

Improving Health Literacy Could Prevent Nearly 1 Million Hospital Visits and Save Over \$25 Billion a Year: Methodology and Citations

Methodology

Data

All data used for this analysis are from publicly available sources, including: the 2014-2018 American Community Survey (ACS), the Robert Wood Johnson Foundation 2020 County Health Calculations, the 2018 Centers for Medicare & Medicaid Services Geographic Variation Public Use File, and 2019 Census Bureau Estimates. Analysis was conducted in Stata.

Estimates of Health Literacy by County

The RAND Corporation's model of predicted health literacy was used to estimate health literacy for all counties in the U.S. The model leverages survey data from the 2003 National Assessment of Adult Literacy – an in-person assessment of English language literacy among a nationally representative sample of U.S. adults age 18 and over – and ACS data to predict average health literacy and percent above basic health literacy for each county in the U.S.

For the purposes of this brief and analysis, all counties with a percent above basic health literacy value at the 80th percentile or higher were labeled as counties with the highest health literacy levels. All counties with a percent above basic health literacy value at the 20th percentile or lower were labeled as counties with the lowest health literacy levels.

Outcomes Analysis

A multivariable regression analysis was used to examine the relationship between county health literacy levels and Medicare Fee-For-Service (FFS) beneficiary outcomes.

The six outcomes included were:

- Flu vaccination rate
- Readmission rate
- Admissions for ambulatory-care sensitive conditions (i.e., preventable hospitalizations) per 100,000 Medicare beneficiaries
- ED visits per 1,000 Medicare beneficiaries
- Costs per capita of Medicare beneficiaries

To estimate the opportunity to improve outcomes for the Medicare FFS population by increasing county health literacy levels, all county percent above basic health literacy levels below the 80th percentile value were replaced with the 80th percentile value. Then, the coefficients from each outcome's model were used to estimate the expected value of each outcome for all counties originally below the 80th percentile threshold. The new predicted value was then subtracted from the original predicted value for each outcome. The calculated difference for each county was then multiplied by the number of Medicare FFS beneficiaries in each county and all county values were summed to get the aggregate.

To compare the outcomes of counties in the lowest quintile of percent above basic health literacy to the outcomes of counties in the highest quintile of percent above basic health literacy, the average of each outcome was computed for each quintile, and the difference was calculated.

Citations

- ¹ World Health Organization, "Health Literacy." www.who.int/healthpromotion/conferences/9gchp/health-literacy/en/
- ² National Academies, "Retooling for an Aging America: Building the Health Care Workforce," 2008. www.ncbi.nlm.nih.gov/books/NBK215400/
- ³ The RAND Corporation, "Multiple Chronic Conditions in the United States," 2017. www.fightchronicdisease.org/sites/default/files/TL221_final.pdf
- ⁴ National Center for Health Statistics, "Prescription Drug Use in the United States, 2015-2016," 2019. www.cdc.gov/nchs/products/databriefs/db334.htm
- ⁵ Office of Disease Prevention and Health Promotion, "Health Literacy." www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/health-literacy
- ⁶ The National Academies, "Health Literacy: A Prescription to End Confusion," 2004. www.nap.edu/download/10883
Gang Fang, Stacy Cooper Bailey, Izabela E. Annis, Michael K. Paasche-Orlow, Michael S. Wolf, Laurie T. Martin, Michael Emch, M. Alan Brookhart, and Karen B. Farris, "Effects of Estimated Community-Level Health Literacy on Treatment Initiation and Preventive Care Among Older Adults with Newly Diagnosed Diabetes," *Patient Preference and Adherence*, 2020. www.doi.org/10.2147/ppa.s211784
- ⁷ Laura L. Hall, Liou Xu, Salaheddin M. Mahmud, Gary A. Puckrein, Ed W. Thommes, and Ayman Chit, "A Map of Racial and Ethnic Disparities in Influenza Vaccine Uptake in the Medicare Fee-For-Service Program," *Advances in Therapy*, 2020. www.link.springer.com/article/10.1007/s12325-020-01324-y
- ⁸ Angela K. Shen, Rob Warnock, Stephaeno Brereton, Stephen McKean, Michael Wernecke, Steve Chu, and Jeffrey A. Kelman, "Influenza Vaccination Coverage Estimates in the Fee-For-Service Medicare Beneficiary Population 2006 – 2016: Using Population-Based Administrative Data to Support a Geographic Based Near Real-Time Tool," *Human Vaccines & Immunotherapeutics*, 2018. www.tandfonline.com/doi/full/10.1080/21645515.2018.1462067
- ⁹ The Centers for Disease Control and Prevention, "Flu & People 65 Years and Older," 2020. www.cdc.gov/flu/highrisk/65over.htm
- ¹⁰ The National Academies, "Best Care at Lower Cost: The Path to Continuously Learning Health Care in America," 2013. <https://www.nap.edu/download/13444>
- ¹¹ Centers for Medicare & Medicaid Services, "National Health Expenditures Fact Sheet," 2020. www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NHE-Fact-Sheet
- ¹² Agency for Healthcare Research and Quality (AHRQ), "Health Literacy Universal Precautions Toolkit," 2010. www.ahrq.gov/sites/default/files/wysiwyg/professionals/quality-patient-safety/quality-resources/tools/literacy-toolkit/healthliteracytoolkit.pdf
U.S. Department of Health and Human Services (DHHS), "National Action Plan to Improve Health Literacy," 2010. www.health.gov/sites/default/files/2019-09/Health_Literacy_Action_Plan.pdf
- ¹³ AHRQ, 2010.
DHHS, 2010.
- ¹⁴ AHRQ, 2010.
DHHS, 2010.
- ¹⁵ AHRQ, 2010.
DHHS, 2010.
- ¹⁶ AHRQ, 2010.
DHHS, 2010.
- ¹⁷ AHRQ, 2010.
- ¹⁸ AHRQ, 2010.

The brief is available at: www.uhg.com/health-literacy-research.