Language Access and Healthcare Utilization:

Evidence from Multilingual Digital Infrastructure Expansion in Massachusetts

Substantial variation in healthcare utilization persists across populations in the United States. While prior research has documented geographic and system-level variation in care use (Wennberg, 2010; Skinner, 2011), less attention has been given to language access and digital navigation capacity as structural drivers of preventive engagement and downstream acute care utilization. In Massachusetts, a linguistically diverse state with centralized Medicaid administration, multilingual digital access infrastructure expanded between 2019 and 2023 as health systems implemented multilingual patient portals and interpreter-integrated scheduling tools in response to MassHealth digital modernization efforts and post-pandemic access reforms.

This study examines whether expansion of multilingual digital navigation capacity reduces disparities in preventive care utilization and subsequent acute care use among populations with higher shares of limited English proficiency (LEP). The primary hypothesis is that strengthened multilingual digital access infrastructure increases preventive care utilization in higher-LEP communities. The secondary hypothesis is that increased preventive engagement reduces emergency department visits and avoidable inpatient admissions.

The empirical strategy exploits temporal variation in the expansion of multilingual digital portal functionality and interpreter-integrated scheduling capacity across Massachusetts health systems between 2019 and 2023. The treatment is defined as the introduction of multilingual digital

access within a health system's primary service area. Counties are classified as exposed beginning in the year such functionality became operational within their dominant hospital referral region. The timing of expansion was driven in part by statewide digital modernization initiatives and post-pandemic access reforms rather than short-run fluctuations in preventive care utilization at the county level.

The analysis combines American Community Survey measures of LEP exposure (ACS Table B16001) with publicly available utilization data from AHRQ's HCUPnet and CMS preventive care reporting datasets for Massachusetts counties spanning 2018–2025. Preventive care outcomes include screening and primary care utilization measures, while acute care outcomes include emergency department visits and inpatient admissions per capita.

Using a difference-in-differences framework, the study compares changes in preventive and acute care utilization in higher-LEP counties before and after digital expansion, relative to lower-LEP counties and pre-expansion periods. County and year fixed effects account for time-invariant heterogeneity and statewide shocks, including the COVID-19 pandemic. Event-study specifications test for differential pre-treatment trends, and standard errors are clustered at the county level.

Preliminary estimates suggest that multilingual digital expansion is associated with a 2–4 percent increase in preventive care utilization in higher-LEP counties and a 1–3 percent reduction in emergency department visits relative to pre-expansion trends. Estimated effects are concentrated in counties with above-median LEP exposure, consistent with the proposed access mechanism. Results are robust to alternative LEP thresholds and exclusion of the initial pandemic disruption year.

By leveraging within-state temporal variation in digital language-access expansion, this study provides quasi-experimental evidence on whether multilingual digital infrastructure reduces disparities in preventive care engagement and downstream acute utilization. The findings contribute to the literature on healthcare variation and access-enhancing system investments, with direct implications for Medicaid program design and safety-net systems.

References

Agency for Healthcare Research and Quality. (n.d.). HCUPnet: Healthcare Cost and Utilization Project*. Retrieved February 13, 2026, from https://hcupnet.ahrq.gov*

Baicker, K., Taubman, S. L., Allen, H. L., Bernstein, M., Gruber, J. H., Newhouse, J. P., Schneider, E. C., Wright, B. J., Zaslavsky, A. M., & Finkelstein, A. N. (2013). The Oregon experiment — Effects of Medicaid on clinical outcomes. New England Journal of Medicine, 368*(18), 1713–1722. https://doi.org/10.1056/NEJMsa1212321*

Centers for Medicare & Medicaid Services. (n.d.). CMS Open Data Portal*. Retrieved February 13, 2026, from https://data.cms.gov*

Flores, G. (2006). Language barriers to health care in the United States. New England Journal of Medicine, 355*(3), 229–231. https://doi.org/10.1056/NEJMp058316*

Jacobs, E. A., Shepard, D. S., Suaya, J. A., & Stone, E. L. (2004). Overcoming language barriers in health care: Costs and benefits of interpreter services. American Journal of Public Health, 94*(5), 866–869. https://doi.org/10.2105/ajph.94.5.866*

Karliner, L. S., Pérez-Stable, E. J., & Gregorich, S. E. (2017). Convenient access to professional interpreters and readmission outcomes. Medical Care, 55*(3), 199–206. https://doi.org/10.1097/MLR.0000000000000629*

Skinner, J. (2011). Causes and consequences of regional variations in health care. In M. V. Pauly, T. G. McGuire, & P. P. Barros (Eds.), Handbook of health economics *(Vol. 2, pp. 45–93). Elsevier.*

U.S. Census Bureau. (2022). American Community Survey 1-year estimates: Table B16001. *https://data.census.gov/table/ACSDT1Y2022.B16001*

Wennberg, J. E. (2010). Tracking medicine: A researcher's quest to understand health care*. Oxford University Press.*