	56,263.29	0.65	2.24	10.9	82.6	3,251.1
Switzerland		107,448.9	62,856.55	1.14	2.56	17.23	83.8	2,990.3
Turkey	78,160.88	114,393.4	46,320.09	0.6	1.27	2.07	78.3	5,685.2
United Kingdom	232,311.1	166,643.5	50,803.49	0.75	2.06	7.83	81.3	4,185.9
United States		75,770	0.31	2.3	11.74	78.7	6,584.5	

Source: OECD (2019) Health Care Resources, author's calculation.

Table A2: Health Workforce per 100,000 Population, by Province

Type of Provider	NL	PEI	NS	NB	QC	ON	MB	SK	AB	BC	Terr	Average*
Audiologists	7	5	10	10	5	5	5	3	4	6	4	5
Chiropractors	13	9	17	12	16	32	22	19	25	25	12	25
Dental Assistants	—	—	84	—	33	—	—	107	137	123	—	97
Dental Hygienists	42	62	74	66	78	90	56	57	75	70	68	79
Dentists	45	55	59	42	64	73	54	46	63	72	167	67
Dietitians	35	55	63	51	39	29	35	35	31	26	31	33
Medical Laboratory Technologists	104	73	84	83	59	50	56	71	—	37	48	48
Medical Radiation Technologists	75	74	63	77	79	75	62	54	56	43	—	68
Midwives	0	—	1	1	3	5	6	1	3	6	38	4
Occupational Therapists	41	43	56	48	64	42	50	30	51	48	32	49
Optometrists	12	15	14	15	18	18	13	15	19	16	6	17
Paramedics	186	100	133	—	66	62	224	155	191	98	—	94
Pharmacists	144	125	139	119	110	111	120	142	126	114	84	116
Pharmacy Technicians	33	50	19	18	—	34	8	24	35	31	—	24
Physician Assistants	0	1	3	1	0	3	7	0	1	0	1	2
Physicians	269	199	273	245	249	236	226	206	251	251	109	243
Family Medicine	138	114	135	133	123	117	113	114	127	135	90	123

Note: *National average weighted by population, except “Dental assistants” and “Registered psychiatric nurses” which shows the unweighted average for provinces with available data.
Source: CIHI Health Workforce Database 2018.

Table A2: Continued

Type of Provider	NL	PEI	NS	NB	QC	ON	MB	SK	AB	BC	Terr	Average*
Specialists	131	85	138	111	126	119	113	92	123	117	19	120
Physiotherapists	56	55	75	70	64	64	58	64	69	77	—	66
Psychologists	48	31	63	46	92	28	20	44	86	25	106	51
Regulated Nurses	1,601	1,579	1,446	1,500	1,187	1,086	1,318	1,337	1,216	1,062	1,435	1,165
Licensed Practical Nurses	452	473	443	440	329	349	249	314	344	243	352	331
Nurse Practitioners	32	19	19	17	6	22	14	20	12	9	47	15
Registered Nurses	1,117	1,087	984	1,043	852	715	974	932	829	753	1,036	803
Registered Psychiatric Nurses	—	—	—	—	—	—	80	71	31	56	—	59
Respiratory Therapists	30	17	34	53	48	24	25	21	43	24	11	32
Social Workers	296	224	204	262	169	125	160	170	170	87	283	146
Speech language Pathologists	28	25	27	32	34	22	29	33	34	26	35	28

Note: *National average weighted by population, except “Dental assistants” and “Registered psychiatric nurses” which shows the unweighted average for provinces with available data.
Source: CIHI Health Workforce Database 2018.

Table A3: Ranking Access to Healthcare: Commonwealth Fund International Health Policy Survey

	Survey of Physicians (2019)				General Population Survey (2016)		
	Offer patient appointments on weekends	Offer patient appointments after 6pm during the week	Alternate arrangements for non-emergency treatment when practice closed	Online bookings and enquiries	Regular primary care provider	Appointment same or next day	Access to evening and weekend medical care
Australia	8	1	8	7	11	3	4
Canada	6	5	12	15	13	15	14
France	1	2	7	9	1	7	12
Germany	5	18	1	10	3	10	11
Netherlands	20	22	4	6	2	1	1
New Zealand	15	14	2	4	7	2	3
Norway	22	21	3	2	4	17	2
Sweden	21	19	6	1	21	9	19
Switzerland	12	11	11	8	8	4	9
UK	3	6	5	3	17	5	5
US	13	8	13	5	19	6	6
NL	10	10	18	20	10	19	21
PEI	16	20	21	21	6	21	20
NS	7	16	19	17	12	18	18
NB	17	17	14	19	9	20	10
QC	4	3	15	13	20	13	17
ON	2	4	9	14	5	16	8
MB	19	13	20	12	16	12	13
SK	14	15	16	18	18	8	15
AB	11	7	10	16	14	11	7
BC	18	9	17	11	15	14	16
Territories	9	12	22	22			

Sources: CIHI Commonwealth Fund International Policy Surveys (2016, 2019), author's calculations.

Table A4: Cost of Attending Medical School in Canada (2018)

University / Province	Regular Quota Tuition Fees												Total Cost				University Applications	
	Cdn citizen / perm. resident				International				Other Compulsory Fees				Domestic	International	Fees	Other Compulsory Fees		
	Yr 1	Yr 2	Yr 3	Yr 4	Yr 1	Yr 2	Yr 3	Yr 4	Yr 1	Yr 2	Yr 3	Yr 4						
Memorial University	\$8,250				\$30,000				\$1,300	\$630			\$36,190	\$123,190	\$75	\$156.75		
Dalhousie University	\$20,176				not applicable				\$1,197				\$85,492	NA	\$70			
Laval, Université	Québec resident	\$3,826	\$4,144	\$5,101	\$2,869	\$28,782	\$31,208	\$38,808	\$21,223				\$19,780	\$123,861	\$84	\$125		
	Other	\$11,658	\$12,645	\$15,793	\$8,883					\$960			\$52,819					
Sherbrooke, Université de	Québec resident	\$4,503					\$27,379			\$1,060			\$22,252	\$113,756	\$82	\$125		
	Other	\$11,608											\$50,672					
Montréal, Université de	Québec resident	\$3,507	\$3,746	\$5,499	\$3,188	\$26,824	\$28,653	\$42,064	\$24,385	\$1,142		\$1,197	\$20,563	\$126,549	\$94	\$125		
	Other	\$10,857	\$11,598	\$17,026	\$9,870								\$53,974					
McGill University	Québec resident	\$5,021	\$3,945	\$4,065	\$2,829	\$38,407	\$30,177	\$31,091	\$21,642	\$2,208	\$2,116	\$2,117	\$24,109	\$129,566	\$154.56			
	Other	\$15,546	\$12,215	\$12,585	\$8,760					\$800	\$720	\$815	\$57,355					
University of Ottawa		\$26,970	\$26,970	\$26,713	\$26,459		not applicable			\$1,238	\$1,158	\$110,262	NA	NA	\$100			
Queen's University		\$26,827		\$26,747			not applicable					\$111,780	NA	NA	\$125			
Toronto, University of	St George		\$24,440				\$72,840			\$1,749	\$1,749	\$1,634	\$104,528	\$298,128	\$125			
Mississauga										\$2,122	\$2,122	\$2,009	\$105,877	\$299,477				
McMaster University		\$27,241					not applicable			\$960			\$84,603	NA	\$125	\$220 (Ontario has a one time fee to use their application portal)		
Western University		\$25,876					not applicable			\$1,350			\$108,904	NA	\$125			
Northern Ont. School of Medicine	East Campus		\$24,600				not applicable			\$1,099			\$102,796	NA	\$100			
	West Campus									\$798	\$602		\$101,200					
Manitoba, University of		\$9,463		\$8,110			not applicable			\$1,056			\$38,017	NA	\$100			
Saskatchewan, University of		\$16,642					not applicable			\$834			\$69,904	NA	\$125			
Alberta, University of		\$12,044					not applicable			\$943			\$51,948	NA	\$180			
Calgary, University of		\$15,012					\$125,076			\$1,170			\$48,546	\$128,586	\$150			
British Columbia, University of	VFMP Site									\$1,212	\$75	\$82	\$73,601			Residents of BC with BC transcripts: \$122		
	IMP Site									\$0	\$677	\$75	\$71,854	NA		Residents of BC with out-of-province transcripts: \$156		
	NMP Site									\$0	\$969	\$75	\$72,146					
	SMP Site									\$0	\$997	\$75	\$72,174					

Source: Association of Faculties of Medicine Canada (2018).

Table A5: Health Services per 100,000 population, Regression Results

	Regression 1	Regression 2	Regression 3	Regression 4	Regression 5	Regression 6	Regression 7
	Coefficient Estimate (Std. Error)						
(Intercept)	22,838.87 (4,749.3)	7,210.747 (5,938.4)	33,406.07 (4,893.91)	17,056.84 (5,947.46)	63,410 (7,454)	37,122.84 (6,907.914)	51,040 (7,157)
FTE Density	4,138.46 (40.88)	4,187.775 (42.04)	4,073.6 (41.02)	4,124.269 (41.899)	1,067 (280.2)	3,938.439 (181.938)	920.7 (265)
Average payment		38.096 (8.849)		40.614 (8.614)	9.434 (8.628)		-7.931 (8.368)
Cost per service			-139.95 (21.03)	-144.082 (20.779)		-143.283 (21.481)	-35.77 (20.4)
Payment : Density					8.228 (0.7315)		14.01 (0.9595)
Cost per service: Density						2.079 (2.726)	-32.05 (3.342)
Specialty	-22,359 (3,454.01)	-21,124.1 (3,429.857)	-22,598.1 (3,366.88)	-21,288.6 (3,335.856)	-64,080 (4,979)	-26,156.9 (5,755.163)	-39,450 (5,175)
Surgical	-11,942.8 (3495.1)	-17,261.9 (3,672.564)	-7,466.23 (3,472.49)	-13,004.8 (3,624.202)	-61,140 (5,189)	-10,846.5 (5,631.557)	-37,460 (5,263)
T	-137.99 (927.54)	-407.842 (919.962)	197.13 (905.49)	-80.669 (895.969)	-1,053 (858.9)	159.336 (907.073)	-735.1 (801.2)
AB	7,850.95 (4,095.85)	3,989.534 (4,151.019)	12,347.86 (4,049.06)	8,363.924 (4,086.146)	-1,380 (3,896)	11,882.01 (4,095.906)	4,547 (3,689)
BC	-582.99 (4,093.64)	-1,800.57 (4,060.633)	2,689.51 (4,020.32)	1,488.024 (3,977.622)	-3,054 (3,784)	2,337.296 (4,047.784)	3,445 (3,573)
MB	1439.79 (4,093.42)	-903.816 (4,086.969)	1,599.46 (3,990)	-894.341 (3,974.859)	-2,715 (3,810)	1,556.993 (3,991.402)	-3,405 (3,549)
NB	-14550.9 (4,093.64)	-15,084 (4,052.657)	-12,074.3 (4,007.45)	-12,569.6 (3,958.134)	-18,080 (3,784)	-12,348 (4,024.502)	-14,460 (3,545)
NL	-20,414.4 (4,269.71)	-20,536.6 (4,225.096)	-20,624.6 (4,161.89)	-20,761 (4,109.324)	-18,170 (3,941)	-20,612.2 (4,162.976)	-16,840 (3,674)
NS	-29,108.2 (4,501.37)	-27,975.2 (4,461.992)	-28,989.9 (4,387.6)	-27,778.6 (4,339.688)	-24,930 (4,165)	-29,015 (4,388.835)	-22,250 (3,888)
PEI	-32,028 (4,905.95)	-33,652.8 (4,869.226)	-31,177.2 (4,783.63)	-32,884.3 (4,736.955)	-34,310 (4,536)	-31,251.8 (4,785.846)	-33,200 (4,225)
QC	-10,518 (4,093.19)	-10,512 (4,050.329)	-8,263.55 (4,004.06)	-8,190.62 (3,953.425)	-13,540 (3,782)	-8,923.46 (4,097.506)	-4,095 (3,621)
SK	17,104.45 (4,104.13)	14,951.05 (4,091.834)	21,172.19 (4,046.78)	18,996.5 (4,022.13)	12,900 (3,816)	21,174.42 (4,047.808)	13,810 (3,604)
Residual Standard error	29,890	29,580	29,140	28,770	27,550	29,140	25,650
R-squared (adjusted)	0.9291 0.928	0.9306 0.9295	0.9327 0.9316	0.9345 0.9333	0.9399 0.9388	0.9327 0.9315	0.948 0.9469
F-stat	830.3	788.8	814.7	781.5	856.9	760	879.9
Degrees of Freedom	824	823	823	822	822	822	820

Source: National Physician Database (2018), author's calculations.

Table A6: Fulltime Equivalent Physician Density, Regression Results

	Regression 1	Regression 2	Regression 3	Regression 4
	Coefficient Estimate (Std. Error)			
(Intercept)	49.744 (4.599)	35.961 (3.963)	54.821 (4.564)	97.52 (6.466)
Average payment	-0.057 (0.007)		-0.053 (0.007)	-0.133 (0.011)
Cost per service		-0.122 (0.017)	-0.108 (0.017)	-0.663 (0.064)
Average Payment: Cost per service				0.001 (9.63E-05)
Specialty.1	-9.171 (2.82)	-7.717 (2.847)	-8.91 (2.758)	-3.685 (2.698)
Surgical	-6.212 (3.032)	-10.545 (2.926)	-2.661 (3.014)	4.362 (2.984)
t	0.506 (0.76)	0.369 (0.769)	0.705 (0.745)	0.871 (0.712)
AB	2.467 (3.435)	0.506 (3.439)	5.644 (3.394)	6.88 (3.245)
BC	0.447 (3.361)	1.44 (3.414)	2.905 (3.308)	6.339 (3.183)
MB	2.54 (3.382)	-0.865 (3.389)	2.43 (3.306)	2.063 (3.158)
NB	-0.572 (3.354)	0.758 (3.404)	1.351 (3.293)	6.185 (3.191)
NL	2.954 (3.449)	3.241 (3.533)	3.205 (3.417)	2.639 (3.265)
NS	-1.463 (3.693)	0.352 (3.726)	-1.244 (3.61)	-0.081 (3.451)
PEI	6.791 (4.023)	5.181 (4.059)	7.056 (3.933)	6.545 (3.758)
QC	-0.183 (3.352)	1.789 (3.4)	1.577 (3.289)	4.096 (3.154)
SK	-3.543 (3.385)	-3.373 (3.435)	-0.326 (3.346)	-1.155 (3.198)
Residual Standard error	24.48	24.75	23.93	22.86
R-squared	0.122 0.108	0.105 0.091	0.164 0.15	0.238 0.224
F-stat	8.843	7.463	11.55	17.14
Degrees of Freedom	827	824	823	822

Source: National Physician Database (2018), author's calculations.