



Published in final edited form as:

Prev Med. 2022 June ; 159: 107042. doi:10.1016/j.yjmed.2022.107042.

Preventive care use among Hispanic adults with limited comfort speaking English: An analysis of the Medical Expenditure Panel Survey data

Ingrid J. Hall^{a,*}, Sun Hee Rim^a, Sabitha Dasari^b

^aDivision of Cancer Prevention and Control, Centers for Disease Control and Prevention, Atlanta, GA, USA

^bCyberData Technologies, Inc, Herndon, VA 20170, USA

Abstract

Language barriers have been associated with worse access to healthcare and poorer health outcomes. To assess differences in access to care and utilization of healthcare services between Hispanic adults and non-Hispanic white adults (NHW), we used the Medical Expenditure Panel Survey (2013–2016) to compare Hispanic adults who expressed limited comfort speaking in English (LCE) with Hispanic adults who were comfortable speaking in English (CE) and NHW adults. Hispanic adults with CE were less likely than NHW adults to have a usual source of care, use preventive services, including cervical cancer screening, and healthcare services. However, after adjustment breast and cervical cancer screening exceeded that of NHW adults. Hispanic adults with LCE fared substantially worse than their Hispanic counterparts with CE in having a usual source of care, use of preventive services, breast and colorectal cancer screening, and healthcare services. After adjustment, use of all cancer screening tests were similar. Eliminating disparities for Hispanic adults will require a multi-pronged approach to address access to healthcare and other social determinants of health, including poverty, employment discrimination, and educational inequities. The public health community can help improve health literacy, address barriers to care, and provide appropriate language assistance at point of care using culturally-competent means to promote greater utilization of preventive services, including demand for and delivery of cancer screenings.

*Corresponding author at: Division of Cancer Prevention and Control, Centers for Disease Control and Prevention, 4770 Buford Hwy, MSS107-4, Chamblee, GA 30341, USA., iah9@cdc.gov (I.J. Hall).

CRedit authorship contribution statement

Ingrid J. Hall: Conceptualization, Writing – original draft, Writing – review & editing. **Sun Hee Rim:** Conceptualization, Methodology, Writing – review & editing, Visualization, Supervision. **Sabitha Dasari:** Methodology, Formal analysis, Data curation, Writing – review & editing, Visualization.

Author statement

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Declaration of interests

The authors, Ingrid Hall, Sun Hee Rim, and Sabitha Dasari, have no financial interests or personal relationships to declare.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.yjmed.2022.107042>.

Keywords

Access to care; Hispanics; Preventive care; Healthcare utilization; cancer screening; Mammography; Colorectal screening; Pap test; Limited comfort speaking English; LEP; English proficiency

1. Introduction

People of Hispanic ethnicity are the largest (18.7%) minority in the United States, with a population of 62 million in 2020. (U.S. Census Bureau. Race and Ethnicity in the United States, 2010) The Hispanic population is projected to approach 111 million by 2060 (Vespa et al., 2020). Hispanic ethnicity is defined as a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish origin, regardless of race (Office of Management and Budget, 1997). The health and socioeconomic status of Hispanic persons in the U.S. vary widely (Held et al., 2018; Garcia et al., 2018; Stern et al., 2016; Fox et al., 2018).

Nearly 30% of U.S. Hispanics aged 5 years speak English less than “very well” and may have limited English proficiency (LEP) (U.S. Census Bureau, 2020). In 2020, 26% of Hispanics reported speaking English “not well” or “not at all” (Collage Group, 2020) and are considered to have limited comfort speaking English (LCE). Language proficiency affects employability and income level and, by extension, participation in the healthcare system (Statistica, Hispanics in the United States – Statistics and Facts, 2021).

Persons with LEP may experience difficulty reading, writing, speaking, and understanding spoken English, which can create significant challenges in accessing needed healthcare. Language barriers influence the number of physicians visits in a year (Derose and Baker, 2000), access to preventive services, including cancer screening (Diaz et al., 2013; De Alba, 2004), and are associated with unmet need and poorer understanding, satisfaction with care, and health outcomes (Garcia et al., 2020; Berdahl and Kirby, 2019; Gunn et al., 2019; Calo et al., 2015; Johnson-Kozlow et al., 2009).

Breast, cervical, and colorectal cancers cause significant health burdens in the U.S. (U.S. Cancer Statistics Working Group, 2021) Screening effectively detects cancer at earlier stages, allowing for timely treatment and improved outcomes (PDQ® Screening and Prevention Editorial Board, 2020), and is particularly important for Hispanic adults who, as a group, often have underlying contributing risk factors such as lack of insurance and high prevalence of comorbidities (Miller et al., 2018). However Hispanics are less likely to receive timely screening (Ahmed et al., 2017; Hall et al., 2018; Sauer et al., 2019), with even lower screening prevalence reported among recent immigrants or those less acculturated or showing less adaptation (Diaz et al., 2013; Johnson-Kozlow et al., 2009; Hall et al., 2018; Jacobs et al., 2005).

This analysis explores the association between Hispanic ethnicity and not being comfortable speaking English and access to healthcare services, particularly on the receipt of cancer screening. We compare Hispanic adults with LCE to Hispanic adults who expressed comfort

speaking English (CE), the group most culturally similar to them. We also compare both Hispanic groups to a referent group of non-Hispanic White adults (NHW) with CE.

2. Methods

We used data from the 2013–2016 Household Component of the Medical Expenditure Panel Survey (MEPS-HC), a survey conducted by the Agency for Healthcare Research and Quality that collects nationally representative data on the healthcare use, expenditures, source of payments, insurance coverage, and the quality of care for the U.S. civilian, non-institutionalized population (Agency for Health Care Research and Quality, 2019). Respondents self-identified Hispanic ethnicity. Respondents who identified as not Hispanic and also identified as White were classified as NHW.

During 2013, MEPS-HC introduced and adopted the U.S. Census question for measuring English proficiency: How well do you speak English (very well, well, not well, not at all) among those whose families primarily spoke a language other than English at home. We pooled data from 2013 to 2016 and defined the group confronting language barriers as those individuals who indicated “I speak English not well” or “not at all.” Only individuals who responded to the new 2013 variable were included in our pooled analysis. We characterized respondents as LCE to distinguish them from the most commonly used definition of people with LEP, that is, anyone who speaks English less than “very well.” The population with LCE is smaller with poorer English skills than people termed as having LEP, as other studies and U.S. Census report (Migration Policy Institute, 2015). We designated respondents who reported speaking English “well” or “very well” as having CE. Hispanic respondents ($n = 351$) with inapplicable, don’t know, refused, not ascertained, or missing values for variables included in the determination of language proficiency were excluded. We excluded $n = 947$ adults with LCE or missing data on English proficiency from the NHW group. Our final sample of Hispanics (both LCE and CE) and NHW was $N = 60,753$. More recent MEPS data (2017–2019) were not included because the specific variables required for analysis were either not available or were changed such that comparisons were incongruous to variables analyzed in this analysis.

We compared Hispanics expressing LCE with their Hispanic counterparts expressing CE and compared the latter with NHW. Weighted percentages and 95% confidence intervals were calculated for all variables by race/ethnicity and comfort speaking English. We examined the following demographics: age group (18–44, 45–64, 65–74, 75–84, 85+ years), sex (male, female), education (less than high school, high school graduate, some college, and college graduate or more), marital status (never married, married, divorced/widowed/separated), number of comorbidities (0,1,2, 3+), Body Mass Index (<18, 18–24.9, 25–29.9, 30), health status (excellent/very good/good, fair/poor), health insurance (private, public only, uninsured), employment status (full time or part time), family income (poor<100% federal poverty level (FPL), near poor and low income (100–200% FPL), middle and high income (>200% FPL)), born in the U.S. (yes/no), and length of years in the U.S. among those not born in the U.S. (<15 years, 15 years).

We analyzed population differences in the quality of primary care using the following measures: access to care (having a usual source of care; unable to get or delay getting any necessary medical care, dental care, or prescription medicine); preventive service receipt (i.e., blood pressure checked in prior 2 years, cholesterol checked in prior 2 years, influenza vaccination in the last year, routine check-up in the last year, dental check-up at least once in the past year). Using the most inclusive definitions of up-to-date screening (Han et al., 2015), we examined cancer screenings among age- and gender-eligible individuals: mammogram within 2 years for women aged 40–74 years; Pap test within 3 years for women aged 21–65 years; any colorectal cancer screening (fecal occult blood test [FOBT] within 1 year, sigmoidoscopy within 5 years, or colonoscopy within 10 years for adults aged 50–75 years) rather than combined modality testing. We also examined healthcare utilization for adults: ambulatory visits, emergency department visits, and in-patient hospital stays, dental visits, inability to or delay getting prescriptions filled.

All estimates were weighted to be nationally representative and were age-adjusted to the 2000 U.S. Census Bureau standard population by the direct method. The chi-square test and two sample *t*-tests were used to test for associations and compare for statistical differences in proportions between LCE Hispanics and CE Hispanics as well as CE Hispanics and NHW.

We conducted multivariable logistic regression models for each cancer screening outcome to estimate the adjusted proportions of screening among our subgroups, accounting for the varying prevalence of covariates across groups. After testing for multicollinearity, the models were adjusted for age, education, marital status, health insurance, time in the U.S., and data year. We assessed interactions between race/ethnicity (LCE Hispanic, CE Hispanic, NHW) and health insurance status and race/ethnicity and education by including the appropriate product term in the model. The effect was non-significant; we did not include interactions in the final model. Predictive margins and 95% confidence intervals were calculated for each screening outcome using the PREDMARG statement in SUDAAN. Analyses were conducted in SAS 9.4 and SAS-callable SUDAAN version 11 (SAS Institute, Cary, NC) to account for the MEPS complex survey design. The same methodology was used for each cancer screening outcome reported in the supplemental tables where estimates are shown for each covariate. Data were anonymized, pre-existing, and public; Institutional Review Board approval for this analysis was not applicable.

3. Results

3.1. Sample characteristics

Table 1 presents demographic characteristics of the study sample. The majority (79%) of our sample was aged <65 years, female (51%), and NHW (80%). Hispanic respondents identified as having heritage from Mexico (62%), Central or South America (16%), or Puerto Rico (9%) (data not shown), with higher proportions of Mexican/Mexican Americans and Central or South Americans among the Hispanic adults with LCE. Overall, Hispanic adults were considerably younger than NHW adults. Individuals aged 18–44 years accounted for nearly 48% of Hispanic adults with LCE, 67% of Hispanics with CE, and 41% of NHW adults.

Compared to NHW adults, Hispanic adults with CE were more likely to have less than high school education (21% vs 8%), have never been married (40% vs 23%), be uninsured (19% vs 6%), and have family income <100% FPL (14% vs 9%). Hispanics with CE were more likely to be employed than NHW (78% vs 69%) and more likely to report no comorbidities (56% vs 37%).

Hispanics with LCE experience greater disadvantage than Hispanics with CE and were more likely to: have less than high school education (66% vs 21%), be uninsured (44% vs 19%), unemployed (34% vs 22%), poor (27% vs 14%) and near poor (36% vs 22%), and be born outside the U.S. (96% vs 39%). They were also less likely to report having never been married (25% vs 40%), no chronic conditions (50% vs 56%) and more likely to be in fair or poor health (26% vs 13%).

3.2. Access to care and use of preventive services

Table 2 characterizes access to care, use of preventive services, and health care utilization among Hispanics with and without comfort speaking English and among NHW. Overall, NHW reported greater use of healthcare, followed by Hispanics with CE, with Hispanics who expressed LCE a distant third.

Compared to NHW, Hispanics with CE were less likely to have a usual source of care (78% vs 84%) and to receive the following preventive services: blood pressure check (90% vs 93%), flu vaccination (50% vs 56%), and dental check-up (55% vs 63%). Rates of mammography and colorectal screening were similar between the two groups while Hispanics with CE were more likely to have received a Pap test (80% vs 75%). After adjustment (Table 3), Hispanics with CE had significantly higher proportions of receipt of mammograms (71% vs 62%) and Pap tests (82% vs 73%) than NHW. For colorectal cancer screening, Hispanics with CE and NHW had similar proportions (56%) of up-to-date screening.

Hispanics with CE, compared to NHW, more often reported no use of services like ambulatory visits (24% vs 14%), dental visits (67% vs 51%), and prescription medicines (30% vs 20%) (Table 2). However, hospital utilization, emergency department and in-patient, were similar between Hispanics with CE and NHW as was reporting of delay in getting any necessary medical or dental care, or prescription medicine.

Hispanics with LCE were even less likely than Hispanics with CE to have a usual source of care (69% vs 78%) and receive preventive services: blood pressure check (85% vs 90%), cholesterol check (78% vs 80%), flu vaccine (45% vs 50%), routine check-up (67% vs 73%), and dental check-up (43% vs 55%) (Table 2). Hispanics with LCE were also less likely than Hispanics with CE to obtain a mammogram (65% vs 69%) or colorectal cancer screening (48% vs 68%).

Hispanics with LCE were more likely than Hispanics with CE to report no ambulatory visits (32% vs 24%), no dental visits (82% vs 67%), no emergency department visits (87% vs 82%) and no prescription medicines (36% vs 30%). Hispanics with LCE were less likely to report delays in getting necessary medical, dental care or prescription medicine (6% vs

9%) than Hispanics with CE. After adjustment, Hispanics with LCE had similar proportions of self-reported receipt of mammograms, Pap tests, and colorectal screening compared to Hispanics with CE (73% vs 71%, 84% vs 82%, and 53% vs 56%, respectively) (Table 3).

4. Discussion

Healthcare disparities between Hispanic adults and NHW adults are well-documented, with Hispanics consistently scoring worse in healthcare access and quality (Brach and Chevarley, 2008). We pooled 3.5 years of data from a nationally representative survey to assess whether Hispanics with LCE experience healthcare differently from Hispanics with CE, in terms of demographic and socioeconomic characteristics and access and utilization (Migration Policy Institute, 2015). Hispanics with LCE experience more disadvantage than their Hispanic counterparts in terms of education, employment, income, and health insurance, and these data suggest they are less likely to use healthcare services than Hispanics with CE.

Reports of disparities in hypertension, cholesterol, flu shots, and check-ups for Hispanics with LEP can be found in published literature (Eamranond et al., 2007; Kenik et al., 2014; Haviland et al., 2011; Pearson et al., 2008). We add to this body of work and specifically explore the use of preventive services, including cancer screening. While some previous work documented that Hispanics were less likely to be screened for colorectal cancer (Hall et al., 2018), particularly among those with LEP (Diaz et al., 2013; Johnson-Kozlow et al., 2009), our results showed Hispanics, with LCE or CE, were equally likely to receive colorectal screening as NHW, after adjustment. We also found that after adjustment, Hispanics with LCE as well as those with CE were more likely to receive a mammogram or Pap test than NHW. The latter results are consistent with other work, such as Hall and colleagues (2018), who reported higher breast cancer screening prevalence (79% vs 70%) among Hispanic women compared to NHW women and higher (84% vs 80%) cervical screening in National Health Interview Survey data (Hall et al., 2018). Similarly, using community health center data from a single state, Heintzman et al., (2018) reported that Hispanic women who preferred English, as well as those with those who preferred Spanish, were more likely than NHW women to have had a Pap test (Heintzman et al., 2018). Programs like CDC's National Breast and Cervical Cancer Early Detection Program (NBCCEDP) that reach out to Hispanic women for breast and cervical cancer screening likely contribute to our finding. For 30 years, the NBCCEDP (National Breast and Cervical Cancer Early Detection Program (NBCCEDP), 2022a) has provided low-income, uninsured, underserved women access to timely breast and cervical cancer screening and diagnostic services. Between 2015 and 2020, Hispanic women comprised 52.1% of 606,357 cervical cancer screening tests and 46.6% of mammograms performed through the NBCCEDP (National Breast and Cervical Cancer Early Detection Program (NBCCEDP), 2022b).

For Hispanics with LCE, language barriers certainly contribute to disparities in access to and use of health care (Derosé and Baker, 2000; De Alba, 2004; De Alba and Sweningson, 2006). We observed that Hispanics with LCE were much less likely than Hispanics with CE to have a usual source of care, and having a usual source of care has been shown to be associated with receipt of preventive and cancer screening services (Blewett et al., 2008). A previous MEPS analysis showed that half of Hispanics with LCE did not have a usual

source of care, and almost 90% of those with a usual source of care had a provider who spoke Spanish or used interpreters, indicating that few Hispanics with LCE selected a usual source of care without language assistance (Brach and Chevarley, 2008). In other examples, language barriers contributed to health disparities in receipt of cancer screening (Jacobs et al., 2005), and individuals with LEP were more likely to have difficulty understanding their doctor due to language barriers (Berdahl and Kirby, 2019).

Development and use of culturally-relevant health messages for Hispanic populations might bolster appropriate use of healthcare, including cancer screenings. For example, culturally-tailored interventions for colorectal and cervical cancer screening have been shown to successfully increase use of FOBT among Hispanics and cervical cancer screening among women of Mexican decent, respectively (Briant et al., 2018; Byrd et al., 2013). Mammography screening increased among women with LEP in Los Angeles following an intensive Spanish-language outreach program (Meersman et al., 2009), while a Spanish-language pre-visit video increased receipt of mammograms among women with LEP (Goel and O’Conor, 2016). Other culturally and linguistically appropriate services, such as community health workers or promotoras, can be useful in bridging the chasms between minority communities and healthcare institutions (Byrd et al., 2013; Reinschmidt et al., 2006; Luque et al., 2019).

Interestingly, many healthcare organizations that collect language data ascertain patients’ language preferences (i.e., the language they would like to speak in healthcare encounters) rather than their English proficiency. Hispanic adults who would not say they are not comfortable speaking English might indicate they prefer to speak Spanish (Agency for Healthcare Research and Quality, 2018). As a recent report of proceedings from a National Academy of Science Engineering and Medicine workshop on cancer screening captured, “even if a patient speaks English, for example, it may not be their preferred language so it may still be beneficial to use a translator (sic)” (National Academies of Sciences, Engineering, and Medicine, 2021). Systematic reviews have documented that trained professional interpreters and bilingual healthcare providers positively affect the quality of care received by people with LEP (Flores, 2016; Karliner et al., 2007). As research has shown that more clinically significant errors are made by non-professional interpreters (Flores, 2016), health care organizations have become interested in training and certifying interpreters, increasing their provision of language assistance. A recent meta-analysis concluded that 76% of 33 studies included in the analysis showed improvement in outcomes assessed when language-concordant care was received (Diamond et al., 2019).

As critical as it is to address language-related assistance, these approaches alone may not eliminate disparities for people with LCE, nor will they improve healthcare access and quality for Hispanics who are comfortable speaking English. Many other factors, including discrimination and bias, play a role in healthcare disparities. For example, Mexican Americans were more likely to report no physician recommendation for colorectal cancer screening that may have been the result of implicit bias on the part of clinicians (Johnson-Kozlow et al., 2009). One review demonstrated a need for additional targeted approaches, awareness education, and provider training as ways to increase CRC screening among

Hispanics (Wang et al., 2013). Below we touch on additional approaches for improving Hispanics' access to and quality of healthcare.

4.1. Educational disparities

Cancer screening is associated with higher education levels (Hall et al., 2018; Damiani et al., 2015), and our data show that, regardless of LCE status, Hispanic individuals with higher education were more likely to be screened. Our data also showed that a larger proportion of Hispanics with LCE had less than a high school education compared to Hispanics with CE. A similar association was seen between Hispanics with CE and NHW. Education is associated with health literacy – the ability to find, understand, and use information and services to inform health-related decisions and actions. Two-thirds of Hispanics have limited health literacy and speaking a language other than English before starting school is highly correlated with limited health literacy (Kutner et al., 2006). Limited health literacy is associated with poorer preventive care and health outcomes (Berkman et al., 2011).

Healthcare providers can counter educational and health literacy disparities by increasing use of health literacy universal precautions, which means treating every patient as if they are at risk of misunderstanding (Brega et al., 2015). Techniques including using plain language, confirming understanding with the “teach-back” method, limiting the number of messages, and using translated written and audio-visual patient education materials that are easy-to-understand and act on. Health literacy strategies can result in better provider-patient communication, improve oral and written communications, and improve uptake of cancer screening.

4.2. Insurance disparities

In our data, Hispanics with LCE were more often uninsured and at lower family income levels than their Hispanic counterparts, while Hispanics with CE were almost three times as likely to be uninsured and nearly twice as likely to be at lower family income levels as NHW. Previous work shows that screening participation is highly related to insurance coverage (Hall et al., 2018; Johnson et al., 2020) which is closely tied to employment and affordable coverage options. Our data show (Supplemental Tables A.1–A.3) that after adjustment, Hispanics with LCE and those with CE who were insured (private or public coverage) were more likely to obtain a mammogram, Pap test, or colorectal screening test than those with no insurance. With expanded access to insurance coverage, a recent study (2020) showed improved access to necessary health care and a usual source of care among individuals with LEP (Lu and Myerson, 2020). Although lower family income at the <100% FPL might qualify Hispanics with LCE for public insurance, some Hispanic immigrants may fear that availing of public insurance might lead to other consequences such as denial of green cards or visas (Bernstein et al., 2020). There is a need for concerted outreach to Hispanic populations to raise awareness of existing insurance programs and provide application assistance (Garcia Mosqueira et al., 2015; Kim et al., 2019). Bilingual caseworkers may be effective in obtaining and maintaining coverage for uninsured adults (Flores et al., 2005). Use of local Hispanic organizations with bilingual personnel assistance and simplifying enrollment and renewal processes may help improve education and

insurance and enrollment rates among Hispanics (Rosman et al., 2014) and subsequently impact participation in cancer screening.

4.3. Strengths/limitations

Like all surveys, MEPS-HC relies on self-reported data, that may be flawed by social desirability bias. People may have overstated their comfort or ability speaking English. If this were the case, we might expect the differences between NHW and Hispanics with CE to be smaller, and the differences between them and Hispanics with LCE to be larger.

This study uses a different measure than other studies to analyze populations who face language barriers. Using the measure of LCE, which equates to speaking English not well or not at all, reduces the size of the population. Compared to studies that use the Census definition of LEP– speaking English well, not well, or not at all – our study reduces differences between Hispanics with CE and those with LCE and increases the differences between Hispanics with CE and NHW.

As an update of prior work (Brach and Chevarley, 2008), our study does not isolate the impact of expressing LCE on access to and use of healthcare services. Rather, we sought to characterize the experience of Hispanics expressing LCE, and the fact that they are more likely to be disadvantaged in a variety of ways as an inherent part of that experience.

5. Conclusion

Compared to NHW adults, Hispanic adults have poorer access to and use of healthcare services, including some preventive services although mammography and Pap test screening were higher. Hispanics with LCE fare worse than their counterparts who express comfort speaking English. As the COVID-19 pandemic demonstrated, improving health care access is important for everyone, particularly for ethnic minority groups like Hispanics. Understanding how linguistic barriers impact and interfere with health care access and preventive care use is imperative. The public health community can further educate healthcare organizations on the provision of appropriate language assistance at point of care, tailor care to be culturally and linguistically appropriate, improve health literacy, and address barriers to care such as discrimination and bias to promote greater access to care and use of preventive services, including demand for and delivery of cancer screenings. Language assistance may reduce health disparities for Hispanics with LCE and their families but eliminating these disparities for all Hispanics will require a multi-pronged approach that includes addressing education and insurance disparities and other social determinants of health.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

- Agency for Health Care Research and Quality, 2019. Medical Expenditure Panel Survey https://meps.ahrq.gov/mepsweb/about_meps/survey_back.jsp#household.
- Agency for Healthcare Research and Quality, 2018. Chapter 4: Defining language need and categories for collection (cont.) | Agency for Healthcare Research and Quality (ahrq.gov). In: Race, Ethnicity, and Language Data: Standardization for Health Care Quality Improvement [Accessed June 21, 2021].
- Ahmed AT, Welch BT, Brinjikji W, Farah WH, Henrichsen TL, Murad MH, Knudsen JM, 2017 Feb. Racial disparities in screening mammography in the United States: a systematic review and meta-analysis. *J. Am. Coll. Radiol* 14 (2), 157–165.e9. 10.1016/j.jacr.2016.07.034 (Epub 2016 Dec 16). [PubMed: 27993485]
- Berdahl TA, Kirby JB, 2019 Aug. Patient-provider communication disparities by limited English proficiency (LEP): trends from the US medical expenditure panel survey, 2006–2015. *J. Gen. Intern. Med* 34 (8), 1434–1440. 10.1007/s11606-018-4757-3 (Epub 2018 Dec 3). [PubMed: 30511285]
- Berkman ND, Sheridan SL, Donahue KE, Halpern DJ, Crotty K, 2011. Low health literacy and health outcomes: an updated systematic review. *Ann. Intern. Med* 155 (2), 97–107. 10.1059/0003-4819-155-2-201107190-00005. [PubMed: 21768583]
- Bernstein H, Gonzalez D, McTarnaghan S, Karpman M, Zuckerman S, 2020. One in Six Adults in California Immigrant Families Reported Avoiding Public Benefits in 2019. Urban Institute Brief https://www.urban.org/sites/default/files/publication/102222/one-in-six-adults-in-california-immigrant-families-reported-avoiding-public-benefits-in-2019_1.pdf.
- Blewett LA, Johnson PJ, Lee B, Scal PB, 2008. When a usual source of care and usual provider matter: adult prevention and screening services. *J. Gen. Intern. Med* 23 (9), 1354–1360. 10.1007/s11606-008-0659-0. [PubMed: 18506542]
- Brach C, Chevarley FM, February 2008. Demographics and Health Care Access and Utilization of Limited-English-Proficient and English-Proficient Hispanics Research Findings No. 28. Agency for Healthcare Research and Quality, Rockville, MD.
- Brega A, Barnard J, Mabachi NM, Weiss BD, DeWalt DA, Brach C, et al., January, 2015. AHRQ Health Literacy Universal Precautions Toolkit, 2nd edition. Agency for Healthcare Research and Quality, Rockville, MD. Report No.: 15–0023-EF.
- Briant KJ, Sanchez JI, Ibarra G, Escareno M, Gonzalez NE, Jimenez Gonzalez V, Marchello N, Louie S, 2018 Nov. Thompson B using a culturally tailored intervention to increase colorectal cancer knowledge and screening among Hispanics in a rural community. *Cancer Epidemiol. Biomark. Prev* 27 (11), 1283–1288. 10.1158/1055-9965.EPI-17-1092.
- Byrd TL, Wilson KM, Smith JL, Coronado G, Vernon SW, Fernandez-Esquer ME, Thompson B, Ortiz M, Lairson D, Fernandez ME, 2013 Apr 1. AMIGAS: a multicity, multicomponent cervical cancer prevention trial among Mexican American women. *Cancer* 119 (7), 1365–1372. 10.1002/cncr.27926 (Epub 2012 Dec 21). [PubMed: 23280399]
- Calo WA, Cubillos L, Breen J, Hall M, Rojas KF, Mooneyham R, Schaal J, Hardy CY, Dave G, Jolles MP, Garcia N, Reuland DS, 2015 Dec 23. Experiences of Latinos with limited English proficiency with patient registration systems and their interactions with clinic front office staff: an exploratory study to inform community-based translational research in North Carolina. *BMC Health Serv. Res* (15), 570. 10.1186/s12913-015-1235-z. [PubMed: 26700176]
- Collage Group, June 1, 2020. Hispanic Acculturation <https://www.collagegroup.com/2020/06/15/hipsaind-acculturaton-in-2020/> [Accessed May 27, 2021].
- Damiani G, Basso D, Acampora A, Bianchi CBNA, Silvestrini G, Frisicale EM, Sassi F, Ricciardi W, 2015 Dec. The impact of level of education on adherence to breast and cervical cancer screening: evidence from a systematic review and meta-analysis. *Prev. Med* 81, 281–289. 10.1016/j.ypmed.2015.09.011 (Epub 2015 Sep 25). [PubMed: 26408405]
- De Alba I, 2004. Impact of English language proficiency on receipt of pap smears among Hispanics. *J. Gen. Intern. Med* 19 (9), 967–970. 10.1111/j.1525-1497.2004.30354.x. [PubMed: 15333062]

- De Alba I, Sweningson JM, 2006. English proficiency and physicians' recommendation of pap smears among Hispanics. *Cancer Detect. Prev* 30 (3), 292–296. 10.1016/j.cdp.2006.05.003 (Epub 2006 Jul 17). [PubMed: 16844320]
- Derose KP, Baker DW, 2000. Limited English proficiency and Latinos' use of physician services. *Med. Care Res. Rev* 57 (1), 76–91. 10.1177/107755870005700105. [PubMed: 10705703]
- Diamond L, Izquierdo K, Canfield D, Matsoukas K, Gany F, 2019 Aug. A systematic review of the impact of patient-physician non-English language concordance on quality of care and outcomes. *J. Gen. Intern. Med* 34 (8), 1591–1606. 10.1007/s11606-019-04847-5 (Epub 2019 May 30). [PubMed: 31147980]
- Diaz JA, Roberts MB, Clarke JG, Simmons EM, Goldman RE, Rakowski W, 2013 Jun. Colorectal cancer screening: language is a greater barrier for Latino men than Latino women. *J. Immigr. Minor. Health* 15 (3), 472–475. 10.1007/s10903-012-9667-6. [PubMed: 22752660]
- Eamranond PP, Patel KV, Legedza AT, Marcantonio ER, Leveille SG, 2007. The association of language with prevalence of undiagnosed hypertension among older Mexican Americans. *Ethn. Dis* 17 (4), 699–706. [PubMed: 18072382]
- Flores G, 2016. The impact of medical interpreter services on the quality of health care: a systematic review. *Med. Care Res. Rev* 62 (3), 255–299.
- Flores G, Abreu M, Chaisson CE, Meyers A, Sachdeva RC, Fernandez H, et al. , 2005. A randomized, controlled trial of the effectiveness of community-based case management in insuring uninsured Latino children. *Pediatrics* 116 (6), 1433–1441. [PubMed: 16322168]
- Fox RS, Mills SD, Roesch SC, Sotres-Alvarez D, Gonzalez P, Bekteshi V, Cai J, Lounsbury DW, Talavera GA, Penedo FJ, Malcarne VL, Fox RS, et al. , 2018 Oct. Perceptions of Cancer risk/efficacy and cancer-related risk behaviors: results from the HCHS/SOL sociocultural ancillary study. *Health Educ. Behav* 45 (5), 790–799. 10.1177/1090198117744242 (Epub 2017 Dec 28). [PubMed: 29284295]
- Garcia Mosqueira A, Hua LM, Sommers BD, 2015. Racial differences in awareness of the affordable care act and application assistance among low-income adults in three southern states. *Inquiry* 52. 10.1177/0046958015609607.
- Garcia MA, Garcia C, Chiu CT, Raji M, Garcia MA, Markides KS, et al. , 2018 Jun. A comprehensive analysis of morbidity life expectancies among older hispanic subgroups in the United States: variation by nativity and country of origin. Version 2. *Innov. Aging* 2 (2). 10.1093/geron/igy014igy014. (Epub 2018 Jun 18).
- Garcia ME, Hinton L, Gregorich SE, Livaudais-Toman L, Kaplan C, Karliner L, 2020 Apr. Unmet mental health need among Chinese and Latino primary care patients: intersection of ethnicity, gender, and English proficiency. *J. Gen. Intern. Med* 35 (4), 1245–1251. 10.1007/s11606-019-05483-9 (Epub 2019 Oct 30). [PubMed: 31667737]
- Goel MS, O'Connor R, 2016 Mar. Increasing screening mammography among predominantly Spanish speakers at a federally qualified health center using a brief previsit video. *Patient Educ. Couns* 99 (3), 408–413. 10.1016/j.pec.2015.09.007 (Epub 2015 Oct 3). [PubMed: 26456634]
- Gunn CM, Fitzpatrick A, Waugh S, Carrera MNR, Paasche-Orlow MK, Battaglia TA, 2019 Feb. A qualitative study of Spanish-Speakers' experience with dense breast notifications in a Massachusetts safety-net hospital. *J. Gen. Intern. Med* 34 (2), 198–205. 10.1007/s11606-018-4709-y (Epub 2018 Oct 22). [PubMed: 30350031]
- Hall IJ, Tangka FK, Sabatino SA, Thompson TD, Graubard BI, Breen N, 2018. Patterns and Trends in Cancer Screening in the United States. *Prev. Chronic Dis* 15, 170465. 10.5888/pcd15.170465. Agency for Healthcare Research and Quality. Medical Expenditure Panel Survey.
- Han X, Yabroff KR, Guy GP Jr., Zheng Z, Jemal A, 2015. Has recommended preventive service use increased after elimination of cost-sharing as part of the Affordable Care Act in the United States? *Prev. Med* 78, 85–91. 10.1016/j.ypmed.2015.07.012. [PubMed: 26209914]
- Haviland AM, Elliott MN, Hambarsoomian K, Lurie N, 2011. Immunization disparities by Hispanic ethnicity and language preference. *Arch. Intern. Med* 171 (2), 158–165. 10.1001/archinternmed.2010.499. [PubMed: 21263106]
- Heintzman J, Hatch B, Coronado G, Ezekiel D, Cowburn S, Escamilla-Sanchez O, Marino M, 2018 Feb 22. Role of race/ethnicity, language, and insurance in use of cervical cancer prevention

services among low-income Hispanic women, 2009–2013. *Prev. Chronic Dis* 15, E25. 10.5888/pcd15.170267. [PubMed: 29470167]

- Held ML, Lindley LC, Held ML, et al. , 2018 Oct, Dec. The relationship between country of origin and prenatal care among unauthorized Mexican and Guatemalan immigrants. *Fam. Commun. Health* 41 (4), 225–232. 10.1097/FCH.000000000000199.
- Jacobs EA, Karavolos K, Rathouz PJ, Ferris TG, Powell LH, 2005 Aug. Limited English proficiency and breast and cervical cancer screening in a multiethnic population. *Am. J. Public Health* 95 (8), 1410–1416. [PubMed: 16043670]
- Johnson NL, Head KJ, Scott SF, Zimet GD, 2020 Jul–Aug. Persistent disparities in cervical cancer screening uptake: knowledge and sociodemographic determinants of papanicolaou and human papillomavirus testing among women in the United States. *Public Health Rep* 135 (4), 483–491. 10.1177/0033354920925094. [PubMed: 32516053]
- Johnson-Kozlow M, Roussos S, Rovniak L, Hovell M, 2009. Colorectal cancer test use among Californians of Mexican origin: influence of language barriers. *Ethn. Dis* 19 (3), 315–322. Summer. [PubMed: 19769015]
- Karliner LS, Jacobs EA, Chen AH, Mutha S, 2007 Apr. Do professional interpreters improve clinical care for patients with limited English proficiency? A systematic review of the literature. *Health Serv. Res* 42 (2), 727–754. 10.1111/j.1475-6773.2006.00629.x. [PubMed: 17362215]
- Kenik J, Jean-Jacques M, Feinglass J, 2014. Explaining racial and ethnic disparities in cholesterol screening. *Prev. Med* 65, 65–69. 10.1016/j.ypmed.2014.04.026. [PubMed: 24806331]
- Kim J, Ford KL, Kim G, 2019 Mar. Geographic disparities in the relation between English proficiency and health insurance status among older Latino and Asian immigrants. *Cross Cult. Gerontol* 34 (1), 1–13. 10.1007/s10823-019-09366-8.
- Kutner M, Greenberg E, Jin Y, Paulsen C, 2006 September. *The Health Literacy of America's Adults: Results from the 2003 National Assessment of Adult Literacy* National Center for Educational Statistics, Washington, DC.
- Lu T, Myerson R, 2020. Disparities in health insurance coverage and access to care by English language proficiency in the USA, 2006–2016. *J. Gen. Intern. Med* 35 (5), 1490–1497. 10.1007/s11606-019-05609-z. [PubMed: 31898137]
- Luque JS, Logan A, Soulen G, Armeson KE, Garrett DM, Davila CB, Ford ME, 2019 Jun. Systematic review of mammography screening educational interventions for Hispanic women in the United States. *J. Cancer Educ* 34 (3), 412–422. 10.1007/s13187-018-1321-0. [PubMed: 29330754]
- Meersman SC, Breen N, Pickle LW, Meissner HI, Simon P, 2009 Oct. Access to mammography screening in a large urban population: a multi-level analysis. *Cancer Causes Control* 20 (8), 1469–1482. 10.1007/s10552-009-9373-4 (Epub 2009 Jun 20). [PubMed: 19543987]
- Migration Policy Institute, 2015. *The Limited English Proficient Population in the United States in 2013* <https://www.migrationpolicy.org/article/limited-english-proficient-population-united-states-2013#:~:text=The%20term%20Limited%20English%20Proficient%20%28LEP%29%20refers%20to,who%20reported%20speaking%20English%20only%20or%20%22very%20well.%22> [Accessed Mar 12, 2021].
- Miller KD, Sauer AG, Ortiz AP, Fedewa SA, Pinheiro PS, Tortolero-Luna G, Martinez-Tyson D, Jemal A, 2018. Siegel RL cancer statistics for Hispanics/Latinos, 2018. *CA Cancer J. Clin* 68, 425–445. [PubMed: 30285281]
- National Academies of Sciences, Engineering, and Medicine, 2021. *Advancing Progress in the Development and Implementation of Effective, High-Quality Cancer Screening: Proceedings of a Workshop* The National Academies Press, Washington, DC. 10.17226/26019.
- National Breast and Cervical Cancer Early Detection Program (NBCCEDP), 2022a. <https://www.cdc.gov/cancer/nbccedp> [Accessed February 7, 2022].
- National Breast and Cervical Cancer Early Detection Program (NBCCEDP), 2022b. *Screening Program Summaries* <https://www.cdc.gov/cancer/nbccedp/data/summaries> [Accessed February 7, 2022].
- Office of Management and Budget, 1997. Revisions to the standards for the classification of federal data on race and ethnicity. *Fed. Regist* 62 (10), 58782–58790. <https://www.govinfo.gov/content/pkg/FR-1997-10-30/pdf/97-28653.pdf> [Accessed June 13, 2021].

- PDQ® Screening and Prevention Editorial Board, 2020. PDQ Cancer Screening Overview National Cancer Institute, Bethesda, MD. Updated 08/19/2020. Available at: <https://www.cancer.gov/about-cancer/screening/patient-screening-overview-pdq>. Accessed August 25, 2021.
- Pearson WS, Ahluwalia IB, Ford ES, Mokdad AH, 2008. Language preference as a predictor of access to and use of healthcare services among Hispanics in the United States. *Ethn. Dis* 18 (1), 93–97. [PubMed: 18447107]
- Reinschmidt KM, Hunter JB, Lourdes Fernández M, Lacy-Martínez CR, Guernsey de Zapien J, Meister J, 2006 May. Understanding the success of promotoras in increasing chronic diseases screening. *J. Health Care Poor Underserved* 17 (2), 256–264. 10.1353/hpu.2006.006. [PubMed: 16702713]
- Rosman B, Maxwell J, Cortés D, González M, Barron C, Schneide K, et al., 2014. State Policy Recommendations for Increasing Latino Enrollment in Health Insurance Coverage Health Care for All, Boston, MA.
- Sauer AG, Siegel RL, Jemal A, Fedewa SA, 2019 Apr. Current prevalence of major cancer risk factors and screening test use in the United States: disparities by education and race/ethnicity. *Cancer Epidemiol. Biomark. Prev* 28 (4), 629–642. 10.1158/1055-9965.EPI-18-1169.
- Statista, Hispanics in the United States – Statistics and Facts, 2021. Hispanics in the United States - Statistics & Facts | Statista [Accessed August 25, 2021].
- Stern MC, Zhang J, Lee E, Deapen D, Stern MC, Liu L., et al., 2016 Feb. Disparities in colorectal cancer incidence among Latino subpopulations in California defined by country of origin. *Cancer Causes Control* 27 (2), 147–155. 10.1007/s10552-015-0691-4 (Epub 2015 Nov 23). [PubMed: 26596856]
- U.S. Cancer Statistics Working Group, June 2021. U.S. Cancer Statistics Data Visualizations Tool, Based on 2020 Submission Data (1999–2018) U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute. www.cdc.gov/cancer/dataviz. released in. [Accessed August 24, 2021].
- U.S. Census Bureau, 2020. Language Spoken at Home by Ability to Speak English for the Population 5 Years and Over (Hispanic or Latino) [https://data.census.gov/cedsci/table?tid=ACSDT1Y2019.B16006&q=ACSDT1Y2016.B16006](https://data.census.gov/cedsci/table?t=ACS&tid=ACSDT1Y2019.B16006&q=ACSDT1Y2016.B16006) [Accessed June 3, 2021].
- U.S. Census Bureau. Race and Ethnicity in the United States, 2010. Census and 2020 Census <https://www.census.gov/library/visualizations/interactive/race-and-ethnicity-in-the-united-state-2010-and-2020-census.html> [Accessed August 25, 2021].
- Vespa Jonathan, Medina Lauren, Armstrong David M., 2020. Demographic turning points for the United States: population projections for 2020 to 2060. In: *Current Population Reports*, P25–1144 U.S. Census Bureau, Washington, DC.
- Wang J, Moehring J, Stuhr S, Krug M, 2013 Nov. Barriers to colorectal cancer screening in Hispanics in the United States: an integrative review. *Appl. Nurs. Res* 26 (4), 218–224. 10.1016/j.apnr.2013.08.005. [PubMed: 24238084]

Demographic characteristics by race/ethnicity and english proficiency status among adults aged 18 years, medical expenditure panel survey, 2013–2016.

Characteristics	All adults		Hispanics		NH White		LCE Hispanics vs. CE Hispanics		CE Hispanics vs. NH White	
	(N = 60,753) [§] Wt% (CI) [£]	(N = 8611) [§] LCE Hispanics ^{**} Wt% (CI) [£]	(N = 16,665) [§] CE Hispanics ^{**} Wt% (CI) [£]	(N = 35,477) [§] NH White Wt% (CI) [£]	^{^^} P	^{^^} P	^{^^} P	^{^^} P		
Age (years)										
18–44	44.7 (43.4, 46.0)	47.8 (45.1, 50.4)	66.6 (64.9, 68.2)	40.6 (39.1, 42.2)	<0.0001	<0.0001	<0.0001	<0.0001		
45–64	34.7 (33.8, 35.6)	36.7 (34.6, 38.8)	25.6 (24.3, 26.9)	36.2 (35.1, 37.3)						
65–74	12.0 (11.3, 12.6)	9.4 (8.0, 10.7)	5.2 (4.5, 6.0)	13.4 (12.6, 14.1)						
75–84	6.4 (5.9, 6.9)	4.6 (3.8, 5.5)	2.1 (1.6, 2.6)	7.2 (6.7, 7.8)						
85+	2.2 (2.0, 2.5)	1.5 (1.1, 1.9)	0.5 (0.3, 0.7)	2.6 (2.3, 2.9)						
Sex										
Male	48.7 (48.2, 49.2)	46.3 (44.8, 47.9)	50.9 (49.7, 52.0)	48.5 (47.9, 49.0)	<0.0001	<0.0001	<0.0001	<0.0001		
Female	51.3 (50.8, 51.8)	53.7 (52.1, 55.2)	49.1 (48.0, 50.3)	51.5 (51.0, 52.1)						
Race/ethnicity										
NH White	80.4 (78.4, 82.4)	—	—	100	n/a	n/a	n/a	n/a		
Hispanic	19.6 (17.6, 21.6)	100	100	—						
Puerto Rican	1.8 (1.5, 2.2)	3.5 (2.4, 4.7)	11.7 (9.7, 13.7)	—						
Cuban/Cuban American	0.9 (0.6, 1.1)	6.9 (4.2, 9.6)	3.6 (2.8, 4.4)	—						
Dominican	0.7 (0.5, 0.8)	4.7 (2.8, 6.7)	2.8 (2.2, 3.5)	—						
Mexican/Mex. American	11.9 (10.1, 13.7)	63.8 (58.2, 69.3)	59.7 (55.8, 63.7)	—						
Central or south American	3.1 (2.8, 3.5)	19.8 (16.6, 22.9)	14.5 (12.6, 16.4)	—						
Other Hispanic	1.2 (1.0, 1.3)	1.3 (0.8, 1.7)	7.7 (6.6, 8.8)	—						
Education										
Less than high school	13.2 (12.3, 14.1)	66.4 (64.0, 68.8)	20.5 (19.2, 21.9)	8.4 (7.8, 9.0)	<0.0001	<0.0001	<0.0001	<0.0001		
High school graduate	28.0 (27.0, 28.9)	21.8 (20.3, 23.4)	31.2 (29.8, 32.7)	27.8 (26.7, 28.9)						
Some college	28.2 (27.4, 29.1)	7.4 (6.4, 8.5)	31.0 (29.6, 32.5)	29.1 (28.2, 30.1)						
College graduate or more	30.6 (29.2, 31.9)	4.3 (3.4, 5.2)	17.3 (15.7, 18.8)	34.6 (33.1, 36.2)						
Marital status										
Never married	25.3 (24.5, 26.1)	25.3 (22.7, 27.9)	40.4 (38.6, 42.1)	22.6 (21.7, 23.5)	<0.0001	<0.0001	<0.0001	<0.0001		

Characteristics	All adults (N = 60,753) [§]		Hispanics		LCE Hispanics ^{**} (N = 8611) [§]		CE Hispanics ^{**} (N = 16,665) [§]		NH White (N = 35,477) [§]		LCE Hispanics vs. CE Hispanics		CE Hispanics vs. NH White	
	Wt% (CI) [‡]	Wt% (CI) [‡]	Wt% (CI) [‡]	Wt% (CI) [‡]	Wt% (CI) [‡]	Wt% (CI) [‡]	Wt% (CI) [‡]	Wt% (CI) [‡]	P ^{^^}	P ^{^^}	P ^{^^}	P ^{^^}	P ^{^^}	
Married	55.4 (54.3, 56.5)	55.6 (52.4, 58.8)	43.8 (42.0, 45.5)	57.5 (56.3, 58.6)	19.3 (18.5, 20.1)	19.1 (17.2, 21.0)	36.8 (35.7, 37.9)	22.4 (21.7, 23.0)	19.9 (19.0, 20.8)					
Divorced/widowed/separated	40.2 (39.1, 41.2)	49.7 (47.3, 52.1)	55.7 (54.1, 57.3)	36.8 (35.7, 37.9)	19.3 (18.5, 20.1)	19.1 (17.2, 21.0)	22.4 (21.7, 23.0)	15.8 (15.2, 16.4)	25.1 (24.1, 26.0)					<0.0001
Comorbidities [‡]														
None	22.0 (21.4, 22.6)	19.3 (17.9, 20.8)	21.1 (20.0, 22.2)	22.4 (21.7, 23.0)	14.9 (14.4, 15.4)	13.1 (11.8, 14.4)	10.4 (9.7, 11.1)	15.8 (15.2, 16.4)	15.8 (15.2, 16.4)					
One	22.9 (22.1, 23.7)	17.8 (16.3, 19.4)	12.8 (11.8, 13.9)	25.1 (24.1, 26.0)	14.9 (14.4, 15.4)	13.1 (11.8, 14.4)	10.4 (9.7, 11.1)	15.8 (15.2, 16.4)	15.8 (15.2, 16.4)					
Two	1.6 (1.4, 1.7)	0.7 (0.4, 0.9)	1.2 (0.9, 1.5)	1.7 (1.5, 1.9)	31.6 (30.7, 32.5)	34.7 (33.0, 36.4)	34.8 (33.1, 36.6)	30.8 (29.8, 31.9)	30.8 (29.8, 31.9)					<0.0001
Body Mass Index														
Under (<18.5)	87.0 (86.4, 87.6)	74.0 (72.1, 75.9)	87.4 (86.5, 88.4)	87.8 (87.1, 88.5)	32.4 (31.6, 33.2)	24.2 (22.6, 25.8)	28.3 (26.9, 29.6)	33.7 (32.7, 34.7)	33.7 (32.7, 34.7)					
Normal (18–24.9)	13.0 (12.4, 13.6)	26.0 (24.1, 27.9)	12.6 (11.6, 13.5)	12.2 (11.5, 12.9)	34.4 (33.8, 35.1)	40.4 (38.9, 42.0)	35.7 (34.5, 36.9)	33.8 (33.1, 34.6)	33.8 (33.1, 34.6)					
Over (25–29.9)	10.2 (9.3, 11.0)	44.0 (40.9, 47.1)	19.4 (17.6, 21.3)	6.3 (5.7, 6.8)	31.6 (30.7, 32.5)	34.7 (33.0, 36.4)	34.8 (33.1, 36.6)	30.8 (29.8, 31.9)	30.8 (29.8, 31.9)					
Obese (≥ 30)	70.5 (69.1, 71.9)	25.4 (23.1, 27.7)	58.1 (56.0, 60.2)	75.8 (74.5, 77.1)	87.0 (86.4, 87.6)	74.0 (72.1, 75.9)	87.4 (86.5, 88.4)	87.8 (87.1, 88.5)	87.8 (87.1, 88.5)					0.5227
Health status														
Excellent/very good/good	19.3 (18.2, 20.3)	30.7 (27.6, 33.7)	22.5 (20.8, 24.2)	17.9 (16.9, 19.0)	13.0 (12.4, 13.6)	26.0 (24.1, 27.9)	12.6 (11.6, 13.5)	12.2 (11.5, 12.9)	12.2 (11.5, 12.9)					
Fair/poor	10.2 (9.3, 11.0)	44.0 (40.9, 47.1)	19.4 (17.6, 21.3)	6.3 (5.7, 6.8)	70.5 (69.1, 71.9)	25.4 (23.1, 27.7)	58.1 (56.0, 60.2)	75.8 (74.5, 77.1)	75.8 (74.5, 77.1)					<0.0001
Health insurance														
Any private	70.3 (69.2, 71.3)	65.6 (63.2, 68.0)	77.7 (76.4, 79.1)	69.3 (68.0, 70.5)	19.3 (18.2, 20.3)	30.7 (27.6, 33.7)	22.5 (20.8, 24.2)	17.9 (16.9, 19.0)	17.9 (16.9, 19.0)					
Public only	29.7 (28.7, 30.8)	34.4 (32.0, 36.8)	22.3 (20.9, 23.6)	30.7 (29.5, 32.0)	10.2 (9.3, 11.0)	44.0 (40.9, 47.1)	19.4 (17.6, 21.3)	6.3 (5.7, 6.8)	6.3 (5.7, 6.8)					
Uninsured	70.3 (69.2, 71.3)	65.6 (63.2, 68.0)	77.7 (76.4, 79.1)	69.3 (68.0, 70.5)	29.7 (28.7, 30.8)	34.4 (32.0, 36.8)	22.3 (20.9, 23.6)	30.7 (29.5, 32.0)	30.7 (29.5, 32.0)					<0.0001
Employment status														
Employed	10.4 (9.7, 11.1)	27.3 (24.0, 30.5)	14.4 (12.9, 16.0)	8.6 (8.0, 9.2)	70.3 (69.2, 71.3)	65.6 (63.2, 68.0)	77.7 (76.4, 79.1)	69.3 (68.0, 70.5)	69.3 (68.0, 70.5)					
Not employed	16.3 (15.6, 17.0)	35.8 (34.0, 37.5)	21.9 (20.7, 23.1)	14.0 (13.3, 14.8)	29.7 (28.7, 30.8)	34.4 (32.0, 36.8)	22.3 (20.9, 23.6)	30.7 (29.5, 32.0)	30.7 (29.5, 32.0)					
Family income														
Poor (<100% FPL)	73.2 (72.0, 74.5)	37.0 (33.9, 40.1)	63.7 (61.4, 65.9)	77.4 (76.2, 78.5)	10.4 (9.7, 11.1)	27.3 (24.0, 30.5)	14.4 (12.9, 16.0)	8.6 (8.0, 9.2)	8.6 (8.0, 9.2)					<0.0001
Near poor/low income (100–200% FPL)	16.3 (15.6, 17.0)	35.8 (34.0, 37.5)	21.9 (20.7, 23.1)	14.0 (13.3, 14.8)	16.3 (15.6, 17.0)	35.8 (34.0, 37.5)	21.9 (20.7, 23.1)	14.0 (13.3, 14.8)	14.0 (13.3, 14.8)					
Middle/high income(>200% FPL)	73.2 (72.0, 74.5)	37.0 (33.9, 40.1)	63.7 (61.4, 65.9)	77.4 (76.2, 78.5)	73.2 (72.0, 74.5)	37.0 (33.9, 40.1)	63.7 (61.4, 65.9)	77.4 (76.2, 78.5)	77.4 (76.2, 78.5)					
Person born in U.S.														
Yes	86.0 (84.9, 87.1)	4.1 (3.1, 5.0)	61.0 (58.6, 63.5)	96.0 (95.5, 96.4)	86.0 (84.9, 87.1)	4.1 (3.1, 5.0)	61.0 (58.6, 63.5)	96.0 (95.5, 96.4)	96.0 (95.5, 96.4)					<0.0001

Characteristics	All adults		Hispanics		NH White (N = 35,477) [§]	LCE Hispanics vs. CE Hispanics		CE Hispanics vs. NH White	
	(N = 60,753) [§]	Wt% (CI) ^f	LCE Hispanics (N = 8611) [§]	Wt% (CI) ^f		CE Hispanics (N = 16,665) [§]	Wt% (CI) ^f	P ^{^^}	P ^{^^}
No	14.0 (12.9, 15.1)	95.9 (95.0, 96.9)	39.0 (36.5, 41.4)	4.0 (3.6, 4.5)					
No. of years lived in U.S. among persons not born in U.S.									
Years <15	29.2 (27.3, 31.1)	39.7 (37.1, 42.2)	24.9 (22.5, 27.4)	19.7 (16.3, 23.1)	<0.001			0.0379	
Years 15	70.8 (68.9, 72.7)	60.3 (57.8, 62.9)	75.1 (72.6, 77.5)	80.3 (76.9, 83.7)					

Abbreviations: LCE, limited comfort speaking English; CE, comfort speaking English; NH, Non-Hispanic; WT, weighted; CI, confidence interval; FPL, federal poverty level; n/a, not applicable.

For CE Status: Comfort speaking English for Hispanic adults was defined as if they: 1) OTHLANG: Not in a family with primarily other language (than English) spoken, and/or 2) HWELLSPE: How well English is spoken by the person (answered either 'very well' or 'well').

** For LCE status: Limited comfort speaking English for Hispanic adults was defined as if they: 1) OTHLANG: In a family with primarily other language spoken, and 2) HWELLSPE: How well English spoken by person (answered either 'not well' or 'not at all').

^f Percentages and confidence intervals were weighted.

[§] Crude frequencies (sample size N) are shown. Respondents with missing LCE/CE status were excluded and respondents with LCE were excluded for NH White.

^{^^} P-values are from chi-square tests.

[‡] Comorbidities collected in MEPS include: heart conditions, asthma, trauma, diabetes, upper respiratory infection, hypertension, arthritis, lipid disorders, gastrointestinal disorders, bone diseases, skin diseases, and mental health disorders.

Table 2

Age-adjusted[£] percentages of access to care, preventive services, and health care utilization among adults aged 18 years by race/ethnicity and comfort with english, medical expenditure panel survey, 2013–2016.

Characteristics	All adults		Hispanics		NH White (N = 35,477) [§]	LCE Hispanics vs. CE Hispanics ^{^^} P-value	CE Hispanics vs. NH white ^{^^} P-value
	(N = 60,753) [§]	LCE Hispanics ^{***} (N = 8611) [§]	CE Hispanics ^{***} (N = 16,665) [§]	NH White			
	Wt% (CI) [£]	Wt% (CI) [£]	Wt% (CI) [£]	Wt% (CI) [£]	Wt% (CI) [£]		
Access to care							
Has a usual source of care	82.2 (81.4, 83.0)	69.3 (67.3, 71.3)	77.5 (75.5, 79.4)	84.0 (83.0, 84.9)	0.0001	0.0001	
Unable to get or delay getting any necessary medical care, dental care, or prescription medication	12.7 (12.0, 13.5)	9.7 (8.0, 11.7)	12.3 (10.7, 14.2)	13.0 (12.2, 13.8)	0.0301	0.4829	
Unable to get any necessary medical care, dental care, or prescription medication	6.3 (5.8, 6.9)	7.1 (5.6, 8.8)	7.6 (6.2, 9.2)	6.2 (5.7, 6.8)	0.6083	0.1067	
Delay getting any necessary medical care, dental care, or prescription medication	10.1 (9.5, 10.7)	6.4 (5.1, 8.0)	9.4 (7.9, 11.0)	10.4 (9.8, 11.1)	0.0049	0.2095	
Preventive services							
Blood pressure checked in last 2 years	91.9 (91.4, 92.4)	84.7 (83.3, 85.9)	90.1 (89.0, 91.1)	92.9 (92.4, 93.4)	<0.0001	<0.0001	
Cholesterol checked in last 2 years	78.4 (77.7, 79.1)	77.8 (76.4, 79.1)	79.8 (78.1, 81.4)	78.2 (77.3, 79.1)	0.0481	0.1182	
Influenza vaccination in the last year	54.3 (53.3, 55.3)	44.9 (42.0, 47.8)	50.2 (47.2, 53.3)	55.5 (54.4, 56.6)	0.0190	0.0016	
Routine check-up in the last year	73.6 (72.9, 74.3)	66.8 (64.8, 68.8)	72.7 (71.0, 74.3)	74.3 (73.5, 75.1)	<0.0001	0.0833	
Dental check-up at least once in the last year	61.5 (60.2, 62.8)	43.0 (40.4, 45.6)	55.1 (51.7, 58.3)	63.1 (61.7, 64.5)	<0.0001	<0.0001	
Cancer screening (age- /gender-eligible individuals)							
Breast cancer screening (mammogram within 2 years) among women aged 40–74 years	68.5 (66.6, 70.2)	64.9 (61.4, 68.3)	69.3 (66.5, 72.0)	68.8 (66.6, 70.9)	0.0218	0.7497	
Cervical cancer screening (pap test within 3 years) among women aged 21–65 years who have not had cervix removed	75.6 (73.9, 77.2)	80.4 (75.9, 84.2)	79.7 (76.4, 82.7)	75.3 (73.4, 77.1)	0.8191	0.0200	
Colorectal cancer screening (FOBT within 1 year, sigmoidoscopy within 5 years, or colonoscopy within 10 years) among adults aged 50–75 years	70.2 (68.6, 71.8)	48.0 (43.0, 53.1)	68.4 (64.6, 72.0)	71.6 (70.0, 73.2)	<0.0001	0.1220	
Health care utilization of adults aged 18 years							
Ambulatory visits [@] (% of visits)							

Characteristics	All adults		Hispanics		NH White (N = 35,477) [§]	LCE Hispanics vs. CE Hispanics P-value ^{^^}	CE Hispanics vs. NH white P-value ^{^^}
	(N = 60,753) [§]		LCE Hispanics (N = 8611) [§]				
	Wt% (CI) [£]	Wt% (CI) [£]	Wt% (CI) [£]	Wt% (CI) [£]	Wt% (CI) [£]	P-value ^{^^}	P-value ^{^^}
Percentage with visits	83.7 (83.0, 84.3)	68.3 (66.7, 70.0)	76.3 (74.4, 78.1)	86.1 (85.5, 86.7)	<0.0001	<0.0001	
Percentage with NO visits	16.3 (15.7, 17.0)	31.7 (30.1, 33.3)	23.7 (21.9, 25.6)	13.9 (13.3, 14.5)			
Average number of visits	7.9 (7.6, 8.1)	3.8 (3.4, 4.2)	4.8 (4.4, 5.1)	8.7 (8.4, 9.0)	<0.0001	<0.0001	
Emergency department visits							
Percentage with visits	17.7 (16.8, 18.5)	13.0 (11.2, 14.9)	17.9 (15.4, 20.7)	17.9 (17.0, 18.9)	0.002	0.9737	
Percentage with NO visits	82.2 (81.4, 83.2)	87.1 (85.1, 88.8)	82.1 (79.3, 84.6)	82.1 (81.1, 83.0)			
Average number of visits	0.21 (0.20, 0.22)	0.14 (0.12, 0.16)	0.19 (0.17, 0.20)	0.22 (0.21, 0.23)	<0.0001	0.0004	
Hospital in-patient discharges							
Percentage with in-patient discharges	11.0 (10.3, 11.7)	8.3 (7.0, 9.9)	10.1 (8.0, 12.7)	11.2 (10.5, 11.9)	0.1925	0.4082	
Percentage with NO in-patient discharges	89.0 (88.3, 89.7)	91.7 (90.1, 93.0)	89.9 (87.2, 92.0)	88.9 (88.1, 89.5)			
Average number of in-patient discharges	0.10 (0.10, 0.11)	0.07 (0.06, 0.09)	0.07 (0.06, 0.08)	0.11 (0.10, 0.12)	0.3691	<0.0001	
Dental visits							
Percentage with visits	45.7 (44.3, 47.1)	18.1 (15.8, 20.6)	32.7 (29.5, 36.0)	49.0 (47.6, 50.4)	<0.0001	<0.0001	
Percentage with NO visits	54.3 (52.9, 55.7)	81.9 (79.4, 84.2)	67.4 (64.0, 70.5)	51.0 (49.6, 52.4)			
Average number of visits	1.01 (0.98, 1.05)	0.39 (0.34, 0.45)	0.63 (0.58, 0.68)	1.12 (1.09, 1.16)	<0.0001	<0.0001	
Prescription medicines							
Percentage with prescriptions	77.3 (76.6, 78.0)	64.4 (62.5, 66.2)	70.1 (67.9, 72.1)	79.6 (79.0, 80.3)	<0.0001	<0.0001	
Percentage with NO prescriptions	22.7 (22.0, 23.4)	35.7 (33.8, 37.5)	30.0 (27.9, 32.1)	20.4 (19.7, 21.0)			
Average number of prescriptions	13.9 (13.4, 14.3)	9.7 (8.4, 11.0)	8.0 (7.1, 8.9)	15.2 (14.7, 15.7)	0.0242	<0.0001	

Abbreviations: LCE, limited comfort speaking English; CE, comfort speaking English; NH, Non-Hispanic; Wt, weighted; CI, confidence interval; FOBT, fecal occult blood test.

For CE Status: Comfort speaking English for Hispanic adults was defined as if they: 1) OTHLANG: Not in a family with primarily other language (than English) spoken, and/or 2) HWELLSPE: How well English is spoken by the person (answered either 'very well' or 'well').

[£] Percentages were age-adjusted to the 2000 U.S. Census Bureau standard population by the direct method.

[§] Crude frequencies (sample size N) are shown.

^{^^} P-values are from two sample t-tests.

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

© Ambulatory visits include both office-based settings or clinics and out-patient department physician or medical provider visits.

** For LCE status: Limited comfort speaking English for Hispanic adults was defined as if they: 1) OTHLANG: In a family with primarily other language spoken, and 2) HWELLSPE: How well English spoken by person (answered either 'not well' or 'not at all').

Table 3

Multivariable analysis of cancer screening by race and english proficiency: medical expenditure panel survey, 2013–2016.

	LCE Hispanics**		CE Hispanics**		NH white		LCE Hispanics vs. CE Hispanics		CE Hispanics vs. NH White	
	Predicted margins (95% CI)		Predicted margins (95% CI)		Predicted margins (95% CI)		P-value		P-value	
Predictive model [#]										
Breast cancer screening [*]	0.73 (0.70, 0.76)	0.71 (0.67, 0.74)	0.62 (0.54, 0.69)	0.267					0.024	
Cervical cancer screening [^]	0.84 (0.82, 0.86)	0.82 (0.80, 0.85)	0.73 (0.66, 0.80)	0.287					0.015	
Colorectal cancer screening ^{\$}	0.53 (0.49, 0.57)	0.56 (0.52, 0.59)	0.56 (0.50, 0.62)	0.288					0.955	

Abbreviations: LCE, limited comfort speaking English; CE, comfort speaking English; NH, Non-Hispanic; CI, confidence interval.

For CE Status: Comfort speaking English for Hispanic adults was defined as if they: 1) OTHLANG: Not in a family with primarily other language (than English) spoken, and/or 2) HWELLSPE: How well English is spoken by the person (answered either 'very well' or 'well').

[#] Models were adjusted for age, education, marital status, health insurance coverage, time in U.S., and survey year.

^{*} Breast cancer screening (mammogram within 2 years) among women aged 40–74 years who were not diagnosed with breast cancer.

[^] Cervical cancer screening (Pap test within 3 years) among women aged 21–65 years who have not had cervix removed.

^{\$} Colorectal cancer screening (fecal occult blood test within 1 year, sigmoidoscopy within 5 years, or colonoscopy within 10 years) among adults aged 50–75 years.

** For LCE status: Limited comfort speaking English for Hispanic adults was defined as if they: 1) OTHLANG: In a family with primarily other language spoken, and 2) HWELLSPE: How well English spoken by person (answered either 'not well' or 'not at all').