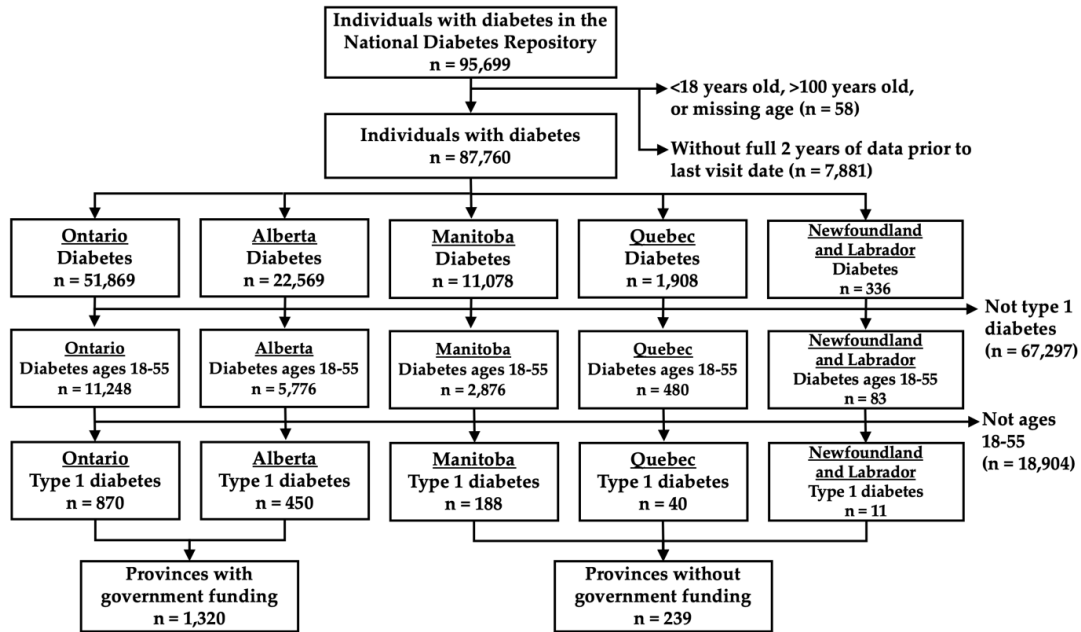


Supplementary Figure 1: Study flow diagram



Supplementary Table 1: Details for government-funded insulin pump programs for provinces included in the National Diabetes Repository

Province	Pump Coverage	Supply Coverage	Age Criteria	Reimbursement Constraints	Date of Inception	Total Population in 2019 ¹¹	Estimated Population with Type 1 Diabetes ^{12†}
Ontario ^{1,2}	Yes	Yes	None	<ul style="list-style-type: none"> - Eligible for new replacement pump every 5 years - Insulin pump: up to \$6,300 reimbursement - Pump supplies: up to \$2,400 per year 	2008	14,467,162	28,630-57,260
Alberta ^{3,4}	Yes	Yes	None	<ul style="list-style-type: none"> - Eligible for new replacement pump every 5 years - Infusion sets: up to 100 units per 100 days - Cartridges/reservoirs/pods: up to 100 units per 100 days - Inserters: up to 1 unit per year 	2013	4,343,951	7,260-14,520
Quebec ⁵	No*	No*	≥18 not covered	<ul style="list-style-type: none"> - Eligible for new replacement pump every 4 years - Insulin pump: up to \$6,300 reimbursement - Pump supplies: up to \$4,000 per year <p>*Adults are eligible to be maintained in the Insulin Pump Access Program if they were previously part of the program as a youth and they meet annual clinical criteria</p>	2011	8,465,271	12,380-24,760
Manitoba ⁶ ⁻⁸	No	Yes*	≥18 not covered	*Supplies are covered by the Manitoba PharmaCare program	1995 (see note below*)	1,364,223	1,955-3,910

				beyond the age of 18 based on an income-linked deductible			
Newfoundland & Labrador ^{9,10}	Age: 18-24	Age: 18-24	≥25 not covered	<ul style="list-style-type: none"> - Eligible for new replacement pump every 4 years - Insulin pump: up to 100% of costs covered* - Pump supplies: up to 100% of cost covered* <p>*2016-17 report: average annual cost of \$3277 per adult client (\$6800 for pump & \$1577 for supplies)</p> <ul style="list-style-type: none"> - Average annual cost of insulin pump (replace pump every 4 years): \$6800/4 = \$1700 - Average annual cost of insulin pump supplies: \$3277-\$1700 = \$1577 	2010	524,126	1,195-2,390

*Note: Insulin pump supply costs for adult patients (≥18) are covered under the Manitoba PharmaCare program (established in 1995). However, the program does not cover insulin pumps for adult patients (≥18). This is different than the Manitoba Pediatric Insulin Pump Program (established in 2012), which covers insulin pumps and pump supplies for patients under the age of 18.

† Estimated population with type 1 diabetes in each province derived using 5-10% of Statistics Canada estimates for numbers of people ages 12-64 with diabetes in 2019

Supplementary Table 2: Characteristics of participants using and not using insulin pumps in provinces with and without government funded insulin pump programs

Characteristic	Pump Funding Program (n = 1,320)		p-value	No Pump Funding Program (n = 239)		p-value
	Insulin Pump (n = 631)	No Insulin Pump (n = 689)		Insulin Pump (n = 90)	No Insulin Pump (n = 149)	
Demographic						
Age (years)	38 [29,47]	43 [33,50]	<0.0001	39 [31,46]	43 [34,50]	0.03
Female, n (%)	316 (50.1%)	301 (43.7%)	0.02	45 (50%)	72 (48.3%)	0.80
Provider Age (years)	51 [41,58]	50 [40,60]	0.90	51 [43,56]	45 [35,53]	0.007
Provider Sex, n (%)			0.18			0.70
Female	262 (41.8%)	307 (44.8%)		28 (31.1%)	50 (33.6%)	
Male	356 (56.8%)	362 (52.8%)		62 (68.9%)	99 (66.4%)	
Provider Type, n (%)			0.33			0.13
Family Physician	616 (97.6%)	680 (98.7%)		89 (98.9%)	139 (93.3%)	
Nurse Practitioner	11 (1.7%)	6 (0.9%)		≤5	9 (6%)	
Clinical						
Hypertension, n (%)	94 (14.9%)	180 (26.1%)	<0.0001	17 (18.9%)	55 (36.9%)	0.003
Depression, n (%)	182 (28.8%)	255 (37%)	0.002	23 (25.6%)	38 (25.5%)	0.99
Osteoarthritis, n (%)	37 (5.9%)	59 (8.6%)	0.06	21 (23.3%)	52 (34.9%)	0.06
DBP (mmHg)	76.72 ± 9.58	77.34 ± 10.15	0.29	75.07 ± 9.22	80.42 ± 8.97	0.001
SBP (mmHg)	124.53 ± 15.61	124.99 ± 17.38	0.64	125.68 ± 16.74	131.19 ± 17.56	0.07
BMI (kg/m ²)	28.53 ± 8.32	29.79 ± 7.91	0.04	29.50 ± 9.07	32.30 ± 10.28	0.17
Laboratory						
HbA1c (%)	8.34 ± 1.98	8.52 ± 1.99	0.13	8.64 ± 1.68	9.12 ± 2.19	0.11
Creatinine (µmol/L)	73 [62,87]	74 [61,90]	0.02	74 [58,87]	64 [52,82]	0.92
ACR (mg/mmol)	1.00 [0.50,4.43]	1.46 [0.60,8.20]	0.09	0.80 [0.50,2.30]	1.30 [0.40,4.10]	0.43
Medications						
Statin, n (%)	99 (15.7%)	176 (25.5%)	<0.0001	15 (16.7%)	37 (24.8%)	0.14
ACEi/ARB, n (%)	93 (14.7%)	164 (23.8%)	<0.0001	12 (13.3%)	41 (27.5%)	0.01
Risk Factors						
Smoking Status, n (%)			0.23			0.81
Current	63 (10%)	93 (13.5%)		≤5	≤5	
Never	92 (14.6%)	96 (13.9%)		0 (0%)	0 (0%)	
Past	115 (18.2%)	130 (18.9%)		≤5	≤5	
Alcohol Status, n (%)			0.008			0.07
Current	96 (15.2%)	135 (19.6%)		11 (12.2%)	37 (24.8%)	
Never	11 (1.7%)	10 (1.5%)		0 (0%)	≤5	
Past	78 (12.4%)	116 (16.8%)		≤5	≤5	
Socioeconomic						
Income Quintile, n (%)						
1 (lowest)	122 (20.7%)	179 (28.8%)	0.001	8 (12.3%)	16 (22.5%)	0.12
2	111 (18.8%)	133 (21.4%)	0.27	11 (16.9%)	14 (19.7%)	0.67

3	136 (23.1%)	114 (18.4%)	0.04	21 (32.3%)	17 (23.9%)	0.28
4	114 (19.4%)	100 (16.1%)	0.14	14 (21.5%)	12 (16.9%)	0.49
5 (highest)	106 (18%)	95 (15.3%)	0.21	11 (16.9%)	12 (16.9%)	1.00
Urban Residence, n (%)	510 (82.3%)	539 (79.9%)	0.27	63 (70%)	104 (70.3%)	0.96

Data presented as means \pm standard deviations, median [interquartile range], or frequency (%).

Continuous variables were compared by Students t-tests or Wilcoxon rank sum depending on normality of distribution, and categorical variables were compared by Chi-square.

Data was missing for provider age (n=197, 13%), provider sex (n=33, 2%), provider type (n=8, 0.5%), diastolic blood pressure (n=263, 17%), systolic blood pressure (n=263, 17%), BMI (n=719, 46%), HbA1c (n=259, 17%), total cholesterol (n=573, 37%), LDL-C (n=620, 40%), HDL-C (n=545, 35%), triglyceride (n=571, 37%), creatinine (n=304, 20%), ACR (n=748, 48%), income quintile (n=213, 13.7%), and urban residence (n=26, 1.7%).

DBP diastolic blood pressure; SBP systolic blood pressure; BMI body mass index; HbA1c hemoglobin A1c; TC total cholesterol; LDL-C low-density lipoprotein cholesterol; HDL-C high-density lipoprotein cholesterol; ACR albumin-to-creatinine ratio; ACEi angiotensin-converting enzyme inhibitor; ARB angiotensin receptor blocker.

Supplementary Table 3: Odds of insulin pump use adjusting for pump funding program status and other characteristics (multivariable generalized estimating question model)

Predictor	Model 1*	Model 2†	Model 3‡
Pump Funding Program (yes v. no)	1.48 (1.00-2.18)	1.44 (1.00-2.06)	1.42 (1.02-1.96)
Age (per 1 year increase)	-	0.97 (0.96-0.98)	0.97 (0.96-0.98)
Sex (male vs female)	-	0.81 (0.67-0.97)	0.81 (0.67-0.97)
HbA1c (per 1% increase)	-	0.94 (0.84-0.99)	0.94 (0.89-1.00)
Income Quintile (ref = 1)			
2			1.21 (0.87-1.69)
3	-	-	1.79 (1.27-2.53)
4	-	-	1.54 (0.93-2.56)
5 (highest)	-	-	1.53 (0.94-2.48)
Urban Residence (v. rural)	-	-	1.13 (0.84-1.54)

*Model 1 unadjusted

†Model 2 adjusted for age, sex, HbA1c

‡Model 3 adjusted for age, sex, HbA1c, income quintile, urban residence v. rural

HbA1c, hemoglobin A1c

HbA1c hemoglobin A1c

Supplementary Table 4: Association between individual characteristics and odds of insulin pump use according to pump funding program status (multivariable generalized estimating equation model)

Characteristic	Pump Funding Program	No Funding Program
<i>Demographic</i>		
Age	0.97 (0.97-0.98)	0.97 (0.95-1.00)
Male vs Female	0.78 (0.65-0.93)	0.97 (0.63-1.50)
Provider Age	1.00 (0.99-1.01)	1.04 (1.01-1.07)
Provider Sex		
Male vs Female	1.17 (0.88-1.55)	1.40 (0.85-2.32)
<i>Clinical</i>		
Depression	0.69 (0.59-0.80)	0.94 (0.52-1.68)
Osteoarthritis	0.67 (0.47-0.96)	0.57 (0.36-0.92)
Hypertension	0.50 (0.38-0.66)	0.43 (0.20-0.91)
BMI	0.98 (0.96-1.00)	0.97 (0.91-1.02)
<i>Laboratory</i>		
HbA1c	0.96 (0.91-1.00)	0.90 (0.75-1.07)
Creatinine	1.00 (1.00-1.00)	1.00 (0.99-1.01)
ACR	1.00 (1.00-1.00)	1.00 (0.99-1.00)
<i>Medications</i>		
Statin	0.54 (0.45-0.66)	0.62 (0.35-1.10)
ACEi/ARB	0.55 (0.46-0.67)	0.40 (0.19-0.84)
<i>Risk Factors</i>		
Smoking Status		
Missing vs Current	1.43 (0.95-2.14)	0.67 (0.23-2.01)
Never vs Current	1.41 (0.84-2.36)	-
Past vs Current	1.29 (0.86-1.94)	0.75 (0.31-1.83)
Alcohol Status		
Missing vs Current	1.46 (1.07-2.00)	2.42
Never vs Current	1.51 (0.79-2.88)	-
Past vs Current	0.94 (0.68-1.31)	2.24
<i>Socioeconomic</i>		
Income Quintile (ref = 1)		
2	1.21 (0.90-1.61)	1.56 (0.40-6.04)
3	1.72 (1.30-2.28)	2.47 (0.63-9.69)
4	1.64 (1.09-2.46)	2.24 (0.82-6.16)
5 (highest)	1.59 (1.03-2.43)	1.79 (0.67-4.78)
Urban Residence (v. rural)	1.14 (0.82-1.60)	0.89 (0.47-1.70)

Data presented as odds ratio estimates with corresponding 95% confidence intervals (OR, 95% CI). BMI body mass index; HbA1c hemoglobin A1c; LDL-C low-density lipoprotein cholesterol; HDL-C high-density lipoprotein cholesterol; ACR albumin-to-creatinine ratio; ACEi angiotensin-converting enzyme inhibitor; ARB angiotensin receptor blocker

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