



# Association Between Income Category and the Number of Diabetes-related Visitations to a Healthcare Professional in the Past 12 Months Among Diabetic U.S. Adults

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## Objective

This study examines the association between a diabetic individual's income category and the number of times they visited a healthcare professional in the past 12 months for their diabetes using logistic regression from 2020 BRFSS data.

## Background

- In 2022, 130 million Americans are living with diabetes.
- Economic status is correlated with diabetes; those who have lower economic status tend to have less health-related education and are more likely to perform higher risk behaviors.
- Low economic status is also correlated with less access to care and avoidance from seeing a physician due to costs.

## Methods

- **Data:** 2020 Behavioral Risk Factor Surveillance System.
- **Analytic Sample:** Those who had valid observations for the exposure and outcome were included in the analytic sample (n=10,051).
- **Exposure:** Income category.
- **Outcome:** The number of times the individual visited a healthcare professional in the past 12 months for their diabetes.
- **Statistical Analysis:** Logistic regression analysis was performed while accounting for weighting and complex survey design.
- **Covariates:** Has a healthcare plan.

**Table 1: Characteristics of U.S Adults Diagnosed with Diabetes by income-level, BRFSS 2020.**

	Less than \$14,999	\$15,000-\$24,999	\$25,000-\$34,999	\$35,000-\$49,999	\$50,000+
	n=1581	n=2359	n=1242	n=1449	n=3420
<b>Number of Times a Healthcare Professional was Visited for Diabetes in the Past 12 Months</b>					
0 visits	207 (11%)	241 (17%)	145 (11%)	186 (14%)	357 (11%)
Less than Recommended (1-3 visits)	671 (41%)	1161 (44%)	676 (55%)	808 (54%)	2053 (58%)
Recommended (4-6 visits)	531 (39%)	767 (32%)	349 (27%)	402 (28%)	905 (28%)
More than Recommended (7+ visits)	172 (8.8 %)	190 (7.2%)	72 (6.6%)	53 (4.5%)	105 (3.5%)
<b>Demographics</b>					
<b>Sex</b>					
Male	561 (38%)	893 (42%)	573 (49%)	696 (49%)	2011 (62%)
Female	1020 (62%)	1466 (58%)	669 (51%)	753 (51%)	1409 (38%)
<b>Education Level</b>					
None	7 (.39%)	2 (.16%)	2 (.47%)	0	2 (.15%)
Elementary	164 (16%)	117 (14%)	33 (5.2%)	21 (1.3%)	18 (.72%)
Some High School	281 (30%)	265 (18%)	69 (9.4%)	51 (5.7%)	53 (3.1%)
High School Graduate	593 (30%)	937 (33%)	446 (38%)	445 (31%)	678 (25%)
Some College or Technical School	394 (18%)	679 (26%)	409 (33%)	474 (43%)	999 (35%)
College Graduate	140 (5%)	352 (8.7%)	282 (14%)	458 (19%)	1667 (36%)

**Table 2: Unadjusted and Adjusted Odds Ratios of Recommended Diabetes-Related Physician Visits in the Past 12 Months Among U.S. Adults with Diabetes, BRFSS 2020.**

	Odds Ratio	95% CI	Adjusted Odds Ratio	95% CI
<b>Income</b>				
Less than \$15,000	2.02	(1.54, 2.66)	2.06	(1.56, 2.72)
\$15,000 - \$24,999	1.45	(1.13, 1.87)	1.48	(1.15, 1.92)
\$25,000 - \$34,999	1.13	(.86, 1.48)	1.14	(.87, 1.51)
\$35,000- \$49,999	1.06	(.79, 1.4)	1.07	(.80, 1.46)
\$50,000+	1.00 (Ref)	-	1.00 (Ref)	-
<b>Sex</b>				
Male	.88	(.73, 1.05)	.88	(.73, 1.05)
Female	1.00 (Ref)	-	1.00 (Ref)	-
<b>Education Level</b>				
Less than High School Degree	1.35	(1.00, 1.82)	1.37	(1.01, 1.85)
High School Graduate	1.00 (Ref)	-	1.00 (Ref)	-

## Results

- Table 1 shows that as income increases, the percent of diabetic individuals completing the less than recommended number of appointments increases. Additionally, as income increases, the percent of individual completing the recommended and more than recommended number of appointments decreases.
- Table 2 shows that, in the analytic sample, adjusting for access to a healthcare plan as a confounder, those with an income of less than \$15,000 had 2.06 (95% CI: 1.56, 2.72) the odds of completing the recommended number of diabetes-related appointments in a year compared to those with an income of \$50,000+. As the income category approaches \$50,000+, the odds of completing the recommended number of diabetes-related physician visits decreases.

## Discussion

- **Conclusion:** The results from this study demonstrate that there is a significant association between having a lower income and completing the recommended number of diabetes-related physician visits in the past 12 months. Regardless of low economic status being a barrier to healthcare access, among those with diabetes, those with low income are more likely to have adverse outcomes and comorbidities that require them to see their doctor more often.
- **Study Limitations:** Diabetic individuals may not have correctly reported the number of times they visited a physician in the past 12 months for their diabetes due to a recall bias. Due to this, there may be a distortion in the relationship between our exposure and outcome.
- **Research Implications:** Although health care access is still a problem, this study demonstrates that those with lower incomes are still going to the physician for their diabetes at a higher rate than those with higher economic status. This may mean that they are facing more complications with their diabetes due to their economic status, and the ways to mitigate those complications should be studied next.