



Health Center Visits by Adults With Type 2 Diabetes: United States, 2024

Loredana Santo, M.D., Tran Dinh, Ph.D., Zachary J. Peters, M.P.H, and Lello Guluma, M.P.H.

Key findings

Data from the National Ambulatory Medical Care Survey Health Center Component

- In 2024, the health center visit rate for adults with type 2 diabetes was 52.7 visits per 1,000 adults, and rates increased by age.
- A documented codiagnosis of overweight or obesity was found at 34.9% of the visits by adults with diabetes.
- Among visits by adults with diabetes, just over one-half were made by adults with no complications of diabetes.
- A majority of visits by adults with diabetes had a documented prescription for a diabetes medication, with 62.3% having an oral glucose-lowering medication, 27.0% having a GLP-1 agonist, and 24.7% having insulin.

Introduction

In 2024, diabetes was the seventh leading cause of death in the United States (1). An estimated 9.8% of adults had diabetes in 2021–2023, with type 2 diabetes accounting for 90%–95% of the cases (2). Risk factors for developing type 2 diabetes include overweight or obesity and increasing age (3). Over time, diabetes can impair many organ systems leading to microvascular (small blood vessel) and macrovascular (large blood vessel) complications (4). Health centers are local, community-based clinics providing care to those who often experience issues accessing health care (5). This report describes the rates and characteristics of health center visits by adults with type 2 diabetes, subsequently referred to as diabetes, using data

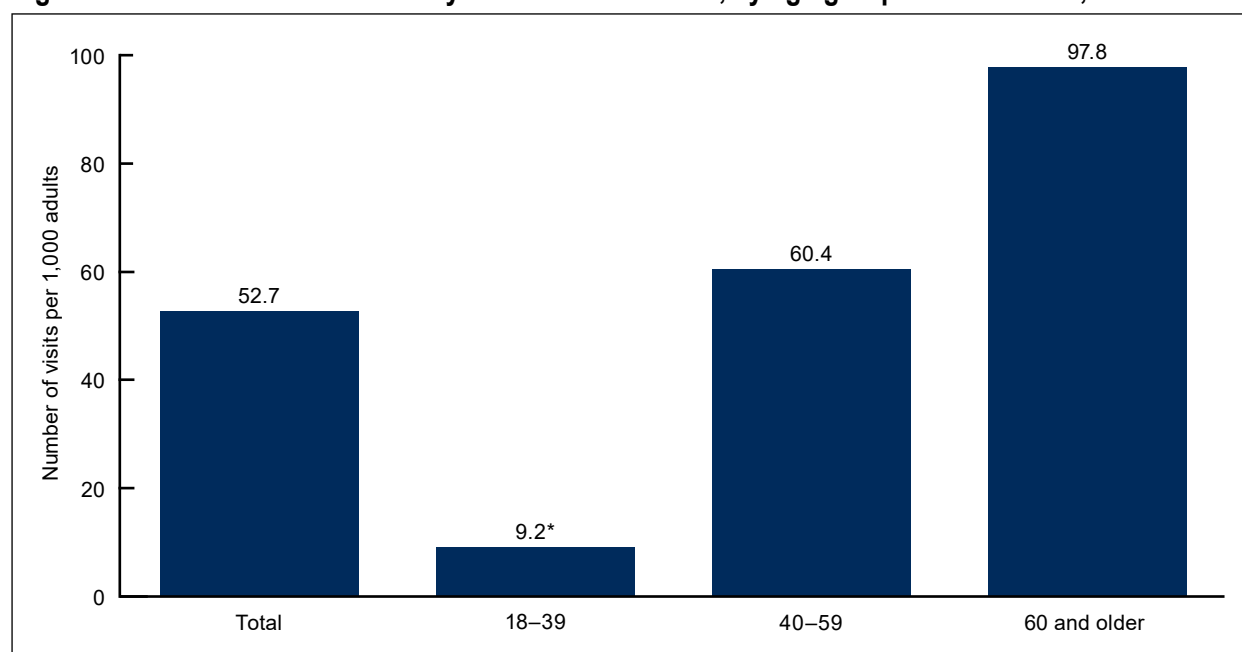


from the 2024 National Ambulatory Medical Care Survey Health Center (NAMCS HC) Component (6).

Visit rates by age

- The rate of visits to health centers for adults with diabetes in 2024 was 52.7 visits per 1,000 adults (Figure 1, Table 1).
- Adults ages 18–39 with diabetes had the lowest visit rate (9.2), followed by adults ages 40–59 (60.4) and adults age 60 and older (97.8).

Figure 1. Health center visit rates by adults with diabetes, by age group: United States, 2024



* Statistically significant increasing trend by increasing age ($p < 0.05$).

NOTES: In 2024, there were 1,023,200 visits made by adults age 18 and older with a diagnosis of type 2 diabetes (referred to as diabetes), representing an estimate of 13.8 million visits (13.8% of the visits by adults). Visit rates are based on a set of estimates of the U.S. civilian noninstitutionalized population, as developed by the U.S. Census Bureau, and reflect the population as of July 1, 2024.

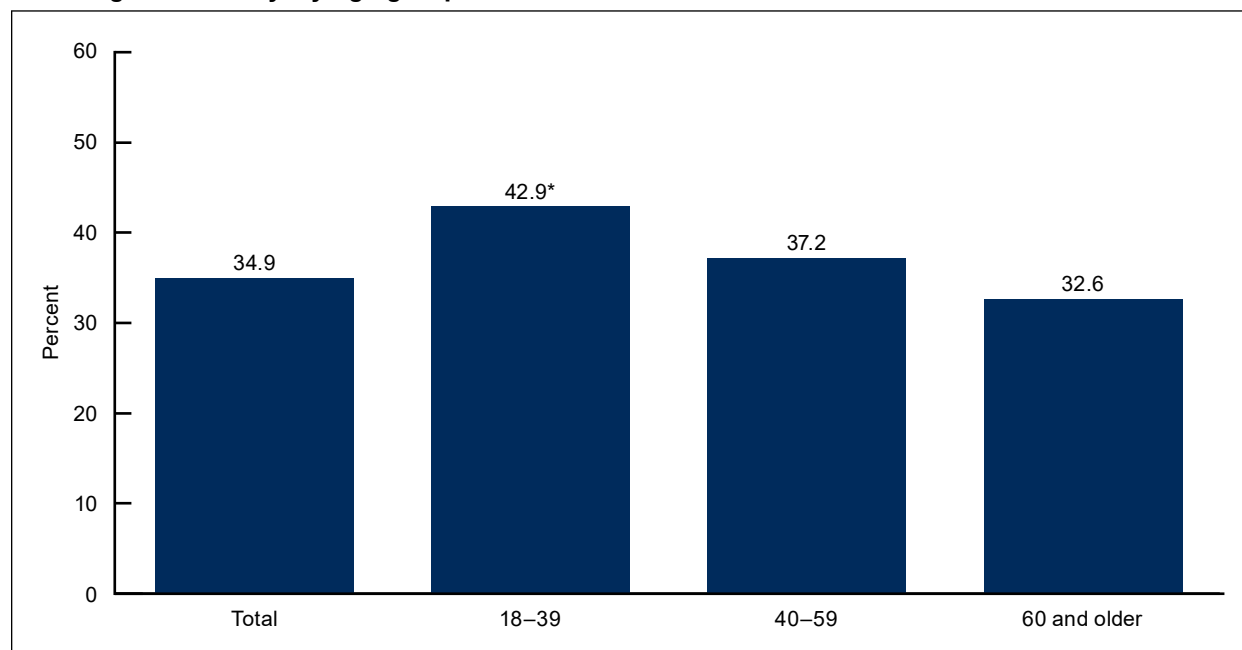
SOURCE: National Center for Health Statistics, National Ambulatory Medical Care Survey Health Center Component, 2024.

Codiagnosis of overweight or obesity

- Among health center visits by adults with diabetes, an estimated 34.9% also included documentation in the electronic health record (EHR) of a codiagnosis of overweight or obesity (Figure 2, Table 2).

- The percentage of visits by adults with diabetes that had a codiagnosis of overweight or obesity decreased by age, from 42.9% among adults ages 18–39 to 32.6% among adults age 60 and older.

Figure 2. Percentage of health center visits by adults with diabetes with a codiagnosis of overweight or obesity, by age group: United States, 2024



* Statistically significant decreasing trend by increasing age ($p < 0.05$).

NOTES: In 2024, there were 1,023,200 visits made by adults age 18 and older with a diagnosis of type 2 diabetes (referred to as diabetes), representing an estimate of 13.8 million visits (13.8% of the visits by adults).

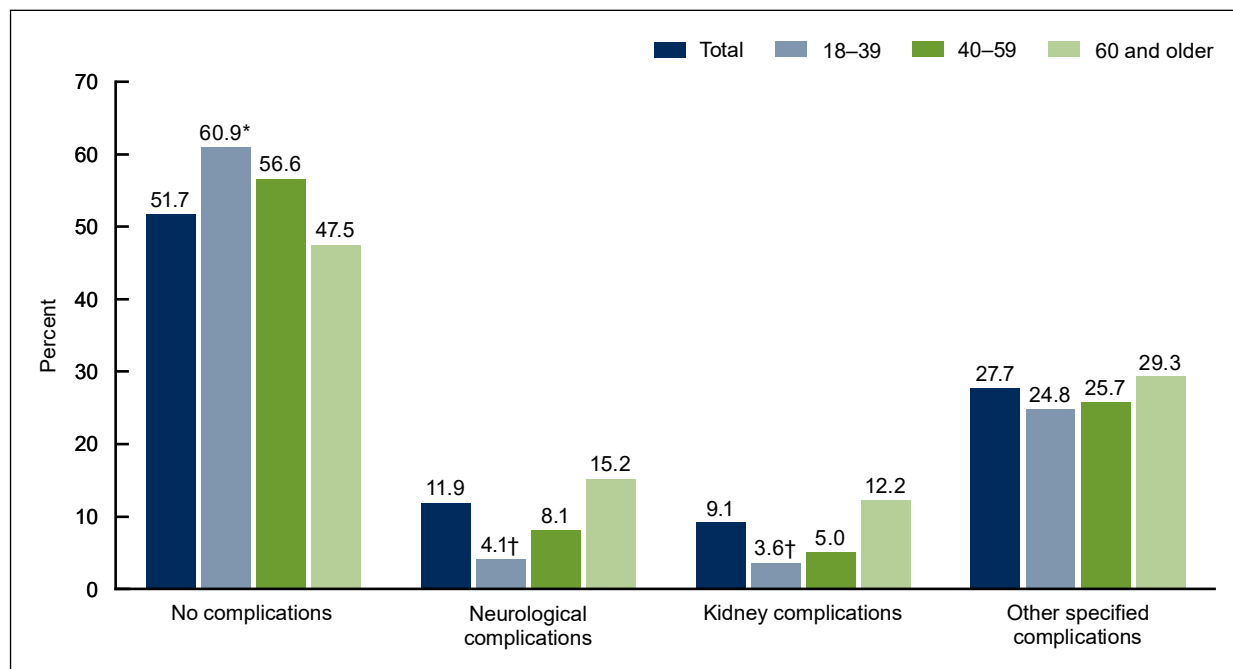
SOURCE: National Center for Health Statistics, National Ambulatory Medical Care Survey Health Center Component, 2024.

Diabetes-related complications

- Among health center visits by adults with diabetes in 2024, 51.7% did not have any diabetes-related complications, 11.9% had neurological complications, 9.1% had kidney complications, and 27.7% had other specified complications, which include arthropathic (joint), skin, oral, hypoglycemic (low blood sugar), or hyperglycemic (high blood sugar) complications ([Figure 3](#), [Table 3](#)).
- The percentage of visits without complications decreased by age, from 60.9% among adults ages 18–39 to 47.5% among adults age 60 and older.
- The percentage of visits with neurological complications increased by age, from 4.1% among adults ages 18–39 to 15.2% among adults age 60 and older. Similarly, the

percentage of visits with kidney complications also increased by age, from 3.6% among adults ages 18–39 to 12.2% among adults age 60 and older.

Figure 3. Percentage of health center visits by adults with diabetes, by complication and age group: United States, 2024



* Statistically significant decreasing trend by increasing age ($p < 0.05$).

† Statistically significant increasing trend by increasing age ($p < 0.05$).

NOTES: Other specified complications includes arthropathy (joint), skin, oral, hypoglycemic (low blood sugar), and hyperglycemic (high blood sugar) complications. Unspecified complications represented 8.1% of the visits by adults with diabetes and estimates are not shown. In 2024, there were 1,023,200 visits made by adults age 18 and older with a diagnosis of type 2 diabetes (referred to as diabetes), representing an estimate of 13.8 million visits (13.8% of the visits by adults). Column totals exceed 100% because more than one *International Classification of Diseases, Clinical Modification* (ICD–10–CM) code can be reported per visit.

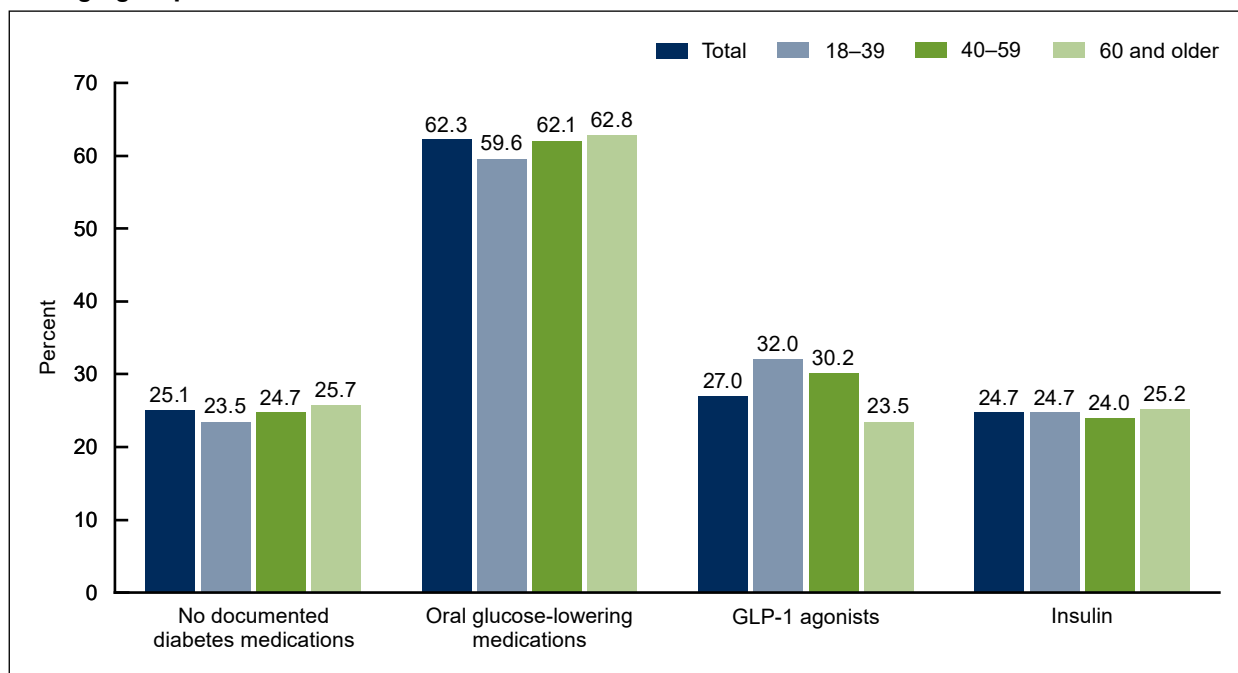
SOURCE: National Center for Health Statistics, National Ambulatory Medical Care Survey Health Center Component, 2024.

Documented prescriptions

- In 2024, no prescriptions for diabetes medications, including oral glucose-lowering medications, GLP-1 agonists, or insulin, were documented in the EHR for 25.1% of visits by adults with diabetes (Figure 4, Table 4).
- A prescription for oral glucose-lowering medications was documented in the EHR for 62.3% of visits by adults with diabetes. The percentages of visits with prescriptions for oral glucose-lowering medications did not vary significantly by age.
- A prescription for a GLP-1 agonist was documented in the EHR for 27.0% of the visits. A prescription for insulin was documented in the EHR for 24.7% of visits, and the

percentages of visits with prescriptions for a GLP-1 agonist or insulin documented in the EHR did not vary significantly by age.

Figure 4. Percentage of health center visits by adults with diabetes, by documented prescription and age group: United States, 2024



NOTES: In 2024, there were 1,023,200 visits made by adults age 18 and older with a diagnosis of type 2 diabetes (referred to as diabetes), representing an estimate of 13.8 million visits (13.8% of the visits by adults). For this figure, health centers at which all medications were missing for all visits ($n = 22$) were excluded, and visit weights for the remaining health centers were normalized to account for those excluded, representing about 11.0 million visits to health centers (11% of visits by adults). Column totals for oral medications, GLP-1 agonist, and insulin exceed 100% because more than one prescription can be reported per visit.
SOURCE: National Center for Health Statistics, National Ambulatory Medical Care Survey Health Center Component, 2024.

Summary

This report presents nationally representative estimates of health center visits by adults with diabetes. The overall visit rate was 52.7 visits per 1,000 adults, and rates increased with age. Over 40% of visits by adults ages 18–39 had a codiagnosis of overweight or obesity (42.9%). Slightly over one-half of all diabetes visits by adults had no diabetes-related complications (51.7%). At a majority of visits (62.3%), a prescription for an oral glucose-lowering medication was documented in the EHR. A prescription for a GLP-1 agonist was documented at 27.0% of visits, and a prescription for insulin was documented at 24.7% visits.

Definitions

Visits by adults with diabetes: Visits with documentation in the electronic health record (EHR) of diagnosed type 2 diabetes. Diabetes visits were identified as any visit with an *International Classification of Diseases, 10th Revision, Clinical Modification* (ICD–10–CM) code of E11.

Visits by adults with diabetes with a codiagnosis of overweight or obesity: Visits with documentation in the EHR of diagnosed type 2 diabetes and overweight or obesity. These visits were identified as any visit with an ICD–10–CM code of E11 (type 2 diabetes) and at least one of the following codes for overweight or obesity: E66 Overweight and obesity, Z68.25 Body mass index (BMI) 25.0–25.9, adult; Z68.26 BMI 26.0–26.9, adult; Z68.27 BMI 27.0–27.9, adult; Z68.28 BMI 28.0–28.9, adult; Z68.29 BMI 29.0–29.9, adult; Z68.3 BMI 30–39, adult; or Z68.4 BMI 40 or more, adult.

Diabetes complications: Visits with no complications are defined as visits with documentation in the EHR of type 2 diabetes mellitus without complications (ICD–10–CM code E11.9) and no codes from any complication category, including complication categories not shown. Visits with other specified complications are defined as visits with documentation in the EHR of type 2 diabetes mellitus with other specified complications (E11.6), visits with kidney complications as visits with documentation in the EHR of type 2 diabetes mellitus with kidney complications (E11.2), and visits with neurological complications as visits with documentation in the EHR of type 2 diabetes mellitus with neurological complications (E11.4). Visits with type 2 diabetes mellitus with hyperosmolarity (E11.0) represent 0.2% of the visits and are not shown in Figure 3. Estimates for visits with type 2 diabetes mellitus with ketoacidosis (E11.1), circulatory complications (E11.5), and ophthalmic complications (E11.3) did not meet National Center for Health Statistics (NCHS) standards of reliability (9) and are not shown in Figure 3. However, they were included as complications when defining visits with no complications.

Diabetes medications: Oral glucose-lowering medications, GLP-1 agonists, and insulin were identified using RxNorm concept codes with an “active” or “completed” label in the EHR at each visit. Oral glucose-lowering medications included meglitinides, alpha-glucosidase inhibitors, thiazolidinediones, DPP-4 inhibitors, sulfonylureas, biguanides, dopamine receptor agonists, bile acid sequestrants, SGLT2 inhibitors, or combinations of these medications. GLP-1 agonists include lixisenatide, exenatide, semaglutide, albiglutide, dulaglutide, tirzepatide, and liraglutide (7). All insulin formulations were included in the category “insulin.” Medications were documented in EHR data using two different coding systems: RxNorm and National Drug Code (NDC). Applying natural language processing techniques, missing medication codes and medications coded in NDC were repopulated by matching the medication name when available, without dosage and route, with a standardized RxNorm code. This process impacted 4.9% of all medication records and resulted in an updated list of RxNorm medications. In this report, only the updated list of RxNorm codes was used to identify diabetes medications. More information is detailed elsewhere (6). Categories are not mutually exclusive, so the same visit may contain documentation of more than one prescription.

Health center: Local, community-based clinics that provide care to those who often encounter issues accessing health care. They treat people’s medical, dental, mental health, substance use, and other health care needs. Staff include doctors, dentists, therapists, social workers, eye doctors, obstetricians/gynecologists, pediatricians, case managers, and other medical staff (5). Both Federally Qualified Health Centers, which receive funding from the Health Resources and Services Administration (HRSA), and health center program look-alikes, which met qualifications but did not receive program funding from HRSA (5), were included in the sample.

Visit rates: Calculated by dividing the estimates of visits by the U.S. civilian noninstitutionalized population (8) in the corresponding age group.

Data source and methods

Data for this report are from the 2024 NAMCS HC Component. Out of 384 health centers, 107 submitted data on 10,075,943 visits from January 1 to December 31, 2024, for an unweighted response rate of 27.9% and a weighted response rate of 24.7%. Weighting was conducted to account for sampling probabilities and nonresponse, resulting in nationally representative estimates of health center visits to all 50 states and the District of Columbia. Participating health centers submitted data for all visits that occurred in 2024 (6). ICD–10–CM diagnosis codes were used to define diabetes, overweight or obesity, and diabetes complications. Categories are not mutually exclusive, so the same visit may contain documentation in the EHR of more than one complication. Analyses for this report were conducted using data from the NAMCS HC Component restricted-use data file. A [public-use version of this file](#) that does not include mediation data is available. Count estimates and measures of variance may differ between the restricted-use and public-use files. [Information on accessing the restricted-use data file](#) is available.

Data analyses were performed using the statistical packages SAS version 9.4 (SAS Institute, Cary, N.C.) and SAS-callable SUDAAN version 11.0 (RTI International, Research Triangle Park, N.C.). Two-tailed t tests with a significance level of $p < 0.05$ were used to determine statistically significant differences. Linear trends by age group were evaluated using orthogonal polynomials in logistic regression. For the medication variable, in certain instances these data were missing from all visits submitted by some of the participating health centers. In these instances, health centers with complete missingness for variables of interest were excluded from analysis, and the visit weights were normalized to account for their exclusion (6). All estimates were assessed for reliability using NCHS data presentation standards for proportions and rates (9,10).

About the authors

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Figure tables

Data table for Figure 1. Health center visit rates by adults with diabetes, by age group: United States, 2024

Age group	Number of visits per 1,000 adults	95% confidence interval
Total	52.7	29.4–94.3
18–39	9.2*	6.1–13.7
40–59	60.4	39.2–93.0
60 and older	97.8	48.4–197.8

* Statistically significant increasing trend by increasing age ($p < 0.05$).
NOTES: In 2024, there were 1,023,200 visits made by adults age 18 and older with a diagnosis of type 2 diabetes (referred to as diabetes), representing an estimate of 13.8 million visits (13.8% of the visits by adults). Visit rates are based on estimates of the U.S. civilian noninstitutionalized population, as developed by the U.S. Census Bureau, and reflect the population as of July 1, 2024.
SOURCE: National Center for Health Statistics, National Ambulatory Medical Care Survey Health Center Component, 2024.

Data table for Figure 2. Percentage of health center visits by adults with diabetes with a codiagnosis of overweight or obesity, by age group: United States, 2024

Age group	Percent	95% confidence interval
Total	34.9	29.2–41.0
18–39	42.9*	37.8–48.2
40–59	37.2	31.3–43.4
60 and older	32.6	27.0–38.5

* Statistically significant increasing trend by increasing age ($p < 0.05$).
NOTES: In 2024, there were 1,023,200 visits made by adults age 18 and older with a diagnosis of type 2 diabetes (referred to as diabetes), representing an estimate of 13.8 million visits (13.8% of the visits by adults).
SOURCE: National Center for Health Statistics, National Ambulatory Medical Care Survey Health Center Component, 2024.

Data table for Figure 3. Percentage of health center visits by adults with diabetes, by complication and age group: United States, 2024

Diabetes-related complication	Percent	95% confidence interval
No complications		
Total	51.7	44.5–58.8
18–39	60.9*	58.0–63.7
40–59	56.6	52.9–60.2
60 and older	47.5	38.1–57.1
Neurological complications		
Total	11.9	8.0–16.9
18–39	4.1†	3.2–5.3
40–59	8.1	6.7–9.6
60 and older	15.2	9.8–22.2
Kidney complications		
Total	9.1	5.1–14.5
18–39	3.6†	2.1–5.7
40–59	5.0	3.3–7.3
60 and older	12.2	7.2–19.0
Other specified complications		
Total	27.7	21.8–34.1
18–39	24.8	21.1–28.8
40–59	25.7	22.0–29.7
60 and older	29.3	21.4–38.2

* Statistically significant increasing trend by increasing age ($p < 0.05$).
† Statistically significant increasing trend by increasing age ($p < 0.05$).
NOTES: Other specified complications includes arthropathy (joint), skin, oral, hypoglycemic (low blood sugar), and hyperglycemic (high blood sugar) complications. Unspecified complications represented 8.1% of the visits by adults with diabetes and estimates are not shown. In 2024, there were 1,023,200 visits made by adults age 18 and older with a diagnosis of type 2 diabetes (referred to as diabetes), representing an estimate of 13.8 million visits (13.8% of the visits by adults). Column totals exceed 100% because more than one *International Classification of Diseases, Clinical Modification* (ICD–10–CM) code can be reported per visit.
SOURCE: National Center for Health Statistics, National Ambulatory Medical Care Survey Health Center Component, 2024.

Data table for Figure 4. Percentage of health center visits by adults with diabetes, by documented prescription and age group: United States, 2024

Prescription	Percent	95% confidence interval
No documented diabetes medications		
Total	25.1	17.7–33.8
18–39	23.5	14.7–34.4
40–59	24.7	16.5–34.4
60 and older	25.7	19.1–33.3
Oral glucose-lowering medications		
Total	62.3	54.4–69.7
18–39	59.6	50.8–68.0
40–59	62.1	53.4–70.3
60 and older	62.8	55.7–69.5
GLP-1 agonists		
Total	27.0	23.2–31.0
18–39	32.0	26.8–37.6
40–59	30.2	25.4–35.4
60 and older	23.5	20.5–26.7
Insulin		
Total	24.7	21.7–27.8
18–39	24.7	20.4–29.3
40–59	24.0	20.8–27.4
60 and older	25.2	22.6–27.9

NOTES: In 2024, there were 1,023,200 visits made by adults age 18 and older with a diagnosis of type 2 diabetes (referred to as diabetes), representing an estimate of 13.8 million visits (13.8% of the visits by adults). For this figure, health centers at which all medications were missing for all visits ($n = 22$) were excluded, and visit weights for the remaining health centers were normalized to account for those excluded, representing about 11.0 million visits to health centers (11% of visits by adults). Column totals for oral medications, GLP-1 agonist, and insulin exceed 100% because more than one prescription can be reported per visit.

SOURCE: National Center for Health Statistics, National Ambulatory Medical Care Survey Health Center Component, 2024.

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