

**LATINO COMMUNITY HEALTH NEEDS & WORKFORCE
ASSESSMENT STUDY**

by

Melinda Ann (Wortinger) Grismer

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THE PURDUE UNIVERSITY GRADUATE SCHOOL
STATEMENT OF COMMITTEE APPROVAL

Dr. Nathalie Duval-Couetil, Co-Chair

Purdue Polytechnic Institute

Dr. Patricia Morita-Mullaney, Co-Chair

College of Education

Dr. Jason Ware

John Martinson Honors College

Dr. Anthony Silva

College of Education

Approved by:

Dr. Janet M. Alsup

Dedicated to the emergent bilingual adult immigrants for whom I have had the pleasure of teaching English as a Second Language, from whom I have gained a wider perspective on life, and with whom I have shared 20 years of mutual learning as “maestra” and “amiga.”

Thanks to my father, Rev. John Wortinger, who taught me both the “how” and the “why” of writing. Thanks to my mother, Linda Wortinger, for her patience, generosity, and encouragement. Thanks to the love of my life, Andy Grismer, whose fruit of the spirit blesses me daily – and to my two amazing children, Annaka (Grismer) Meadows and Drew Grismer for inspiring me to persist. Most of all, thanks be to Jesus Christ, who redeems and guides me. May all I do glorify Him.

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ABSTRACT

This dissertation explores the healthcare status, concerns and access of Spanish-speaking, immigrant Latinos who live and work in and around Clinton County, Indiana. The study analyzed the responses of 579 participants who answered questions during 20-minute, door-to-door interviews (80% of which were conducted in Spanish). The study's sponsor, the Indiana Minority Health Coalition (IMHC), was interested in assessing the health needs of this Latino community because it receives IMHC's funding for health disparity reduction. IMHC was interested in comparing the results of a previous benchmarking study, conducted a decade earlier, to the 2020 results for the purposes of understanding how successfully programming was being implemented. Between 2010 and 2020, Indiana's Latino population increased nearly 25%, and the population in Clinton County (where more than half of the school children are now Latino) almost doubled.

The study was spearheaded by the Purdue Center for Regional Development in conjunction with the Learning Network of Clinton County, a community-based organization that provides education and training in English and Spanish to adult learners, as well as the Mexican Consulate of Indianapolis that promoted the study among Spanish-speakers and shared the study results. Faculty and staff from the Indiana University School of Medicine at Purdue University served in an advisory capacity with medical students enrolled in West Lafayette's Latino Concentration Program serving as co-investigators. They were assisted by 10 bilingual (Spanish/English) youth of the community and two adult, bilingual (Spanish/English) Promotores de Salud (community health workers) who were trained and earned their ethical research certifications to participate.

The study used a mixed-methods, community-based participatory research approach to survey design, data collection, data analysis, dissemination of results. The findings this study revealed are detailed in the following three journal articles that each concentrate on a component of the project. In addition to its focus on health, the survey asked participants about their education and literacy levels, job satisfaction, and feelings of acceptance in the United States. The study provided insights based on descriptive statistics as well as a set of logistic regression models.

Immigrant voices were elevated to build awareness of their healthcare and workforce situation among providers, educators, public policymakers, community organizations, and employers of Latino workers. As this work was both exploratory and comparative in nature, there are implications for healthcare and workplace interventions that could improve equitable outcomes.

CHAPTER 1. INTRODUCTION

Fifteen bilingual surveyors wearing t-shirts and caps—along with their orange masks and backpacks—could have been mistaken for a Purdue hazmat team in the hot summer days of August and September 2020. In the midst of a global pandemic, this team knocked on doors in Frankfort, Ind., asking questions of local Latino residents who were willing to share information about their health concerns, self-reported health status, healthcare benefit coverage, level of job satisfaction, and feelings of acceptance in the United States. Five triads of surveyors were deployed to conduct these in-person interviews, yielding both quantitative data and qualitative data. After five weekends of data collection, 579 local residents responded—461 in Spanish and 118 in English—each answering 42 questions and spending nearly 20 minutes speaking to surveyors.

To be transparent, I know I must first confront my posture in light of the theoretical perspective that guided my work. In part, claiming a theoretical perspective helps the researcher choose language that “represents and communicates a paradigm and worldview” (Jones, 2014, p. 4). Crotty (1998) said that a theoretical perspective is “the philosophical stance informing the methodology and thus providing a context for the process and grounding its logic and criteria” (p. 3). In many ways, I am the “accidental researcher,” the “maestra,” turned community developer, turned statewide specialist who found herself pondering research questions that could only be answered by a scientific study of the topic at hand, the health and literacy of the Latino workforce. Due to these experiences, I view the world through a constructivist and interpretivist lens.

My relationship to the “youth of the community” on this team was as their parents’ “maestra,” watching them labor sacrificially to provide for their children over the past 20 years since most of them immigrated to Frankfort. Waking up before the sun to work hard all day, returning home to feed their family, and somehow attending evening English as a Second Language classes before falling asleep long enough to do it all over again the next day. Being a part of my adult learners’ lives touched me, changed me, and ultimately, inspired me to find ways to help improve their lives and livelihoods. To understand this study better, I need to explain how I came to be interested in this subject matter.

The first time I visited Frankfort, Indiana, where I spent 20 years of my career as an educator serving emergent bilingual adult learners, I knew I was home. My father had just become senior pastor of St. Matthew United Methodist Church, and my husband, four-year-old daughter,

and I were shopping at the local Wal-Mart. I remember being surprised that at least half the conversations happening around me were in Spanish, and I wondered, “What’s going on in this small, Indiana town?” I was compelled to find out what was driving this rural migration wave.

Fascinated by Latino culture, proficiency in the Spanish language has been the “*meta de mi vida* (life’s goal)” since high school. During college, I studied abroad in Madrid, Spain, to complete my minor in Spanish at Ball State University and covered the 1992 Barcelona Olympics as a student journalist on assignment from the Muncie Star. So, I was very excited in 2001, six months before our second child was due, when we decided to relocate to Frankfort so our children could grow up close to their grandparents. Right away, I immersed myself in Spanish learning and teaching, agreeing to instruct conversational Spanish classes for community residents in the evenings at the Clinton County Purdue Cooperative Extension office. Beginning classes turned into intermediate, turned into advanced – and, eventually, I taught on-site classes at local industries, for healthcare providers, and in schools for teachers of young emergent bilinguals.

As my children grew, I spoke to them in Spanish, fueling their second language acquisition (as well as mine) and opened up afterschool *Spanish for Kids* classes in the finished attic of my home, using an inquiry-based curriculum I wrote. At one point, I had 80 children enrolled (eight classes of 10 children – pre-K through 8th grade), including monolingual English-speaking children whose parents wanted them to learn to speak Spanish, as well as heritage speakers of Spanish whose parents wanted them to learn to read and write in Spanish.

It was during this Spanish language instruction explosion that I was asked to apply for the Learning Network of Clinton County Director position, where I would be co-located in the Clinton County Purdue Cooperative Extension office. My job was to create programs to meet the needs of the county’s adult learners, of which emergent bilinguals were an ever-increasing part, and fill educational gaps with both in-person and distance instruction.

At that time, I still thought the reason our local Latino workers experienced health and income disparities was, primarily, due to issues with the language barrier. However, several more years of Extension program planning and implementation showed me the real issue was access – or lack thereof. Serving in Frankfort as the Learning Network Director, Community Development Extension Educator, and County Extension Director for the Clinton County Purdue Cooperative Extension office provided several examples of how access is the real game-changer.

As the reality of the accessibility issue began to dawn on me, I changed the directionality of my Learning Network and Extension programming from one-way to two-way. I focused on providing programs like *Amigo Hour*, where monolingual English-speakers and monolingual Spanish-speakers equally benefited from structured interactions in each language (convened over a particular theme), and *Reality Spanish/Reality English* classes (under the tutelage of Dr. Gaye Jenkins, who created the COLA system following the lead of TPR pioneers like Stephen Krashen) that concentrate on building oral language confidence – with “connection not perfection” as the motto.

By 2008, I was writing grants and executing grant-awarded programs that supported the major non-formal educational outreach in the county. These included an English Language Learner-Civics program funded by the Indiana Department of Workforce Development serving more than 100 learners weekly, a large afterschool program funded by the Indiana Department of Education, as well as *PI@za Comunitaria* funded by the Mexican Consulate of Indianapolis, with whom I had cultivated a close working relationship.

Gaining a reputation for serving the state’s third largest (per capita) population of emergent bilinguals, the Indiana Minority Health Coalition asked the Learning Network to apply as an affiliate coalition site. This successful, long-lasting partnership produced my first opportunity to conduct a fully funded health needs assessment, which I did as part of the completion of my Master’s degree in 2010. The baseline data from that study informed several grant proposals and yielded awards that funded our Community Health Worker (known internally as our *Promotores de Salud*) team members, who first started making house calls in 2012.

Between 2012 and 2016, when I left the role of County Extension Director in the Clinton County Cooperative Extension office, I worked relentlessly in cooperation with a team of bilingual educators and staff to build our Clinton County Minority Health Coalition and empower our *Promotoras de Salud* (five Latina staff members) and the Spanish-speaking community residents they served. Since 2016, I have continued to serve on the board of the Learning Network of Clinton County, writing all the grants that fund the work the staff members carry out on a daily basis. In 2020, the Learning Network hired its first *Promotor* (male Community Health Worker) *de Salud*.

My long tenure as an educator in the same county where my study was conducted definitely affected my positionality as a researcher. In terms of my relationship to the subject matter, I benefited from a deeper understanding of the historical context of Frankfort, Ind., and its

immigrant residents due to the embedded nature of my work in the community. This knowledge was beneficial in choosing the research questions, designing the research instrument, and the process of pilot testing with multiple Spanish-speaking, community stakeholders. While I primarily see this an advantage, the opportunity-cost was that this very knowledge steered me in a specific direction to the exclusion of other potential research paths. Specifically, I pursued a greater focus on Latino workers at the intersection of health and literacy because of my past interactions with them and their employers.

My relationship with my research participants themselves also affected my positionality as a researcher. As I discovered on the first day of the study's data collection, the Latino residents who participated in this health and workforce needs assessment were acquainted with me due to my education and advocacy work in Clinton County. At first, I viewed this as a disadvantage. In order to avoid introducing bias into my respondents' answers, I immediately returned to the "command center" of the data collection operation rather than actively participating as a data collector for the study. Ultimately, however, I came to view this as an advantage because it allowed me time to debrief with the data collectors – individually and as groups – for the duration of the study, which resulted in another level of rich data I had not previously anticipated collecting.

My relationship with my research team was as a mentor and colleague. The Promotores de Salud viewed me as the former director of both the Learning Network and Clinton County Purdue Cooperative Extension office who wrote grants, developed programming, and advocated for the inclusion of community health workers as paid providers in the healthcare field across the state of Indiana. The bilingual youth of the community who I trained and employed as part of this study saw me as a sponsor of the United States Hispanic Leadership Institute (USHLI) program from which they had graduated and been selected for this role.

For my 2020 Latino Community Health & Workforce Needs Assessment study, I used a social-ecological theoretical framework to guide my inquiry. The five domains of social determinants of health include: 1) economic stability, 2) educational access and quality, 3) healthcare access and quality, 4) social and community context, and 5) neighborhood and built environment. Borrowed from the discipline of community psychology (Lounsbury & Mitchell, 2009), social-ecological theory is system-oriented and "generates research outcomes that give insight into the dynamic interaction of individuals with their environment" (p. 213). This framework helped me develop the 42 questions for the bilingual survey, which I

compared/contrasted with the Behavioral Risk Factor Surveillance System (BRFSS) questionnaire that is used as the script for a nationally distributed survey conducted annually by the Centers for Disease Control.

The methodology I used was Community-Based Participatory Research (CBPR), an approach to health, environmental and social science research designed to increase the value of studies for both researchers and the community being studied (Viswanathan et al., 2004, p. 1). This investigative approach is intended to produce research that is more responsive to existing needs and to enhance a community's ability to address important health issues. I chose CBPR because it matched the purpose of the funder, the Indiana Minority Health Coalition (IMHC), which was to better understand the communities where it supports affiliate coalition sites (such as Clinton County, Indiana, with the third highest per capita Latino population in the state) and implement health programming there. The present study was also an opportunity to make a decade comparison between the 2020 results and the data I collected in 2010 in the same community during a benchmark needs assessment.

I used a mixed methods approach, where quantitative was the principal method and qualitative was the complementary method. Though there are many ways to think about the term “mixed methods” research, Creswell (2015) primarily regards it as a method (a strategy or tactic) rather than a methodology (a process). Specifically, he defines it as:

an approach to research in the social, behavioral, and health sciences in which the investigator gathers both quantitative (close-ended) and qualitative (open-ended) data, integrates the two and then draws interpretations based on the combined strengths of both sets of data to understand research problems (Creswell, 2015, p. 2).

Some authors (Morgan, 1998; Steckler et al., 1992; and Baum, 1995) have argued for the use of mixed methods in health research due to “the complexities of most public health problems or social interventions, such as health education and health promotion programs” (Baum, p. 459; Steckler, p. 6). Many studies have been published within the past decade combining the two into this multi-paradigmatic approach.

In the article, *Revisiting the Quantitative-Qualitative Debate: Implications for Mixed-Methods Research*, Sale et al. proposes that the methods derived from both the quantitative and qualitative paradigms be used in a “complementary” way that is both “philosophically and practically sound” (p. 51). Morgan (1998) supports this recommendation by suggesting that

researchers “achieve complementary results by using the strengths of one method to enhance the other (p. 366). Triangulation, or cross-validation, is another technique to combine the two (Denzin, 1970; Mertens & Hesse-Biber, 2012, p. 77; Fielding, 2012, p. 127), but has been challenged on several fronts. Denzin thought that “by combining methods and investigators in the same study,” deficiencies could be partially overcome (p. 300). Now, the preferred rationale is one that “does not necessarily enhance validity but can extend the scope and depth of understanding” (Denzin & Lincoln, 2011, p. 7; Moran-Ellis, 2006, p. 48; Fielding & Schreier, 2001).

The three articles included in this dissertation focus on three distinct components of the study, namely 1) its CBPR methodology utilizing Latino “youth of the community” as data collectors, 2) its results as they relate to Latino health, and 3) its results as they relate to the Latino workforce. The first article has been conditionally accepted for publication in *Local Development & Society*, a journal publication of the Community Development Society. The second article was submitted for review to *Ethnicity & Health* in January 2023. And the third article will be submitted (ideally to a Taylor & Francis journal) in May 2023, pending the feedback of my PhD committee.

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CHAPTER 2. THE ROLE OF LATINO HIGH SCHOOL STUDENTS AS DATA COLLECTORS IN COMMUNITY-BASED PARTICIPATORY RESEARCH

Abstract

An important aspect of conducting studies related to Latino health and well-being is gaining access to the community and obtaining accurate information about their status. However, a significant barrier to obtaining these data is their reluctance to speak with researchers. To assess Latino healthcare needs, a study was conducted amid the COVID-19 pandemic in a rural Midwest community where the Latino population has nearly doubled since 2010. The study used a community-based participatory research (CBPR) methodology that involved bilingual Latino high school students as data collectors. This manuscript describes the methodology used to recruit students, train them in responsible research methods, and gather their experiences during and after the data collection period. The students' reflections detailed how their experiences with CBPR influenced their awareness of community issues and their personal or professional development. We demonstrate how "youth of the community" can be a valuable resource in Latino community research.

Keywords: *Latino, research methods, healthcare, survey, community-based participatory research, student reflections*

2.1 Introduction

The demographics of many communities across the country are changing. In some regions, the traditional minority population is increasing to become the majority population, now termed "a majority-minority demographic shift" (Lichter, 2012). In the state of [blinded for review] alone, the Hispanic population grew 40% between 2010 and 2020 (U.S. Census Bureau, 2020). This is the case in many rural areas of the Midwest, where many Latinos have migrated and settled over the past 30 years to obtain full-time employment in low-wage manufacturing jobs such as food and meat processing; assembly and warehousing; farm maintenance; and construction (Kandel et al., 2011). The region where this study was conducted received a significant influx of Latino

immigrants in the early 2000s. Today, the children and grandchildren of immigrants in this county comprise over 50% of the school-aged, public-school population.

Although they have put down roots and can find work, many Latino residents continue to struggle with issues they encountered when they first arrived in the early 2000s. They still have problems with the Spanish-English language barrier – a persistent problem since their arrival (on average) 20 years ago [blinded for review]. And despite the passage of the Affordable Care Act, there has only been a seven-percentage point increase in Latino residents with medical insurance coverage since 2010 [blinded for review]. National studies show that Latino workers face more health, healthcare access, and safety issues than white workers, and they do not seek medical care at the same rate as the non-Latino population (Baron et al., 2014; Oh et al., 2020). As a result, organizations and policymakers are interested in understanding the consequences of these phenomena to the workers, their employers, and the vibrancy of communities in which they reside – and how this has evolved.

A significant barrier to obtaining healthcare and other information from Latinos is their reluctance to speak with researchers (Shattell et al., 2008). This was particularly the case in late 2020, given politically-driven depictions of immigration, a hesitancy to participate in the decennial Census, and the uncertainty associated with the COVID-19 global pandemic. Prior research has found that the combined influences of mistrust and social desirability make gathering accurate data from Latino populations a challenge (McCann, 2020). Therefore, it is essential to design studies and methodologies that gather the data necessary to accurately depict Latino well-being and its impact on their communities.

To do so, this study used a Community-Based Participatory Research (CBPR) approach (Suarez-Balcazar, 2000; Wallerstein & Duran, 2006; and Pinto, McKay & Escobar, 2008), which involved empowering bilingual high school students, or the "youth of the community," to serve as data collectors. This paper describes the methodology used to orally administer a health assessment questionnaire to 579 representatives of households in a door-to-door survey among Latino residents of a rural community during the COVID-19 pandemic. The survey's main goal was to identify problematic health indicators for Latino residents of rural communities and bring healthcare solutions through the county-based Minority Health Coalition to address those indicators and reduce disparities in their health outcomes. This article explains how the students were recruited, trained, deployed, and monitored and their personal reflections throughout the

process that contributed to our conclusions. Their involvement was crucial to the study, so the authors have dedicated this article to detailing this unique methodology and the students' experiences.

2.2 Background

An important aspect of conducting studies related to Latino health and well-being is gaining access to the community and obtaining accurate information about their challenges, as well as their potential opportunities. This was the case in the Midwest community we were studying, where state and local initiatives existed to address the needs of the county's growing Latino population but where there was tension regarding documentation status (Evanoff, 2007). Our study took place during a political period when there were heightened concerns among local residents about immigration status and the collection of Census data. These issues were exacerbated by the fact that, while the study was planned before the COVID-19 pandemic hit the U.S., it was executed during the fall of 2020 before a vaccine was available and when many people were still isolating. While we could have postponed the study, we viewed the timing as an opportunity to examine the well-being and resilience of this community under these conditions.

The study was commissioned by a community-based nonprofit organization aiming to eliminate Latino health disparities through research, education, and advocacy. Because work, education, and language are known to be social determinants of health (Salman et al., 2021), this present study (that took place in 2020) focused on better understanding Latino healthcare access, coverage, health issues, and self-perceptions of health status. The purpose of this study was to provide a data-driven rationale for community-based health interventions being implemented in 2021 and beyond. Quantitative data from the study have been presented to community and business leaders and are the topic of a separate manuscript. The current manuscript focuses on the methodology used to collect data under the circumstances and conditions described above.

2.2.1 Community-Based Participatory Research (CBPR) in Latino Communities

Community-based participatory research (CBPR) is an approach to health, environmental, and social science research designed to increase the value of studies for researchers and the community being studied (Rea & Parker, 1997; Wallerstein, 2021). A study reviewing barriers to

recruiting ethnic minorities conducted in 2014 identified three themes that consistently emerged: 1) a lack of communication and cultural awareness between research staff and participants, 2) research staff personal attributes, and 3) a limited willingness and enthusiasm of researchers (Brown et al., 2014). The CBPR methodology helps to overcome these barriers. It is beneficial for academic researchers and public health professionals who are "struggling to address" health disparities in all five domains of the Social Determinants of Health (SDOH), including economic stability, education and access quality, healthcare access and quality, neighborhood and built environment and social and community context (Viswanathan et al., 2004, p. 1; Salman et al., 2021). The potential benefits of CPBR are sharing knowledge and experiences among researchers and community members (Wallerstein, 2021, p. 251; Schensul, 1985; and Israel & Schurman, 1989); the development of appropriate measurement instruments (Altman, 1995; Schensul, 1987); trust and power-sharing that can enhance data quality and quantity; and a "deeper understanding of a community's unique circumstances," that result in increased participation in the overall study (Viswanathan et al., 2004, p. 1; Duke, 2020). CPBR infers a movement towards more "community-driven" approaches to research (Wallerstein, 2021) in which community members pose the research questions and co-develop the study design, participating as advisory board members, community researchers, and data collectors.

Potential barriers to CPBR include insufficient staffing, resources, funding, and incentives for both communities and academic researchers to partner and collaborate (Belone et al., 2016; Duke, 2020). As such, there have been initiatives to better define CBPR and incentivize participation. A major initiative by the National Institutes of Health (NIH) sought to create a conceptual model for CBPR with four domains: context, partnering practices, impacts on research design and methods, and outcomes (Wallerstein, 2021; Elwood et al., 2019). NIH also developed a community engagement framework that includes values, strategies to operationalize each value, and potential outcomes of their use, as well as a peer-review framework for evaluating research that engages communities (Ahmed & Palermo, 2010; Forst et al., 2020), the purpose of which was to "ensure societal input into research priority setting at the NIH, the world's single greatest funder of biomedical research" (Burgin, 2005). **(See Table 1 for a comparison of NIH criteria and evidence from this present Latino Community Health Needs Assessment Study).*

These frameworks aim to "build the capacity of young and traditionally trained researchers and scientists interested in pursuing community engagement in research" (Ahmed & Palermo,

2010). Due to many factors, healthcare-related studies of Latino communities have been limited in their ability to gain enough participation from the target population to make significant inferences from the data (Sage et al., 2018). These factors include 1) researchers who only bring a theoretical knowledge of health to the task of investigating Latino populations or 2) staff members of community-based organizations who only bring practical knowledge of Latino populations to the task of investigating health. In 1996, Giachello made a claim that "most of the research on Latino health has been conducted without the representation of this population as part of the research team" (p. 354). Since then, more research has been done by minority investigators with Latinos in leadership roles (Harawa et al., 2017; Flores et al., 2019). One longitudinal study (Harawa et al., 2017) conducted by the Resource Centers for Minority Aging Research (RCMAR) found that investments in mentoring minority investigators and funding their work (from 1997 through 2015) produced perseverance in their academic research. There are also some examples of how individual community members, specifically high school students or the "youth of the community," are involved in research (Ozer, 2017; Arnold et al., 2019; Harley et al., 2019; Key et al., 2019). One photo-voice study that the authors found particularly relevant details how students were given cameras to document health disparities using a CBPR process, thereby uncovering themes that would not have otherwise emerged (Lightfoot, 2019). The involvement of young community members in the role of researchers is a valuable means to align with "principles of trust, mutual benefit, respect for diversity and the community's culture, and most importantly, respect for the voices of community residents" (Suarez-Balcazar et al., 2018, p. 398). According to Doran (2018), youth who share the target population's values evoke higher levels of trust among potential participants. Additionally, undocumented residents feel more comfortable and less threatened when questioned by youth (Lightfoot, 2019).

This article describes the steps taken in the summer of 2020 to assemble a young, bilingual team of data collectors to mobilize, execute and analyze a Latino health needs assessment study within their community. CBPR is the approach we chose for this research, given these challenges, and our personal long-term involvement and connections within the Latino community in the county of interest enhanced our efforts. The high school students were identified and selected based on their participation in a Grassroots Leadership Development Program (GLDP), which culminates in their graduation from the United States Hispanic Leadership Institute (USHLI), the goal of which is to empower minorities through leadership development, civic engagement, and

research since 1982. To participate in our data collection efforts, students were trained in responsible conduct of research methods. At several points during and after the data collection process, they were also asked to reflect upon their experiences.

2.2.2 The Research Context – The Latino Community Health Needs Assessment Study

While the focus of this manuscript is to describe the involvement of the "youth of the community" as bilingual data collectors in our methodology, it is vital to understand the more extensive study in which they were involved. The Latino Community Health Needs Assessment Study was funded by a nonprofit organization, the [blinded for review], which is focused on reducing health disparities in minority residents across the state of [blinded for review]. This present study was a ten-year follow-up to a prior study (conducted in 2010) benchmarking health indicators that were used to determine which health interventions would be deployed in the community by the local health coalition. For example, an outcome of the 2010 study was that an ergonomist worked with several industry leaders receptive to changing their assembly line practices to reduce repetitive stress injury. He also taught individual Latino workers better ways of maneuvering their bodies to prevent injuries. An interesting finding from the most recent study was that Latino access to primary healthcare providers and clinics increased, diminishing their reliance on emergency rooms to resolve health concerns. Only 21% sought medical care from an emergency room, a sizeable reduction from the 76% who sought care there exclusively in 2010. This present study (conducted in 2020) was also valuable in assessing the local impact of healthcare employment, economic development, and social services in [blinded for review].

The 2020 study focused on six areas of interest to the [blinded for review] Minority Health Coalition (IMHC), including infant mortality, mental health, obesity, substance abuse, access to care, and chronic disease [blinded for review]. In 2010, the focus was on chronic disease, but the research also gathered demographic, education, income, and health insurance information. The 2020 survey instrument included the same core questions from 2010 but broadened it to include at least one question from each area listed above. The primary goal was to compare results between the 2010 and 2020 studies to make inferences about whether the condition of minority health in the county had improved or declined. A secondary goal was to better understand barriers to accessing healthcare resources and coverage among Latino residents in Indiana. A third goal was to utilize the data being gathered to create an economic model that helps explain the cost(s) of

racial/ethnic health disparities to employers, the community, and the state economy, to impact policy decisions.

The research team was composed of 17 individuals with distinct roles and responsibilities. Two researchers wrote the research proposal, designed the initial draft of the survey instrument, and submitted the project for Institutional Review Board (IRB) approval. IRB approval was secured a month prior to the start of data collection. It was issued as an exception during the face-to-face restriction of human subjects' research studies related to COVID-19 based on dynamic safety protocols the team agreed to follow during the study's administration. Three co-investigators were bilingual medical students at the [blinded for review] School of Medicine. Two bilingual community health workers (known as Promotores de Salud*) represented an outreach organization that has earned the trust of the Latino community over the past 20 years. Ten high school students, or "youth of the community," were selected as bilingual data collectors.

2.3 Methodology

2.3.1 Data Collection

The quantitative data collection involved administering an oral survey to Latino residents in the community, who accounted for approximately 5,000 individuals within an overall population of approximately 15,000 community residents. This involved drawing cluster samples from high-concentration Latino residential areas, including city blocks, outlying developments, and rural neighborhoods. These were identified on a map, and ten were randomly selected for surveying. Each had at least 100 residents for a total of 1,000 in the sampling frame. Clusters were highlighted on the map and each "zone," or unit was labeled with a number and randomly drawn by surveying teams. Each team was responsible for one zone, per survey day, with two alternate zones (just in case they exhausted the area more quickly than anticipated).

Five survey teams were responsible for data collection. Each comprised two high school students and one bilingual adult mentor (either a "Promotor de Salud" who worked for the community organization or a medical school student who spoke and wrote both Spanish and English fluently) for a total of five data-collecting triads. Their instructions were to knock on every third door of their assigned "survey zone" to interview Latino residents based on a bilingual health needs assessment questionnaire. Administering the survey entailed one data collector reading the

questions to residents, the second recording their responses, and the third making notes of their side comments/conversations.

The data collectors exceeded the goal of 500 respondents, which was necessary to ensure a statistically valid sample (with a 95% confidence level). In total, data were collected from 579 Latino households. Five hundred was the minimum sample necessary to allow us to generalize to other rural Latino populations of similar size in the Midwest estimated at 5,000 residents (Rea & Parker, 1997). This required that each survey team talk to 11 respondents per survey day (nine survey days, four hours per day), allowing for 20 minutes per interview. Two alternative days had been written into the schedule, as a backup plan, in case fewer than that number were gathered by the last official survey day. Eighty percent of surveys were conducted in Spanish and 20% in English.

Although a mail or phone survey could have been chosen as a data collection method, based on prior research, ethnic communities tend to respond better to in-person surveys, boosting the overall response rate (Rea & Parker, 1997; Suarez-Balcazar, 2000). As previously stated, the study was planned before the onset of COVID-19, so going door-to-door was a significant concern when the pandemic hit. The authors discussed postponing but ultimately decided to go forward with it to collect timely data that could align with the decennial Census results and capture a snapshot of the effect of the COVID-19 crisis on a rural Latino population. The research team made every effort to protect themselves by wearing masks and gloves and carrying backpacks with additional PPE offered to all community members willing to respond to the survey. Therefore, with the approval of the funder and the local community-based organization, the team chose to move forward with only two months delay from the original timeline.

To incentivize individuals to take the survey, they were offered a \$10 gift certificate to one of five Mexican groceries in the community. Other public service activities were used to build trust and credibility with the target population. For example, each respondent received a "Know Your Rights" card (in Spanish) detailing how to deal with immigration status inquiries. The idea was based on a practice that the Mexican Consulate [blinded for review] uses to help Mexican nationals living in the U.S. protect themselves. If police officers or immigration agents knock at the door, residents can slip the card under it instead of answering or opening it. Participants also received information about English as a Second Language (ESL) classes available and were also invited to a community public forum to announce the findings of the study. Connecting their

personal participation (time spent taking the survey) with anticipated results appeared to be a motivator for cooperation (Suarez-Balcazar, 2000; George et al., 2013; and Sheehan et al., 2016).

To ensure intra-rater reliability when administering the survey, data collection teams were instructed to do the following:

- Clearly read (in Spanish or English, depending on respondent preference) each survey item and repeat questions as many times as necessary.
- Read the survey (from an iPad) in such a way that both the data collector and the respondent could see the survey and so that the respondent could correct any misunderstandings as the data collector fills in his/her responses.
- Offer respondents information about the study's upcoming public forum to announce preliminary results, as well as ESL resources.
- Thank them genuinely for helping the community by completing the health needs assessment survey with a \$10 gift certificate to one of five Mexican grocery stores.

2.3.2 Recruitment and Training of "Youth of the Community" Bilingual Data collectors

Several months before the survey launch, a meeting was arranged with high school seniors interested in working as bilingual data collectors for the five weekends required to complete the study. The targeted students had participated in the school's Grassroots Leadership Development Program (GLDP), culminating in a trip to the annual United States Hispanic Leadership Institute (USHLI) conference in Chicago each year. The USHLI promotes the principles of democracy through education and leadership development, empowering Latinos and similarly disenfranchised groups through civic engagement, research, and participation in the electoral process (www.ushli.org/mission-history/). Students must apply to the program and complete a community project to qualify to attend the USHLI conference.

The entire USHLI cohort of 25 students was invited to apply. Of those 25 students, 20 applied, 15 were chosen, and ten passed all modules of the required responsible conduct of research (CITI) training administered through the authors' university. These ten students completed two separate requests for information:

- 1) A self-report rubric that asked them to rank their language proficiency in two quadrants (reading/writing and listening/speaking) in both English and Spanish. The purpose of this was to select pairs of bilingual youth surveyors (who were accompanied by an adult Promotor de Salud/medical school student) based on their strengths in language comprehension and production; and
- 2) A calendar that asked them to provide their availability on specified days/times.

Ten students were selected and placed on teams according to their reading/writing and listening/speaking skills in both languages. As stated, each team was accompanied by either a Promotor de Salud or a medical school student. Before the data collection began, the entire team of 15 met to review the survey itself so surveyors could better field participant questions and conduct inter-rater reliability tests where they practiced using the equipment (an iPad), playing their role as either asking the questions (interviewer), entering the answers (data recorder) or taking notes (scribe). This was a critical part of the preparation to conduct the research, helping to ensure the consistency of the data (both quantitative and qualitative) and confidence of the "youth of the community" and Promotores de Salud to competently administer the survey.

Each team member was paid \$12 per hour for their work (\$600 per person), accounting for approximately \$9,000 of the total study expense. The payment did not appear to be a significant factor in their initial interest in the project but was undoubtedly a factor in their dedication to completing the project. Perseverance across all five teams was critical to the inter-rater reliability and the accuracy of data collection. In fact, to heighten their resolve to complete 500 total surveys/interviews, a bonus was given to each individual on a team that met its weekend data collection goals. As the teams competed against one another, their performance increased over the course of the five weekends comprising the research period.

2.3.3 Backgrounds of Student Data Collectors

Each high school data collector was a native, Spanish-speaking, bilingual member of the Latino community. Nine grew up in households with parents who emigrated from Mexico, and one grew up in a household with a mother who emigrated from Guatemala. All ten were raised in Spanish-speaking households and spoke Spanish as their first language. Each had varying levels of Spanish and English language proficiency in all four modalities (reading, writing, speaking, and listening). Teams were assembled by matching varying proficiency levels in English and Spanish language comprehension and production among members to ensure proper communication and documentation procedures for the study.

Eight data collectors identified as female, and two identified as male. All had varying education and work experiences that drove their interest in the study. Three of the young women had taken biomedical-related courses in high school; one worked as a nurses' assistant at a local nursing home facility; the remaining four were primarily interested in helping to reduce health

disparities in the community. Both young men were primarily interested in empowering Latino residents of Clinton County with resources and interventions. Of the eight females, seven were either already admitted to college or planning to attend, while the remaining one planned to go directly into the local workforce out of high school. Of the two males, one was admitted to college, and the other planned to join the local workforce.

2.3.4 Human Subjects Training and Certification

Before the study launch, all bilingual data collectors (high school students, medical school students, and community Promotores de Salud) were required to pass the university's basic human subjects and responsible conduct of training module from the Collaborative Institutional Training Initiative (CITI Program), which mandates a minimum 80% score for certification (<https://about.citiprogram.org/en/homepage/>). The test is available online in English and Spanish, and one of the authors offered test preparation workshops on three occasions during May and June 2020 to cover the test's content and answer any questions. These workshops supplemented the information available through the CITI online instructional modules and were critical to answering questions and providing more context for the study.

2.3.5 Data Collection Pivots

During the data collection process, the data collectors faced several obstacles related to the COVID-19 pandemic, particularly given that no vaccine was yet available. Chief among them was the physical barrier of opening the door to anyone for fear of infection. Complicating the situation was that our study occurred at the same time the U.S. Census concluded its door-to-door surveying. Therefore, many residents assumed that the clipboard-carrying bilingual data collectors were census takers.

By the second weekend of surveying, the research team realized it would need another strategy to literally get a "foot in the door." One of the team members suggested wearing university apparel for the next four weekends to make it clear that they were not from the Census nor immigration. Before this, they wore regular street clothes with orange masks, backpacks, and gloves provided by the [blinded for review] (since orange is the dominant logo color for the community organization). This was a successful change in strategy. Latino residents were familiar

with the local land grant university and more willing to open their doors for the subsequent four weekends. This trust exists due to the efforts of the local community organization and the University Extension Office, which share the same building, and where English as a Second Language and other programs designed for Spanish-speaking residents had been provided for the past 20 years.

Another pivot was removing white, non-Latino research team members from the data collection activity. On the first morning of the study, one of the authors and a medical school student joined a separate team in hopes of helping with data collection. While both spoke Spanish (in addition to their native language, English), they were white and non-Latino. Separately, they each noticed that participants held back in their answers during the survey/interview process due to their presence. So, instead of assisting with data collection, they left the field and set up a "central command" post at the partnering community-based organization's office where the five teams could check in with them, get questions answered, return for cold water and snacks, and drop off data collection materials and completed surveys to be secured.

2.4 Student reflections

In addition to describing the data collection methodology, an important aspect of this work was to examine the experiences of the high school students both during and after the data collection period. This was done to gather more insight into the data collection process, inform our results, and explore how their experience with CBPR influenced their awareness of issues within their community and their personal or professional development. The students participated in daily debrief sessions immediately after all ten data collection sessions. They also participated in three focus groups (once after the last day of data collection and twice after the study's completion at the one-month and six-month marks).

2.4.1 Reflections on Data Collection

After each day of data collection, when students returned to "central command" to drop off their survey materials, they were asked to reflect on their experiences. They were given question prompts to start the dialogue. These reflections were recorded, transcribed, and organized by

manual inductive coding to discover the following seven emerging themes. The names of the students have been changed for anonymity.

Theme 1: Survey Hesitancy within the Latino Community

From the reflections, it was clear that hesitancy to open the door to strangers was common and was particularly notable during 2020, given the pandemic and heightened political tension. While familiar faces and bilingual speakers helped increase our data collection efforts in many cases, many Latino households were still reluctant to participate.

“Today, as we were sitting on the curb to look at our cluster map before heading to the next house to survey, and a man came out of his house because he recognized me,” said one of the bilingual survey team members. “He thought I was a census person, which is why he avoided answering his door when we knocked on it. I told him we were just doing a community survey, and he seemed relieved. He said he didn't have papers, and he was scared it would affect him if he answered the wrong way. He said a friend of his recently answered the door for the Census and they were asking for his children's names. He said if they know the children's names, then they could figure out who he and his wife are—and could come back and arrest them.” ~ Leticia

“Little kids would look out the window. They would tell their parents, and then their parents just wouldn't open the door. The kids would open the curtains, and then they'd close them, and you would hear a bunch of chatting and they look a second time—then nothing. There was even one that was outside and I said, “Hey, is your mom home?” She said, “Yeah.” I asked, “Can you go get her?” And then she went and she was gone for a good five minutes. And then, once we left, and she came out again to play, but without her mom.” ~ Daniela

Theme 2: Advocacy for and Solidarity with the Latino Community

As stated, “Know Your Rights” cards were given to each survey respondent. These were printed in Spanish (front side) and English (back side) as a demonstration of solidarity with the Latino community and a means to increase survey participation. The purpose of these cards was to give Latino residents something to slip under the door or show authorities who questioned them. The cards say, “I am exercising my right to remain silent. I am also exercising my right to refuse to sign anything until my attorney reviews it. If I am detained, I request to contact my attorney

immediately. My attorney's contact information is... (with blanks to write in name and phone number)." This was an effective means of communicating the research team's intent, building trust, and increasing participation.

"We always give out the "Know Your Rights" cards first. People have said these cards are really helpful. Giving out two is a good idea, so they can keep one and share one. I noticed they always put them in the wallets or pockets right away." ~ Ignacio

"Some people didn't want to answer [the survey], but they agreed to do so when we told them it would help the community. I'm amazed how many people were willing to take the survey because it would help the community, although the younger people don't feel like helping the community as much as the older ones do." ~ Herminia

"I think that it really did amaze me the amount of people that were willing to do take the survey, even without that money incentive. Just by saying, 'Oh, we're trying to help the Hispanic community.' They were just like, 'All right, I'll take my time.' And it's very nice to see that in a community. That really touched me." ~Magdalena

Theme 3: Knowledge of Local Resources

Although the community had offered English as a Second Language (ESL) classes for more than 20 years, it frequently came up in conversations that community members needed to learn about these services and how to access them. Along with the "Know Your Rights" cards, the bilingual data collectors distributed business cards with information on accessing ESL and other community resources.

"When they say they don't know or speak English, and we give them a card about free English as a Second Language (ESL) classes, they get excited!" ~ Elena

"There was one woman we encountered who was really giving us her input and telling us what she needs. Because one of the things she said she needed is English to defend herself and her family because she has two kids with autism, so she gets a lot of criticism." ~ Abril

"Once they [the respondents] see that someone is asking about their health, they seem to open up and want to share. When we pass out the cards, it puts them even more at ease and gives them a way to resolve whatever health problem they may be encountering." ~ Juan

Theme 4: Confidentiality and Privacy

Reassuring respondents that the data collected would be confidential was crucial for getting participation. One interesting observation was that individuals in multigenerational households often had different ideas about privacy, which led to confusion and mistrust. Reassuring residents that the information being collected was confidential and anonymous was also essential.

“I think a lot of the older people think that we're there to get their information.”
~Elena

“Sometimes it's the senior citizens that live with their kids. Maybe the son-in-law, feels like it's not their house so they don't feel comfortable participating without their permission. Even though they want to participate they need the "okay" from the father-in-law, or the son, or the daughter. I always reassure them that we don't record names, addresses, phone numbers, or anything. That's how we demonstrate it's confidential.” ~Marisol

“They must feel like 'They're going to judge me,' or something. That's why I always start by saying, ‘We don't take any identifying information – no name, address, phone number or anything.’” ~Abril

Theme 5: Social Desirability in Responses

All five teams of bilingual data collectors encountered situations where they intuitively felt that health issues such as domestic violence, alcohol abuse, and drug abuse were underreported or not reported. Many factors likely contributed to the difficulty of gathering this data, including intimidation by seeing multiple people at the door and fear of a family member overhearing.

“I think people are sometimes embarrassed to answer honestly.” ~Ignacio

“They are trying to hide their issues and are afraid to tell the truth.” ~Alexa

“There's especially a lot of hesitation to answer the domestic violence question. It seems like the man always tries to answer that one before the woman can.”
~Mariana

Theme 6: Issues Affecting Immigrants' Access to Healthcare

Many bilingual data collectors reported that the most disheartening part of the data collection process for them was hearing stories from immigrants who encountered problems when they first arrived in the community – that they continue to encounter. This chart shows Latino

Health Needs Assessment study participants' responses regarding problems they encountered when they first arrived compared with problems they still face [Table 1 here].

Table 2.1. Study Participants' Problem Type Percentage Change (first arrived vs. current situation)

Problem type	When first arrived	Current situation	Percentage change
Language barrier	41%	33%	-8 percentage points
Work-related issues	16%	3%	-13 percentage points
Legal issues	12%	9%	-3 percentage points
Medical issues	7%	4%	-3 percentage points
Other problems	4%	15%	+11 percentage points
No problems	20%	36%	+16 percentage points

**Some "other" problems involved obtaining driver's licenses, being underemployed, and experiencing discrimination.*

"There were a few who really did tell us: 'We didn't have our driver's license when we first arrived, and we still don't.'" ~ Alexa

"One survey participant said he actually went to college in Mexico, but now he is working in construction here." ~ Julieta

"In response to the question of how valued do you feel here, sometimes people say: 'I stand up for myself,' or you also get the, 'well kind of,' or, 'no not at all because of racism.'" ~ Mercedes

"Because of the survey, we discovered there are a lot of people who don't have a social security number. We also found a lot of people who don't have access to doctor's clinics, so for us we felt good to be able to give them information and to help them fix their situation." ~ Jimena

"A lady told me that, even though she has insurance, she pays a lot of money in health bills because she has a condition that can only be treated in [big city]." ~ Eva

"I encountered two people who travel to [big city] for healthcare because there are more bilingual services there." ~ Mercedes

Theme 7: Gender-Based Differences in Responses

One of the data collectors' "ah-ha" moments was the role that gender played in the responses of survey participants. Several commented that they were amazed at how many men were informed about their own health and the health of their spouses and children.

"A lot of the times, I feel the mom is the one who takes the kids to the doctor or something, she even reminds the father to go to his check-up. She knows everything that's happening. And he knows that she has that role. But then the father agrees to take the survey, and he ends up knowing the information after all." ~ Leticia

"And a lot of men have answered the question about health in the household. In my experience, it was my mom who took all of the health stuff. She was the one who knew about my vaccines and everything. And here, all the men knew if their kids have vaccines or not—and the health issues going on in the house. They seem very informed." ~ Julieta

"I don't think there was any difference in the way they (participants) treated us men vs. women. They were all very nice, or they were willing to answer the question. There was even a guy who was iffy, and then as soon as we said: 'We're doing this to better the health of the Hispanic community here' he said: 'Okay. If it's for Hispanics, I'll do it.'" ~ Magdalena

"I had an interesting encounter with two guys—one of them was part of the household and the other one was a friend. We asked him if he wanted to participate in the survey, and the other one looked at him like, 'You're going to do that?' Kind of like a joke sort of thing. Then the guy said, 'Shut up,' and went ahead and took the survey. That was interesting. The guy was shamed by his friend for doing the survey." ~ Daniela

Theme 8: Impact of COVID-19

One key finding from the study was that survey participants indicated that the emotional and psychological impact of COVID-19 appeared worse than the economic impact. This seemed to resonate with the bilingual data collectors, who shared some of the impact the pandemic had on them personally and their own families.

"There was one white male, and he closed the door saying, 'Wait. I have COVID. I was exposed to it. Don't come close to me.' He was cautious. The other one, he answered the survey. He was Hispanic, and he was coughing." ~ Herminia

"Also, on the topic of mental health, it's been surprising for me that COVID, seemingly, has not had that much of a huge impact economically or psychologically or emotionally. Every now and then I get a 'yes,' though. One guy even told me his

wife was hospitalized for really, really bad anxiety related to the whole pandemic.”
~ Abril

“It’s surprising, but I think I’ve been more psychologically impacted, too. Like I’m always overthinking interactions and things like that due to COVID. I’m not head of a household. So, I can’t imagine how [it] would not impact someone who is.” ~ Magdalena

2.4.2 Overall Reflections

Six months after the survey was completed, student data collectors and medical students were asked to reflect on their research experience and community. We were curious to explore the experience's impact on their personal or professional development. Their comments are organized into the categories below.

Motivation for Latino Advocacy and Volunteerism

The knowledge the students gained from the experience empowered them to feel like advocates for the community. Their comments suggest there were both personal and practical outcomes, and they were very rewarding.

“This experience fueled my passion for volunteer work, which I have always enjoyed and plan to continue doing throughout my career.”

“This experience made me realize there is a prevalent need for health programming implementation in the Latino community. It showed me that assessing the health status and needs of the community is key for the development of appropriate interventions.”

“Now, when I assist Hispanic people with questions about healthcare, I am able to point them in someone's direction, to get them the help they need.”

“I work at a school and I may not be in school or technically an education professional, but I'm still able to ask least talk to parents if they have any questions.”

“The bilingual survey experience definitely gave me more motivation to help my community.”

“I have thought about all the people who we were able to reach out to and help in one way or another.” “One of the most rewarding things for me was letting people know that there is help out there that they were not aware of.”

Appreciation for the Latino Community and Cultural Identity

The research experience also appears to have given students a new perspective on and appreciation for their communities. They indicated pride in their culture.

“I have reflected many times on the health data we collected last summer. Knowing all that I do, I wonder if working at a factory after school affects high school students negatively – their health and their grades.”

“Yes, it was very impactful – and a great experience being there for the community. I sometimes think of what tweaks we could make to do it even better.”

“The surveying experience made me realize how much I enjoy being around the Hispanic community. Being from Miami, FL, I grew up in a beautiful community speaking Spanish daily and bonding with other individuals over our cultures. While it may sound corny, there is an incredible beauty in that which further empowers me to work in a community where I can care for other Hispanics.” [medical student]

“I appreciate the Hispanic Heritage Festival even more now – a day where we can focus on important issues in the Hispanic community.”

“During my time as a data collector, I was able to immerse myself in the Latino community and learn about their cultural identity.

“I am grateful to all the people who allowed me to survey them because they were very open and shared their own life story with me apart from just answering the necessary questions.”

The Importance of Bilingual, Culturally-Appropriate Healthcare

Not surprisingly, the data collectors also got a more specific view of how language and culture are essential to healthcare access. For the medical school students, it made them more determined to work with underserved communities.

“I perceive health differently after having been a bilingual data collector. I can understand where other Latinos come from -- and what issues they face.”

“Being a medical student, I often encounter Hispanic patients and translate medical visits for them when no one else can in the clinic. It's a beautiful connection to have with someone and I find myself remembering how rewarding it was to serve the Hispanic community in [blinded for review] when surveying and then at the Binational Health Fair. Working with the Hispanic community and other the data collectors was something I will never forget.”

“I got to discuss with members of the Mexican community the cultural barriers which prevent them to access medical care. For example, I saw many individuals

avoided visiting the doctor all together due to inability to communicate effectively in English or due to concerns about insurance coverage.”

“The experience did make me eager to work with underserved communities, such as the Latino community, because my ability to speak Spanish, leverage my own experience as an immigrant, and demonstrate cultural knowledge of this community will help me create a better patient-physician relationships in the future.”

Barriers to Healthcare Access

They also got a deeper understanding of the healthcare access challenges facing many Latino individuals and how they relate to various factors, including culture, language proficiency, jobs, finances, transportation, and even misinformation.

“Interacting with the community helped me realize the amount of misinformation there exists when it comes to medical issues. Many members of the community did not realize the extent of their own medical ailments.”

“I learned about the work issues of the community, how so many people are employed in factories or working in the fields (due to their migratory status) and how their employment contributes to their health issues.”

“Some people are not familiar with where to go and the ones who are aware are too afraid to ask for help as well.”

“I have seen many people not get the help they need, especially the older generation. They need more people out there spreading the word on how to help!”

“The surveying experience undoubtedly influenced how I perceive health and work issues in the community because I got to hear from fellow Hispanics directly regarding difficulties with access, transportation, and financial barriers when seeking medical care.”

Personal and Professional Development

Participating in the research appeared to be a very satisfying experience, both personally and professionally. The high school and medical students were empowered to make a difference through their future professions.

“I enjoyed meeting many members of the Latino community, talking about their health concerns, their barriers to care. As a future doctor I could help bridge the gaps in the care of the Latino community.”

“Having that interaction with individuals really helped me know what is going on. It gave my future goals more importance.”

“This is an experience I might not get to have again as a physician, but what I learned from it, I will carry with me in years to come.”

“For me, this experience sparked an interest in public health, but it didn't really change what I want to study, which is political science. I just really enjoyed doing the surveying and then seeing the data that we all collected. It is something that perhaps in the future I would do again.”

2.5 Discussion

Given the potential benefits of Community-Based Participatory Research (CBPR), our goal in this article was to describe the methodology to allow other researchers to employ it when conducting research within other communities.

Strengths. There are several benefits to our approach that are worth highlighting. First, it offered greater access to Latino participants by employing community members in data collection efforts. Second, it provided not only a means of collecting data but also a means to share community resources with the Latino survey respondents who participated. Third, it offered a personal and professional development opportunity to Latino high school students and empowered them to become advocates for their community. Ultimately, the methodology can contribute to the community's social capital and act as a collective "catalyst for change" (Vargas et al., 2012). The resulting health statistics can also make a case for resource allocation.

The students' reflections on their experiences brought these statistics to life. They witnessed the value of "Know Your Rights" cards and the lack of knowledge of community resources such as ESL courses. They observed survey hesitancy and the influence of social desirability in survey responses. Furthermore, they described the barriers to healthcare access and differences in gender and family roles. Several of those employed in this survey project were considering future work in healthcare, public service, or community development. Their insights provide depth to the quantitative findings and reveal new information that adds value to the study.

Our CBPR approach also involved brokering partnerships and providing participation incentives, essential to the data collection effort. We contacted five local Mexican grocery stores to collaborate on a gift certificate incentive. This was a key to success in our data collection effort because it validated the credibility of the study, provided an incentive to participate, and generated "word of mouth" in the community. As stated, within the five teams of bilingual data collectors, it was the role of the "interviewer" to hand the thank-you gift certificate to the survey respondent at

the end of the survey. Sometimes, participants would decline the incentive or take it for a friend/someone in need. In one case, a happy participant jumped on his bike (gift certificate in hand) after the survey, announcing that he was off to buy shrimp at one of the markets. While fairly modest, the incentive appeared effective.

Other keys to success were providing payment and incentives to students and research team members, which kept them engaged throughout the study period. The "Know Your Rights" cards were essential to developing trust and building rapport with participants. These conveyed to potential respondents that our research team cared about their rights and would protect their confidentiality.

Limitations. For future studies, the author recommends utilizing ALTA Language Service's assessment (used nationally for medical interpreter training) rather than a self-report rubric to assess the four modalities of language proficiency in both languages among bilingual data collectors. While the self-report rubric was relatively accurate and worked well for the purposes of this study, the ALTA assessment would likely improve the bilingual data collector pairing process and, as a result, overall study outcomes.

Lessons learned. Given the timing of our study, it is difficult to see how we would have succeeded in our data collection efforts without employing this method of CBPR. The COVID-19 pandemic secluded people and made them reluctant to open their doors. The political climate was hostile towards immigrants from Mexico and South America. Moreover, there was skepticism of Census workers who canvased neighborhoods to collect household data. We experienced the suspicion of strangers firsthand when our white, non-Latino team members attempted to join the data collection teams, which diminished their ability to obtain survey data. Dressing in the branded clothing from our local university, which was familiar to community members, was essential to our study's success in meeting our data collection goals.

Several other outcomes of this research were of value to the Latino community and should be highlighted. First, the Mexican Consulate of [blinded for review] collaborated with the author to host two outreach sessions during 2020 to promote the study and validate its importance for local Latino residents, mainly Mexican nationals. Collaborating with the consulate lent credibility to the research study and encouraged local residents to participate without fear. Before data collection, the first event served the dual function of announcing important immigration-related information to Mexican Nationals amid COVID to those who attended the outdoor event or

watched via Facebook Live (more than 2,000 people). For the second event, which occurred after data collection, representatives from the consulate returned to co-sponsor a health fair during Binational Health Week. The campaign theme, "Paisano, Tu Salud es Tan Importante como Tu Trabajo (Countryman, Your Health is as Important as Your Job)," was promoted heavily via social media along with assurances of safe practices like social distancing and mask-wearing. We presented preliminary quantitative study results in Spanish, highlighting "action items" that Latino residents might want to consider to improve their health. Also, several local healthcare and resource providers hosted information booths. The local Lions Club provided a well-attended vision health clinic since poor eyesight was one of the most significant health needs indicated in the study's findings. Before, during, and after the binational health fair, the partner community-based organization posted infographics that explained the study's key findings in Spanish and English so that Latino residents who participated in the study could have access to the information produced by the research (Ojeda et al., 2011).

Given that this data collection was successful during a pandemic and amid immigration tension, we can only assume that these strategies could be even more successful in a different context and at a different time. This paper demonstrates that CPBR can be a very effective tool and that integrating high school students into the process can result in several positive outcomes for the research and the individuals involved. It provides a view of their community from a different lens, suggests how to catalyze change, and exposes them to different professions through their engagement with medical school students, research, and data.

2.6 References

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CHAPTER 3.INSIGHTS FROM A COVID-ERA HEALTH NEEDS ASSESSMENT OF RURAL MIDWESTERN LATINOS

Abstract

Latino health and well-being are crucial to the growth and vibrancy of rural areas across the United States, particularly at a time when the demographics of many rural communities are transitioning from minority Latino to majority Latino populations. This manuscript details the findings of a study that explored the health and healthcare benefit status of 524 Latino households in rural Indiana during the COVID-19 pandemic. Via 20-minute, door-to-door interviews conducted by bilingual researchers, survey participants answered questions about access to healthcare services and benefits, dietary and safety habits, medical issues, and vaccination status. The study found that slightly more than half of those surveyed were enrolled in healthcare benefit plans; approximately a third were unsatisfied with their health/health status; almost two-thirds had not received a flu shot and were eating fast food/processed food on a daily basis. Top health concerns reported included: stress (52%), vision problems (34%), neck and back pain (30%), headaches/migraines (28%), anxiety and depression (28%) and weight problems (26%). The study also discovered that half of the respondents could not identify a primary healthcare provider (PCP) by name and that pregnant women faced a lack of resources for maternal health in the county where the study was conducted. The results indicate that Latinos in rural communities continue to endure significant health issues and barriers to healthcare. The study provides an excellent model of how a rural community can monitor the health of its residents, which can inform health interventions for underserved populations.

Keywords: Latino, Hispanic, rural, immigrants, health status, access to health/healthcare

3.1 Introduction

Although health outcomes differ among Latinos, health disparities are known to more adversely affect rural residents (Figueroa et al., 2021). While Latino immigrants historically settled in border states like California and Texas, they are increasingly moving to “new destination” areas, like Indianapolis, in more rural states (Lichter, 2012), resulting in a 24.6% increase in the Indiana

Latino population since 2010 (U.S. Census, 2020). Latinos have accounted for at least 9.2% of rural populations nationwide since that time (HAC, 2010). Documentation status varies widely even among family members who live in the same household (referred to as mixed-status households). Currently, there are approximately 2.3 million mixed-status families in the United States (Passell, 2011; Castañeda, 2014).

Rural people, in general, experience more barriers to healthcare services and poorer health than their urban counterparts (Caldwell et al., 2016; Cohen et al., 2017; Stone et al., 2022), but these issues may be compounded for rural Latinos (Ortega et al., 2015). According to the Centers for Disease Control (CDC), after COVID-19, heart disease, cancer, accidents, diabetes and strokes/aneurysms were the top five most common causes of death for rural Latinos from 1999-2020 (CDC, 2020). Research has shown that Latinos are less likely to have access to, or enroll in, healthcare benefits (Cabral & Cuevas, 2020; Carrasquillo, et al., 2000; Ku & Matani, 2001; Lubin, 2014; Majerol, et al., 2015; Ngo-Metzger et al., 2003; Ortega et al., 2007, 2015, 2018; Sudano & Baker, 2003; Zuckerman, 2011). Lower levels of healthcare benefit adoption have also been attributed to Latinos' lack of understanding or mistrust of the process for registration/payment (Duval-Couetil & Mikulecky, 2011). Latinos still perform worse on most measures of access and utilization than non-Latino whites (Alcalá et al., 2017; Chen et al., 2016). National studies show that Latino workers face more health, healthcare access and safety issues, and do not seek medical care at the same rate as the non-Latino population (Baron et al., 2014; Oh et al., 2020).

Reasons for these persistent disparities are multi-faceted, but include factors such as citizenship status, language barriers, socioeconomic factors, to name a few (Ortega et al., 2015, p. 527; Majerol et al., 2015). Data from the National Health Interview Survey (NHIS, 2011-2015 sample), revealed that respondents who completed the survey in Spanish were more likely to be uninsured, forego care, visit an emergency department and see a physician as compared to respondents who completed the survey in English (Alcalá, 2017, p. 55). "Specifically, disparities by citizenship or language (with only one exception) did not dissipate with the passage of the ACA" (Alcalá, 2017, p. 59). Pew Research Center and the Robert Wood Johnson Foundation conducted a national survey of more than 4,000 U.S. Latinos who had received care in the five years prior to 2008, finding (among other things) that "foreign-born and less-assimilated Latinos are more likely to report not having a regular source for medical treatment or advice" (Lubin, 2014, p. 24).

Because of the undue hardship of status on immigrants, immigration is now considered a social determinant of health (Castañeda et al., 2015; Ortega et al., 2015; Cabral & Cuevas, 2020). The structural framework for immigration as an additional social determinant of health for Latinos has been addressed in the literature (Castañeda et al., 2015), as well. According to Castañeda et al.'s structural framework, immigrant health is "influenced by three economic and social conditions": 1) access to healthcare, 2) access to health-protective resources, and 3) immigration enforcement actions" (p. 376). The authors make the case that without acknowledging that immigration is a "lived experience that directly affects health and well-being," it is impossible to "examine and respond to...disease on a population level" (p. 386).

Given the persistent healthcare issues facing Latinos, a statewide health organization in Indiana commissioned a health needs assessment study for one of its affiliate coalitions in a rural county where the Latino population nearly doubled from 2010 to 2020. The organization had done a similar study ten years prior and was interested in tracking the status of Latinos in their community. Therefore, a door-to-door survey of households was conducted particularly among working-age (ranging from ages 18 to 65), Spanish-speaking immigrants. The study drew questions from the leading health indicators (LHIs) defined by Healthy People 2010 and Healthy People 2020, as well as the Behavioral Risk Factor Surveillance Survey (BRFSS) developed by the Centers for Disease Control (CDC) in order to supplement this data with more information about the Latino populations of rural areas in the state where the sample was drawn and throughout the Midwest.

The present study primarily examined: 1) self-reported health status, 2) the population's most prevalent health concerns, and 3) access to health/healthcare benefits. Understanding Latino's health status, primary health concerns, and how they are impacted by access to health services/healthcare benefits is important given the potential negative impacts on their well-being, employment, and communities in which they live. The study provides an excellent model of how a rural community can monitor the health of its residents, which can inform health interventions for underserved populations.

3.2 Materials & Methods

The present study was conducted in a rural community about forty minutes outside of the Indianapolis area in a county with the state's third-largest, per capita population of Latinos (18.5%),

according to the U.S. Census Bureau (2020). The two major industry clusters are manufacturing and agriculture, where local residents are employees of farms and factories and where 53.2% of school-age children are Hispanic (IDOE). The survey was conducted orally by interviewers who were “youth of the community” and *promotores de salud* (community health workers) from the local high school and a community-based nonprofit organization. In teams of three, fifteen bilingual surveyors were assigned to five zones of the town and went door-to-door asking Latino residents 42 questions. The average time for the survey completion was approximately 20 minutes. While one surveyor read the questions to the participant, another surveyor entered each respondent’s answers into the questionnaire, and yet another surveyor made notes of participants’ feedback.

The questions utilized in the 2020 Latino Community Health Needs Assessment were cross-referenced with the Leading Health Indicators (LHIs) from Healthy People 2010 (HP2010) and Healthy People 2020 (HP2020), the Behavioral Risk Factor Surveillance Survey developed by the Centers for Disease Control (CDC), and the 2020 United States Census. Of the 10 Leading Health Indicators (LHIs) common to both the HP2010 and HP2020 initiatives, the present study asked questions pertaining to 1) access to healthcare (grouped under Access to Health Services in HP2020), 2) physical activity and overweight/obesity (grouped under Nutrition, Physical Activity and Obesity in HP2020), 3) mental health, 4) immunization (grouped under Clinical Preventive Services in HP2020), 5) injury and violence, and 6) tobacco and substance abuse. One of the LHIs included in HP2020, but not in HP2010, was maternal health, for which this study also produced meaningful data.

Social determinants of health were also measured by 19 of the 42 questions (or 45%) in the 2020 survey. There are five domains of the social determinants of health (SDOH), including: 1) economic stability, 2) educational access and quality, 3) healthcare access and quality, 4) social and community context and 5) neighborhood and built environment. The questions asked during this study particularly explored four of the five domains (with only one question of the 42 questions pertaining to the fifth domain).

To determine the efficacy of the survey and individual survey items, three pilot test sessions were conducted with local Latino residents. The first group, adult English learners in levels 1 & 3 of a state-funded literacy program, yielded helpful feedback for improving the instrument’s syntax and flow. The second group consisted of Spanish-speaking parents of children who were filling

out the FAFSA online at a community center. The third group, bilingual board members and teachers who work for a community-based nonprofit organization reviewed the survey questions to ensure accuracy of terminology and coverage of all health indicators. Changes were made based on the 30 local community members and adult learners (served by that community-based nonprofit organization) who reviewed/improved the survey before its deployment.

Ten years prior, a survey using the same community-based participatory research methodology was conducted by the same researcher in the same community. Nearly 350 immigrant Latino residents participated in the 2010 study, serving as a point of reference and comparison for the 2020 study.

Specifically, this article presents the findings from these survey measures:

Health habits. Six items regarding healthy habits were asked of participants, including the frequencies of eating fast food, using tobacco, drinking alcohol, consuming fruits/vegetables, wearing seatbelts, and exercising. A five-point Likert scale (1 = *never*, 5 = *always*) was used to measure the set of items. In order to develop the questions included on the 2020 survey instrument, the 2010 Latino Community Health Needs Assessment questions were cross-referenced with the Leading Health Indicators (LHIs) from Healthy People 2020, the Behavioral Risk Factor Surveillance Survey developed by the Centers for Disease Control (CDC), and the demographic categories used by the 2020 United States Census.

Health concerns. Participants were asked how frequently they themselves – or someone in their household – were affected by 14 different health concerns. These health concerns included stress, anxiety and depression, high blood pressure, diabetes, hypercholesterolemia, cardiac heart problems, kidney problems, weight problems, vision problems, arthritis, neck/back pain, migraines, domestic violence, and drug abuse. However, since none of the participants reported that they had ever abused drugs, this item was excluded from the analysis. Domestic violence was also excluded from the analysis as there were so few responses on positive occurrences. (*Some reasons why no drug or domestic abuse was reported by participants are explored in the limitations.*) Thus, the total score for the remaining 12 items was used for the statistical models.

3.3 Results

Over the course of five weekends in August and September 2020, a total of 579 Latino households participated in the study survey, including 461 in Spanish and 118 in English; in the

end, a total of 524 valid, complete surveys were analyzed. The average age of the participants was 40.15 ($SD = 12.5$), and the average time spent in the United States was 20.36 years ($SD = 9.82$). The sample includes 54% female and 46% male. The majority were married (50%) and employed (73%). Only 5% of the participants finished postsecondary education.

Table 3.1. Demographic Information of the Study Participants

	<i>n</i>	%
Biological Sex		
Female	283	54%
Male	241	46%
Marital Status		
Single	112	21%
Married	257	49%
Living together	90	17%
Divorced	41	8%
Widowed	13	2%
Employment		
Employee	381	73%
Independent contractor or business owner	27	5%
Unemployed	32	6%
Stay-at-home mom or dad	48	9%
Student	5	1%
Retired/Not in the workforce	7	1%
I can't work (because of a disability)	9	2%
Place of Birth		
United States	63	12%
Mexico	416	79%
El Salvador	11	2%
Nicaragua	0	0%
Guatemala	14	3%
Honduras	2	0%
Dominican Republic	0	0%
Other	10	2%
Medical Care Location		
Emergency room	48	9%
Doctor's office	103	20%
No-cost Health Clinic	104	20%
Low-cost Health Clinic	83	16%
Faith-based Clinic	96	18%
Neighboring small town	52	10%
Closest metropolitan area	24	5%
Other	66	13%
Year in US	<i>M</i> = 20.36 (<i>SD</i> = 9.82)	Min = 0, Max = 75
Age	<i>M</i> = 40.15 (<i>SD</i> = 12.5)	Min = 16, Max = 79

The initial models included demographic variables, including biological sex, marital status, age and residency years. Biological sex and marital status were input as dummy variables. The final full model included health-and work-related variables (e.g., healthy habits, employment status, insurance status), which examined their effects after controlling for the demographic variables. The individual models were evaluated by goodness-of-fit indices (deviance tests) to determine which predictors would remain in the final model. All categorical and continuous variables were grand-mean centered for better interpretability.

All analyses were performed using SAS 9.4. Multiple imputation method was utilized to treated missing data. In doing so, 10 imputed datasets were created, and the estimates were merged using PROC MIANALYZE in the SAS software. The estimated model fits were combined by the method suggested by Little and Rubin (2002).

Latino respondents' self-reported health status. Of the study participants, 15.8% ($n = 90$) were very satisfied (or rated their general health condition positively, i.e., good, very good), over half (50.4%) were somewhat satisfied and 30 percent ($n = 193$, 33.8%) were not satisfied (or rated their general health condition as negative, i.e., bad, very bad). By comparison, the 2010 study found that 62.35% of survey respondents were very satisfied with their health, while 28.63% were somewhat satisfied and 9.02% were not satisfied. This speaks to a declining (rather than improving) state of health for Latinos in this particular state and county, perhaps with implications for Latinos in underserved rural areas where access to healthcare is limited by their documentation status (Cabral & Cuevas, 2020).

In the 2020 study, 12% of respondents (51 people) said that pain makes it difficult for them to take care of themselves more than half the time; 13% of the respondents (54 people) said that pain makes it difficult for them to go to work more than half of the time, and 9% of the respondents (40 people) said that pain makes it difficult for them to participate in recreational activities more than half of the time. Within the same state, the national Behavioral Risk Factor Surveillance System (BRFSS) survey found that Hispanic respondents (ages 18 years and older) more frequently reported (11.1% Hispanic vs. 9.4% white) poor physical and mental health that “kept them from doing usual activities”.

Table 3.2. Frequent Poor Physical/Mental Health kept you from doing usual activities among adults 18 years and older by Race, Ethnicity, Indiana BRFSS and Year

Race, Ethnicity	2010	2020
Hispanic	5.7%	11.1%
Black, Non-Hispanic	7.8%	8.2%
White, Non-Hispanic	7.4%	9.4%

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health, 2010 and 2020 Indiana Survey, Behavioral Risk Factor Surveillance System (BRFSS); <https://nccd.cdc.gov/weat/#/analysis>

Note: Frequent - 14 or more days in the past 30 days

Latino respondents' health concerns. Specifically, a considerable number of participants reported that stress ($n = 220$ out of 420 valid responses, 52%), vision problems ($n = 153$ out of 446, 34%), neck and back pain ($n = 141$ out of 459, 30%), headaches/migraines ($n = 128$ out of 457, 28%), anxiety and depression ($n = 133$ out of 468, 28%), and weight problems ($n = 125$ out of 473, 26%) were *occasionally* to *always* a problem for them or their family members. In terms of healthy habits, many positive health habits—like wearing seatbelts (99%), eating five fruits/vegetables a day (95%) and routine exercise (84%)—were reported, along with the negative health habit of eating fast food/processed food on a daily basis (61%).

Latino respondents' health habits. Regarding the participants' household use of healthcare services, 68% of them had visited doctors' offices within the last 12 months; 59% visited dentists' offices; 41% visited optometrists; and 41% had received a flu shot. Among 283 female participants, 43% had received a breast exam and 35% had received a mammogram in the past 12 months. These proportions become more significant when looking the age range of 40+, at which regular breast exams are strongly encouraged; 95% had received a breast exam and 79% had received a mammogram in the past 12 months.

Table 3.3. Participants' Health Issues

	Never	Almost Never	Sometime s	Frequently	Always
Health issues in family					
Stress	170 40.48%	30 7.14%	163 38.81%	24 5.71%	33 7.86%
Anxiety/depression	309 66.03%	26 5.56%	101 21.58%	17 3.63%	15 3.21%
High blood pressure	395 82.46%	10 2.09%	36 7.52%	5 1.04%	33 6.89%
Diabetes	406 82.52%	13 2.64%	19 3.86%	7 1.42%	47 9.55%
Hypercholesterolemia	390 82.28%	8 1.69%	43 9.07%	10 2.11%	23 4.85%
Cardiac heart problems	490 94.96%	2 0.39%	12 2.33%	1 0.19%	11 2.13%
Kidney problems	473 93.48%	1 0.20%	16 3.16%	5 0.99%	11 2.17%
Weight problems	331 69.98%	17 3.59%	77 16.28%	16 3.38%	32 6.77%
Vision problems	280 62.78%	13 2.91%	56 12.56%	15 3.36%	82 18.39%
Arthritis	440 88.35%	2 0.40%	20 4.02%	12 2.41%	24 4.82%
Neck/back pain	312 67.97%	6 1.31%	97 21.13%	18 3.92%	26 5.66%
Migraines	319 69.80%	10 2.19%	101 22.10%	16 3.50%	11 2.41%
Domestic violence	520 98.86%	2 0.38%	2 0.38%	1 0.19%	1 0.19%

Table 3.4. Participants' Health Habits

Health habits					
Fast food	65	140	283	28	10
	12.36%	26.62%	53.80%	5.32%	1.90%
Tobacco	470	6	35	4	12
	89.18%	1.14%	6.64%	0.76%	2.28%
Healthy food	9	17	206	145	149
	1.71%	3.23%	39.16%	27.57%	28.33%
Drink alcohol	285	47	167	15	10
	54.39%	8.97%	31.87%	2.86%	1.91%
Use seatbelts	5	1	6	7	504
	0.96%	0.19%	1.15%	1.34%	96.37%
Exercise frequently	44	39	252	74	116
	8.38%	7.43%	48.00%	14.10%	22.10%

3.4 Discussion

The purpose of this study was to examine Latino respondents' 1) self-reported health status, 2) the population's most prevalent health concerns and habits, and 3) access to health/healthcare benefits. The study found that although a decade had passed since a previous survey asking nearly the same questions, self-reported health status, major health concerns and percentage of Latinos covered by healthcare benefits had changed very little. Many of the barriers to healthcare remain (such as status, cost, language and location) even after several changes of federal administration and the passage of the Affordable Care Act (ACA). The following section details insights gleaned from comparing the 2020 study results with those from a similar study conducted in 2010, as well as more than two decades of Latino health needs assessment data.

Self-reported health status. A full third of survey respondents were unhappy with their current health status, as compared to only 9% of respondents in the 2010 study, which indicates a community in a declining state of health. More research is needed to uncover the specific reasons for this decline, but factors discovered in this present study shed important insight that can assist future researchers in their exploration. One possible reason is the effect of immigration status on the health of U.S. resident Latinos, including their self-reported health status. In fact, one study (Ortega et al., 2018) discovered that undocumented immigrants have lower odds of self-rated

excellent/very good health status compared to documented immigrants, U.S. born Latinos, and whites (p. 921). In another study, researchers found “patterns of increasing use of [healthcare] services” followed “the continuum of immigration status from lack of documentation to naturalization” (Ortega et al., 2007, p. 2358). This means that those immigrants most in need of services use them the least, perhaps out of fear of exposure to authorities who might report their healthcare activities and endanger their ability to remain in the United States.

A discussion of specific insights under each category follows below:

- *Immunization.* Foreign-born immigrants are generally thought less likely to be fully vaccinated than the U.S.-born population (Strine et al., 2002). However, the 2020 study found that 96% of the children of the immigrants who participated in the survey were vaccinated, but they themselves (the adult immigrants) had low rates of immunization. In fact, 58% of the respondents (303 people) in the 2020 study said that they had not received a flu shot in the past 12 months, yielding similar results to that of an emergency room immunization study completed more than a decade earlier (Jacobs, 2002). The 2010 Latino Community Health Needs Assessment study, conducted by the same author as the 2020 study, didn’t ask participants to answer a question about flu shots. Immunization played out in the local community dynamics during the pandemic as 56% of Latinos in the state where the study was conducted were ultimately vaccinated against COVID-19 (IDOH).
- *Maternal Health.* The 2020 study found that only 14% of applicable women interviewed during the 2020 study reported receiving monthly prenatal check-ups during pregnancy and that 7% experienced the loss of a child within the first 12 months after delivery. In 2019, the infant mortality rate for all ethnicities in the United States was 5.6 deaths per 1,000 live births. For Latinos, the rate was 4.9 deaths per 1,000 live births (CDC, 2020). The School of Medicine in the state where the 2020 study was conducted reports an infant mortality rate 20% higher than the national average (IU School of Medicine, 2021a). Within those cases of infant deaths, about one in eight is a SUID, or a sudden, unexpected death without an immediately identifiable cause (ibid., IU School of Medicine). According to the IU School of Medicine, upon further investigation the vast majority of these SUIDs appear to be due to suffocation or strangulation resulting from unsafe sleep (2021a). Only 10% of the pregnant women who were surveyed reported receiving proper prenatal care, including monthly checkups. Upon further investigation, it was discovered that there are a

limited number of providers in the county where the survey was conducted that accept emergency Medicaid for monthly prenatal visits. However, emergency Medicaid does cover in-hospital labor and delivery (XX).

- *Primary Care Provider (PCP).* While more respondents receive care now from a doctor's office or clinic—rather than the emergency room like they did in 2010—a full 50% cannot identify a primary care provider (PCP). In healthcare research, PCPs are known to be a protective factor, increasing the opportunity for preventive care and creating a continuity of care that leads to longer life expectancy overall. The good news is: the percentage of people who haven't visited any (type of) doctor in 2020 (32%) is 10 percentage points lower than those who hadn't visited any (type of) doctor in 2010 (42%). Even better, the percentage of people who haven't seen a dentist in the past year in 2020 (41%) is 20 percentage points lower than those who hadn't visited a dentist in 2010 (61%).

Health concerns and health habits. Half of survey respondents in 2020 complained about stress (as the No. 1 health concern), and the survey respondents' other Top 5 health concerns included vision, anxiety and depression, neck/back pain and migraines (in that order). Weight issues was the 6th most cited health concern. With more than half of survey respondents (61%) claiming to eat processed food almost daily in 2020, as compared to 60% in 2010, this has been a decade-long community nutrition issue.

A discussion of specific insights under each category follows below:

- *Vision.* In the 2010 study, 39.61% of respondents complained of vision problems. Although the overall complaints decreased by 13.38% in the 2020 study (with 153 respondents, or 34.31%, mentioning these concerns), eye problems were still the second highest self-reported health concern by survey participants in 2020. Researchers discovered one local barrier to vision health was a lack of understanding of vision insurance/cost of eyeglasses and contacts, as well not being aware of nearby bilingual optometrist resources. A health intervention focused on creating a pathway to vision care was created as a result.
- *Mental health.* In the 2020 study, 220 people (or 52.38%) responded that stress is a daily health concern for them, while 133 people (or 28.42%) identified anxiety and depression as specific daily concerns. Both of these health indicators came up in the Top 5 health concerns overall for study participants. In the 2010 study, 36.47% indicated that stress was

a daily concern for them, meaning that in the span of a decade, stress (as a health concern) grew by 43.62% for this community's Latino residents. Anxiety and depression were not specifically measured in the 2010 study. The combined total means that 80.8% of respondents expressed some type of mental health related concern in 2020. This an area that demands additional research, but studies consistently suggest that immigrants underutilize mental health services (Vega et al., 1999). Reasons for this can include stigma, cultural and linguistic barriers and impeded access to healthcare services/insurance (Rodriguez et al., 1992 and Ngo-Metzger et al., 2003). Two studies did find that first-generation Mexican immigrant adults had a lower prevalence of mental disorders compared to U.S.-born Mexicans and to the rest of the U.S.-born sample (Kessler et al., 1994; Robins & Regier, 1991). On a practical level, not speaking English proficiently and needing interpretation services are two major barriers to accessing healthcare and consistently receiving healthcare services, including mental healthcare (Alegria et al., 2017). "... there appear to be common risk and protective factors for mental health outcomes that result from the immigrant experience" (p. 155).

- *Neck/back pain and migraines.* While 42% less survey respondents in 2020 (30.7%) complained of back/neck pain than they did in 2010 (52.94%), this was still the fourth most frequently mentioned health concern overall in the 2020 study. Migraine pain was not specifically measured in the 2010 study. Since 60% of the participants work in factory/manufacturing environments, the authors believe there may be a connection to repetitive stress injury (Arcury et al., 2015; Cartwright et al., 2012; Baron, 2009; Durocher et al., 2013). More investigation is needed into the relationship between these data and the survey respondents. In an effort to address the situation locally, a health intervention was conducted after the 2010 study results became available to educate the community of interest (in Spanish) regarding principles of good ergonomic practice and techniques for slowing/halting the progress of repetitive stress injury in affected individuals.
- *Nutrition & weight issues.* In the 2010 study, 18.44% of respondents struggled with weight issues by comparison to 26.43% in 2020—a percent increase of 43.33% within one decade. Some studies have found increased obesity in immigrants as their time spent in the United States increases because they consume fewer complex carbohydrates and more highly processed convenience foods (Rivera, 2002). A 2015 nutrition study, in which many of the

same respondents who participated in the 2020 study participated (and with whom the first author of this paper collaborated) confirmed this finding (Hermosa et al., 2015). The authors' results evidenced the "perception of improved quality of life variables related to ... tendency for increases in their consumption of fast food, processed food and soda," generating "negative effects in terms of an increase in being overweight, and particularly a lowered consumption of products from their traditional diet" (Hermosa et al., 2015, p. 107).

Access to health/healthcare benefits. Although this study did not specifically ask about the respondent's immigration status (documented or undocumented), all respondents were immigrants of Hispanic heritage and 80% of the respondents answered in their native language, Spanish. According to Kandula et al. (2004), reporting data on ethnic minorities with a high proportion of foreign-born is a typical proxy for immigration status. The average participant in this study was a 40-year-old, married adult emergent bilingual immigrant who has lived in the United States for an average of 20 years with four people in the household and two children under the age of 18. This median time-in-country is consistent with an immigration wave that occurred in this state and county in the early 2000s, when it was estimated that at least 40% of Latinos were foreign-born (Schmidley, 2000).

Only 7 percentage points more of the Latino population in the 2020 study—a total of 54%—have healthcare benefits now as compared to 2010. Nearly half, 47%, still do not. Among those with insurance, 73% had benefits provided through their employer, and 20% were covered by some type of government healthcare program (including Medicaid/Medicare/HIP). Perhaps most interestingly, a greater percentage of the respondents' children (66%) than they themselves were covered, 51% by some type of government healthcare program (including Medicaid/Medicare/HIP). Compared to the U.S.-born population, immigrants were twice as likely to be uninsured regardless of type (public or private healthcare insurance) in 2000 (Carrasquillo et al., 2000; Ku & Matani, 2001; Sudano & Baker, 2003). The 2020 ACS data support that gaping disparities remain with 7.1% of native-born U.S. residents uninsured, while 19.3% of foreign-born residents are uninsured. In Indiana, where both the 2010 and 2020 studies were conducted, the data is even more dramatic with 7.3% of native-born U.S. residents uninsured and 21% of foreign-born residents uninsured.

Despite the efforts to reform healthcare through the Affordable Care Act of 2012, undocumented immigrants were specifically excluded (Lubin, 2014; Zuckerman et al., 2011). Although emergency Medicaid covers anyone who presents at an acute care facility with a “life- or limb-threatening” illness, injury or condition, it does not cover ongoing healthcare (Zuckerman, p. 2003). Cabral & Cuevas (2020) add that, due to the strict enforcement, undocumented immigrants often seek healthcare at community health clinics (p. 875). The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 was passed barring immigrants from applying for Medicaid or Medicare for at least five years after entry (PRWORA, 1998). This law is still in effect, amended slightly by the Illegal Immigration Reform and Immigrant Responsibility Act in 1997, and is a barrier that still persists to this day nearly 25 years later. Due to immigrants’ fear of compromising future status upgrades, many do not claim public healthcare benefits even after they are eligible (McCann & Jones-Correa, 2020). In their 2011 study, Duval-Couetil and Mikulecky discovered that Latinos were hesitant to pay for healthcare benefits because they preferred to keep all of their earnings and were suspicious of the associated fees (p. 219). All of this contributes to the low levels of healthcare benefit adoption and coverage of Hispanic/Latino employees in companies across the United States, as well as their low levels of health literacy.

3.5 Limitations

Researchers were limited in several areas of questioning by respondents’ strong social urge to give the researcher the answer the participant thought the researcher wanted (a phenomenon known as social desirability). While none of the participants reported that they had ever abused drugs or been involved in domestic abuse, social desirability factors likely played into this result. Therefore, no useful data was collected for tobacco use and substance abuse from the 2020 Latino Community Health Needs & Workforce Assessment study. As such, the authors are investigating other ways of answering this question among the community of interest.

3.6 Conclusion

This study primarily examined: 1) self-reported health status, 2) the population’s most prevalent health concerns and 3) access to health/healthcare benefits. The study’s findings compared to findings of a similar study in 2010 indicate that this rural immigrant Latino

community is in declining health, according to their self-reported answers to the 42-question survey. Their Top 5 major health concerns included stress (with more than half of respondents indicating that this as a daily affliction), vision problems, anxiety/depression, neck/back pain and migraines. Given that this is a sample of working age participants, many of these health concerns may be directly related to their vocation, though more research is needed to be certain. Nearly two-thirds of respondents eat “fast food” on a daily basis, and nearly half still do not have healthcare benefits. These findings are calls to action for healthcare providers in the community of interest, as well as other rural populations across Indiana and the nation with similar demographics. They suggest that more needs to be done given the growing presence of Latinos and the economy’s reliance on them through employment in local workplaces and as contributing members of their local communities. ~5,199 words

3.7 Declaration of Interest Statements

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Raw data and study materials are secured according to IRB protocol; authors can access the code used for analysis.

All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Melinda Grismer, Dr. Nathalie Duval-Couetil and Dr. Soohyun Yi. The first draft of the manuscript was written by Melinda Grismer and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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Informed consent was obtained from all individual participants included in the study. This article does not include any individual person’s data in any form.

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CHAPTER 4. RURAL LATINO IMMIGRANT WORKERS' JOB SATISFACTION & FEELINGS OF ACCEPTANCE

Abstract

Latinos are already the largest ethnic minority in the United States, representing 18.9% of the total U.S. population (U.S. Census, 2020a). In fact, by 2030, one out of every five workers in the labor force will be Latino (Bureau of Labor Statistics, 2021a), as immigrants and their children will contribute roughly 18 million working-age people to the labor force between 2015 and 2035 (Budiman et al., 2020). To examine Latino health and workforce needs, a door-to-door study was conducted amid the COVID-19 global pandemic in a rural Midwest community where the Latino population has nearly doubled since 2010. More than 579 Latino adults participated in the study, 80% of them Spanish-speaking immigrants. This manuscript describes the results of that study as they relate to job satisfaction and acceptance issues of emergent bilingual immigrant workers. The authors found that as study participants' English proficiency increased, so did their job satisfaction. Participants perceived more job satisfaction when their family size was bigger. The study's results also implied that younger participants - and participants with shorter residency years - were associated with greater feelings of acceptance in the United States. These findings are significant because of their implications for emergent bilinguals' current and future workplace success.

Keywords: Latino workers, survey interviews, community-based participatory research, English proficiency, job satisfaction, acceptance in the United States

4.1 Introduction

New ways of recruiting and retaining immigrant workers are imperative given that U.S. labor force growth over the next four decades is expected to come from Latinos and their children. Between 2020-2030, the Latino labor force is projected to increase by 78% (compared to 9 percent in the non-Latino labor force) with second-generation Latinos accounting for 47 percent of that growth (Bureau of Labor Statistics, 2021a) and approximately 66,000 Latinos turning 18 every month (Coulombe & Gill, 2016). This has resulted in a 24.6% increase in the [blinded for review]

Latino population between 2010 and 2020 (U.S. Census, 2020b), estimated to be 554,191 or 8.2% of the state's total population.

While immigrants have historically settled in border states like California and Texas, they are increasingly moving to smaller metro areas, including Midwest cities such as Indianapolis (Lichter, 2012). In the state [blinded for review] where this study was conducted, most emergent bilingual, working-age adults have unclassified occupations (32%), while 14.8% work in manufacturing and 10.8% work in services/healthcare/social assistance (Lightcast, 2021). Eight-eight percent of the participants in this study were employed, 63% of them in manufacturing, 14% in construction, 4% on farms, 4% in food service, 2% in an office, and 1% in childcare.

Many communities are ill-prepared for the “fast pace of change” on local economic and civic structures (Wilson, 2014, p. 17). This demographic shift and subsequent societal impacts in rural [blinded for review] communities were part of the impetus for a Latino Community Health Needs & Workforce Assessment study conducted in 2020. The study was funded by a regional nonprofit agency focused on providing healthcare and related services to the racial and ethnic minorities. Its health-related findings, that about half the participants are without healthcare coverage and one-third are unsatisfied with their self-reported health status, are the subject of another manuscript [submitted for publication]. Its novel methodology, employing bilingual surveyors, who are “youth of the community,” is the subject of yet another manuscript [submitted for publication].

The present study expanded beyond healthcare access to examine workplace issues – specifically, job satisfaction and acceptance in their primarily rural Midwestern, monolingual workplaces. Given the reliance of regional employers on this population of Spanish-speaking, immigrant employees, this article explores the potential impacts of job satisfaction and overall feelings of acceptance on performance and well-being. Other reasons for placing more emphasis on work and worker satisfaction in the region were the increasing scarcity of workers, growing demand for both low- and high-skilled labor, and a desire among public agencies and employers to tailor workforce training to current and future worker needs.

This study was conducted door-to-door in September 2020, during the COVID-19 global pandemic. The paper examines data collected from 579 Latino residents to understand how their literacy level affects their job satisfaction and how they perceive their overall acceptance in the United States. The results substantiate the claim that literacy is an integral component of job

satisfaction and has implications for future research to test the constructs of language and belonging that could add insight into what employers and public agencies can do to improve the quality of life for this fast-growing labor force.

4.1.1 Latinos and Work

In the United States, Latinos made up 40% of the U.S. workforce growth between 2010 and 2020 (U.S. Census, 2020a), contributing 12% of the GDP, and over \$1.7 trillion in purchasing power. Latinos also constitute 25% of all low-wage workers, which are defined by the Brookings Institution as workers who earn median hourly wages of \$10.22 and median annual earnings of \$17,950 (Ross & Bateman, 2019). Brookings' Metropolitan Program Policy report, *Meet the Low-Wage Workforce* (2019), states that Latino workers are over-represented in this category of workers relative to their share of the total workforce, with females faring particularly poorly, at 54% of low-wage workers, higher than their total share of the workforce (48%). Today's low-wage workforce, as described by Ross & Bateman (2019) in the Brookings report, "disproportionately includes foreign-born individuals (33%) and those with limited English proficiency (24%)," (p. 9). By comparison, 20% of all low-wage workers and almost two-thirds of low-wage, immigrant workers were not proficient in English a decade ago (Brooks, 2009), and that number has not increased significantly (U.S. Census, 2019), a finding confirmed locally by the results of our 2020 Latino Community Health Needs & Workforce Assessment Study [manuscript submitted for publication].

4.1.2 Emergent Bilinguals in the Workforce

Two-thirds of emergent bilingual workers are concentrated in six industry categories (collapsed from 20 more detailed categories described with NAICS codes): maintenance, production, construction/extraction, food preparation/serving, transportation/material moving, sales and office/administrative support (Wilson, p. 13). Using the American Community Services dataset (2012), a Brookings Institution study calculated a location quotient (LQ) by dividing the share of emergent bilingual workers in each industry by that industry's share of non-emergent bilingual workers. Emergent bilingual workers were disproportionately found in industries with a

LQ of 1 or above, including: manufacturing, agriculture, hospitality and in the private employment of households (Wilson, p. 14).

Regardless of the geography of the sector, labor force participation is dependably high among emergent bilingual workers in the United States (Wilson, 2014; Zhen, 2016; Hwang et al., 2010; and Batalova & Fix, 2010). In an article analyzing National Assessment of Adult Literacy (NAAL) data, 97% of immigrant men with low oral English proficiency were employed, despite the obvious barriers (Batalova & Fix, 2010, p. 520-21). According to the 2020 Bureau of Labor Statistics, 84% of Hispanic families have at least one family member employed (Bureau of Labor Statistics, 2021b). Although Latinos are currently the second largest workforce in the country, Latinos remain underrepresented in managerial positions (Linares, 2015).

4.1.3 English Language Proficiency

Nearly one in 10 working-age adults, or 19.2 million people ages 16-64, is considered LEP, limited English proficient (Wilson, 2014). *For the remainder of this article, the authors will refer to LEP adults as emergent bilinguals.* The vast majority (87%) of emergent bilingual workers are immigrants; two-thirds of them speak Spanish, but speakers of Asian and Pacific Island languages are also likely to be emergent bilinguals (Wilson, p. 4). Since 1980, the number of working-age emergent bilingual adults has grown by 2.5 times, expanding from a 4.8 to a 9.3 percent share of the population (Wilson, p. 2).

According to the Programme for the International Assessment of Adult Competencies (PIAAC, 2017), 17% of adults in the Midwest who speak languages other than English, could “not read well” or “not read at all” in English (U.S. Department of Education, n.d.). Fourteen percent of participants who tested in the PIAAC scored in the Level 1 range of literacy, while 33% scored in Level 2 and 37% scored in Level 3. Within the Midwest region of the United States (including Illinois, Kansas, Nebraska, Indiana, Wisconsin, Iowa, Minnesota, Michigan, Missouri, North Dakota, Ohio and South Dakota), 8% of this population are Hispanic. Midwest Hispanic participants’ average literacy score on the PIAAC was 239 as compared to 280 for whites only in the Midwest (U.S. Department of Education, n.d.).

Beyond English for conversational purposes, called Basic Interpersonal Communication Skills (BICS), working-age adults need literacy skills for work-related reading and writing tasks

that necessitate some level of Cognitive Academic Language Proficiency (CALP) expression (Cummins, 2008, p. 71). While BICS can be acquired in about two years, CALP takes a minimum of five to seven years to develop (Halbach, 2012, p. 608), putting workers at a time disadvantage, even if wrap-around resources like transportation and childcare are available and affordable (Vanek et al., 2019; Mollica, 2020).

4.1.4 Educational Attainment

Educational attainment has a powerful effect on English proficiency (Rumbaut & Massey, 2013, p. 149). Nationally, 33% of Hispanic/Latinos have less than a high school diploma (ACS, 2019), as compared to Whites (7.6%), Asians (13.4%), Blacks (14.6%). “Those with less education and language preparation at migration are more likely to end up unemployed or in trade/manual labor, and this occupational difference further contributes to a lower likelihood of obtaining advanced and career-related education in the USA,” (Calvo & Sarkisian, 2015, p. 1043).

Since the early 2000s, national assessments that measure literacy consistently find that working-age, emergent bilinguals have lower levels of formal education than their non-emergent bilingual counterparts. In the 2003 NAAL, 69% of adults age 25 and older lacked a high school diploma (Batalova & Fix, 2010, p. 529). Further, Wrigley et al. analyzed the difference in education between foreign-born and U.S.-born emergent bilinguals and discovered that 35% of foreign-born as compared to 16% of U.S.-born, emergent bilinguals had not earned their high school diploma (Wrigley, 2009). Ten years later, slightly more than half (51%) of low-wage workers have less than a high school education, and 14% have a bachelor’s degree as compared to 44% of mid- to high-wage workers (Ross & Bateman, 2019, p. 9).

4.1.5 Underemployment

Emergent bilinguals are often blocked from earning up to their potential, as income is strongly related to both English literacy and educational attainment. In fact, proficiency in English makes the “greatest difference in earnings for those emergent bilinguals in the middle of the educational attainment range (high school diploma or some college),” (Wilson, 2014, p. 28). Using data from the PIAAC, a Gallup study commissioned by the Barbara Bush Foundation for Family Literacy showed the variance in income between U.S. adults with differing levels of literacy.

Adjusting for demographics, if emergent bilinguals jump from level 2 to level 3 in English literacy, the study shows they gain an estimated \$13,193—and even more, \$23,979—if they jump from level 0 or 1 to level 3 in English literacy (Rothwell, 2020). If all U.S. adults were to obtain at least level 3 of English proficiency, the study reports that an additional \$2.2 trillion in annual income would be generated for the United States, which is 10% of the gross domestic product (Rothwell, p. 4).

Relatedly, the role minority-language enclaves play in earning disparities among emergent bilinguals was the subject of a study by Chiswick & Miller (2002) and Zhen (2016). The first study found that “linguistic concentration may have an indirect influence on earnings through their negative impact on the acquisition of destination language skills,” (Chiswick & Miller, p. 34). The second study found that although enclaves bring immigrants non-wage benefits, they can impede the earnings of those emergent bilinguals who are more proficient in English (Zhen, p. 347). Hwang supports this finding by suggesting that the “effects of English proficiency on earnings are conditioned by language environment” (p. 1626). Jobs outside of enclaves, Zhen suggests, assist emergent bilinguals who are aspiring to higher levels of literacy to use their new-found skills and further integrate into U.S. society (p. 347).

4.2 Methodology

The present study was conducted in a rural Midwestern town, with the state’s third-largest, per capita population of Latinos (18.5%), according to the U.S. Census Bureau (2020a) and where 53% of school-age children are Hispanic ([blinded for review] Department of Education, 2023). The survey was conducted door-to-door by trained bilingual surveyors, who were “youth of the community” and adult *Promotores de Salud* (community health workers) from a Latino advocacy agency. In teams of three, 15 bilingual surveyors were assigned to five zones and asked Latino residents 42 questions. The average time for the survey completion was approximately 20 minutes. As the lead surveyor (the “interviewer”) asked the survey questions, another member of the surveying team (the “reporter”) entered the answers, while a third team member (the “scribe”) made notes of participants’ feedback. Over the course of five weekends, a total of 579 Latino adults participated in the study survey, including 461 in Spanish and 118 in English; in the end, a total of 524 valid responses were analyzed.

Two of the study's four research questions focused on Latino health status, concerns and outcomes. These findings are the subject of a separate manuscript. The current manuscript focuses on the survey participants' responses to questions related to job satisfaction and feelings of acceptance, which were derived from the research questions listed below:

RQ 1. What are the prevalent workplace barriers that emergent bilingual immigrant workers face? Have those barriers changed, increased or decreased since their arrival in the United States (on average 20 years ago)?

RQ 2. What are the health and work-related predictors that explain Latinos' job satisfaction and feelings of acceptance in the United States?

4.3 Measures & Analysis

Job satisfaction. Participants were asked how valued they feel at work, choosing between three categories (3 = *valued*, 2 = *more or less valued*, 1 = *not valued*). Since not many responses reported *not valued* (4.6%), the responses, *more or less valued* and *not valued*, were considered as negative; thus, we created a binary variable for further analyses, a method suggested by D'Alonzo (2011).

Acceptance in the United States. Participants were asked to rate to what extent they feel accepted in the United States. Three categories (3 = *valued*, 2 = *more or less valued*, 1 = *not valued*) were used, but responses, *more or less valued* and *not valued*, were merged as negative responses, a model suggested by Sanchez & Vargas (2016). (A binary variable (1 = *valued*, 0 = *more or less or not valued*) was created and used for the analyses.

Covariates. Biological sex, marital status, educational attainment, age, residency years, and number of family members were the covariates in the analytic models in terms of the participants' geographic information.

The authors estimated the logistic regression models to predict the participants' job satisfaction (1 = *valued*; 0 = *more or less valued* or *not valued*) and feelings of acceptance in the United States (1 = *valued*; 0 = *more or less valued* or *not valued*), respectively. The initial models included demographic variables, including biological sex, marital status, age, educational attainment, English proficiency, and residency years. Biological sex and marital status were input as dummy variables. The final full model included health-and work-related variables (e.g., healthy habits, employment status, insurance status), which examined their effects after controlling for the demographic variables. The individual models were evaluated by goodness-of-fit indices

(deviance tests) to determine which predictors would remain in the final model. All categorical and continuous variables were grand-mean centered for better interpretability.

All analyses were performed using SAS 9.4. Multiple imputation method was utilized to treated missing data. In doing so, 10 imputed datasets were created, and the estimates were merged using PROC MIANALYZE in the SAS software. The estimated model fits were combined by the method suggested by Little and Rubin (2002).

4.4 Results

4.4.1 Descriptive Statistics

First, we analyzed the descriptive statistics before presenting the work-related concerns and prevalent perceptions of Latino participants. Presented in Table 1, these variables were controlled to address the research questions.

Demographics. The average age of the participants was 40.15 ($SD = 12.5$), and the average time spent in the United States was 20.36 years ($SD = 9.82$). The sample includes 54% female and 46% male. The majority were married (50%) and employed (73%). Only 5% of the participants finished postsecondary education. Eighty-one percent of survey respondents were born in Mexico, 12% were born in the U.S., and 7% were born in other countries, particularly from Guatemala, El Salvador and Honduras.

Place & Level of Education. Sixty percent of the respondents to our 2020 Latino Community Health Needs & Workforce Assessment study had less than a high school education and 40% had at least a high school education. Only 5% had some college or a college degree. Sixty-three percent of respondents went to school in Mexico, 22% went to school in the U.S., and 15% went to school in other countries, particularly Guatemala, El Salvador and Honduras. 63% of respondents went to school in Mexico, 22% went to school in the U.S., and 15% went to school in other countries (particularly from Guatemala, El Salvador and Honduras)

Employment. More than two-thirds of survey respondents were employees (73%), and a few were self-employed (5%). Ten percent were stay-at-home parents or grandparents, 6% were disabled or retired, and 6% reported being unemployed. Most of the employed participants worked at factories (63%), on construction sites (14%), or at farms (4%), while 4% worked in food services, 2% worked in an office, and 1% worked in childcare.

English Proficiency. In terms of perceived English proficiency (1 = *fluent*, 2 = *proficient*, 3 = *survival English*, 4 = *I cannot read/write English*), the average was 2.11 (*SD* = 1.33) for writing and 2.24 (*SD* = 1.27) for speaking. Only 22% of participants felt they could understand/speak English proficiently, while 32% say they could not read/write at all. Compared to a decade ago (when the baseline study in the same community [blinded for review] was conducted), English speaking proficiency was up by 29% (reported to be 17% in 2010) and English reading/writing proficiency was up by 26% (in 2010, 43% reported they could not read/write at all in English).

Problems Encountered Then and Now. The findings here specifically address the first research question, detailing how the prevalent barriers that participants faced in the past – and currently face – have changed since their arrival in the United States (on average, 20 years ago).

Table 3.1. Study Participants' Problem Type Percentage Change (first arrived vs. current situation)

Problem type	When first arrived	Current situation	Percentage change
Language barrier	41%	33%	-8 percentage points
Work-related issues	16%	3%	-13 percentage points
Legal issues	12%	9%	-3 percentage points
Medical issues	7%	4%	-3 percentage points
Other problems	4%	15%	+11 percentage points
No problems	20%	36%	+16 percentage points

*Some "other" problems involved obtaining driver's licenses, being underemployed, and experiencing discrimination.

Table 4.2. Demographic Information of the Study Participants

	<i>n</i>	%
Biological Sex		
Female	283	54%
Male	241	46%
Marital Status		
Single	112	21%
Married	257	49%
Living together	90	17%
Divorced	41	8%
Widowed	13	2%
Employment		
Employee	381	73%
Independent contractor or business owner	27	5%
Unemployed	32	6%
Stay-at-home mom or dad	48	9%
Student	5	1%
Retired/Not in the workforce	7	1%
I can't work (because of a disability)	9	2%
Place of Birth		
United States	63	12%
Mexico	416	79%
El Salvador	11	2%
Nicaragua	0	0%
Guatemala	14	3%
Honduras	2	0%
Dominican Republic	0	0%
Other	10	2%
Year in US	<i>M</i> = 20.36 (<i>SD</i> = 9.82) Min = 0, Max = 75	
Age	<i>M</i> = 40.15 (<i>SD</i> = 12.5) Min = 16, Max = 79	

4.4.2 Statistical Analysis

The authors conducted a series of t-tests and ran a set of logistic regression models with variables from the study to determine the statistical significance of the study participants' responses.

Latino Workers' Job Satisfaction. In order to predict a binary variable of job satisfaction (1 = satisfied, 0 = not satisfied), the authors estimated a set of logistic regression models. Table 2 represents the results. The first model included all covariates, finding that only family size was significantly associated with their job satisfaction, $\beta = 0.18$, $SE = 0.09$, $p = 0.048$, $OR = 1.20$. Participants perceived more job satisfaction when their family size was bigger. The second model added health and work-related variables. Deviance statistic significantly decreased from the one for the previous model, $\Delta\chi^2 = 561.33 - 511.52 = 49.81$; the addition of the predictors improved the model fit. In the second model, English proficiency in reading and writing, employment status, and language barriers were significant, $\beta = -0.34$, $SE = 0.16$, $p = 0.03$, $OR = 0.71$, $\beta = -0.55$, $SE = 0.22$, $p = 0.01$, $OR = 0.57$, and $\beta = -0.29$, $SE = 0.15$, $p = 0.05$, $OR = 0.75$, respectively. As the lowest value on English proficiency means fluency, the result indicated that participants' English proficiency predicted job satisfaction. Age was also significant, $\beta = -0.03$, $SE = 0.01$, $p = 0.04$, but the odds ratio was 0.97, which indicated a very small effect.

Table 4.3. Logistic Regression Results Predicting Work Satisfaction

	Model with Covariates Only						Full Model					
	<i>Est.</i>	<i>SE</i>	<i>95% CI</i>		<i>p</i>	<i>OR</i>	<i>Est.</i>	<i>SE</i>	<i>95% CI</i>		<i>p</i>	<i>OR</i>
			Lower	Upper					Lower	Upper		
Intercept	-0.11	0.11	-0.33	0.11	0.33	0.90	-0.17	0.79	-1.73	1.39	0.83	0.85
Biological sex	-0.06	0.10	-0.26	0.14	0.58	0.95	0.03	0.12	-0.20	0.26	0.80	1.03
Marital status	0.10	0.15	-0.20	0.40	0.50	1.11	0.24	0.16	-0.08	0.55	0.14	1.27
Age	<0.001	0.01	-0.02	0.03	0.82	1.00	-0.03	0.01	-0.06	0.00	0.04	0.97
Educational attainment	0.01	0.06	-0.11	0.12	0.87	1.01	0.09	0.07	-0.04	0.22	0.18	1.09
Residency years	-0.01	0.01	-0.04	0.01	0.34	0.99	0.01	0.02	-0.02	0.04	0.44	1.01
Number of family member	0.18	0.09	0.00	0.37	0.05	1.20	0.19	0.10	-0.01	0.38	0.06	1.20
Number of children in family	-0.15	0.11	-0.37	0.07	0.17	0.86	-0.22	0.12	-0.46	0.02	0.07	0.80
Work Type (manual labor = 1)	-0.14	0.14	-0.36	0.07	0.30	0.75	-0.09	0.15	-0.32	0.06	0.33	0.83
Health perception							-0.20	0.13	-0.45	0.05	0.11	0.82
Health habits							0.05	0.04	-0.03	0.13	0.24	1.05
Health issues							0.00	0.01	-0.02	0.01	0.74	1.00
Insurance status							-0.18	0.24	-0.65	0.30	0.47	0.84
English proficiency (reading/writing)							-0.34	0.16	-0.64	-0.03	0.03	0.71
English proficiency (speaking)							-0.16	0.18	-0.51	0.20	0.39	0.86
Employ status							-0.55	0.22	-0.99	-0.12	0.01	0.57
Language barriers							-0.29	0.15	-0.58	0.00	0.05	0.75
Work issues							0.87	0.93	-0.95	2.69	0.35	2.39
Legal issues							-0.20	0.23	-0.66	0.25	0.37	0.82
Medical issues							-0.66	0.45	-1.54	0.22	0.14	0.52
Other issues							-0.25	0.18	-0.61	0.11	0.18	0.78
Deviance Statistic			458.51						392.39			

Age was also significant, $\beta = -0.03$, $SE = 0.01$, $p = 0.04$, but the odds ratio was 0.97, which indicated a very small effect.

Table 4.4. Logistic Regression Results Predicting Feeling Accepted in the United States

	Model with Covariates Only						Full Model					
	<i>Est.</i>	<i>SE</i>	<i>95% CI</i>		<i>p</i>	<i>OR</i>	<i>Est.</i>	<i>SE</i>	<i>95% CI</i>		<i>p</i>	<i>OR</i>
			Lower	Upper					Lower	Upper		
Intercept	0.09	0.10	-0.10	0.29	0.35	1.10	1.12	0.47	0.19	2.05	0.02	3.07
Biological sex	-0.12	0.09	-0.30	0.06	0.20	0.09	-0.14	0.11	-0.35	0.07	0.18	0.87
Marital status	0.10	0.14	-0.17	0.38	0.47	1.11	0.08	0.14	-0.19	0.36	0.56	1.08
Age	0.02	0.01	0.01	0.04	0.01	1.03	0.01	0.01	-0.02	0.03	0.56	1.01
Educational attainment	0.01	0.05	-0.09	0.12	0.81	1.01	0.07	0.06	-0.05	0.18	0.24	1.07
Residency years	-0.04	0.01	-0.07	-0.02	<.001	0.96	-0.03	0.01	-0.06	0.00	0.06	0.97
Number of family member	0.11	0.08	-0.05	0.27	0.17	1.12	0.12	0.09	-0.05	0.30	0.17	1.13
Number of children in family	0.03	0.11	-0.18	0.24	0.79	1.03	-0.02	0.12	-0.25	0.22	0.88	0.98
Work Type (manual labor = 1)	-0.20	0.11	-0.32	0.05	0.07	0.81	-0.14	0.14	-0.36	0.07	0.32	0.76
Health perception							-0.12	0.11	-0.35	0.11	0.30	0.89
Health habits							0.08	0.04	0.01	0.16	0.03	1.09
Health issues							0.01	0.01	-0.01	0.02	0.48	1.01
Insurance status							0.09	0.22	-0.33	0.51	0.67	1.10
English proficiency (reading/writing)							-0.15	0.13	-0.42	0.11	0.25	0.86
English proficiency (speaking)							-0.08	0.16	-0.39	0.23	0.63	0.93
Employ status							-0.17	0.12	-0.41	0.06	0.15	0.84
Language barriers							-0.34	0.13	-0.59	-0.08	0.01	0.71
Work issues							0.09	0.36	-0.61	0.78	0.81	0.09
Legal issues							-0.56	0.23	-1.01	-0.12	0.01	0.57
Medical issues							-0.12	0.33	-0.77	0.53	0.71	0.89
Other issues							-0.43	0.16	-0.75	-0.11	0.01	0.65
Deviance Statistic												

595.53

492.55

Age was also significant, $\beta = -0.03$, $SE = 0.01$, $p = 0.04$, but the odds ratio was 0.97, which indicated a very small effect.

Health Conditions Based on Work Type. Further, the authors examined differences in health conditions based on work types. The “manual work” group included participants working at factories, farms, and construction sites. The “other” group included participants working in offices, food service, childcare, and other similar occupations where the work is less physically intense and performed indoors/under better conditions. Table 2 indicates the independent t-test results where the individual health condition variables were measured with a 5-point Likert scale (1= never to 5 = always).

Based on the two categories of work type (1 = manual labor, 0 = other work), there were significant differences in perceived health habits and health issues. In terms of health habits, the “manual labor” group’s average health habits ($M = 12.01$, $SD = 2.69$) were better than the “other work” group’s ($M = 11.18$, $SD = 2.60$), $t(425.07) = -3.50$, $p = 0.001$, $d = 0.31$. However, the “manual labor” group’s average health issues ($M = 25.30$, $SD = 13.95$) were not significantly different from the average of the “other work” group’s ($M = 27.86$, $SD = 15.34$), $t(503) = 1.93$, $p = 0.054$, $d = 0.17$.

There were statistically significant group differences in stress (manual work $M = 2.24$, $SD = 1.26$; other work $M = 2.48$, $SD = 1.28$), high blood pressure (manual work $M = 1.39$, $SD = 1.04$; other work $M = 1.63$, $SD = 1.28$), diabetes (manual work $M = 1.42$, $SD = 1.11$; other work $M = 1.72$, $SD = 1.44$), hypercholesterolemia (manual work $M = 1.35$, $SD = 0.97$; other work $M = 1.63$, $SD = 1.20$), cardiac heart (manual work $M = 1.10$, $SD = 0.50$; other work $M = 1.22$, $SD = 0.86$), and migraines (manual work $M = 1.57$, $SD = 1.02$; other work $M = 1.83$, $SD = 1.16$), implying that the manual labor group’s frequency of perceived health concerns was lower than the “other” group’s concern for those same issues. However, given that overall average scores were just around 2 (*almost never*) for both groups, this may not imply the “other work” group reported more serious health concerns than the “manual work” group.

Latino Workers’ Feelings of Acceptance in the United States. Table 3 presents the logistic regression results for explaining participants’ feelings of acceptance in the United States. In the model with covariates, age and residency years were significant, $\beta = -0.02$, $SE = 0.01$, $p = 0.01$, $OR = 1.03$ and $\beta = -0.04$, $SE = 0.01$, $p < 0.001$, $OR = 0.96$; however, the odds ratio was too small in terms of age. The results implied that younger participants - and participants with shorter residency years - were associated with greater feelings of acceptance in this country. The addition of health-and work-related variables significantly improved the model fits, $\Delta\chi^2 = 674.65$

– 640.27 = 34.38. Positive health habits were related with feelings of acceptance, $\beta = 0.08$, $SE = 0.04$, $p = 0.03$, $OR = 1.09$, while perceived health conditions, health issues, and insurance status were not significant. Language barriers and legal issues were also significant predictors explaining participants' lesser feelings of acceptance in the United States, $\beta = -0.34$, $SE = 0.13$, $p = 0.01$, $OR = 0.71$, and $\beta = -0.56$, $SE = 0.23$, $p = 0.01$, $OR = 0.57$.

4.5 Discussion

The present study investigated Latino health and workforce needs, and this manuscript described its results as they relate to job satisfaction and feelings of acceptance issues among emergent bilingual immigrant workers who participated in the survey. We found that as workers' English proficiency predicted their job satisfaction, meaning as English literacy increased so did job satisfaction. Family size was also significantly associated with workers' job satisfaction. Manual laborers had better health habits than service workers, and workers' positive health habits were related with feelings of acceptance. Language barriers and legal issues were also significant predictors explaining participants' lesser feelings of acceptance in the United States. The results also implied that younger participants - and participants with shorter residency years - were associated with greater feelings of acceptance in this country. In terms of problems that immigrants face now as compared to those they faced when they first arrived in the United States, the present study saw the biggest percentage decrease was in problems related to work, while the biggest percent increase was in not having any problems at all (Grismer, 2023).

Strengths. The results regarding Latino workers' English proficiency predicting their job satisfaction were among the most significant in the entire study because of their implications for emergent bilinguals' current and future success in the workplace. As participants' English proficiency increased, so did their job satisfaction. These findings are consistent with the literature on job satisfaction and literacy (Shinnar, 2007; Sum, 2007; Valdivia & Flores, 2012; Lefrid et al., 2022). A quantitative study published by the National Commission on Adult Literacy (Sum, 2007) showed that the mean annual earnings of immigrant workers with no more than a high school education rose steadily with their self-reported level of English-speaking skill. A qualitative study by Shinnar (2007) found that low English proficiency, as well as factors such as limited education and access to information, impeded career progression of Mexican immigrants. In addition to literacy, Valdivia & Flores (2012) reported that immigrants "who had strong levels of ethnic

identity, who were more acculturated to Anglo culture, and who perceived low levels of discrimination and racism within the community reported high levels of job satisfaction” (p. 40). Lefrid et al. (2022) suggests that Hispanic immigrants, and other immigrant groups from collectivist cultures, have “different perceptions of...job satisfaction than the mainstream U.S. labor force (p. 3). These findings are consistent with those of the present study.

While the result showed that participants’ English proficiency predicted their job satisfaction, the authors believe this positive association is more about “communicative competence” generating a sense of belonging than about use of a specific language in the workplace. These ideas are being explored in our follow-on study with large industries/employers of Latino workers in the same region of the state of [blinded for review]. More research needs to be done in order to determine if the result discovered in the present study was more dependent on the language variable or on the belonging variable.

Lessons Learned. Respondents who were younger, with fewer years of residency and with positive health habits felt more accepted in the United States than those with language barriers and legal issues. *Holding Fast*, a book based on a yearlong survey of Latino immigrants, both citizens and noncitizens, reinforces this finding that the “the longer an immigrant has lived in the United States, the lighter the tint in the rose-colored glasses” (McCann & Jones-Correa, 2020). In their research, conducted before the 2016 election, they found that for immigrants who had lived in United States for 35 years, the average impact was a drop in government trust by more than half a point. For relative newcomers (with only 15 years of residence in the country), the effect of evaluations of where the country was heading was just over half as large (p. 61-63). From a mental health perspective, the present study (Grismer, 2023) supports the finding that U.S.-born Mexicans had a self-reported higher prevalence of mental disorders than foreign-born immigrants (taken from the analysis of questions 11, 37, 39/40 and 42). According to Alegría (2017, p. 146) first generation immigrants generally have an “initial health advantage over their U.S.-born counterparts that erodes the longer they reside in the U.S.” This phenomenon has been labeled the acculturation hypothesis. The established conclusion is that as immigrants become more assimilated or acculturated into U.S. social and cultural norms, the more their health status resembles that of the U.S.-born.

Recommendations for Further Research. Two other unexplained, but interesting, results were the significance of family size and age (though with a very small effect) on job satisfaction.

Findings from a study by Stein et al. (2015) describe familism as a coping mechanism for life's stressors, in this case work, and may partially explain the results of this present study and how they related to participants' construct of family size. Based on the results, survey participants perceived more job satisfaction when their family size was bigger. More research is needed to determine how these factors (family size and age) contributed to rural Latino immigrant workers' answers to this particular question.

Although a small effect size (since the average score for this question hovered around 2, meaning *almost never*), the "other work" group reported more serious health concerns than the "manual work" group. This also bears investigation into the daily routines and health habits that produced a potentially lower score depending on type of work.

Implications. Given the evidence that job satisfaction increases as English proficiency increases, employers of Latino workers should see the value of investing in their language skills at the workplace and supporting community-level adult education programming and assistance.

4.6 Conclusion

The main contributions of the present study are threefold. First, the authors presented the results of 579, door-to-door interviews with Latino, working-age adults in a rural Midwestern community where agriculture and manufacturing are the primary industry sectors. The authors reported participants' feedback regarding the problems they encountered upon immigration, as well as those they still face. Second, the study showed the link between health and job satisfaction, finding that manual laborers had better health habits than service workers, and workers' positive health habits were related with feelings of acceptance in the United States. Third, the study provided empirical evidence that job satisfaction increases as English proficiency increases. Literacy (reading and writing) in the language spoken at work, as well as family size, predicted job satisfaction. This study has implications for employers of Latinos who are interested in understanding their workers, supporting their well-being, and retaining them as productive team members. It also underscores the importance community-based adult education.

¹ We are using the terms *Hispanic* and *Latino* interchangeably throughout a document (as both the U.S. Census Bureau and the Pew Research Center do in their manuals of style). We use *Hispanic* primarily to refer to language, and we use *Latino* primarily to refer to geography.

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CHAPTER 5. CONCLUSION

Even though a lot changed in the decade between the 2010 health benchmarking study and the 2020 Latino Community Health Needs & Workforce Assessment study, in many ways time stood still. A total of 53% of the respondents to the 2020 study had healthcare benefits; nearly half, 47%, still did not. That's a shift of only seven percentage points after several changes of federal administration and the passage of the Affordable Care Act (ACA). Many of the barriers to healthcare remain, such as status, cost, language, and location. While more respondents received care now from a doctor's office or clinic in 2020 – rather than the emergency room like they did in 2010 – a full 50% could not identify a primary care provider (PCP). In healthcare research, PCPs are known to be a protective factor, increasing the opportunity for preventive care and creating a continuity of care that leads to longer life expectancy overall. The study found that 78% of its respondents performed manual labor on a daily basis as part of their jobs, leading to their top five health concerns of 1) work-related stress, 2) vision problems, 3) neck/back pain, 4) headaches/migraines, and 5) anxiety/depression. Many positive health habits – like wearing seatbelts (99%), eating five fruits/vegetables a day (95%) and routine exercise (84%) – were reported, along with the negative health habit of eating fast food/processed food on a daily basis (61%), an issue first identified in this community by Hermosa et al.'s 2015 study (see appendix).

Since the survey was conducted six months into the country's largest-ever public healthcare crisis, surveyors asked questions about COVID and discovered that respondents had been negatively affected economically (46%), psychologically (47%), or emotionally (52%). While only 4% of respondents said they had not vaccinated their children, 58% said they themselves had not received a flu shot in the past year – a finding with obvious implications for the current administration of COVID vaccinations among adults. Many of the study's findings, such as the low rate of annual doctor and dental visits – 32% and 41% (respectively) said they hadn't seen one within the past year – are calls to action for healthcare providers both locally and for other rural populations across the state of Indiana with similar demographics.

The study's biggest limitation was the lack of COVID data collected during the 20-minute, door-to-door survey interviews. Just like society at-large, our research team was overwhelmed with safety protocols and logistics, missing the opportunity to probe further into issues prompted by a global pandemic. It was difficult to balance the need for brevity with the need to make the

most of a rare opportunity to converse with nearly 600 Spanish-speaking residents of one community. The research team intentionally limited the types of information requested of respondents, choosing not to ask them about immigration status or income as a way of ensuring participation and protecting their identities. There were trade-offs in this decision.

Interesting findings such as a higher than state and national average infant mortality rate (7%) and a higher than state and national average workplace injury rate (10%) could certainly be the subject of further research. Another area of further research would be the intersection of literacy and job satisfaction. Though the study provided empirical evidence that English proficiency predicts job satisfaction, the question remains if the results were language-dependent or belonging-dependent. Meaning, if the language context of work matched their native language, how would this change their perceived job satisfaction? Or, put another way, were the respondents reacting to being included in the majority culture's language group or being proficient enough in a second language to be an effective team member. More research is needed to determine the answers to these intriguing questions.

At the conclusion of the study, several recommendations emerged for taking action to address the Latino community's top health concern, vision. In fact, at the Binational Health Fair in October 2020, the study's preliminary results were presented in Spanish to the community who had participated in the survey, highlighting the needs—like poor vision—identified in the results. With local community support, a local nurse conducted vision screenings at one of the booths while the Frankfort Lions Club donated the money for 15 eye exams and glasses. In April 2021, the community-based organization that partnered in this study was awarded a Purdue service-learning grant to provide a vision health clinic. A medical student in the IU School of Medicine, West Lafayette's Latino Concentration Program, who had participated in the study, took the lead to work with a local optometrist and bilingual opticians. Participants in the 2020 study have lived in Frankfort for an average of 20 years, yet 59% of them said they hadn't seen an eye doctor in the past 12 months. This clinic, attended by more than 50 Spanish-speaking residents, helped lay the groundwork for better communication about vision care and vision resources available locally. This is only the beginning of how these findings could be used to help reduce health disparities for Latino residents of small rural towns across the state of Indiana and throughout the Midwest.



APPENDIX A. SURVEY INSTRUMENT (ENGLISH)

Access to Medical Care

1. Where do you usually seek medical care?

Emergency room	Doctor's office	Open Door Clinic	Arnett Clinic
St. Vincent	Lebanon	Lafayette	Other: _____

2. Why do you prefer this medical provider?

Convenient Low price Speaks Spanish Kind/Nice Location

Other (please specify): _____

3. Is there a particular person that you consider your primary care physician or medical care provider?

Yes, just one Yes, more than one No, not a specific person

4. Which of these problems prevent you or your family from seeking medical care?

Difficulty finding a doctor:

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5

High cost of the provider:

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5

Language barrier:

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5

**Lack of
transportation:**

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5

A long line or wait:

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5



5. Do you have any type of medical insurance?

Yes

No

6. What type of medical insurance do you have?

Provided through your employer (or the employer of one of your family members)

You pay for with no employer contributions

Provided through government (like Medicare/Medicaid/HIP/Health

Service) Other (please specify:) _____

Doesn't Apply

7. Does your child(ren) have any type of medical insurance?

Yes

No

I don't have a child(ren)

8. What type of medical insurance does your child(ren) have?

Provided through your employer (or the employer of one of your family members)

You pay for with no employer contributions

Provided through government (like Medicare/Medicaid/HIP/Health

Service) Other (explain): _____

Doesn't Apply

Health Concerns

9. In general, would you say your health is...?

Bad

Okay

Good

Very Good

Excellent

1

2

3

4

5

10. What percentage of the time does pain make it difficult for you (or someone in your household) to carry out these routine activities:

Taking care of yourself: 0-10, 11-20, 21-30, 31-40, 41-50, 51-60, 61-70, 71-80, 81-90, 91-100

Going to work: 0-10, 11-20, 21-30, 31-40, 41-50, 51-60, 61-70, 71-80, 81-90, 91-100

Participating in recreation: 0-10, 11-20, 21-30, 31-40, 41-50, 51-60, 61-70, 71-80, 81-90, 91-100



11. Which of the following health problems affect you or your family?

Stress

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5

Anxiety/ depression:

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5

High blood pressure:

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5

Diabetes:

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5

High cholesterol:

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5

Heart problems:

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5

Kidney problems:

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5

Weight problems:

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5

Vision problems:

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5



Arthritis:

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5

Neck/back pain:

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5

Headaches/ migraines:

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5

Domestic violence:

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5

Drug abuse:

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5

12. Which of the following health habits are part of your daily life?

Eat fast food:

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5

Smoke cigarettes, smoke e-cigarettes, or chew tobacco:

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5

Eat 5 fruits/vegetables:

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5

Drink alcohol (including beer and wine):

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5



Use seatbelts in the car

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5

Walk/exercise:

Never	Almost never	Sometimes	Frequently	Always
1	2	3	4	5

13. Have your children received their vaccinations?

Yes	No	I don't have a(any) child(ren)
-----	----	--------------------------------

14. Part A: During the past year (within the last 12 months), have you (or someone in your household):

Visited the doctor?	Yes	No	I don't know/Not sure
Visited the dentist?	Yes	No	I don't know/Not sure
Visited the eye doctor?	Yes	No	I don't know/Not sure
Received a flu shot?	Yes	No	I don't know/Not sure
Talked to a counselor?	Yes	No	I don't know/Not sure
Had blood taken/analyzed?	Yes	No	I don't know/Not sure
Fallen and been injured?	Yes	No	I don't know/Not sure

Become pregnant before the age of 18?

Yes	No	I don't know/Not sure
-----	----	-----------------------

Part B: For Women Only:

Received a clinical breast exam?

Yes	No	I don't know/Not sure
-----	----	-----------------------

Received a mammogram?

Yes	No	I don't know/Not sure
-----	----	-----------------------

Lost a baby during pregnancy or in childbirth?

Yes	No	Does not apply
-----	----	----------------

Received prenatal exam (if you have been pregnant in the past 12 months)?

Yes	No	I don't know/Not sure
-----	----	-----------------------



Civil Status

15. What is your gender?

Male

Female

Other

Prefer not to answer

16. How old are you? _____

17. What is your marital status?

Single

Married

Living Together

Divorced

Widowed

18. How many total people live in your house? _____

19. How many children under the age of 18 live in your house? _____

Education

20. What is the highest grade in school you completed?

Never attended

Elementary

Middle School

High

School

Diploma Trade School

College

Undergraduate degree

Graduate degree

21. In which country(ies) did you attend school? _____

22. How well do you read/write in Spanish?

Fluent

Proficient

Survival Spanish

I can't read/write Spanish

23. How well do you read/write in English?

Fluent

Proficient

Survival Spanish

I can't read/write English

24. How well do you understand/speak English?

Fluent

Proficient

Survival Spanish

I can't understand/speak

English



Work

25. Are you currently...?

An employee (salaried or paid by the hour) Independent contractor or business owner Unemployed
Stay at-home mom or dad
Student
Retired/Not in the workforce
I can't work (because of a disability)

Other (please specify): _____

26. Where do you work?

Frankfort Lebanon Lafayette In the country between towns Other
(please specify): _____

27. How do you commute to work?

Drive alone Drive with others Walk Bike Bus

Other (please specify): _____

28. How many minutes does it take you to commute to work?

0-10, 11-20, 21-30, 31-40, 41-50, 51-60, 61-70, 71-80, 81-90, 91-100

29. What type of work do you do?

Factory Farm Office Construction Food Service

Childcare Other (please specify): _____

30. How valued do you feel at work?

Not valued More or less valued Valued

31. Is your job dangerous?

Yes No Sometimes

32. How often have you suffered an injury at work?

Daily Weekly Monthly Annually Once Never

33. Did you report the injury(ies)?

Yes No N/A (doesn't apply)

34. Did your employer help you find medical care after the injury?

Immediately After a few days Never N/A (doesn't apply)



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National Origin

35. Where were you born? _____

36. How many years have you been in the United States? _____

37. How accepted do you feel in the United States?

Not accepted

More or less accepted

Accepted

38. Why do you live in Frankfort?

Family/Friends

Work

Peaceful Community

Low Rent

Education

39. When you arrived in Frankfort, what problems did you face?

Language barrier

Work issues

Legal issues

Medical issues

Other Issues

(please specify): _____ None

40. Do you still have those problems?

Language barrier

Work issues

Legal issues

Medical issues

Other Issues

(please specify): _____ None

COVID-19 Questions

41. Have you, or has someone in your household, tested positive for COVID-19?

Yes

No

Don't know

42. Has COVID-19 negatively affected you or your family in any of these ways?

Economically

Yes

No

Don't know

Psychologically

Yes

No

Don't know

Emotionally

Yes

No

Don't know



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APPENDIX B. SURVEY INSTRUMENT (SPANISH)

Acceso a Cuidado Médico

1. ¿Dónde consigue atención médica?

Cuarto de emergencia Oficina del doctor Open Door Clínica La Clínica Arnett San
Vicente Lebanon Lafayette Otro(a):

2. ¿Por qué prefiere Ud. su médico principal?

Conveniente Precio bajo Habla español Es
amable Ubicación Otro(a):

3. ¿Hay alguna persona a la que usted considere su médico principal o proveedor de atención medica personal?

Sí, sola una Si, más de una No, hay ninguna persona especifica

4. ¿Usted o a su familia tiene dificultades para conseguir cuidado médico? Por dificultad encontrar un doctor:

Nunca	Casi nunca	A veces	Con frecuencia	Siempre
1	2	3	4	5
Por costo alto de la cita médica:				
Nunca	Casi nunca	A veces	Con frecuencia	Siempre
1	2	3	4	5
Por problemas para comunicarse por el idioma:				
Nunca	Casi nunca	A veces	Con frecuencia	Siempre
1	2	3	4	5
Por falta de transportación:				
Nunca	Casi nunca	A veces	Con frecuencia	Siempre
1	2	3	4	5
Por una fila o una espera demasiada larga:				
Nunca	Casi nunca	A veces	Con frecuencia	Siempre
1	2	3	4	5



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5. ¿Tiene Ud. algún tipo de seguro médico?

Sí

No

6 ¿Qué tipo de seguro médico tiene Ud.?

Que brinda su trabajo (o trabajo de un miembro de la familia)

Que Ud. paga (solamente)

Un plan del gobierno (como Medicare/Medicaid/HIP/Servicio de Salud Indígena)

Otro(a) (explique):

No aplica

7. ¿Sus hijos tienen cualquier tipo de seguro médico?

Sí

No

No tengo ningun(os) hijo(s)

8. ¿Qué tipo de seguro médico tiene(n) su niño(s)?

Que brinda su trabajo (o trabajo de un miembro de la familia)

Que Ud. paga (solamente)

Un plan del gobierno (como Medicare/Medicaid/HIP/Servicio de Salud Indígena)

Otro(a) (explique):

No aplica

Preguntas acerca de Salud

9. ¿Cómo está su salud...?

Malo	Más o menos	Bueno	Muy bueno	Excelente
1	2	3	4	5



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10. ¿Cuál porcentaje del tiempo tiene dolor en que le dificultó realizar actividades diarias?

Cuidado personal: 0-10, 11-20, 21-30, 31-40, 41-50, 51-60, 61-70, 71-80, 81-90, 91-100

El trabajo: 0-10, 11-20, 21-30, 31-40, 41-50, 51-60, 61-70, 71-80, 81-90, 91-100

La recreación: 0-10, 11-20, 21-30, 31-40, 41-50, 51-60, 61-70, 71-80, 81-90, 91-100

11. ¿Cuáles de los problemas siguientes de salud tiene un impacto en la vida diaria de Ud. o de su familia?

Estrés:

No/Nunca	Si, un poco	Si, a veces	Si, mucho	Siempre
1	2	3	4	5

Ansiedad/ Depresión:

No/Nunca	Si, un poco	Si, a veces	Si, mucho	Siempre
1	2	3	4	5

Presión alta (de sangre):

No/Nunca	Si, un poco	Si, a veces	Si, mucho	Siempre
1	2	3	4	5

Diabetes:

No/Nunca	Si, un poco	Si, a veces	Si, mucho	Siempre
1	2	3	4	5

Colesterol alto:

No/Nunca	Si, un poco	Si, a veces	Si, mucho	Siempre
1	2	3	4	5

Problemas del corazón:

No/Nunca	Si, un poco	Si, a veces	Si, mucho	Siempre
1	2	3	4	5

Problemas en los riñones:

No/Nunca	Si, un poco	Si, a veces	Si, mucho	Siempre
1	2	3	4	5

Problemas con tu peso:

No/Nunca	Si, un poco	Si, a veces	Si, mucho	Siempre
1	2	3	4	5



Problemas con la vista:

No/Nunca	Si, un poco	Si, a veces	Si, mucho	Siempre
1	2	3	4	5

Artritis:

No/Nunca	Si, un poco	Si, a veces	Si, mucho	Siempre
1	2	3	4	5

Dolor de cuello/espalda:

No/Nunca	Si, un poco	Si, a veces	Si, mucho	Siempre
1	2	3	4	5

Dolor de cabeza/migrañas:

No/Nunca	Si, un poco	Si, a veces	Si, mucho	Siempre
1	2	3	4	5

Violencia en la casa:

No/Nunca	Si, un poco	Si, a veces	Si, mucho	Siempre
1	2	3	4	5

Abuso de drogas:

No/Nunca	Si, un poco	Si, a veces	Si, mucho	Siempre
1	2	3	4	5

12. ¿Cuáles de los siguientes hábitos de salud forman parte de su vida diaria?

Comer comida procesada (como McDonald's, Wendy's, Burger King):

Nunca	Casi nunca	A veces	Con frecuencia	Siempre
1	2	3	4	5

Fumar cigarrillos, cigarrillos electrónicos, o masticar el tabaco:

Nunca	Casi nunca	A veces	Con frecuencia	Siempre
1	2	3	4	5

Comer 5 frutas/verduras:

Nunca	Casi nunca	A veces	Con frecuencia	Siempre
1	2	3	4	5



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**Tomar alcohol
(incluso
cerveza y vino):**

Nunca	Casi nunca	A veces	Con frecuencia	Siempre
1	2	3	4	5

Usar cinturones en el carro:

Nunca	Casi nunca	A veces	Con frecuencia	Siempre
1	2	3	4	5

Caminar/hacer ejercicio:

Nunca	Casi nunca	A veces	Con frecuencia	Siempre
1	2	3	4	5

13. ¿Sus niños han recibido vacunas?

Sí No No tengo ningún(os) hijo(s)

14. Parte A: Durante el año pasado (dentro de los 12 meses), Ud. ha:

¿Visitado el/la doctor(a)?	Sí	No	No sé/no estoy seguro
¿Visitado el/la dentista?	Sí	No	No sé/no estoy seguro
¿Visitado el/la oculista?	Sí	No	No sé/no estoy seguro
¿Recibido una vacuna contra la influenza?			
	Sí	No	No sé/no estoy seguro
¿Hablado con consejero(a)?	Sí	No	No sé/no estoy seguro
¿Tenido analices de sangre?	Sí	No	No sé/no estoy seguro
¿Se ha caído causando una herida?	Sí	No	No sé/no estoy seguro



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¿Tenido un hijo(a) que se embarazó o embarazó a alguien antes de los 18 años?

Sí

No

No sé/no estoy seguro

Parte B: Para mujeres solamente:

¿Recibido un chequeo clínico del seno?

Sí

No

No sé/no estoy seguro

¿Recibido una mamografía?

Sí

No

No sé/no estoy seguro

¿Perdido un bebe durante embarazo o parto (que no sobrevivió)?

Sí

No

No aplica

¿Si usted estuvo embarazada (en los últimos 12 meses), recibió un chequeo mensual durante el embarazo?

Sí

No

No sé/no estoy seguro

Estado Civil

15. ¿Cuál es su género?

Masculino

Femenino

Otro(a)

Prefiero no contestar

16. ¿Cuántos años tiene Ud.?

17. ¿Cuál es su estado civil?

Soltero(a)

Casado(a)

Viven juntos

Divorciado(a)

Viudo(a)

18. ¿Cuántas personas en total viven en su hogar?

19. ¿Cuántos niños menores de edad de 18 años viven en su hogar? _____ Ninguno(s)



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Educación

20. ¿Cuál es el grado de educación más alto que usted realizó?

Nunca asistí Primaria Secundaria Diploma de Secundaria
Bachillerato Preparatoria Graduado de Bachillerato/Preparatoria
Licenciado/Maestría

21. ¿En cuál país asistió Ud. a la escuela?

22. ¿Qué tan bien puede Ud. leer/escribir español?

Fluido(a) Puedo comunicar Para sobrevivir No puedo leer/escribir español

23. ¿Qué tan bien puede Ud. leer/escribir inglés?

Fluido(a) Puedo comunicar Para sobrevivir No puedo leer/escribir inglés

24. ¿Qué tan bien entiende y habla Ud. el inglés?

Fluido(a) Puedo comunicar Para sobrevivir No puedo entender/hablar inglés

Trabajo

25. ¿Es Ud.?

Empleado asalariado o pagado por hora Trabajador independiente
Desempleado
Mujer o hombre que se ocupa de las tareas de la casa Estudiante
Jubilado/No está en la fuerza laboral
No puede trabajar (por inhabilidad/incapacidad)
Otro(a) (explique:)

26. ¿Dónde trabaja Ud.?

Frankfort Lebanon Lafayette En el campo entre de pueblos Otro(a)



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27. ¿Cómo llega Ud. al trabajo?

Maneja solo(a) Maneja con otro(s) Camina Monta bicicleta Sube autobús Otro(a)

28. ¿Cuántos minutos para llegar al trabajo?

0-10, 11-20, 21-30, 31-40, 41-50, 51-60, 61-70, 71-80, 81-90, 91-100

29. ¿Qué tipo de trabajo hace Ud.?

Fábrica Granja Oficina Construcción Comida Guardería

Otro(a) (explique:)

30. ¿Qué tan valioso(a) Ud. se siente en el trabajo?

No valioso(a) Más o menos valioso(a) Valioso(a)

31. ¿Su trabajo es peligroso?

Sí No A veces

32. ¿Con que frecuencia Ud. ha sufrido un daño en el trabajo?

Diaria Semanal Mensual Anual Una Vez Nunca

33. ¿Lo reportó?

Sí No No aplica

34. ¿Le ayudó su empleador a encontrar cuidado médico después de que sufrió daño?

Inmediatamente Después algunos días Nunca No aplica



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Origen Nacional

35. ¿Dónde nació Ud.? _____

36. ¿Cuántos años ha estado Ud. en Estados Unidos? _____

37. ¿Qué tan aceptado Ud. se siente en los Estados Unidos?

No aceptado Más o menos Aceptado

38. ¿Por qué vive en Frankfort?

Familia/Amigos Trabajo Comunidad tranquila Renta baja Educación

39. ¿Cuándo llegó a Frankfort, cuales problemas se le presentaron?

Barrera del idioma Trabajo Legales Médicos Otros (explique):

_____ Ningunos

40. ¿Todavía tiene problemas?

Barrera del idioma Del trabajo Legales Médicos Otros (explique):

_____ Ningunos

Preguntas acerca de COVID-19

41. ¿Usted o alguien de su hogar ha dado positivo en la prueba de COVID-19?

Sí No No sé

42. ¿COVID-19 ha afectado negativamente a usted o su familia en cuales de esas maneras?

Económicamente:	Sí	No	No sé
Psicológicamente:	Sí	No	No sé
Emocionalmente:	Sí	No	No sé

APPENDIX C. KNOW YOUR RIGHTS CARD

Tarjeta de *Conozca sus Derechos*

Instrucciones para usar su tarjeta de *Conozca sus Derechos*

1. Corte las dos copias de la tarjeta. Dóblelas por la mitad.
2. Asegúrese de llenar ambas tarjetas con el nombre y el número telefónico de su abogado.
3. Siempre mantenga consigo ambas copias de la tarjeta. Si usted les muestra esta tarjeta a los oficiales de inmigración o a la policía, ellos podrían tomar la tarjeta y no devolverla. Es por eso que es importante siempre llevar consigo dos copias de la tarjeta.
4. En caso de redada o de relacionarse con oficiales de inmigración o policía, use esta tarjeta para ayudarle a recordar y ejercer sus derechos.
5. Al frente de esta tarjeta hay una declaración de que usted está ejerciendo su derecho a permanecer callado. Si usted se está relacionando con oficiales de inmigración o con la policía, usted debe recordar que cualquier cosa que diga puede ser usada en su contra. Es su derecho permanecer callado. Para ejercer su derecho a permanecer callado, muéstreles a los oficiales una copia de esta tarjeta o lea la declaración en voz alta. Usted no necesita decir la declaración palabra por palabra, pero tiene que comunicar que está ejerciendo su derecho a permanecer callado.
6. Detrás de la tarjeta encontrará una lista de sus derechos. Léalos a menudo. Esté preparado.
8. Para protegerse, APRENDA DE MEMORIA la información en la tarjeta.

I AM EXERCISING MY RIGHT TO REMAIN SILENT.		I AM EXERCISING MY RIGHT TO REMAIN SILENT.	
Please be informed that I am choosing to exercise my right to remain silent. I am also exercising my right to refuse to sign anything until my attorney reviews it. If I am detained, I request to contact my attorney immediately. My attorney's contact information is:		Please be informed that I am choosing to exercise my right to remain silent. I am also exercising my right to refuse to sign anything until my attorney reviews it. If I am detained, I request to contact my attorney immediately. My attorney's contact information is:	
Name _____		Name _____	
Phone _____		Phone _____	
SÉ QUE...		SÉ QUE...	
① Tengo derechos. Tengo dignidad. No estoy solo.	④ Cualquier cosa que diga se puede usar contra mí.	① Tengo derechos. Tengo dignidad. No estoy solo.	④ Cualquier cosa que diga se puede usar contra mí.
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VITA

Melinda A. Grismer

Community Development Specialist / Purdue Center for Regional Development / Purdue University

1341 Northwestern Avenue – Schowe House at Purdue University
West Lafayette, IN 47906

Professional Preparation

Institution	Field	Degree, Year
Purdue University	Literacy & Language	PhD, 2023
Purdue University	Extension & Adult Education	MS, 2010
Ball State University	Journalism & Spanish/English	BS, 1994

Professional Experience and Employment History

Melinda Grismer, a Community and Regional Development Specialist with the Purdue Center for Regional Development (PCRD), has expertise in grant-writing, facilitation, strategic planning, board governance and diversity/inclusion issues. Currently, she works with the Indiana Digital Equity Task Force, the Wabash Heartland Innovation Network (WHIN), the Latino Health & Workforce Study, and the Master Remote Work Professional Certificate Program. She currently serves as Past President of NACDEP (National Association of Community Development Extension Professionals), on the JCEP (Joint Council of Extension Professionals) Board of Directors, and on the Indiana Minority Health Coalition (IMHC) Board of Directors.

Previously, Melinda helped lead PCRD's Rural Opportunity Zone Initiative (ROZI) team, identifying projects for investors across the state of Indiana; DMAP (Defense Manufacturing Assistance Program) team, assisting counties and regions affected by defense downsizing; and SET (Stronger Economies Together) regions across the state to build local coalitions and write high-quality plans of action. In addition, she served on a team with the regional community development educators to create/refine curriculum for the Business Retention & Expansion (BR&E), Community Leadership, Enhancing the Quality of Public Spaces, and (national award-winning) Beginners Guide to Grant Writing programs.

Melinda spent three years (2004-2007) developing a successful Latino Community Learning Center/Plaza Comunitaria in Frankfort, Indiana, followed by three years (2007-2010) as the Learning Network Coordinator of Clinton County, building local educational and workforce capacity through grant funding and fee-based revenue. In 2010, upon obtaining her Master's degree from Purdue University in Extension/adult education, she became a community

development educator in Clinton County, trailblazing such spotlight programs as Breaking Back into the Workforce, Reality Language instruction for manufacturing/service industries, Local Government: Closest to the People, Industry Leader Lunch Series, Small Business Networking, Summer Kids Workshops, the Clinton County Tutoring Program and Leadership Clinton County. In her role at PCRD, Melinda leverages the experience she gained working with local communities and expands it into regional impact for the state of Indiana.

2016-2023: Purdue University, West Lafayette, IN – Community Development Specialist, Purdue Center for Regional Development

2013–2016: Purdue University, Frankfort, IN – County Extension Director, Purdue Cooperative Extension, Clinton County office

2010-2016: Purdue University, Frankfort, IN – Community Development Educator, Purdue Cooperative Extension, Clinton County office

2007–2016: Learning Network of Clinton County, Frankfort, IN - Coordinator

2005-2007: Learning Network of Clinton County, Frankfort, IN – Pl@za Comunitaria Coordinator

2002–2014: Learning Network of Clinton County, Frankfort, IN – Spanish/Bilingual Instructor

1999–2002: RCI Headquarters, Carmel, IN – Senior Editor

Honors and Awards

- NACDEP's **Cross-Program Team Award** for Financial Resource Management Study (with Spanish-speaking community residents) (2023)
- Purdue's **Societal Impact Fellow** (2022)
- NACDEP's **Teamwork Award** for Beginner's Guide to Grant Writing (2018)
- NACDEP's **Diversity Award** (individual category) (2014)
- JCEP's first **Professional of the Year Award** (2014)
- **Frankfort Forward Award** (presented by Mayor Chris McBarnes of Frankfort, 2013)

Selected Recent Grants and Contracts

Secured \$2,693,500 in funding for Purdue Extension's Learning Network (2008-15), some examples include:

- 21st Century Community Learning Centers grants (\$1.9 million)
- English Literacy-Civics grants from Departments of Education & Workforce Development (\$464,000)
- Indiana Minority Health Coalition grants (\$225,000)
- IME Becas grants for Pl@za Comunitaria) (\$32,500)
- Corporate/private donations (\$72,000)

Secured \$40,180,000 in funding for the Purdue Center for Regional Development (2016-21), some examples include:

- AFRI Conference grant for NACDEP (2021) funded by the National Institute for Food & Agriculture (\$40,000)
- Latino Health & Workforce Study (2020) grant funded by the Indiana Minority Health Coalition (\$40,000)
- GIFT VII grant funded by Lilly Endowment Inc. (\$100,000) for the Wabash Heartland Innovation Network (WHIN)
- Wabash Heartland Innovation Network (2018) grant funded by Lilly Endowment Inc. (\$40 million, \$1 million to PCRD)

Presentations

“Map the Ripple Effects of your Advocacy, Diversity & Equity” presenter at the Public Issues in Leadership Development (PILD) Conference (April 2023)

“Starting with Evaluation Leads to a Happy Ending” presenter at the Extension Leadership Conference (ELC) Conference (February 2023)

“Starting with Evaluation Leads to a Happy Ending” presenter at the National Association of Extension Program & Staff Development Professionals (NAEPSDP) Conference (November 2022)

“Rural Latino Health Needs & Workforce Study” presenter at Community Development Society (CDS) Virtual Conference (July 2021)

“Latino Health Needs & Workforce Assessment” presenter at NACDEP Virtual Conference (May 2021)

“REAL TALK: All A-Board (Prioritizing Board Diversity)” presenter at NACDEP Virtual Conference (June 2020)

“The WHIN Project: Local Impact, Global Significance” presenter at International Association for Community Development (IACD) Conference in Dundee, Scotland (July 2019)

“In Search of the Representative Sample: How to get the most accuracy out of your convenience survey” presenter at NACDEP Conference in Asheville, NC (June 2019)

“The Focused Focus Group” presenter at NACDEP Conference in Cleveland (June 2018)

“Leveraging Social Capital to Build Networks” Ignite Session presenter at NACDEP Conference in Burlington, Vermont (June 2016)

“Cultural Competency: Understanding the Latino Client & Market” Indiana Latino Health Summit, Indianapolis (March 2015)

Indiana Association for Adult and Continuing Education (IAACE) statewide conferences: **“How Adults Learn”** (2012), **“Teach English Like You Know Spanish** (Strategies for Overcoming the Linguistic & Cultural)” (2013), and **“Leveled Instruction & Curriculum Mapping”** (2014)

“Adult Learners’ Spanish Language Proficiency and Their English Language Outcomes,” Cambio de Colores, University of Missouri – Columbia (2014)

“The Role of Extension Service in Providing Public Space for Inter-Ethnic Networking in New Immigrant Destinations,” Galaxy IV in Pittsburgh, Pennsylvania (2013); Tri-State Diversity Conference, Hebron, Kentucky (2013); NACDEP Conference in Park City, Utah (2012)

Presented **“Rural Voices”** at the Indiana Rural Summit, Office of Community & Rural Affairs, Indianapolis (2013)

“How to Start a Plaza Comunitaria in Your Community,” presented at NACDEP Conference in Charleston, South Carolina (2011)

“Mini-Immersion Programs Yield Local Tourism Revenue for Frankfort, Ind.,” presented at NACDEP Conference in Charleston, South Carolina (2011)

Posters

“Rural Latino Health Needs & Workforce Study” presented at NACDEP Conference in Coeur d’Alene, Idaho (May 2023)

“Latino Needs Assessment Informs Stakeholders How to Improve Healthcare Access,” presented at NACDEP Conference in Charleston, South Carolina (2011)

Publications

Perception of Change in Living Conditions and Diet Among Rural Latino Immigrants (Percepciones de cambio en condiciones de vida y hábitos alimenticios de inmigrantes Latinos Rurales), Agronomía Colombiana, recognized in acknowledgements (2015)

Clinton County 4-H Special Section, author of 12-page insert to the *Frankfort Times* with feature articles about rural life and culture, exhibit spotlights, and agriculture service journalism (2014-15)

Indiana County Government IBAT, author of funded proposal and co-author of statewide video/resources suite explaining local government roles in the state of Indiana (2012-14)

Latino Health Needs Assessment in Clinton County, Ind., author, Indiana Minority Health Coalition statewide’s ChronicDx Indicator Report (2010) and contributor, Assessment of Chronic Health Indicators in North Central Indiana (2009)

ComunitariaNews bilingual publication author, bimonthly distribution to Clinton County industries (2008-2013)

RCI Ventures Magazine, Endless Vacation Magazine, and Affiliate Connections newsletter (Editor, 1999-2001, RCI Headquarters, Indianapolis, Ind.)

Share the Spirit Magazine, Medical Staff Update, Health Smart newsletter, *In The Spirit* newsletter (Editor, 1997-99, Holy Spirit Hospital, Camp Hill, Penn.)

Central Penn Parent Magazine, Central Penn Senior Magazine, Silver & Gold Magazine, Central Penn Business Journal (Editor, 1995-97, Journal Publications Inc., Harrisburg, Penn.)

Professional Service

President of Learning Network of Clinton County (LNOCC) Board of Directors (2017-2019); LNOCC **Director** (2020-present)

Member of Indiana Minority Health Coalition (IMHC) Executive Board of Directors statewide (2017-present); **Chair** of Programs Committee (2016-2021)

Member of Joint Council of Extension Professionals (JCEP) Board of Directors statewide (2021-present); Extension Leadership Conference (ELC) **Co-Chair** (2021-2022); ELC **Chair** (2023-2024)

Past President of National Association of Community Development Extension Professionals (NACDEP) (2022-23); **President** of National Association of Community Development Extension Professionals (NACDEP) (2021-22); **Chair** of Communications Committee (2017-20); Member (since 2011)

Secretary of Indiana Extension Educators Association (IEEA) (2015-16) and **Chairperson** of IEEA's CD Section (2012-15)

Delegate to Joint Council of Extension Professionals (JCEP) (2015) and to Public Issues in Leadership Development (PILD) (2014)

Perception of change in living conditions and diet among rural Latino immigrants

Percepciones de cambio en condiciones de vida y hábitos alimenticios de inmigrantes Latinos rurales

Maroly Hermosa¹, María Tineo², Yesid Aranda¹, and Germán Posada³

ABSTRACT

Thirteen percent of the total population of the United States (US) is composed of immigrants. Mexicans accounted for about three-quarters of the increase in the Hispanic population from 2000 to 2010. The social and economic problems facing this population in their countries of origin are fueling migration to the US, in search of new opportunities. The purpose of this study was to identify and compare the changes in living conditions (housing, health, education) and the dietary intake (ex - ante and ex - post) of the Latino immigrant population that emigrated from rural areas in Mexico. The participants were attendees of the Purdue Extension Learning Network of Clinton County, who filled out a questionnaire with open and closed questions. The results evidenced the perception of improved quality of life variables related to housing, access to utilities and education, and a change with a tendency for increases in their consumption of fast food, processed food and soda, generating negative effects in terms of an increase in being overweight and obesity, and particularly a lowered consumption of products from their traditional diet.

Key words: quality of life, overweight, rural areas, consumption, fast food, income.

RESUMEN

El trece por ciento de la población total de los Estados Unidos son inmigrantes, la población mexicana representó alrededor de tres cuartas partes de los aumentos en la población hispana entre 2000 - 2010. Debido a los problemas sociales y económicos que enfrenta esta población en sus países de origen, se viene impulsando la migración a los Estados Unidos para la búsqueda de nuevas oportunidades. El propósito de este estudio fue identificar y comparar las percepciones de cambio en las condiciones de vida (vivienda, salud, educación) y de los hábitos alimenticios (ex - ante, ex - post) de los inmigrantes latinos provenientes de áreas rurales de México. Los participantes entrevistados asistían al centro de Aprendizaje de Purdue Extensión del condado de Clinton, a quienes se realizó una entrevista-cuestionario con preguntas abiertas y cerradas. Los resultados evidencian una percepción en el mejoramiento de la calidad de vida relacionado a las variables de vivienda, acceso a servicios y educación, y un cambio en los hábitos alimenticios con tendencia al incremento en el consumo de comidas rápidas, procesadas y sodas, generando efectos negativos en términos del incremento en el sobrepeso y obesidad, y de manera particular el menor consumo asociado a productos alimentarios relacionados a su dieta tradicional.

Palabras clave: calidad de vida, sobrepeso, áreas rurales, consumo, comida rápida, ingreso.

Introduction

Large numbers of people have been forced to migrate from their homeland because of different social and economic problems seen in their countries. The poverty gap in Mexico has reinforced the displacement of a large number of Mexicans from rural and indigenous areas to the United States or others places within this territory, in search of employment and better opportunities for improving their quality of life (Rojas, 2012). They migrate to other places

in search of new opportunities for themselves and their families. The United States receives a large percentage of immigrant communities in the world, and the Mexican community represents one of the biggest, with 28.6% of the total Latino population (MPI, 2015).

Several studies conducted with the immigrant population have addressed several issues concerned with family, social, and economic aspects (Marroni, 2006; Domínguez and Polo, 2009; Salas *et al.*, 2011; Ordorica and Prud'Homme,

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¹ Department of Rural Development, Faculty of Agricultural Sciences, Universidad Nacional de Colombia. Bogota (Colombia). myhermosa@unal.edu.co

² Purdue Extension's at Learning Network Clinton County, Purdue University. Frankfort (IN, US)

³ Child Development & Family Studies, College of Health & Human Science, Purdue University. Frankfort (IN, US)

2012). As mentioned by other authors, immigrant agricultural workers belong to a sector of the population that is socially excluded, marked by poverty and ignored by social studies (Vera and Robles, 2010).

The aim of this study was concerned with perceptions of change regarding living conditions and diet for rural immigrants. The concept of living conditions is linked to the notion of quality of life and refers to both “objective” (e.g., housing conditions, crowding, employment) and “subjective” aspects (e.g., degree of perceived wellbeing, satisfaction of needs through social roles and affiliation (Palomba, 2002; Verbeke and Poquiqui, 2005; Lafuente *et al.*, 2009).

One of the key topics associated with quality of life is nutritional needs. Yet, nutrition must be achieved in a balanced way so that it does not affect individuals negatively. This dietary acculturation is a multidimensional change related to a variable dynamic and complex; in addition, it varies considerably, depending on a variety of personal, cultural, and environmental attributes (Satia-Abouta *et al.*, 2002). The FAO (2009) reports that Mexican nutritional problems involve social and cultural roots. Although the average consumption levels indicated a sufficient intake of nutrients for the entire national population, a significant part came from an inadequate and repetitive diet, contributing to a rapidly growing number of people with obesity problems.

Major changes in diet that produce a nutritional impact as a result of changes in dietary patterns are correlated with economic, social, demographic and health factors as they start from the time of migration; this situation has been seen in mainly immigrant populations of ethnic groups, generating negative implications for health through a risk of chronic diseases: obesity, cardiovascular disease, diabetes, and hypertension, in ethnic populations (Gadd *et al.*, 2005) and, particularly, immigrant populations (Gilbert and Khokhar, 2008).

The obesity risk increase was notable because these people have a reduced physical activity for two reasons: on the one hand, due to a reliance of these communities on an increased use of motorized transportation (Sallis and Glanz, 2009) and, moreover, the difficulty of accessing safe areas for convenient recreation or walking (French *et al.*, 2001).

Furthermore, the main change in diet is evident by an increase in consumption of processed foods, rich in sugar, salt and fat, with a significant decrease in consumption of healthy foods such as fruits and vegetables (FAO, 2013). Consuming foods with these characteristics seems to be

more attractive to the population due to the low cost, resulting in a situation that can be associated with the acculturation of diet and the low income level of the immigrant populations (Satia-Abouta *et al.*, 2002). The US Department of Health and Human Services (USDHHS, (2005) indicated that obesity and being overweight prevail in households with a low income.

Frankfort is a small rural community located in Clinton County in the state of Indiana that has a 25% Latino population (United States Census Bureau, 2010). In addition, the FRAC (2010) reported that 25.3 percent of Hispanic or Latino households in the United States live below the poverty line. These reports can lead us to infer that a low income level is directly related to inadequate living conditions and nutrition habits that result in obesity and overweight problems.

Methods

This pilot study was developed in Frankfort, a small rural community located in the state of Indiana. For the study, the perception 20 Latino Immigrants from rural areas of Mexico with regard to their change in living conditions and dietary after immigrating were consulted. The socio-demographic information of the participants shows Tab. 1.

TABLE 1. Socio-demographic characteristics of the participants.

Characteristics	Value	Absolute frequencies and percentage
Age	18-25	2 (10)
	26-35	9 (45)
	36-45	8 (40)
	46-55	1 (5)
Sex	Male	14 (70)
	Female	6 (30)
Civil status	Married	12 (60)
	Single	4 (20)
	Cohabiting	3 (15)
	Divorced	1 (5)
Length of residence in USA	3-5 years	4 (20)
	6-10 years	7 (35)
	11-20 years	9 (45)

The recruitment of the participants was conducted at the Purdue Extension Learning Network of Clinton County. This center has a mission to increase the educational opportunities for residents, with the main objective of Latino community immigrants achieving greater integration in employment and improving their income and, therefore, their conditions of life. The participants came to the center while attending English classes during the time of this study, with a condition of being older than 18

for participation in this study and having lived in the US for more than one year, their participation was voluntary.

For collecting the information, a semi-structured interview was used, with open and closed questions, which sought to identify changes in their living conditions and diet between their country of origin and their current diet in the US. The topics evaluated in the interview are shown in Tab. 2.

TABLE 2. Topics evaluated in the interview.

Topic	Description
Living conditions	Housing (house, family member number, utilities, room number)
	Health (health insurance, frequency doctor visit)
	Education (last educative level, nearby school)
	Occupation
	Transport (type)
Dietary intake	Main food consumption
	Number of meals per day
	Meals outside of home
	Consumption of soda and artificial juices
	Consumption of can products
	Consumption of snacks
	Consumption of sugary foods
	Consumption of fast food
	Consumption of meat
	Consumption of frozen foods
	Consumption of dairy products
	Frequency of physical activity
	Body Mass Index

Some questions for dietary intake were adapted from the Indiana Family Nutrition Program Evaluation Tool by Purdue Extension (2014). On-line at: www.ces.purdue.edu/new

The last part of the interview aimed to have the participants rate their satisfaction with their degree of living conditions and diet to which they had access in their country of origin as compared to their overall access in the US after immigration; a scale of 1 to 7 was used to evaluate the change in the perception of this population, where: 1 - extremely dissatisfied, 2 - very dissatisfied, 3 - somewhat satisfied, 4 - neutral, 5 - satisfied, 6 - very satisfied, and 7 - extremely satisfied. Additionally, for each participant, the Body Mass Index (BMI) was measured, which relates weight to height; this index was obtained to identify obese and overweight participants.

The interview was conducted in their native language (Spanish) and was recorded in audiotape. The average duration for each interview was approximately one hour and 15 min. The interviews were done at the office of Learning Network of Clinton County. The audio of all of the interviews were transcribed and then organized by

topic; the topics were: health education, transportation and diet. We used the thematic analysis method that describes patterns across the qualitative data and discovered themes and concepts embedded throughout the interviews (Braun and Clarke, 2006).

The encoded information was processed with the Statistical Package for Social Sciences (SPSS), with 95% confidence, where a paired t-test was performed to assess whether there were statistically significant differences in the variables evaluated by the participants with their responses to the interview. For the discussion of the results, an analysis of percentage and frequencies was used for the declarations of the immigrants consulted in relation to the selected variables for the perceived living conditions and dietary habits.

Results and discussion

Changes in living conditions

The results show statistically significant differences in the topics of housing and education. Table 3 shows the obtained data in detail.

TABLE 3. Paired sample test, paired differences of dietary intake.

Topic compared	Correlation statistics	
	(df)	P-value
Housing MX-US	19	0.01**
Health MX-US	19	0.122 ns
Education MX-US	19	0.03*

df, degrees of freedom; ** $P \leq 0.01$; * $0.01 < P \leq 0.05$; ns, not significant.

In the housing conditions, statistically significant differences were found with a value of 0.01 in Mexico, mainly because not all of the participants had access to gas service and potable water, whereas, in the United States, access were guaranteed for all of the participants. Another aspect influencing positive change for housing was that, in all of the households, the host country provided access to bathrooms, while, in Mexico, 40% of the homes of the participants did not have this. Other topics related to housing do not present changes in relation to the country of origin, such as home ownership and number of rooms.

In access to health conditions, significant differences were not found according to the participants' responses, who declared that they did not have health services in either country. For instance, in Mexico, the participants did not have information that allowed access to health insurance, while, in the United States, high costs and legal status are a restriction for health care access; therefore, the frequency of doctor visits did not have a significant difference. One third

of immigrants in the US (33%) are uninsured, compared to 12% of American citizens (MPI, 2015).

In access to education, statistically significant differences were found. Eighty percent of the participants reported that they could not continue their studies because of the economic situation in Mexico did not allow it, while, in the United States, all of the participants were able to continue their education, in elementary, high school, or English courses. This is a positive change for the immigrant population, because a higher educational level offers the possibility of obtaining a better job and, consequently, better income.

In the occupation status, a change in the activity of the participants was seen with fifty-five percent reporting that they worked on farms and grew their own food before immigration and fifty-five percent reporting that they currently work in industries, only ten percent reported currently working as farm labor. Although Frankfort is a rural area, it has an industrial park with 23 diversified industries that require a high amount of labor, creating jobs for residents (Clinton County Chamber of Commerce, 2015).

For self-produced food, seventy-five percent of the participants grew their own food in their country of origin, while, in the host country, this activity decreased by 20%; this reduction was mainly due to a lack of space and time and weather conditions that do not permit it due to seasonal weather.

Change in dietary intake

Table 4 shows the main changes in the dietary intake. The results of the paired t test for the statistically significant results for the consumption of processed foods, mainly to consumption fast food and sausages, had a notable increase in the frequency consumption of foods outside the home, similar to reports by other studies with immigrants from other countries, such as reports from Gilbert and Khokhar (2008) and Kaplan *et al.* (2004). This indicates that the participants increased consumption of these foods when they arrived to the United States, as has been evidenced by Neuhouser *et al.* (2004) for immigrant populations that live in other cities in the US. It is important to note that these foods provide higher sodium contents; therefore, the average daily intake of sodium declared by the participants was 3 times higher than recommended, according to a report from the CDC (2011).

In the case of vegetable consumption, no variation of intake was found, while the consumption of fruit decreased, due not to a lack of resources to purchase them, but because the

TABLE 4. Paired samples test, paired differences of dietary intake.

Topic compared	Correlation statistics	
	(df)	P-value
Processed food consumption MX-US	19	0.01**
Sugary food consumption MX-US	19	0.11 ns
Vegetable consumption MX-US	19	0.06 ns
Fruit consumption MX-US	19	0.18 ns
Meat consumption MX-US	19	0.00**
Dairy product consumption MX-US	19	0.04**

df, degrees of freedom; ** $P \leq 0.01$; * $0.01 < P \leq 0.05$; ns, not significant..

populations had more access to resources they preferred, *i.e.* buying fast food, processed food and others instead of what they were used to. This result is different to that found in Latino immigrant populations in the state of Washington by Neuhouser *et al.* (2004) and can be related to differences in income and education of the immigrants in each of these states.

The differences reported in the consumption of meat and dairy products are often due to increased consumption in the United States since participants reported a higher income and, thus, a greater purchasing power to obtain them. This situation was reported by Gilbert and Khokhar (2008) for some ethnic groups, who maintained cultural food habits despite expensive imported foods that are purchased despite their cost relative to income. In the case of Mexican Latino immigrants in Frankfort, we found that the consumption of typical and traditional food still exists, but it has been replaced by a new dietary pattern in the host country.

The Body Mass Index (BMI) is defined by the World Health Organization (2015) as a simple index of weight to height that is commonly used to classify overweight and obese adults. It is defined as a person's weight in kilograms divided by the square of his/her height in meters (kg/m^2), and a BMI greater than or equal to 25 is overweight; a BMI greater than or equal to 30 is obese.

According to the results, 45% of the participants were overweight and another 45% were obese; only 10% of the participants were in a normal weight range; this is perhaps related to a decrease in physical activity in the US, as seen in the results of the paired T-test for physical activity MX-US. $t(19) = 0.00$ $P \leq 0.01$, which showed statistically significant results basically because, in the US, the participants owned cars and, therefore, walked very little and did not perform any physical activity, while, in México, they walked more and were more active. This data can be linked to the fact that 33.2% of Hispanic adults in the state of Indiana are reported as being overweight (CDC, 2014).

Perception of change in living conditions and food habits

Each participant was asked about his/her satisfaction level with their living and eating habits in Mexico and the US on a scale of 1-7, where 1 is extremely dissatisfied and 7 extremely satisfied, both aspects obtained statistically significant differences.

The perception the of living conditions for all of the participants improved by living in the US. In general, rising incomes and, thus, purchasing power, for this aspect of perceptions of change, had results that the paired t test revealed as having statistically significant differences for the satisfaction grade for the living conditions of the participants (Tab. 5), meaning that they achieved their goal of improving their quality of life by coming to the United States.

Regarding eating habits, the participants reported that they had enough money to eat any kind of food, but they were aware that they did not eat adequately.

TABLE 5. Paired samples test, paired differences of dietary intake.

Topic compared	Correlation statistics	
	df	P-value
Satisfaction grade for living conditions MX-US	19	0.00**
Satisfaction grade for dietary intake MX-US	19	0.48 ns

df, degrees of freedom; ** $P \leq 0.01$; * $0.01 < P \leq 0.05$; ns, not significant.

Some direct quotes from the participants follow:

“... The thing is... you know... the food here is really bad for your health but it is very tasty. Then, I cannot say 2 because it means very unsatisfied and I will be lying to you. Right after finishing this interview I will go straight to Burger King” (Participant # 2).

“... Also, here I drink more than 6-7 cans of soda per day and in Mexico just 2 ...” (Participant # 8).

“... The food is not very good here; lots of fast food and most of the canned food are not as natural as the food we used to eat in Mexico ...” (Participant # 6).

“... Sometimes people will give you clothes or my mom had to sew or mend them, putting patches, sometimes we did not have enough food for us to eat and my mom did not eat and gave us her food...” (Participant #1),

“... Here, I feel safe, I feel really happy; not in Mexico, there is not security. There, many children are disappearing and other things are happening too. I would say that here is a better place for my children...” (Participant #12).

Conclusions

The perception of changes in the living conditions of the participants showed statistically significant differences, with a better quality of life in the US, specifically, in housing, utilities, and education.

The studied sample perceived a change in their dietary intake and a lower frequency of consumption of typical food from their country of origin, substituting with an increase in the consumption of fast food, processed food, and sodas in the host country.

Ninety percentage of the participants had some degree of being overweight or obese; this was perhaps related to a decrease in physical activity in the US. This showed statistically significant results basically because, in the US, the participants owned cars, while, in Mexico, the participants walked more and performed physical activity.

This study was designed as a pilot type in order to undertake programs of awareness about the eating habits of our community and the impact of our perspectives of the conditions we live in. These results were based on a small sample. It is important to conduct further studies on the issues investigated here in a representative sample of the population in Frankfort, especially because of the high percentage of Latino populations in the United States. For example, the state of Indiana is considered one of the 18 states that have a 33.2% prevalence of obesity within the Latino population. Likewise, other changes that occur with other Latino immigrants in the host country should be assessed.

Acknowledgement

The authors thank Claudia Houchen and Melinda Grismer for guidance during the study and the Community Purdue Extension Learning Network of Clinton County for allowing us to conduct this study. This study received financial support provided to the first author by the Programa Nacional de Semilleros de Investigación, Creación e Innovación by the Universidad Nacional de Colombia 2013-2015, and was developed in the Undergraduate Research Experience Purdue-Colombia (UREP-C).

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