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Implications of Spanish interviews in health surveys as collected in the United States: The case of Self-Reported Health

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ABSTRACT

This is an original investigation of self-reported health status among Hispanic adults from 1997 to 2018 in the United States (US). Previous research has shown there is a widening gap in poor/fair self-reported health between Hispanics who answer health surveys in English and those who answer in Spanish that cannot be explained by demographic/socioeconomic characteristics, assimilation or region of residence. Using data from the National Health Interview Survey (1997–2018), this study explores the patterns underlying the recent increase in self-reported health among Hispanic adults in the United States by estimating the percent of the population reporting poor/fair health status by language of interview and place of birth. Central to this study is the use of '*regular*' as a translation to "*fair*" which has been poised to be a non-equivalent translation. This investigation reveals that the increase is highly concentrated among non-US born Hispanic adults who answer health surveys in Spanish with increase in reports of "*regular*" health status driving this trend. The results presented in this short communication underscore the importance of language of interview when collecting key measures of health often employed to study health disparities.

1. Introduction

For over 40 years, the effect of inadequate translation of health surveys and implications for assessments of health status among Hispanic adults in the United States (hereafter US) has been a topic of concern (Berkanovic, 1980). A well-established body of scholarship has found Hispanics adults who answer health surveys in Spanish to be more likely to report poorer health than English respondents in the US (Sanchez & Vargas, 2016; Viruell-Fuentes et al., 2011). A consistent pattern of a higher percent of the population is found in self-reported physical and mental health among Hispanic immigrants when compared to their US-born counterparts (Garza et al., 2017). This deviates from well-established literature on the Hispanic Paradox, where the Hispanic population and/or population subgroups (i.e. Mexicans, Mexican-Americans) are found to have similar or better mortality than their non-Hispanic whites peers, despite their lower socioeconomic status (Fenelon et al., 2017). Being initially approached as an issue of language proficiency (Kandula et al., 2007; Shetterly et al., 1996), scholarship has started to converge towards the existence of a measurement bias due to translation issues regarding how self-reported health is collected in the US (Bzostek et al., 2007; Kandula et al., 2007; Sanchez & Vargas, 2016; Viruell-Fuentes et al., 2011).

Since 1997, no discernible trend in self-reported health is observed among Hispanics adults in the US when this population is analyzed as a whole (Santos-Lozada, 2022a). However, a recent study found an increase in poor/fair self-reported health when the analysis considers language of interview. That study documented an increase in poor/fair self-reported health among Hispanic adults who answered a health survey in Spanish from 15.91 % to 20.83 % from 1997 to 2018 (Santos-Lozada, 2022b). Such trend is not observed among Hispanics adults who answered the same survey in English over the same period (1997 = 12.15 % and 2018 = 11.83 %). Thus, the overall pattern found in the first study hides complex patterns of change in self-reported health among Hispanic adults in the US. Together, both studies underscore the need to study underlying patterns in measures used to assess health inequalities among diverse populations.

Data from the National Health Interview Survey collected between 1997 and 2018, reveals that the percent of Hispanic adults who chose to answer health surveys in Spanish was approximately 30 % (Santos-Lozada, 2022b). Given the sizable percent of Hispanic adults who choose

Abbreviations: US, United States.

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to answer in Spanish whether or not health status is accurately reflecting health has implications for understanding health disparities in the US. This is of particular importance given that self-reported health is one of the most frequently assessed and widely used items in population health and epidemiologic research (Eriksson et al., 2001; Zajacova & Dowd, 2011). Because most studies of self-reported health and its determinants follow a cross-section approach year-to-year change and changes across time have remain vastly unexplored in the extant scholarships. For example, the recent study by Santos (2022) found that the English-Spanish gap in self-reported health increased from 4.55 % to 8.30 % between 1997 and 2018 (Santos-Lozada, 2022b). The magnitude of the increase in the percent of Hispanic adults reporting poor/fair self-reported health, the sizable number of Hispanic adults who choose to answer health surveys in Spanish, the diversification of the population, and our reliance on self-reports to assess population health underscores the need to understand the sources of this increase.

This short communication provides insights as to the sources of the increase in poor/fair or mala/regular self-reported health among Hispanic adults in the US between 1997 and 2018, by exploring differences by language of interview and place of birth.

2. Data and methods

2.1. Data

For this study, I use data from the 1997–2018 National Health Interview Survey (NHIS) compiled and distributed by IPUMS Health Surveys (Blewett et al., 2019). The initial sample size was 294,983 observations collected among Hispanics 18 years and older from 1997 to 2018. This sample size reduced by 52,567 observations due to missing values in language of interview (50,640 observations), self-reported health (516 observations), or place of birth (1,411 observations). The source major reduction is due to an ambiguous category found in language of interview "*English and Spanish*" for which it is not possible to determine in what language the health question was asked. The final analytical sample consisted of 242,416 observations with valid information for the three variables employed in this analysis. The analysis was also performed without omitting the values excluded due to ambiguous category in the language of interview variable, as a robustness check, and the results are consistent with those presented in this short communication (see Supplemental Materials).

2.2. Measures

Self-Reported Health was operationalized as a dichotomous variable indicating whether respondents had reported their health was poor/fair for English respondents and mala/regular for Spanish ones (n = 20,167 or 12.31 % and n = 13,774 or 17.52 %, respectively). This operationalization is consistent with traditional operationalizations of self-reported health in research (Garza et al., 2017; Manor et al., 2000). Analyses for the original self-reported health items are included in the Supplemental Materials. Language of interview is a dichotomous variable indicating whether the NHIS was administered in English (n = 163,795 or 67.57 %) or Spanish (n = 78,621 or 32.43 %). Place of birth is also measured as a dichotomous variable, collected by self-report, indicating whether respondents indicate they were born in the US (a state or the District of Columbia) or not (n = 103,667 or 57.24 % and n = 138,749 or 42.76 %, respectively).

2.3. Analytical approach

Following the analysis of sample composition (included in the *Measures* section), the analysis proceeded in two stages. First, I estimate the percent of the population reporting poor/fair or mala/regular self-reported health by language of interview and place of birth for each year of the period of analysis (Fig. 1). Second, I estimate for the percent of the non-US born Hispanic adult population reporting of fair/regular and mala/poor health for each year of the period of analysis (Fig. 2). All

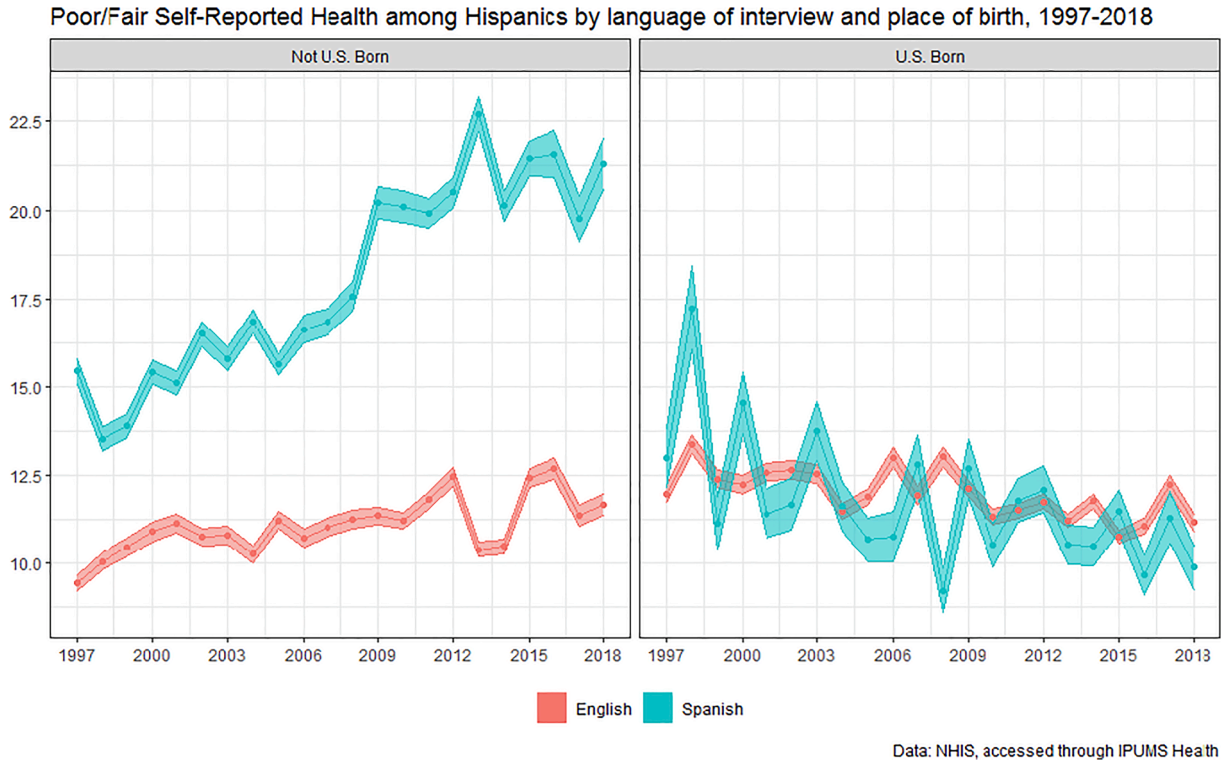

Fig. 1. Percent of the Hispanic adults reporting poor/fair self-reported health by language of interview and place of birth with 95% confidence intervals. Panel A shows trends for not-US Born Hispanic adults by language of interview. Panel B shows trends for US Born Hispanic adults by language of interview (National Health Interview Survey, 1997–2018).

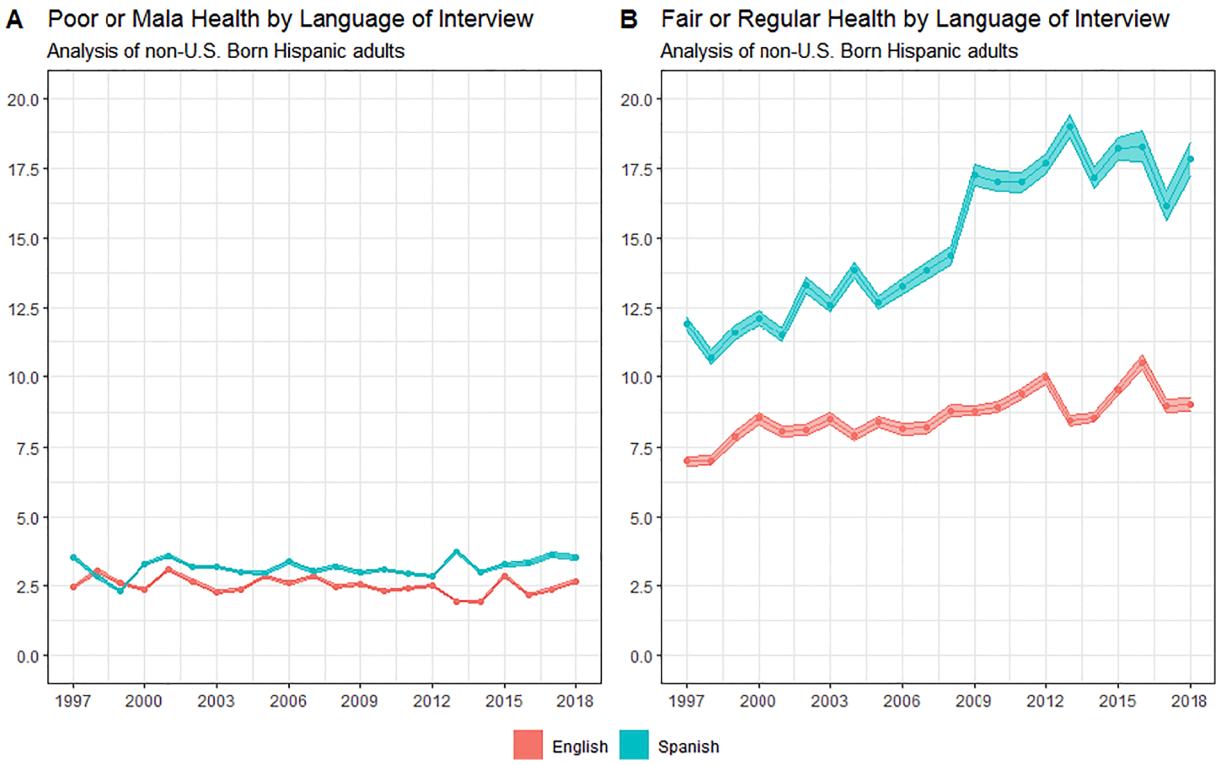

Fig. 2. Percent of the not-US Born Hispanic adults reporting poor/fair or mala/regular self-reported health status by language of interview with 95% confidence intervals. Panel A presents trends in poor/mala reporting by language of interview. Panel B presents trends in fair/regular reporting by language of interview (National Health Interview Survey, 1997–2018).

analyses were conducted using RStudio and the estimates are adjusted for complex survey design using the *svyr* library. The analyses were replicated using the semi-continuous self-reported health variable used to produce the poor/fair or mala/regular variable and the results were consistent to those presented in this short communication. These sets of robustness checks and consistency in results are in line with the emerging body of scholarship that produces consistent results using the dichotomous measure and the semi-continuous one (Santos-Lozada, 2022a). Additional robustness checks reproducing Fig. 2 for each individual health status category are included in the Supplemental Materials. These supplemental analyses seem to indicate that the increase in *"fair"/"regular"* is parallel to a reduction in the percent of non-US born respondents reporting their health status as "Muy Buena", the translation to "Very Good" within the NHIS. This is a secondary data analysis. As such, the Internal Review Board at The Pennsylvania State University has classified it as Non-Human Subjects research and has confirmed it as exempt (STUDY00020588).

3. Results

Fig. 1 shows the percent of the population reporting poor/fair self-reported health by language of interview and place of birth. As Fig. 1 illustrates, the increase in poor/fair self-reported health was concentrated among non-US born Hispanics who answered the NHIS in Spanish (1997 = 15.44 % and 2018 = 21.31 %). An increase of this magnitude is not observed among non-US born Hispanic adults who answered the NHIS in English (1997 = 9.44 % and 2018 = 11.67 %). Within US born Hispanic respondents, the percent of the population reporting poor/fair or mala/regular self-reported health remained relatively stable over the period of analysis (see Fig. 1). Fig. 2 show the trends of reporting poor/mala or fair/regular health by language of interview for non-US Born Hispanic adults. As Fig. 2 illustrates, the percent of the non-US Born Hispanic respondents reporting poor/mala self-reported health remained relatively stable regardless of language of interview. The percent change was 0.21 % and −0.01 %, for English and Spanish respondents, respectively. In both instances, the percent change is not statistically different from zero. In contrast, the percent change for fair/regular health among non-US Born Hispanic adults was 2.02 % and 5.89 % for English and Spanish respondents, respectively. The supplemental materials include information for each of the responses and hint that the increase in *"regular"* is parallel to a reduction in the percent of non-US born Hispanic adults reporting their health as "Muy Buena", the translation of "Very Good" health status (see Supplemental Figures 2 and 4).

4. Discussion

The result presented in this article expand our understanding of the ongoing increase in poor/fair health status among Hispanic adults in the US. Between 1997 and 2018, the percent of Hispanics adults who answered the NHIS in Spanish reporting poor/fair health status increased from 10.88 % to 14.44 %. The corresponding percent for English respondents remained relatively stable (1997 = 8.26 % and 2018 = 8.56 %). This increase is mostly concentrated among non-US born Hispanics (Panel A - Fig. 1). While the English-Spanish differences in self-reported health are well documented, the increase documented in this study has not been discussed in extant literature. The majority of the increase is due to a rising proportion of Hispanic adults who answered the NHIS in Spanish reporting "*regular*" as their health status. It is possible that this rise is rooted in linguistics differences mostly through by lack of equivalency between "*fair*" and "*regular*" (Bzostek et al., 2007; Sanchez & Vargas, 2016; Viruell-Fuentes et al., 2011). To reinforce this Fig. 2, indicates that the increase in the percent of Hispanic adults reporting *"regular"* health status is responsible for the majority of this increase. Earlier work has advised to account for acculturation when self-reported health is leveraged as a determinant of health (Finch et al., 2002) or to exercise caution in the use of self-reported health for comparisons of diverse populations (Dowd & Todd, 2011). Despite the persistence of the English-Spanish gap in self-

reported health (Landrine & Corral, 2014) and recently documented increase on it (Santos-Lozada, 2022b), no action has been taken to address the possible lack of equivalency at the data collection phase. Because more than 30 % of the Hispanic adults have consistently chosen to answer the NHIS in Spanish, excluding these respondents from the analysis could bias research findings and their generalizability. The largest increase is observed following onset of The Great Recession of 2008. Research conducted during that period indicated that the economic crisis, anti-immigrant attitudes and policies and enforcements of such policies have a detrimental effect on Hispanic Immigrants (Moya Salas et al., 2013; Ybarra et al., 2016). Anyón and Becerra (2013) found that Hispanic immigrants included limited English proficiency as a basis for the discriminatory practices they endured (Ayón & Becerra, 2013). Thus, it may be possible that more persons rely on the "*regular*" category to classify their health within a context of increased aggressions and horizontal/institutional discrimination. The absence of health measures that are comparable across languages may result in diminished understanding of health status among the population, and could lead to the under- or over-estimation of health disparities in the US. Future studies should evaluate, perhaps through decomposition techniques, how much of these differences are due to language of interview and/or due to differences in actual health. This could be accomplished by comparing biological risk profiles (i.e. employing biomarker based measures), measures of activity limitations such as activities of daily living or predictive power of this measure for subsequent mortality.

Author contributions

The author confirms sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data are available via IPUMS Health, and the replication code script is available in the following replication repository: https://github.com/alexisrsantos/SRH_Regular.

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Statements and declarations

Ethics approval: The Institutional Review Board of The Pennsylvania State University approved this study and considered Non-Human Research (STUDY00020588).

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.pmedr.2022.102103.

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