

Geographical and Specialty-Based Patterns of Dapagliflozin Prescription Among Medicare Part D prescribers in Texas, US



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Introduction & Objectives

- Dapagliflozin (Farxiga®) is a sodium-glucose co-transporter 2 (SGLT2) inhibitor used primarily for the management of type 2 diabetes (T2DM), heart failure, and chronic kidney disease.
- Texas has a higher prevalence of diagnosed T2DM (13.2%) compared to the national average (8.4%)¹. Texas has the biggest rural population across U.S., and rural areas with high poverty are associated with higher T2DM rates².
- The study aims to understand the association between prescriber's characteristics and pattern of dapagliflozin prescriptions among Medicare Part D prescribers in the state of Texas, US.

Methods

- A cross-sectional analysis was conducted using data from the 2022 Medicare Part D Prescriber Dataset and the American Community Survey (5-year estimates 2018-2022)³.
- We utilized prescribers' characteristics (gender, specialty, city) and the number of dapgliflozin claims and days supply from the Medicare Dataset, converting days' supply to 30-day supply.
- Data from the American Community Survey (ACS) was used to calculate county-level socioeconomic status (SES) index scores⁴. The SES measure and the formula to calculate SES index are listed in Table 1. SES index scores were converted into quartiles for analyses.
- The SES index score was derived at the county level. To align prescriber data with counties, we matched each prescriber's city to its corresponding county using a City-County Finder tool. For cities spanning multiple counties, we applied population-weighted adjustments to apportion prescription counts proportionally across the relevant counties. Prescription data were then aggregated based on the county-level Federal Information Processing Standards (FIPS) codes.
- Metro and non-metro areas was determined based on Rural-Urban Continuum Codes (RUCC).
- Generalized Linear Models (GLM) were conducted to assess the associations between prescribers' characteristics and dapagliflozin prescriptions

Table 1. SES index score: individual variable definitions and formula⁴

SES Index formula	50 + (0.11 * median household income score) + (-0.10 * % below federal poverty line) + (-0.08 * %unemployed) + (0.10 * % college graduates) + (-0.11* % education below 12 th grade) + (0.08 * median property value score) + (-0.07 * % crowded households)
SES Measure	Definition
Income score	Median household income, standardized to range from 0 to 100
Property value score	Median value of owner-occupied property values, standardized to range from 0 to 100
Below federal poverty line (%)	Percentage of persons below the federally defined poverty line
Unemployed (%)	Percentage of persons aged 16 years or older in the labor force who are unemployed (and actively seeking work)
College graduate (%)	Percentage of persons aged > 25 years with at least 4 years of college
Education below 12 th grade (%)	Percentage of persons aged > 25 years with less than a 12th-grade education
Crowded household (%)	Percentage of households containing one or more person per room

Results

Table 2. prescribers' characteristics and prescription distributions

	Number of prescribers (n=5,037), # (%)	claims (N=183,220), # (%)	# of claims per prescriber (average = 36.4)	30-day supply (n=331,224.03) # (%)	# of 30-day supply per prescriber (average = 65.8)
Gender					
Female	2,078 (41)	64,227 (35)	30.9	117,785 (36)	56.7
Male	2,959 (59)	118,993 (65)	40.2	213,439 (64)	72.1
Metro					
			p=0.39		p<0.001
Metro	4,491 (89)	164,551 (90)	36.7	302,697 (91)	67.4
Non-metro	546 (11)	18,669 (10)	34.2	28,527 (9)	52.3
Specialty type					
Primary care*	2,811 (56)	95,898 (52)	34.1	176,771 (53)	62.9
Cardiology [§]	385 (8)	15,867(9)	41.2	27,085 (8)	70.4
Endocrinology	294 (6)	20,650(11)	70.2	39,682 (12)	135.0
Nephrology	301 (6)	15,727(9)	52.3	24,345 (7)	80.9
NP/PA [†]	1,144 (23)	31,421(17)	27.5	58,158 (18)	50.8
Others	102 (2)	3,657(2)	35.9	5,184 (2)	50.8
SES index					
			p<0.001		p<0.001
First quartile (Q1)	1,229 (24)	52,090 (28)	42.4	94,922 (29)	77.2
Second quartile(Q2)	1,418 (28)	50,540 (28)	35.6	89,547 (27)	63.2
Third quartile(Q3)	1,163 (23)	42,057 (23)	36.2	77,578 (23)	66.7
Forth Quartile (Q4)	1,227 (24)	38,533 (21)	31.4	69,176 (21)	56.4

*Primary care includes family practice, internal medicine, and general practice.
[§] Cardiology included Cardiology, Interventional Cardiology, Advanced Heart Failure and Transplant Cardiology
[†] NP denotes nurse practitioner, PA denotes physician assistant.

Table 3. Prescription patterns across specialty and metro/non-metro areas

	Metro vs. Non-metro	# of prescribers (%)	# of claim (%)	Claim per prescriber	# of 30-day supply (%)	30-day supply per prescriber
Primary Care	metro	2,479 (88)	83,372 (87)	33.6	157,810 (89)	63.7
	non-metro	332 (12)	12,526 (13)	37.7	18,961 (11)	57.1
Cardiology	metro	372 (97)	15,302 (96)	41.1	26,137 (97)	70.3
	non-metro	13 (3)	565 (4)	43.5	948 (3)	72.9
Endocrinology	metro	288 (98)	20,036 (97)	69.6	38,675 (97)	134.3
	non-metro	6 (2)	614 (3)	102.3	1,007 (3)	167.8
Nephrology	metro	291 (97)	15,347 (98)	52.7	23,777 (98)	81.7
	non-metro	10 (3)	380 (2)	38.0	568 (2)	56.8
NP& PA	metro	964 (84)	26,975 (86)	28.0	51,257 (88)	53.2
	non-metro	180 (16)	4,446 (14)	24.7	6,901 (12)	38.3
Others	metro	97 (95)	3,519 (96)	36.3	5,041 (97)	52.0
	non-metro	5 (5)	138 (4)	27.6	143 (3)	28.6

Table 4. GLM regression model* to assess the associations between prescribers' characteristics and the number of claims				
Number of claims	Coefficients [§]	Standard Errors [§]	95% Confidence Interval [§]	p value
Gender (Ref: Female)				
Male	1.2	1.0	(1.1, 1.3)	<0.001
Metro (Ref: Metro)				
Non-metro	0.8	1.0	(0.8, 0.9)	<0.001
Specialty (Ref: primary care)				
Cardiology	1.2	1.1	(1.1,1.3)	<0.001
Endocrinology	2.2	1.1	(2.0, 2.5)	<0.001
Nephrology	1.6	1.1	(1.4,1.8)	<0.001
NA/PA	0.9	1.0	(0.8,0.9)	<0.001
Others	1.1	1.1	(0.9,1.3)	0.4
SES (Ref: Q4)				
Q1	1.5	1.0	(1.4, 1.6)	<0.001
Q2	1.1	1.0	(1.0, 1.2)	<0.001
Q3	1.1	1.0	(1.0, 1.2)	<0.001
(Intercept)	25.6	1.0	(23.9, 27.5)	<0.001

* The GLM model was constructed using a log link function with Gamma distribution.
[§] Coefficients, standard errors, and 95% confidence interval were exponentiated.

Table 5. GLM regression model* to assess the associations between prescribers' characteristics and the number of 30-day supply				
Number of monthly supply	Coefficients [§]	Standard Errors [§]	95% CI [§]	p value
Gender (Ref: Female)				
Male	1.2	1.0	(1.1, 1.3)	<0.001
Metro (Ref: Metro)				
Non-metro	0.7	1.1	(0.6,0.7)	<0.001
Specialty (Ref: primary care)				
Cardiology	1.1	1.1	(1.0,1.2)	0.1
Endocrinology	2.2	1.1	(2.0, 2.5)	<0.001
Nephrology	1.3	1.1	(1.1,1.5)	<0.001
NA/PA	0.9	1.0	(0.8, 0.9)	<0.001
Others	0.8	1.1	(0.7, 1.0)	0.1
SES Index Quartile (Ref: Q4)				
Q1	1.6	1.0	(1.4, 1.7)	<0.001
Q2	1.1	1.0	(1.0,1.2)	<0.001
Q3	1.1	1.0	(1.1, 1.2)	<0.001
(Intercept)	48.2	1.0	(44.8, 51.9)	<0.001

* The GLM model was constructed using a log link function with Gamma distribution.
[§] Coefficients, standard errors, and 95% confidence interval were exponentiated.

Results Summary

- Among dapagliflozin prescribers from the 2022 Texas Medicare Part D prescriber dataset, 58.8% were male, 89% were located in metro areas, and 56% of prescribers were primary care physicians (PCP) (Table 2).
- Slightly over half of all dapagliflozin claims were prescribed by PCPs in Texas. Yet, specialty physician in endocrinology, nephrology, and cardiology are among the top prescribers in terms of claims per prescriber.
- The overall 30-day dapagliflozin supply per prescriber was significantly higher in metro compared to non-metro areas (p<0.001), yet the pattern varies across different specialties. Endocrinologists averaged 134.3 (metro) vs 167.8 (non-metro) 30-day supply. Nephrologists averaged 81.7 (metro) vs 56.8 (non-metro) 30-day supply. Cardiologists averaged 70.3 (metro) vs 72.9 (non-metro) and PCPs averaged 63.7 (metro) vs 57.1 (non-metro) 30-day supply (Table 2& 3).
- The GLM models suggest that prescribers in the lowest SES quartile (Q1) prescribed significantly more claims (coefficient = 1.5, p < 0.001) and more 30-day supply (coefficient = 1.6 p<0.001)compared to those in the highest SES quartile (Q4) (Table 4 & 5).

Discussions

- After adjusting for gender, prescribers' specialties, and SES index scores (quartiles), metro areas showed a higher total volume of claims and 30-day supply prescriptions. The density of patients per prescriber in metro areas may contribute to a greater overall volume of claims.
- Findings suggest that non-metro endocrinologists prescribed 1.5 times claims per prescriber compared to metro endocrinologists may imply a higher patient demand or a higher disease burden⁵. However, accurate conclusions require insight into the patient-to-provider ratio and epidemiology data.
- The higher dapagliflozin prescribing rate per prescriber for dapagliflozin in lower SES areas characterized by lower income, lower educational level, and crowded housing, may be associated with a higher prevalence of diabetes/higher disease severity in these areas ⁶.

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