Factors impacting the use of telehealth for Medicare and Medicaid members in 2020-2024

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Data Analytics 401

Introduction

Research Aim:

- Understand the factors impacting the use of telehealth visits for Medicare and Medicaid members

Dataset:

- Medicare Telehealth Trends dataset (Centers for Medicare & Medicaid Services)
- US Census Bureau
- Transit Report Card from Transportation for America

Fixed Effect Analysis:

- Assesses the relationship between the variables and the number of telehealth visits (per capita).
- Controls for state and year.

Implications:

- Results explore potential socioeconomic barriers to telehealth access
- Increasing the use of telehealth services for populations who are lacking vs accessing eligible services.
- Support targeted interventions to improve equitable access to care.

Methods

Fixed effect model

- Control for time invariant variables (state and year)

Factors in the fixed effect model:

1. The Number of Vehicles Owned
2. Transit Spending Per Capita
3. Having Internet Access
4. Number of Hospitals
5. Number of Physicians
6. Poverty Level

Evaluate the fit of the model:

- R^2 represents how well the model explains variation in number of telehealth visits for each fixed-effect group.

Variance Inflation Factor (VIF):

- Test for multicollinearity
- When independent variables are highly correlated
- If so, variables could be capturing overlapping aspects of economic status.

Figure 1: Telehealth Visits by Year

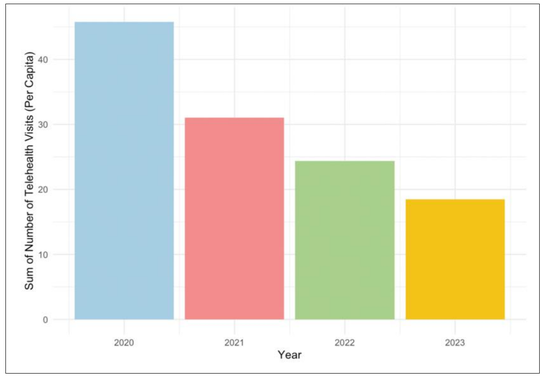

Figure 2: Eligible Services (With Potential for Telehealth Use) by Year

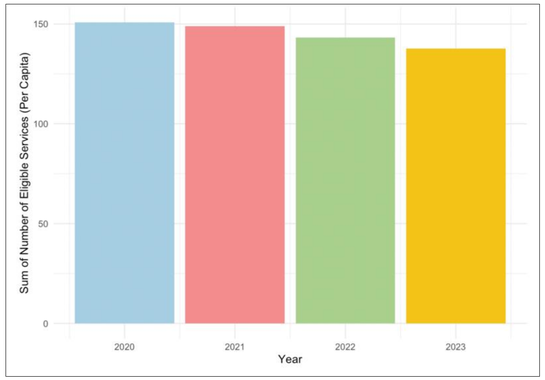

Figure 3: Telehealth Visits by Enrollment Status

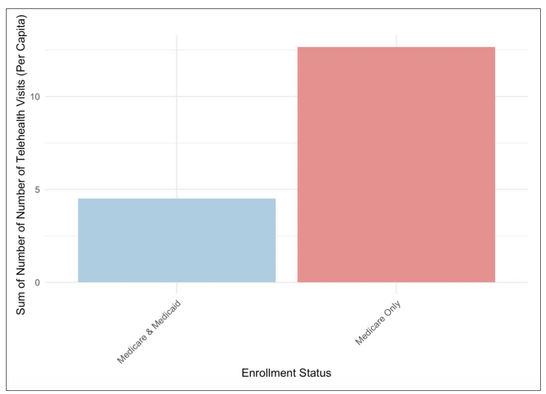

Table 1: State and Year Fixed Effects on Various Factors impacting the Number of Telehealth Visits (Per Capita)

Variable	No Fixed Effect	State Fixed Effect	State and Year Fixed Effect
Vehicles Owned	0.066**	0.121***	0.122***
	(0.009)	(0.021)	(0.021)
Transit Spending Per Capita	0.000***	0.005***	0.005***
	(0.000)	(0.001)	(0.001)
With Internet	-0.076***	-0.108***	-0.103***
	(0.009)	(0.013)	(0.014)
Number of Hospitals	-45.313***	-1670.351***	-1657.032***
	(5.089)	(323.434)	(323.677)
Number of Physicians	2.211***	92.439***	93.079***
	(0.213)	(14.899)	(14.912)
Percent Below Poverty Level	-0.025***	-0.022	-0.021
	(0.003)	(0.015)	(0.015)
Num.Obs.	19330	19330	19330
State Fixed Effects	No	Yes	Yes
Year Fixed Effects	No	No	Yes
R^2	0.092	0.139	0.139

Note: Statistical significance for coefficients is shown by *p < 0:10 **p < 0:05 ***p < 0:01 ****p < 0:001. Standard Errors are included in parenthesis.

Results

R^2

- No fixed effect $R^2 = 0.092$. (Number of telehealth visits is explained little by the variables)
- With fixed effect $R^2 = 0.139$ (Explains more of the variation)

Vehicles Owned

- Higher number of vehicles owned is associated with more telehealth visits.
- Likely better financial status and accessibility to resources.

Transit Spending

- Higher amount spent on transit is associated with slightly more telehealth visits.
- Urban areas have higher access to broad band internet vs rural areas (Ching-Ching, 2018).

Internet access

- Surprisingly, more internet is associated with fewer telehealth visits.
- Widespread internet, 95% of U.S. households have at least one type of computer (Liu, 2024).

Number of Hospitals and Number of Providers

1. More hospitals is associated with less telehealth which could be because of more in person availability. These have potential to be done with telehealth (Ashwood, 2017).
2. More providers means there are more appointment available, including telehealth.

Percent below poverty level

- Higher poverty is associated with fewer telehealth visits

Table 2: Variance Inflation Factors (VIF)

Variable	VIF
Vehicles Owned	7.70
With Internet	6.55
Number of Physicians	2.09
Hospitals Count	1.75
Transit Spending Per Capita	1.69
Percent Below Poverty Level	1.66

Results

- <5 suggests low multicollinearity
- Table 2 variables are mostly low so coefficients in the Fixed Effect are accurate and reliable.

Discussion

- Eligible services are missing potential for increase access with the use of telehealth
- Several key factors influencing telehealth usage have been identified in the fixed effect model
- The use of telehealth by Medicare and Medicaid members is affected by more than just whether internet is available
- There are many factors which could be used to represent economic status, technology access and appointment access
- Medicare and Medicaid members in this study is used to represent a population who is facing more barriers.
- Further research should be done on populations included other levels of insurance coverage.

Works Cited

Ashwood, J. and Mehrotra, Ateev and Cowling, David and Uscher-Pines, Lori. (2017). Direct-to-consumer telehealth may increase access to care but does not decrease spending. Health Affairs, 36(2)https://doi.org/10.1377/hlthaff.2016.1130

CMS Program Statistics - OEDA (2025). Medicare Telehealth Trends. [Data set]. Centers for Medicare & Medicaid Services. https://catalog.data.gov/dataset/medicare-telemedicine-snapshot

Ching-Ching, Claire Lin et al.. (2018). Telehealth in health centers: Key adoption factors, barriers, and opportunities. Health Affairs, 37(12) https://doi.org/10.1377/hlthaff.2018.05125

Liu, L. (2024). *Computer and Internet Use in the United States 2021*. https://www.census.gov/newsroom/press-releases/2024/computer-internet-use-2021.html