# Is There Really a Labor Market Advantage to Being Bilingual in the U.S.?

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RESEARCH REPORT

# Is There Really a Labor Market Advantage to Being Bilingual in the U.S.?

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Although it is commonly thought that people who are bilingual have an advantage in the labor market, studies on this topic have not borne out this perception. The literature, in fact, has found an earnings penalty is associated with bilingualism—people who are bilingual often make less than people who are monolingual in similar jobs. This report reviews those studies and introduces a new set of studies that found different outcomes for bilingual people in terms of education and earnings. In this report I examine why the prior and present studies differ so greatly and what this means for education policy.

**Keywords** Bilingualism; labor market; immigrants; Hispanics; Latinos; linguistic skills

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## Preface

In 2012, Educational Testing Service (ETS) entered into an agreement with the Civil Rights Project/Proyecto Derechos Civiles (CRP) to sponsor the commissioning of a set of original papers that would investigate, from different disciplinary perspectives, the labor market implications of bilingualism in the United States. The extant research appeared to conclude rather definitively that bilingualism in the United States was associated with no higher earnings and, in fact, was often found to carry an earnings penalty. This latter finding, while somewhat counterintuitive, makes sense when one considers who is bilingual in the United States—usually immigrants who, as a class, tend to have lower earnings than native-born citizens. However, the rapidly changing demographics of the country, along with the steep rise in other-than-English media and significant enclaves of non-English speakers, have created a different context for examining the question of labor market returns to bilingualism. Moreover, the increasing popularity of dual-language programs across the United States, and especially in states that have severely limited bilingual instruction, suggests that native English–speaking parents perceive a pecuniary benefit to bilingualism for their children. As one North Carolina mother was quoted as saying in a recent newspaper account of Cumberland County dual immersion schools, "[f]or me, it was about setting my child up for success. All I could think about is him having a great paying job after finishing school" (Jenkins, 2013). Are these parents misguided, or is there really something to their perception of economic advantage for bilingualism?

To answer this question, the CRP, with the financial assistance of ETS, sent out a request for proposals to wide networks of researchers to stimulate research on this topic. Several very good proposals came forward, and a few others were generated by making direct pleas to highly regarded researchers in the field who could fill some existing knowledge gaps. What resulted from this endeavor are eight studies conducted by economists, political scientists, sociologists, education scientists, sociolinguists, and anthropologists examining the question of labor market returns to bilingualism from their various disciplinary perspectives. As a group, the researchers undertook to analyze mostly secondary data sources: U.S. Census data, National Education Longitudinal Study (NELS88) data, Education Longitudinal Study (ELS 2002)—these latter two datasets consisted of national samples collected by the U.S. Department of Education—and two unique regional datasets that focus specifically on language and immigration among youth on the two coasts of the United States collected by Rubén Rumbaut and his colleagues. The result is a compelling narrative of the relationship between bilingualism and both educational and labor market outcomes and the ways that the relationship varies depending on age, geography, and levels of linguistic competence. Because these data are analyzed from multidisciplinary perspectives, the researchers use different analytical techniques and present their data in different ways. This presents challenges in

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creating a seamless document that speaks with a consistent voice. To that end, the report begins with an introduction that provides a context for understanding the questions that are addressed in the commissioned studies, and the studies are grouped thematically into three sections in this report. Each section begins with an introduction of the research presented and its implications, then focuses on the findings of the authors, quoting from them directly at key points. I have attempted to synthesize the studies in such a way that maintains their integrity, while reducing the text to manageable length and complexity. Additional tables and statistics for many of these papers are presented in the appendix in order to provide more detailed information for the technically oriented reader, while maintaining the flow of the narrative for the reader who may have less interest in this level of detail. More tables are available for download in an Excel spreadsheet at http://www.ets.org/Media/Research/RR-15-07_tables.xlsx.

The History and Overview of the Language Minority Population in the United States section in this report deals with an overview of a study by Reynaldo Macías (2014) on the history of language policies and practices in the United States from its founding, as well as a careful description of the many subgroups contained within the nation's largest non-English group, Hispanics or Latinos, from a study by Sarah Moore and her colleagues (Moore, Fee, Ee, Wiley, & Arias, 2014).[1] In this second study, Moore et al. paid particular attention to literacy, as they argued that this may be the critical dividing line between those bilinguals who are compensated for their linguistic skills and those who are not. The Labor Market Analyses of Bilingualism section in this report turns to three studies that use U.S. Census data to test the hypothesis that bilinguals might receive additional compensation for their language skills, especially if they are situated in jobs that require sensitive and extensive interpersonal contact, such as those in the health and criminal justice sectors. This group of studies is authored by Joseph Robinson-Cimpian (2014) and Amado Alarcón and several colleagues (Alarcón, Di Paolo, Heyman, & Morales, 2014a, 2014b). The New Questions, New Data, and New Answers section in this report combines studies that take a different approach, either by asking different questions, such as, Does linguistic assimilation exact a cost on language minority youth in the labor market? in a study authored by Orhan Agirdag (Agirdag, 2014); Are there educational implications of bilingualism that may indirectly affect labor market outcomes? in a study authored by Lucrecia Santibañez and Maria Estela Zárate (Santibañez & Zárate, 2014); or, in the case of Rubén Rumbaut's study, Does bilingualism reduce dropout and/or yield better labor market outcomes? (Rumbaut, 2014). These studies rely on U.S. Department of Education data (i.e., NELS88, ELS 2002) and specific new datasets developed by Rumbaut. Finally, in the conclusion, I attempt to draw these findings together into a coherent response to the question asked in the title of this report: Is there really a labor market advantage to being bilingual in the U.S.? The answer, it turns out, is not necessarily straightforward, but it is very optimistic.

Each of the studies commissioned was peer-reviewed by noted researchers in the same field as the authors, as well as through a roundtable review organized by the CRP in late summer 2012, in which the researchers critiqued each other's papers. The studies were then edited based on this review process. However, as a result of further peer review, several of the papers underwent yet another editing, sometimes extensively, after the period of the ETS contract. Additionally, a couple more studies were commissioned by the CRP to extend the issues covered, and chapters were added to integrate the whole body of work. This final phase of the work has resulted in a book published in October 2014 by Multilingual Matters titled *The Bilingual Advantage: Language, Literacy, and the U.S. Labor Market,* edited by Rebecca Callahan and Patricia Gándara. The book should be viewed as a companion piece to this policy report.

## Introduction

In Phoenix, the capital of a state that has all but banned bilingual education, English-speaking parents have rallied to build a program where their children can learn in both Spanish and English. In a recent article, one native English–speaking mother asserts, "The chance Gillian is getting to learn about another culture will broaden her horizons for the future," and another adds, "This endeavor is all about brain development."[2] Ironically, however, if a child already speaks Spanish but wants to strengthen those language skills, and also needs to learn English, he or she is not eligible to attend the school in Phoenix. While this policy actually runs counter to the best-researched and apparently most successful model of language learning: two-way dual-language programs that bring together native speakers of both languages,[3] there *may* be something to the notion that bilingualism is only good for native English speakers, at least with respect to the labor market.

Most research into the labor market benefits of bilingualism has centered on the value of non-English speakers learning to speak English—a characteristically American framing of bilingualism. And, this research finds that the stronger the English, the better are the job market prospects, and earnings, for those strong English bilinguals (see Chiswick, 2009;

López & Mora, 1998). As Agirdag (2014) pointed out, studies that look at the benefits of bilingualism in the United States from the perspective of having high levels of proficiency in *two* languages (or more) are scant. For example, Chiswick and Miller (2002) and Shin and Alba (2009), testing out the proposition that bilingualism represents additional human capital and, therefore, should garner greater rewards in the labor market, have compared the earnings of Spanish-English bilinguals with English monolinguals in the United States, using census data. Their findings are that Spanish-English bilinguals actually earn less on average than monolinguals, even after controlling for education. Chiswick and Miller (2002) explained this in part by noting that Spanish-speaking bilinguals tend to cluster (or be segregated) in areas where job prospects are more limited. Moreover, because the language variables are poorly defined in census data, it is possible that the bilinguals are not as proficient in either language as presumed, or that their educational background differs in unobserved ways that influence their value in the labor market. It is also notable that earlier research by Chiswick (1978) had found more positive results for bilinguals, but these findings included many different language groups and were not limited to Spanish speakers, who have historically suffered discrimination in the U.S. labor market (Reimers, 1983).

López (1999) asked a similar question, Does speaking a second language affect labor market outcomes? Using a different dataset, the 1992 National Adult Literacy Study (NALS), López drew a different conclusion. It is important to note that the NALS dataset allows for the evaluation of different levels of language proficiency, and López's findings are associated with speaking English *and* the second language proficiently. He found that bilingual individuals earn a slight premium compared to English monolinguals, and when testing for differences in region, he further found that "individuals residing in states with English only laws do not see this premium mitigated" (p. 1). López argued that "since there is a return associated with bilingualism, policies that seek to make English the official language of the United States or emphasize English proficiency over other languages may inadvertently minimize the development of important human capital, namely bilingualism" (p. 1).

Following on López's study, Fry and Lowell (2003) also asked what the value of bilingualism is in the U.S. labor market using the same dataset as López (1998). However, they took a somewhat different analytic approach and concluded that bilingual workers do receive higher pay, but this reflects the higher educational attainment they bring to the labor market, rather than their bilingualism. When observable characteristics are controlled (including education level), there did not appear to be any statistically significant wage payoffs to competency in a second language. The fact that self-reported bilinguals had acquired higher levels of education than the monolinguals in the sample is, however, an interesting finding in itself and one that has not been widely reported. This also suggests that there may be associated benefits to bilingualism that could *indirectly* affect labor market outcomes and that have been under-researched.

The increasing interest in dual-language programs among monolingual English speaking families raises an important question: Why are English-speaking parents increasingly spending uncomfortable nights in sleeping bags outside school offices to get a place in line to enroll their children in dual-language schools? One reason is probably that knowledgeable parents have read the studies that show that students in dual immersion programs tend to outperform other students on a host of academic measures (see Genesee, Lindholm-Leary, Saunders, & Christian, 2006), and better academic outcomes lead to better post-secondary school options, which in turn can lead to better earnings. Additionally, a number of studies show there are real cognitive advantages to being bilingual. Bialystok (2001) and her colleagues (Bialystok & Craik, 2010; Bialystok & Majumder, 1998) have reported through a plethora of studies that bilinguals have clear advantages in cognitive flexibility, ability to focus and avoid distraction, and in working memory, all critical characteristics of efficient learners. But another reason is certainly the belief that speaking another language, especially one in such wide use as Spanish, will benefit their children in the labor market. It is evidently viewed as a marketable skill by these parents. To what extent are they right, and does this only hold for native English speakers, or are there significant benefits for those children who are already on the path to bilingualism by speaking a language other than English at home?

Up to now, the research has suggested that there may be a modest economic advantage in the labor market for English speakers who gain a second language, as well as for some other language groups that acquire strong English skills, but for the most common bilingual in the United States—the individual who retains his or her native Spanish and becomes bilingual through the acquisition of English—the labor market outcomes are not so clear. Certainly, if evidence is lacking that retaining the home language will be of significant value in the labor market, then speakers of other languages may not be as likely to encourage the development of those language skills in their children (cf., Velásquez, 2009). Maybe it is better to just focus on English. Moreover, if there is no significant labor market advantage for immigrants to retain

their primary language skills, it may be difficult to argue that students are losing anything of value when their primary language is allowed to atrophy. Thus, understanding the potential benefits that accrue to bilinguals, and especially in the labor market, may have significant educational and social policy implications.

There are many reasons to doubt the current relevance of past research on labor market outcomes for bilinguals. The massive shifts in demography over the last couple decades in the United States, to a point where Hispanics comprise 52 million of the approximately 312 million residents of the United States, is one. The fact that nearly one in four school age children in the United States is of Hispanic origin is another. These individuals represent not only potential workers, but they also represent potential *markets.* Today, *Univision*, the Spanish-language television network, routinely ranks number 1 or number 2 for all network television viewing in the United States[4] (Bibel, 2013). Not only does this represent a huge opportunity for advertisers, it is also the source of a lot of Spanish-language media jobs. Anecdotally, across great swaths of the United States, one hears of the press to hire employees who can interact with both Spanish-speaking workers (usually in lower skilled jobs) as well as with clients and customers at all levels of socioeconomic status. Moreover, in increasingly larger sectors of the United States (and world) economy, foreign trade and commerce require that individuals have the capacity to interact with their counterparts in the languages of those nations. It would seem that so much economic activity among Spanish speakers, and others, must translate into greater opportunities for those who are bilingual in the United States.

Studies that have examined bilingualism in the labor market without paying attention to differences in gender or age may also miss the mark in a society that has changed so radically over just two decades. Young people entering into the labor market in recent years may have a different experience than the whole of the laboring population, and this may also differ by gender. Finally, simply looking at earnings is not as meaningful in today's labor market, where youth unemployment is high and competition for jobs is fierce. Perhaps *getting* a job, and holding it, is a more critical marker of the value of proficiency in more than one language than simply whether the employer offers additional compensation for the skill. For example, Villa and Villa (2005) found that in the Mesilla Valley (New Mexico border region), almost 62% of employers either required or preferred that employees be Spanish-English bilinguals, but only slightly more than 4% paid for this skill. Similarly, in a new study from California, Porras, Ee, and Gándara (2014) found that if two job candidates had similar qualifications, two thirds of nearly 300 employers surveyed preferred to hire the bilingual (in any number of languages), but many fewer paid for these skills.

Although an additional salary stipend may not be associated with a job, it is also possible that in some job categories, such as sales, earnings may be higher for bilinguals simply because of their ability to generate more and better contacts with a wider range of customers. Some of these questions may be unanswerable with existing data, but clearly there are more interesting questions to be asked than have been explored in the past with respect to bilingualism in the labor market. This report is an attempt to answer some of those questions. It is important to note that some of the analyses that follow include speakers of languages other than Spanish. We had, in fact, hoped to include more research on speakers of other languages; however, this report focuses largely, though not exclusively, on Spanish in the education sector and in the labor market because:

- The Spanish-speaking population in the United States is so much larger than any other non-English language group. Almost two thirds of all speakers of languages other than English are Spanish speakers; the next highest percentage of speakers of other languages is Chinese, with 4.8% (Ryan, 2013).
- The great bulk of research conducted over the last several decades on the use and utility of foreign languages has been on Spanish.
- The findings are more robust for Spanish speakers because of the much larger number of subjects in both national and regional samples.

There are suggestions, however, that at least some of the findings reported for Spanish speakers generalize to other language groups, where those groups exist in large enough numbers.

Before turning to the research, however, it is first necessary to look briefly at how law and regulation of language use in the workplace have shaped the way that bilingualism is viewed and valued. There is a particularly conservative trend to the court rulings in this area of the law that has sent awkward and oftentimes conflicting messages to multilingual workers who serve their employers with their language skills but must tread a very thin line between work-related and personal speech.

As the Latino population has grown and dispersed throughout most states in the nation, both law and practice have had to confront issues associated with employees who speak a language other than English in the workplace. While increasingly employers have sought workers who can interact with clients and customers who speak Spanish, at the same time, a number of cases have been brought by employees who allege discrimination in the workplace on the basis of being punished for using their primary language. Most of these cases have been decided in favor of the employers (Gibson, 2004). For example, in the case of *Garcia v. Gloor* (1980), which has been cited as precedential in many of the cases that have followed, the court found that while seven of eight employees of the company were Hispanic and had been hired for the purpose of communicating with customers in Spanish, the use of Spanish between employees could be prohibited by the employer without violating Title VII national origin law. The reasoning of the court was that the English-only rule was applied "to a person who is fully capable of speaking English and chooses not to do so in deliberate disregard of his employer's rule" Thus, if a person is capable of speaking English, that person must speak English if the employer requires it. The *Garcia v. Gloor* decision presents the odd situation in which an employee may be hired expressly because of his or her Spanish (or other) language skills to be used with customers or clients, but if the employee turns around and speaks to a coworker in the same language he or she may be fired for deliberately disregarding the employer's rule. To a bilingual or multilingual individual, this can be especially disconcerting because one is not always conscious of the need to code switch when the coworker to whom a comment is directed speaks the same language as the client. It can constitute a linguistic *trap*; however, the courts have not acknowledged this problem.

As a result of *Garcia v. Gloor*, the Equal Employment Opportunity Commission (EEOC) created guidelines in 1980 that spelled out how Title VII legislation should be applied. According to the guidelines, English-only rules are discriminatory if applied at all times, including breaks and lunch. However, if the employer can show a business justification for it, the employer can prohibit the use of a language other than English during working hours (Speak-English-Only Rules, 2000). Accordingly, the EEOC has insisted that employees should be able to use their primary language during nonwork times, such as breaks and lunch, and that employers must demonstrate that there is a need for any restrictive language policies that they impose. This was reaffirmed in the more recent 2000 case of *EEOC v. Premier Operator Services, Inc.* However, many courts have disregarded the EEOC guidelines entirely, and even those that have recognized them have commonly cited two justifications for disallowing languages other than English in the workplace: to promote harmony among employees and the need for supervisors to monitor employees. The promotion of harmony in the workplace has been extended into informal and nonwork related use of language (Gibson, 2004).

Gibson (2004) also noted that there was a 600% increase in EEOC investigations into cases involving English-only rules in the workplace between 1996 and 2002. A briefing held by the U.S. Civil Rights Commission in 2010 resulted in the recommendation that EEOC guidelines be withdrawn, allowing employers to designate English-only workplace policies except in the case where "it can be shown by a preponderance of evidence that the policy was adopted for the purpose of harassing, embarrassing, or excluding employees" (U.S. Commission on Civil Rights, 2010, p. 5). Of course, such an intent is virtually impossible to prove. None of the many civil rights organizations invited to provide testimony chose to appear before the Commission, evidently believing their testimony would be fruitless. Clearly, this is a contentious issue reflecting a deep irony. With an increasing non-English, and especially Spanish-language market and increased numbers of people who are hired *because of their ability to communicate in Spanish* (and other languages) with customers, clients, and business associates, asking these employees to split linguistic hairs—speaking to one person in one language and another in another language, all in the same context, in order to follow an arbitrary set of language rules seems a bit silly. But the underlying attitude that guides these rules must surely influence the way that multilingual workers are viewed in the workplace and the extent to which their linguistic skills are appreciated by employers and co-workers.

## History and Overview of the Language Minority Population in the United States

Labor market practices with respect to multilingualism in the United States must be viewed within a broad context. Not all languages are equal in the eyes of an employer, nor are all employees equal. Historically, not all racial and ethnic groups in the United States have been viewed equally positively by employers either. Historic treatment of certain language groups may continue to influence the way those languages are viewed and compensated. As a nation of immigrants, the United States has a rich history of language diversity, as well as restrictive policies aimed at *homogenizing* that diversity in favor of establishing a monolingual, English-speaking state. Teddy Roosevelt's famous statement,

> We have room for but one language in this country, and that is the English language, for we intend to see that the crucible turns our people out as Americans, of American nationality, and not as dwellers in a polyglot boarding house. (Roosevelt, 1926, p. 554)

continues to resonate with many Americans. Today's labor market policies and practices cannot be truly understood without knowing something of this history and the various twists and turns that it has taken.

In his paper *Benefits of Bilingualism: In the Eye of the Beholder?* Macías (2014) recounted a history of language policies and practices that begins with the founding of the nation and extends to the present day, suggesting that perceptions of linguistic groups by the majority population have played a significant role in whether those languages would be tolerated, encouraged, or suppressed. Macías also pointed out, however, that values can change, and the United States today is radically different than it was just a few decades ago. Moreover, the economics of Spanish-English bilingualism could well change perceptions of the value of multilingualism in the eyes of the beholders.

As Macías wrote:

> There is little question anymore that there is an "American bilingual tradition" (see Kloss, 1998) of language diversity and a history of language politics, policies, and practices that echo the national valuation of that diversity. Yet, there are seemingly disparate descriptions of that language policy history on how or whether specific languages (including English) or bilingualism have borne positive value, advantages, or benefits within the political economy of the United States. In the 19th century, it seems that language policies were differentially tailored for specific languages. The degree of political consolidation of the federal government over a particular new land area as the country expanded from the Atlantic to the Pacific coasts and beyond to Alaska, the Caribbean, and the South Seas, also made a difference as to whether and what types of language policies were adopted. With only a tenuous hold over an area, there was little prohibitory language legislation and even an official recognition of the language of the prior sovereign or of a significant portion of the population speaking the language. As the federal government drew tighter reins of geopolitical control, there seemed to be a concomitant increase in migration to the area by Euro- American English speakers, rural to urban population shifts and explicit English language legislation, facilitating the transfer of power, property, and other economic resources from local populations to Anglo Americans. This geopolitical consolidation by the federal government was reinforced when statehood was granted by Congress to those parts of the country designated as territories, by often requiring English as the language of state government administration, even while nominally allowing Spanish, or French, to be used for limited periods of time in recognition of the prior sovereign of those territories, or the significance of the legacy populations speaking those languages within those jurisdictions.
>
> Issues of national identity became intertwined with the economic interests of the dominant Anglo, white population. Access to governmental and administrative power could be controlled and regulated via the English language, and economic enclaves dominated by non-English speakers could be marginalized, exploited, dismantled, and transferred to Anglo Americans. The 20th century was different from the 19th century in both language diversity and language policies. The urbanization of the population, the spread of the public school systems and mandatory attendance laws, anti-child labor laws forcing children into schools, the rise of the mass media industries and the debates over immigration, citizenship, and American identity, all affected the formation of language policies and their configuration in the 20th century.
>
> English language laws, policies and practices were adopted much more widely throughout society, making it an English-only era for most of the 20th century. This English legal adoption and use was so widespread that it created a normative social expectation of accommodation to English-only as the valued language, almost exclusively, and gave substance and body to an English language ideology rationalizing the Anglicization of all non-English language speakers and communities, associating them with foreignness, and with immigrants or non-natives, and so with lesser rights than 'citizens'. Non-English languages, indigenous, colonial and immigrant, were devalued, 'minoritized' (García & Mason, 2009; Hill, 2008), made invisible by being lumped together and conflated as the 'non-English proficient'.
>
> If we were to broadly paint modal types, patterns or 'streams' of language policies in the 19th and 20th centuries, we might say that there were at least two fragmented streams in the 19th century, tied to the social and political relations between groups: a 'tolerant' stream involving German and French, Dutch and other Western and Northern

> European-origin settler language groups; and a 'repressive' stream involving American Indians, Mexicans, Puerto Ricans, Chinese, Hawaiians, Afro-Americans, and others. The two streams mixed into a 'restrictive' stream that dominated the first three quarters of the 20th century by conditioning social, political, and economic benefits on English language abilities, thus differentially valuing English over other languages, and advantaging white English speakers. The ideological rationales for English-only language policies and legislative and executive language policy strategies changed until they were consistent with the legal framework of the country. When anti-immigrant language legislation was drafted in the 19th century, it initially prohibited the use of non-English languages in various institutional settings . . . . As these laws were legally challenged in the late 19th century and early 20th century, the courts declared prohibitory language policies as unconstitutional on equal protection, liberty, and other constitutional grounds. At the same time, they developed a legal and ideological rationale that allowed the states to reach the same objective, but with a legally approved means. Legislative acts that universally mandated English, say as a medium of instruction in schools or a prerequisite for voting, were approved by the courts as being within authorized and appropriate state interests, and within their state police powers. With legal support, then, many states in their search for standardization mandated English abilities as a condition for the exercise of many rights, access to benefits and services and even participation in the economy and society. It became a small policy extension to then make these English language requirements exclusive, and increase the language proficiency threshold of these laws by adding English literacy requirements to English oral fluency.
>
> Through the 19th century, most of these language communities were compact in rural communities and small townships without intense language contacts with other language groups. By 1900, the majority of the national population lived in cities and the language contact among newly arrived immigrant communities was much greater and more intimate. As we know from Fishman, Nahirny, Hofman, and Hayden's (1966) major study of the language loyalty of these groups between 1900 and 1960, most of the European immigrant language groups shifted to English monolingualism over three generations, reducing the number of immigrant heritage language speakers, and the consequent language diversity of the nation. Yet, unlike these European language groups, during the 20th century the Spanish-speaking population grew at a higher rate than the rest of the country and benefitted from a continuous stream of in-migration of Spanish speakers, primarily from Mexico, and other parts of the western hemisphere.
>
> In 1850, there were an estimated 118,000 Spanish speakers, who represented about 0.5% of the total national population of about 23 million. In 1900, the Spanish-speaking population was estimated at 2% of the national population, while in 2011, there were 34.7 million Spanish speakers in the country, representing 12.3% of the total national population of 308.7 million. Not only was there an increase in the absolute numbers of Spanish speakers, but there was an increase proportionately to the national population as well . . . . The United States currently has the fourth-largest Spanish-speaking population in the world. Global Spanish has second-largest number of native speakers behind Chinese and slightly ahead of English. As we explore the value of bilingualism or single languages within the U.S. economy, we should keep in mind this history of language diversity and language policies and practices as well as the ideological forces that affect the organization of the economy, social relations between groups and the participation of people with different ethno-linguistic characteristics and talents in these political economies. Demography and the dollar may yet trump ideology. Ultimately, we should bear in mind that the social, political, or economic value, benefit or advantage of bilingualism or of specific languages may lie in the eye of the beholder. (Macías, 2014, pp. 37 – 42)

Just as Macías traced the ascendance of Spanish in the United States and the decline of other languages, it is also important to acknowledge that the present day Spanish-speaking population is extremely diverse in history, region, socioeconomic status, education, and literacy. All of these factors result in different experiences in the labor market so that it is not possible to draw conclusions about a single *Hispanic* group.

Sarah Moore and her colleagues at the Center for Applied Linguistics argued in their paper *Exploring Bilingualism, Literacy, Employability and Income Levels Among Latinos in the United States,* that in order to understand the role of language — in this case, Spanish — in the labor market, it is critical to understand the diversity of its speakers (Moore et al., 2014). Using the American Community Survey's (ACS) rolling 5-year average for 2007 – 2011 (U.S. Census Bureau, 2012), these researchers explored the variation in employment, earnings, and language proficiency in both English and Spanish as self-reported in the federal data. It becomes increasingly evident in the studies that follow this one that lack

of precision about *who* is in the target group and what their actual proficiency is in *both* languages probably colors the findings of many labor market studies. Moore et al. (2014) divided Latinos into the seven major subgroups in the United States — Mexican, Puerto Rican, Cuban, Dominican, Central American, South American, and other[5] — and first examine their migration histories. Migration history, they note, is very significant to labor market participation, as some groups (e.g., Cubans, South Americans) tend to arrive with relatively high human and financial capital and legal status, while others (e.g., Mexican and Central Americans) tend to have exceptionally low levels of education and little capital, in addition to being disproportionately undocumented. Of course, it is important to mention that even these subgroups are not monolithic; some Cubans, for example, arrive with very little capital, and some Mexicans arrive with doctoral degrees. Nonetheless, *average* subgroup differences can explain a great deal about job prospects, earnings, and the education level of the children of immigrants in the United States.

The ACS collects detailed demographic and socioeconomic data every year on a 1% sample of Americans, thus making it possible to track changes in population characteristics over time and to pinpoint when certain characteristics may begin to diverge. However, the ACS does not ask questions specific to either literacy abilities or proficiency in languages other than English. This presents a significant drawback to these otherwise detailed data. Respondents are asked to self-assess their English speaking abilities, but not their ability to read or write in either English or another language. While the authors fully acknowledge the limitations of their methods, one of the major contributions of this study is the development of surrogate measures, based on the ACS data, for (bi-)literacy, bilingualism, income levels, and employment, in order to be able to draw comparisons among subgroups. *Employment* was constructed as a simple dichotomous variable, either employed or not. Obviously, there are many levels of employment — part time, part year, and so forth — but, for comparative purposes, the authors chose a simple straightforward measure. *Income level* was constructed using individual earnings data and grouped into three categories: low (more than zero and less than $19,428), middle ($19,428 to less than $57,994), and upper ($57,994 to $99,999,999).[6] With respect to language and literacy, Moore et al. employed the following methods:

> "Bilingualism" was estimated based on the presence of Spanish spoken in the home,[7] combined with English proficiency. Although this approach is far from ideal, there is precedent based on previous research drawing on census data [e.g., see Fry & Lowell, 2003; Wiley, 2005; de Klerk & Wiley, 2008].
>
> *Spanish-English bilingual* was established based on self-reports of speaking Spanish in the home and speaking English *well* or *very well,* (i.e., *English proficient).*
>
> *Spanish dominant* was established based on self-reports of speaking Spanish in the home and speaking English *not well* or *not at all (i.e., not English proficient).*
>
> *English dominant* was created based on self-reports of speaking only English at home. Respondents who reported speaking only English were excluded from the *English proficiency* follow-up question; thus, this variable is not correlated with the *Spanish-English bilingual* and *Spanish dominant* variables above.
>
> *Literacy*
>
> *English literacy* was created from three indicators: years of schooling, place of birth and age upon arrival in the United States We created an English literacy binary variable as (0 = *Not English literate*, 1 = *English literate*); if a person was born in the United States *and* obtained over 8 years of schooling, the person was considered *English literate*. Respondents who migrated from non-English-speaking countries before age 7 *and* received over 8 years of schooling in the United States were also considered *English literate*. All other respondents were coded to *not English literate*. *Spanish literacy* was determined through three indicators: place of birth, years of schooling and age upon arrival in the United States Like English literacy, Spanish literacy was coded as a binary variable (0 = *Literacy Unknown*, 1 = *Spanish literate*). If a person migrated from a non-English-speaking region after age 14 *and* received over 8 years of schooling in a home country, s/he was coded to *Spanish literate*. Respondents who migrated after age 7 but before age 14 ***or*** who completed less than 8 years of schooling were coded to *Literacy Unknown*. (Moore et al., pp. 48–49)

In Table 1, the researchers find important differences among subgroups, especially with respect to literacy and earnings. One observation is particularly worth noting, however. At one time there was a very large disparity between males and

**Table 1** Means and Proportions of Latino Population by Regions of Origin: American Community Survey 2007–2011 ($N = 39$ M)

| Variable | Mexico | Puerto Rico | Cuba | Dominican Republic | Central America | South America | Other[a] |
|---|---|---|---|---|---|---|---|
| Percentage of population | .65 | .09 | .04 | .03 | .09 | .06 | .05 |
| Gender: Female | .48 | .51 | .50 | .54 | .48 | .52 | .51 |
| Age cohort | | | | | | | |
| 16–29 | .40 | .36 | .28 | .38 | .38 | .31 | .36 |
| 30–49 | .45 | .43 | .46 | .42 | .47 | .48 | .42 |
| 50–64 | .15 | .20 | .26 | .20 | .15 | .21 | .23 |
| English proficient | .70 | .87 | .67 | .68 | .62 | .76 | .88 |
| Language skill | | | | | | | |
| English-Spanish bilingual | .53 | .57 | .55 | .62 | .55 | .66 | .42 |
| Spanish Dominican | .23 | .08 | .27 | .29 | .34 | .20 | .06 |
| English Dominican | .24 | .35 | .18 | .09 | .11 | .14 | .53 |
| Literacy | | | | | | | |
| English | .45 | .70 | .39 | .34 | .26 | .29 | .64 |
| Spanish | .35 | .49 | .57 | .48 | .44 | .65 | .54 |
| Employment status | .90 | .87 | .90 | .87 | .90 | .92 | .90 |
| Income: Male | | | | | | | |
| Lower | .42 | .34 | .33 | .40 | .43 | .31 | .35 |
| Middle | .48 | .48 | .46 | .48 | .49 | .50 | .44 |
| Upper | .10 | .18 | .21 | .11 | .08 | .19 | .21 |
| Income: Female | | | | | | | |
| Lower | .57 | .43 | .44 | .54 | .58 | .47 | .47 |
| Middle | .37 | .46 | .44 | .40 | .37 | .43 | .42 |
| Upper | .06 | .11 | .13 | .06 | .05 | .10 | .11 |

*Note:* Adapted from "Exploring Bilingualism, Literacy, Employability and Income Levels Among Latinos in the United States," by S. C. K. Moore, M. Fee, J. Ee, T. G. Wiley, and M. B. Arias, in R. M. Callahan and P. C. Gándara (Eds.), *The Bilingual Advantage, Language, Literacy, and the U.S. Labor Market* (Table 3.2, p. 61), 2014, Bristol, England: Multilingual Matters. Copyright 2014 by R. M. Callahan and P. C. Gándara.

[a]*Other* refers to all other respondents who did not indicate one of the prior six groups as their primary identification.

females in the immigrant population from Latin America. As can be seen in Table 1, male and female immigrant and heritage speakers are relatively equally represented in the ACS data, suggesting a shift to family and both-gender migration.

Notable differences are between South Americans and Puerto Ricans who are the most proficient in both English and Spanish and among the highest income earners (with the exception of Cubans and *other*), and these are individuals who have likely benefited from a dual-language education, as Puerto Rico is an officially bilingual territory and South American immigration tends to favor more affluent persons. The Cuban case is especially interesting because Cubans are the most likely to be in the upper income category (again, with exception of *other*), yet their level of bilingualism is only about average for all groups, and their literacy in English is actually lower than that of Mexicans, who are highly represented in the lowest income group. This, no doubt, reflects the very different migration pattern (and documented status) of the Cuban subgroup, as well as their dominance in many markets in the Miami area, reaffirming the authors' contention that both language proficiency *and* migration patterns are likely to affect earnings. Across all subgroups, women are much more likely to fall into the low-income category and much less likely to fall into the upper income category. This may reflect a greater likelihood of being employed part-time, but also reflects the ongoing wage gap between the genders in the United States (Patten, 2014), which may be especially acute for immigrant women.

## Labor Market Analyses of Bilingualism

The following three studies in this section explore traditional labor market analyses with more recent data and with much more targeted questions than past studies have done. All three studies use ACS data from 2006 to 2010. The ACS is especially well developed for labor market studies, and thus has been used extensively in this type of research. It is collected annually and has a great deal of data on employment; job types; hours, days, and months worked; education; and earnings, as well as detailed demographic data on workers. It does not, however, have very good data on first and second language and literacy proficiency (as noted above), and so each study deals with this shortcoming in creative, though different,

ways. Researchers are forced to make tradeoffs, as there is no national dataset that is updated annually; samples widely; and has detailed data on languages, background characteristics, and labor market on large numbers of individuals.

The Robinson-Cimpian (2014) study used a national sample from the ACS with workers 24 to 64 years of age, while the two Alarcón studies (Alarcón et al., 2014a, 2014b) drew their ACS sample from the borderlands of United States – Mexico in the first study and Dallas-Tarrant County in the second study and employed a sample of workers aged 17 – 70. Given that past studies with ACS data have consistently found that there is no wage premium for bilingual workers, these researchers pursued somewhat more detailed questions. For example, Robinson-Cimpian wanted to know if wage differentials for bilinguals might occur in situations of ethnic enclaves, and Alarcón and colleagues questioned if specific job sectors or geographic areas may reward bilingual workers differently than monolingual workers in the labor market.

In his study, *Labor market differences between bilingual and monolingual Hispanics*, Robinson-Cimpian (2014) explored three primary questions:

- Do bilingual and monolingual Hispanics experience different levels of labor market participation, employment rates, and annual wages?
- Do any outcomes change when accounting for individual characteristics (such as gender and educational attainment)?
- Do any differences vary according to concentration of Spanish speakers in the area in which individuals reside?

According to Robinson-Cimpian (2014), "'*bilingual*' is defined as someone who (a) speaks Spanish at home and (b) self-reports speaking English *very well.* Note that this means that individuals who self-report speaking English less than *very well* are excluded from these analyses. Individuals who speak only English are coded as 0 (for monolingual)" (p. 85).

In his regression analyses, Robinson-Cimpian (2014) controlled for educational attainment, *citizenship process* (manner of acquiring citizenship), marital status, race, year of entry (if born abroad), class of worker (i.e., type of employer), weeks worked in past 12 months; in all analyses, age, age squared, and age cubed are included to allow for flexibility in the relationships between age and outcomes. The author also builds several models to analyze each outcome: labor market participation, employment, and annual wages. Tables describing these models can be found in the appendix; however, Robinson-Cimpian summarized his findings as follows:

> Consistent with prior studies in the United States that explored bilingual – monolingual wage differences among Hispanic males, the current study finds evidence that male bilinguals earn slightly lower wages, other factors held constant. In the current study, bilingual Hispanic males earned 2% lower wages than observationally similar monolingual Hispanic males, and there was no evidence of a wage gap between observationally similar bilingual and monolingual Hispanic females. These findings lie somewhere in the middle of prior studies. For example, Shin and Alba (2009) found a gap of about 5.6% (favoring monolinguals) among Mexican males and females. Fry and Lowell (2003) found no gap among Hispanic males, and they did not examine the female bilingual – monolingual wage differential.
>
> The present study also finds some evidence that bilingual males participate in the labor market at slightly lower rates. However, this and the male wage gap are the extent to which there is any evidence of lower average bilingual outcomes once other factors are taken into account. That is, on average bilingual and monolingual males are employed at the same rates, and there is no average difference between bilingual and monolingual females in employment rates or in annual wages. Importantly, there are positive correlates of bilingualism: there is significant evidence that female bilinguals participate in the labor market at higher rates than do observationally similar monolingual females; this difference is the largest standardized difference found in this study (0.044 SDs). . . . the most consistent finding across all of the analyses presented . . . is that bilingual and monolingual Hispanic individuals have remarkably similar labor market outcomes.
>
> The present study found virtually no evidence of lower outcomes for bilinguals when the concentration of Spanish speakers exceeded 50%. In fact, in the case of labor market participation, bilingual males participated significantly more than monolingual males when the concentration was above 50%. Among females, the participation gap favored bilinguals throughout most of the concentration distribution, and the gap increasingly favored bilinguals as the percentage of Spanish speakers in the area neared 100%. (pp. 97 – 98)

Finally, Robinson-Cimpian (2014) argued that it is important to look beyond wage premiums and to consider other labor market outcomes, such as participation. Moreover, he asserted that both concentration of speakers of the non-English language and gender differences are important variables to consider in any such study. There are, however, several important limitations of this study that arise from limitations in the data and the choices that the author made. Only U.S. citizens are included in the sample because, as Robinson-Cimpian noted, there is no indicator on the ACS survey for permanent residents. Therefore, many millions of Hispanics who are either undocumented or legal residents but not citizens are omitted from the analyses. Moreover, as there is no measure in the ACS data of how well individuals speak Spanish or if they are literate in Spanish (or English), biliteracy is not a measured trait in the sample, which may have implications for the robustness of the findings regarding bilingualism. Also, since individuals who self-reported speaking English less than *very well* (e.g., Moore et al. [2014] used *very well* or *well* as their measure of bilingualism), some individuals who might be perceived as reasonably bilingual in common interactions were also removed from the sample. Finally, the sample includes those individuals in the labor market between 24 and 64 years of age who were also not in school—a wide age span, though it also does not include more recent workers who may have several years in the job market after completing high school, some college, or a college degree. This may prove to be an especially important limitation, as it is likely that a person who today is in her 60s experienced a very different labor market at the onset of her work life than someone who is today in his 20s. This issue will be further interrogated in later studies in this report. These limitations of the data may skew the findings in unknown ways. Nonetheless, Robinson-Cimpian's contribution to the literature is significant in raising new questions that have not been explored.

If indeed Robinson-Cimpian (2014) was correct in his analyses that, overall, there are few differences, if any, in the earnings of bilingual and monolingual workers in the U.S. labor market, then Alarcón et al. (2014a, 2014b) asked the next obvious question: Are there differences in the way that bilingual workers are valued by job type? In other words, if one works in a field that is heavily dependent upon client interaction, and the work is located in an area with a high percentage of non-English speakers, will these linguistic skills be more highly valued than in the labor market as a whole?

Thus, Alarcón et al. (2014a) in their study, *The Occupational Location of Spanish-English Bilinguals in the New Information Economy: The Health and Criminal Justice Sector in the U.S. Borderlands With Mexico*, focused on health and criminal justice and examine the job placement of bilingual versus monolingual English speakers. This study attempted to explain how the *processes of hiring* may affect the valuation of their language skills and subsequent compensation for those skills. This is a study that opens up the *black box* of hiring decisions and attempts to explain how it is that individuals with particular competencies (both education and linguistic skills) end up being placed in the job hierarchy within particular employment sectors.

Alarcón et al. (2014a) used the same ACS (2007 – 2010) dataset that Robinson-Cimpian (2014) used, but they sampled from several geographical sites along the border between Texas and California. They divided the workforce into five categories along the dimensions of symbolic analysis (or the degree of specialized education required), as well as amount of direct interaction the job has with the public. Their quantitative analysis is also supported by ethnographic analyses that provide important insights into just how bilingual individuals are incorporated into the workforce in these job sectors.

With respect to language categories, Alarcón et al. (2014a) approached the data a bit differently than Robinson-Cimpian (2014) and Moore et al. (2014). Language background is measured with three mutually exclusive categories: (a) monolingual English is defined as *home language is English*; (b) limited English proficient is defined as *home language is Spanish with English level not at all*, *not well*, *or well*; and (c) fluent bilingual is defined as *home language is Spanish* with English *very well*. Alarcón et al. (2014a) further noted the limitation in the ACS survey that asks about language spoken at home, but not the language spoken at work, so information about actual language use is very limited and may skew linguistic categories in unknown ways.

Table 2 provides descriptive information on occupations by intensity of language interactions. High symbolic analysts are generally management/professional positions; low symbolic analysts tend to be middle management and jobs that require modest but real training; then service occupations are divided into those that require personal contact, such as store clerks, versus those that are *silent*, such as janitors or tradesmen; and, finally, manual labor, which requires no particular personal contact or special skill. The researchers then run regression analyses to determine the relationship between job placement and individuals' linguistic background (monolingual English, bilingual, or limited English), controlling for myriad independent demographic variables, including sex, family status, education, place of birth, and place of residence. Tables describing the authors' models and statistics are found in the appendix.

**Table 2** Language and Occupation Descriptives for Number and Percentage of People

| Occupation by linguistic intensity | Monolingual English | Fluent (bilinguals) | Limited English proficient | Totals[b] |
|---|---|---|---|---|
| High symbolic analyst | 731 (51.4%)) | 568 (39.9%) | 124 (8.7%) | 1,423 (100%) |
| Low symbolic analyst/low public contact | 161 (40.1%) | 203 (50.5%) | 38 (9.5%) | 402 (100%) |
| Low symbolic analyst/high public contact | 230 (34.0%) | 366 (54.1%) | 81 (12.0%) | 677 (100%) |
| Nurses[a] | 433 (51.4%) | 345 (40.8%) | 67 (7.9%) | 845 (100%) |
| High in-person services | 796 (37.2%) | 1,139 (53.2%) | 207 (9.7%) | 2,142 (100%) |
| Low in-person services | 360 (19.5%) | 692 (37.5%) | 792 (43.0%) | 1,844 (100%) |
| Manual labor | 90 (24.9%) | 101 (27.9%) | 171 (47.2%) | 362 (100%) |

*Note:* Adapted from "The Occupational Location of Spanish-English Bilinguals in the New Information Economy: The Health and Criminal Justice Sector in the U.S. Borderlands With Mexico," by A. Alarcón, A. Di Paolo, J. Heyman, and M. C. Morales, in R. M. Callahan and P. C. Gándara (Eds.), *The Bilingual Advantage, Language, Literacy, and the U.S. Labor Market* (Table 5.2, p. 122), 2014a, Bristol, England: Multilingual Matters. Copyright 2014 by R. M. Callahan and P. C. Gándara.

[a] Alarcón et al. (2014a) explained that nurses required a category of their own because of the multidimensional nature of the profession.

[b] Percentages may not add perfectly to 100% due to rounding.

Alarcón et al.'s (2014a) findings are summarized thusly:

> [F]luent bilingualism tends to place its speakers above the disadvantaged occupations of low-skill services and manual labor, but partially below credentialed occupational sectors such as high symbolic analysts (who are mainly professionals and managers) and nurses, even when level of education is controlled. Fluent bilinguals are overrepresented in middle-tier oral public service roles, exemplified in our study by police officers and medical assistants. Language capabilities are an important variable affecting occupational location, and this is true not only for the expected effect of limited proficiency in the dominant language, but also, in a novel finding, in interesting and not entirely positive ways for high-level proficiency in two languages. . . . However, we are careful not to claim causality; we do not argue that dealing with the public makes health and criminal justice organizations deliberately hire bilinguals . . . . Likewise, although we include standard labor market controls, other nonlinguistic, non-work role factors (e.g., discrimination, social networks) may sort people by linguistic background, reflective of wider social groups, into occupations. We suggest that with selection into workplace roles, we have captured one important part of the processes of selection for and against bilingualism in occupational sorting processes. Our previous qualitative research (Alarcón & Heyman, 2012, 2013) suggested that Spanish-English bilingualism is often treated as a freely available, naturally occurring resource of the border social-cultural environment, a "heritage language" rather than a learned skill, and it is infrequently treated as a high value skill requiring specific recruitment, retention, training and promotion . . . . It is likewise consistent with our findings that when bilingualism is a recruitment and retention target, it is usually for entry level public interface jobs (such as receptionists and medical assistants), not necessarily managerial and professional roles (e.g., nurses, doctors, lawyers, public safety managers) that also require bilingual competency. For some of the latter positions, formal educational credentials based on work or examinations done in English overrode bilingual skills, even when such were needed. Notably, our quantitative models did control for education, and we still see a reduced probability of fluent bilinguals holding high symbolic and nurse positions relative to monolingual English speakers . . . . The term "glass ceiling" has been used for occupational distributions in which specific populations are well represented in all but the best paid, most powerful and most prestigious occupations. This is an apt description of our findings, although we should note that the highest occupations do include a substantial number of bilinguals, just a disproportionately low number relative to other occupations. Based on our qualitative work, we suggest a mechanism by which this glass ceiling occurs for professionals wherein Spanish-English bilinguals have fewer credentials needed for specific occupations. When jobs are filled, scarce credentials (e.g., for nurses) trump communication skills, regardless of the potential importance of these skills in the work place. However, the "credential" explanation does extend to managers without special licenses, for whom a glass ceiling remains.

Furthermore, the U.S. borderlands with Mexico have a profound history of discrimination against Mexican-origin people (see Macías, 2014). This has included linguistic discrimination against Spanish, educational barriers and

> discrimination, highly unequal occupational placement (often deliberate) and extremely low capital accumulation. The last factor in turn results in limited access to and experience in managerial roles in the private sector. (pp. 132–133)

This study is especially important in that it deconstructs *the process* whereby bilingual workers may be compensated at lower levels or not at all for skills that are widely acknowledged to be in high demand. It demonstrates the limitations of viewing compensation solely in terms of earnings without considering the types of jobs that generate those earnings. Building on this study, Alarcón et al. (2014b) next attempted to answer the question of whether it is, in fact, the border region that skews the findings, given that, while there is a high demand for Spanish, there is also an extremely high supply, and so perhaps in a context in which the supply is lower, premiums for bilingualism may be higher.

Following on their previous study (Alarcón et al., 2014a), it was natural for Alarcón et al. to ask the question: What is the relationship between the supply of bilingual workers in a region and their compensation for language skills in critical occupations? If one were to look at another area where there is a large demand, but less of a supply for bilingual workers, would the findings be different?

To answer the above question, Alarcón et al. (2014b), in a study titled *Returns to Spanish-English Bilingualism in the New Information Economy: The Health and Criminal Justice Sectors in the Texas Border and Dallas-Tarrant Counties,* compared these more inland counties to their findings for the border region. The researchers restricted the comparison to the state of Texas in order to control for political, social, and economic factors that could prove challenging in a comparison across states. Dallas County has 17% of persons who speak Spanish at home but whose English is self-reportedly weak, and Tarrant County has almost 11% of persons who are similarly Spanish dominant. This is the hypothesized *demand* side of the equation. Meanwhile, Dallas has about 16% strong bilingual individuals (speak Spanish at home and are self-reportedly proficient in English), and Tarrant County has almost 10% fluent bilingual individuals — the *supply* side the equation. This is compared to the border region, where between 30% and 50% of the population is Spanish dominant with limited English skills (demand), but between 40% and 50% fluent bilingual people (supply). As in their prior study, the researchers focus on the health and public safety sectors, where there is considerable high stakes language contact between service providers and clients.

Alarcón et al. (2014b) returned to the ACS and included all persons employed full-time in the two labor sectors between ages 18 and 70. Although there was a slight variation in the sample from the prior study (including only full-time workers and those 18 and older), the method for determining language categories was the same: Spanish-English bilingual workers, monolingual English speakers, and limited English speakers. This study was a straightforward comparison of average hourly wage between the two regional groups and the five categories of occupational hierarchy. The researchers controlled for human capital variables, including sociodemographic variables, education, potential experience, and years since migration.

Alarcón et al. (2014b) provided regression tables (see the appendix) to support their conclusions, which are the following:

> [W]orkers with the highest quality of bilingualism that our data can identify do not receive higher wages than monolingual English speakers, and in some occupations receive significantly lower wages. Notably, this pattern is most concentrated in occupations with the highest level of oral interaction with the public, occupations with the highest concentration of bilinguals. Our findings hold for both border and non-border regions, reducing the likelihood of findings specific to geographic peculiarities . . . Overall, we find that *Spanish speakers with very good skills in English* (to emphasize their high degree of linguistic human capital) experience a 6% decrease in wages in comparison to monolingual English speakers. The amount of the disparity is not large, but its very existence is notable and deserves explanation . . . . Conventional human capital theory would predict an increase in earnings, not a decrease, all other factors being equal . . . . The absence of this human capital benefit is especially striking since we controlled for a number of other human capital factors that otherwise might have confounded the relationship between language and earnings: years of education, potential labor market experience, gender and family-related variables, country of origin, years since migration, etc. (pp. 155–156)

Alarcón et al. (2014b) attempted to explain how it is possible that their findings appeared to contradict human capital theory — additional skills ought to be viewed as an asset in the labor market. They suggested that limitations of the ACS

data may be at play, but then offered that they attempted to control for most, if not all of those limitations. They ultimately landed on a couple of explanations that appear to be supported by research from other disciplines:

> [P]erhaps English-only speakers have social network connections that provide income advantages and entry into professional and managerial positions, though not entry into public interface occupations. That brings us to the final possible explanation—discrimination. Discrimination cannot be proven with these data, but the case for its possible presence is strengthened by a study where (1) occupational concentration (e.g., in public interface occupations) runs in the opposite direction from compensation, when we would expect occupational demand for bilinguals to drive up wages; and (2) some degree of control for other causal factors is provided. As we pointed out in [our previous study], there is a long history of intense racism against Mexican-origin persons in Texas, both in the borderlands and in the Dallas-Tarrant region; while overt racial discrimination has declined (more definitively at the border than in the Dallas-Fort Worth region), structural racial inequality (e.g., unequal schooling), bias against Spanish as an immigrant, working-class and low-income language and some personal biases against Mexican-origin persons persist. (Alarcón et al., 2014b, p. 158)

Alarcón et al.'s (2014b) tentative conclusions about bias in the Texas labor market certainly aligned with the historical review provided by Macías (2014) and echoed his argument that the value of language skills probably lies in "the eye of the beholder." However, it is also important to note that in two of the states that border Mexico—Texas and California—state laws set an additional stipend for bilingual individuals who pass certification in certain public service jobs. In Texas, this includes police, who are to receive a minimum of $50 per month (up to $100 in some counties). Also, the City of Dallas Police Department provides a stipend for bilingualism of $1,800 annually, and the City of Fort Worth Police Department provides a $1,200 stipend for these skills, while El Paso (on the border) does not provide any stipend, consistent with the notion of high supply. In California, highway patrol officers earn $100 per month additional pay for being certified bilingual. Other State of California personnel in certified bilingual positions are to earn an additional $.058 per hour, or equivalent. These policies, however, do not appear to affect the aggregate earnings data provided in the ACS, suggesting that monolingual workers may be compensated in other ways, or that there may be variability in the degree to which employers adhere to these regulations.

Each of the studies in this section found, consistent with past research, that there is either no readily apparent benefit to being bilingual in the U.S. labor market or that bilingualism is actually penalized. The studies have examined different regions and found no differences, but they have found the suggestion of a minor benefit for female over male bilingual, although overall the news has not been good. It does not appear that there has been any significant change from prior studies. However, all relied on ACS census data, which, as noted, have serious limitations in the way that language proficiency is assessed, bilingualism is defined, and education is measured, and all have looked at the breadth of ages of the working population at a single point in time. While all of the previous studies controlled for age, they did not attempt to analyze their findings by age cohort to understand how different cohorts, with quite different educational and contextual experiences, might fare differently in the labor market, especially those youth now moving from high school and college into the workforce. I now turn to several studies that have examined different, longitudinal datasets, some created specifically to assess the impact of bilingualism and others that at least provide better data on language use and proficiency. These datasets follow more youthful cohorts longitudinally through school and into postsecondary education and the labor market. Significantly different outcomes emerge from these studies.

## New Questions, New Data, and New Answers

The following three studies analyzed very different datasets. Each had its own limitations, but all have significant advantages over the ACS data in that they were all designed to be able to answer more questions about educational and employment outcomes for cohorts of young adults just entering the labor market, and some also incorporated more detailed information about both first and second languages. Because the data are relatively new or unique, more detail is provided about the sample profiles than for studies in the prior section, which relied on ACS data. These studies attempt to directly ask, and answer, questions about the potential impact on both educational and employment outcomes of *balanced bilingualism*, a definition that, while it differs to some extent for the different datasets, also includes an assessment of *biliteracy,* a human capital characteristic that Moore et al. (2014) argued was an important asset to measure.

Agirdag (2014) posed the question of whether there could actually be a *cost* associated with the *loss of bilingualism* among samples of individuals who have begun their educations with knowledge of a non-English language. This, of course, is a complete reversal of the questions posed up to this point, which have focused on whether there is any reward or premium for being bilingual in the U.S. labor market. As Agirdag pointed out, the effects of being fluent in a minority language on labor market outcomes are rarely examined, though there is a Bourdieusian explanation for this. Agirdag noted:

> In "The economics of linguistic exchanges" . . . . Bourdieu states that the value of being competent in a certain language — which he calls linguistic capital — is highly dependent on the social contexts in which these linguistic competences are used . . . . Bourdieu asserts that in a situation of bilingualism, a dominant and dominated language will emerge along social-class lines:
> *A language is worth what those who speak it are worth, i.e. the powers and authority in the economic and cultural power relations . . . the dominant language is the language of the dominant class.* (Bourdieu, 1977b, as cited in Agirdag, p. 162)

Once again, we are reminded of the thesis established by Macías (2014) that history influences the way that non-dominant languages are valued, and, as such, it is not possible to understand how bilingualism is valued in the present context without having some understanding of how second languages have been treated in the past. In the case of Spanish, Macias made clear that it was largely a devalued language historically in the United States, being associated with a lower social-class group of individuals.

Agirdag (2014) hypothesized that linguistic assimilation, that is, becoming English monolingual, as is the case for many children of immigrants, comes with significant costs. Thus, this study asked whether students' bilingual proficiencies are related to their future employment status and earnings. Agirdag utilized two datasets, comparing and contrasting their findings: the National Education Longitudinal Study (which began in 1988 with a national sample of 24,000 eighth graders and conducted the final data collection in 2000 when the average age of the sample was 26) and the Children of Immigrants Longitudinal Study (CILS), which began in 1992 with 5,000 first- and second-generation students in the eighth and ninth grades in Miami and San Diego. The final data collection was conducted in 2002 when the students were, on average, about 24 years of age. Thus, the two samples are similarly positioned in time. (For more information about the CILS, see Portes & Rumbaut, 2005). Agirdag first conducted multinomial logistic regression analyses to predict full-time employment status versus either part-time employment or unemployed status, comparing balanced bilinguals to English-dominant groups. He utilized latent class analysis (LCA) to create three distinct language groups: (a) those who are similarly proficient (or understand, speak, read, and write) in both English and the language of the home, who

**Table 3** Results of Latent Class Analysis: Probability Scales for Three Language Groups

| | Native language | | | | English | | | |
|---|---|---|---|---|---|---|---|---|
| Language group | Understand (%) | Speak (%) | Read (%) | Write (%) | Understand (%) | Speak (%) | Read (%) | Write (%) |
| Limited bilingual | | | | | | | | |
| Not at all | 2 | 4 | 18 | 22 | 1 | 1 | 0 | 0 |
| Not well | 4 | 7 | 20 | 23 | 5 | 7 | 12 | 15 |
| Well | 45 | 45 | 37 | 34 | 73 | 77 | 82 | 80 |
| Very well | 49 | 43 | 25 | 21 | 22 | 15 | 6 | 6 |
| Balanced bilinguals | | | | | | | | |
| Not at all | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Not well | 0 | 1 | 0 | 6 | 1 | 0 | 0 | 0 |
| Well | 3 | 13 | 32 | 39 | 1 | 1 | 1 | 2 |
| Very well | 97 | 86 | 68 | 54 | 98 | 99 | 99 | 98 |
| English dominant | | | | | | | | |
| Not at all | 1 | 3 | 26 | 37 | 0 | 0 | 0 | 0 |
| Not well | 12 | 34 | 47 | 50 | 0 | 0 | 0 | 0 |
| Well | 56 | 48 | 26 | 13 | 1 | 2 | 2 | 6 |
| Very well | 32 | 16 | 1 | 0 | 99 | 98 | 98 | 94 |

*Note:* Adapted from "The Literal Cost of Language Assimilation for the Children of Immigration: The Effects of Bilingualism on Labor Market Outcomes" by O. Agirdag, in R. M. Callahan and P. C. Gándara (Eds.), *The Bilingual Advantage, Language, Literacy, and the U.S. Labor Market* (Table 7.2, p. 171), 2014, Bristol, England: Multilingual Matters. Copyright 2014 by R. M. Callahan and P. C. Gándara.

are referred to as *balanced bilinguals*; (b) those who are English dominant, and (c) those who have lower proficiency in both languages (see Table 3). The data are then limited to those who are full-time employed to investigate the effects of bilingualism on earnings, and ordinary least squares (OLS) regression analyses are used for this purpose.

Agirdag's (2014) analyses with both the CILS and NELS indicated that balanced bilingual workers are more likely to be employed full-time and less likely to be unemployed than respondents who are proficient in English only. Among those who are employed full-time, balanced bilingual workers earn significantly more than the English-dominant group. Even after controlling for cognitive ability, educational attainment, and parental socioeconomic status, the additional cost of complete linguistic assimilation is estimated to be between $2,000 and $3,000 annually. This study turns the usual analyses of bilingualism on their head. Researchers have consistently sought to answer whether bilingual instruction retards English acquisition (cf., Baker & De Kanter, 1981) or results in inferior educational outcomes (Porter, 1990; Rossell, 2009). Those questions have largely been put to rest with a preponderance of evidence that shows students in bilingual instruction perform as well or better than those in English-only programs (Genesee et al., 2006; Slavin & Cheung, 2005; Umansky & Reardon, 2014). Agirdag, however, went considerably beyond these queries in questioning if there are not costs associated with the loss of the primary language for those children of immigrants who have the potential to be fluent bilinguals, and he found that the costs are, indeed, quite high. He argued:

> In short, linguistic assimilation policies do not merely *steal* from people, they steal from those who already have *less*. These results pose fundamental questions about the long-term consequences of educational English-only policies. Research has shown that English learners do not benefit from the restriction of bilingual education in terms of educational outcomes (Gándara & Hopkins, 2010). These findings suggest that English learners may be placed at an even greater disadvantage, given the negative association between monolingualism and earnings. (Agirdag, 2014, p. 180)

Ruben Rumbaut (2014), in his paper *English Plus: Exploring the Socioeconomic Benefits of Bilingualism in Southern California,* combined two major surveys that he and his colleagues developed to study, among other things, the impact of bilingualism and language usage on young adults in their 20s and 30s. He merged the data from the Immigration and Intergenerational Mobility in Metropolitan Los Angeles Study (IIMMLA), with final data collected in 2004, and the CILS in San Diego, final data collected in 2003, to ask three primary questions of multicultural and multilingual young adults in the Southern California region. Rumbaut (2014) defended the choice of Southern California for this study as "the nation's largest regional site of immigrant incorporation over the last three decades and home to the greatest diversity of immigrants to have settled in the U.S. over this period" (p. 184). He argued that this is a particularly strategic site for the research because it is possible to track the new second-generation with their mix of linguistic attributes in large numbers as they go through school, postsecondary experiences, and into the labor market. At the time of first data collection, one of every five immigrants to the United States resided in the region. The questions that Rumbaut posed are: Do various levels of bilingualism have independent effects on (a) dropping out of high school, (b) occupational status (employment), and (c) earnings?

The limitations of other datasets have already been noted, and these are primarily the failure to ask questions of respondents about the relative strength and use of their first and second languages, and at what points in their lives the first or second language became dominant. Thus, it is difficult to say with certainty to what extent *balanced* bilingualism contributes to student outcomes, or whether prior study findings resulted from unmeasured differences in the competencies in the two (or more) languages. In fact, Rumbaut (2014) argued that a primary reason for past failures to find significant effects of bilingualism on schooling and labor market outcomes is that there is likely a considerable overestimation of bilingualism in the population sampled. That is, many nominally *bilingual* individuals were probably considerably weaker in one or the other language than assumed in the study models. Rumbaut addressed this limitation in his own data by asking detailed questions about the level of proficiency in, preference for, and use of both English and the home languages of his respondents.

Table 4 shows the demographic characteristics of the two merged datasets. Notable is the much greater distribution of Mexican-origin students across the generations so that it is possible to compare first-, second-, and third-generation outcomes, whereas, this is not the case with Asian immigrants, who are much more recently arrived. Also of interest is the large percentage of immigrants among the *White* young adults. Presumably, many of these individuals have a primary language other than English, which can be seen in Table 5. The average age, 27.5 years, is comparable to the average age of

**Table 4** Young Adults in Southern California: Sample Size by Ethnicity, Gender, Age, and Generation (Merged IIMMLA and CILS-III San Diego Samples, $N = 6{,}135$)

| | | Gender | | | Generation[a] | | |
|---|---|---|---|---|---|---|---|
| Ethnicity | Number | Female | Male | Age | 1.5 | 2 | 3 |
| Mexican | 1,642 | 855 | 787 | 27.5 | 423 | 818 | 401 |
| Salvadoran, Guatemalan | 380 | 193 | 187 | 26.8 | 181 | 199 | 0 |
| Other Latin American | 240 | 133 | 107 | 28.6 | 91 | 149 | 0 |
| Chinese[b] | 433 | 188 | 245 | 27.6 | 235 | 198 | 0 |
| Korean | 408 | 207 | 201 | 27.6 | 257 | 151 | 0 |
| Vietnamese | 590 | 296 | 294 | 26.0 | 434 | 156 | 0 |
| Filipino | 983 | 508 | 475 | 25.5 | 411 | 572 | 0 |
| Other Asian[c] | 329 | 183 | 146 | 25.3 | 232 | 97 | 0 |
| Black (non-Hispanic) | 432 | 239 | 193 | 30.5 | 11 | 24 | 397 |
| White (non-Hispanic) | 698 | 362 | 336 | 30.3 | 81 | 202 | 415 |
| Total | 6,135 | 3,164 | 2,971 | 27.5 | 2,356 | 2, 566 | 1,213 |

*Note:* IIMMLA = Immigration and Intergenerational Mobility in Metropolitan Los Angeles Study, CILS = Children of Immigrants Longitudinal Study. Adapted from "English Plus: Exploring the Socioeconomic Benefits of Bilingualism in Southern California," by R. G. Rumbaut, in R. M. Callahan and P. C. Gándara (Eds.), *The Bilingual Advantage, Language, Literacy, and the U.S. Labor Market* (Table 8.2, p. 189), 2014, Bristol, England: Multilingual Matters. Copyright 2014 by R. M. Callahan and P. C. Gándara.

[a]3rd generation or higher = U.S.-born, both parents U.S.-born. Of 2,566 classified as 2nd generation, 659 had one U.S.-born parent (2.5 generation). Of the 1,213 classified as 3rd or higher generations, half of the Mexican Americans (47%) had four U.S.-born grandparents (4th + generation), as did two thirds (69%) of the non-Hispanic White respondents and almost all (95%) of the Black respondents. [b]Including Taiwanese. [c]Including 200 Cambodians and Laotians (Lao and Hmong).

subjects in both Agirdag's (2014) and Santibañez and Zárate's (2014) samples, which aided in making comparisons among the findings of these studies.

Table 5 summarizes the heritage language proficiency of the different generational and ethnic groups and suggests a method for classifying their level of bilingualism. Of the four dimensions of non-English language proficiency measured (each on a 4-item scale from *very well* to *well*, *not well*, and *not at all*), respondents reported greater ability in *understanding* a language, followed by *speaking*, then *reading*, and then *writing* in that language. A dichotomous measure of *balanced bilingual* is provided in the last column of the table, defined as the ability to understand, speak, read, and write a non-English language *very well* or *well* on all four dimensions. Thirty-seven percent of the respondents in the sample were balanced bilingual individuals by this measure. Balanced bilingual individuals, in turn, encompassed *fluent bilingual* individuals (who do *very well* on all four dimensions), and *moderate bilingual* individuals (who do *well* on all four dimensions). The rest include English monolingual individuals, as well as *limited bilingual* individuals (those who understand, speak, read, and write a non-English language *not well* or *poorly*). This classification is then employed in the multivariate analyses that follow.

The patterns of language use and loss among the different ethnic groups in this table are very interesting. For example, while about one fourth of Mexican-origin young adults are third + generation (a point at which a great deal of research has shown that the heritage language is normally defunct), still more than half of the sample reports to be balanced bilingual individuals (as defined at the bottom of the table). By contrast, only 31 – 40% of Asian youth report being balanced bilingual individuals, while there were no third-generation members of their group in the sample. Spanish-speaking young adults report being much more proficient in both reading and writing their native (or heritage) language compared to the Asian students. Altogether, this suggests a much more rapid loss of the native language among the Asian subjects. Non-Hispanic White individuals in the sample contain a heterogeneous group of individuals, including Arabic and Farsi speakers in addition to Europeans, so it is not surprising that 24% spoke a non-English language at home growing up. Yet, virtually all prefer speaking English at home now; only 10% of these young people claim to be balanced bilingual individuals at the point of final data collection. Native language loss is also acute in this heterogeneous group.

In an attempt to answer the first question that he posed, Rumbaut (2014) conducted a logistic regression to test the effects of balanced bilingualism on chances of dropping out of high school. He ran two models: Model 1 tested the effects without GPA entered and found that gender (being male) was a strong predictor of dropping out; but when GPA is entered in Model 2, gender was no longer a predictor (because females have higher GPAs than males). However, parental

**Table 5** Language Spoken at Home Growing up, Current Language Preference, and Bilingual Proficiency, by Generation and Ethnicity (Merged IIMMLA and CILS-III San Diego Samples, $N = 6{,}135$)

| Ethnicity and generation | Growing up spoke non-English at home (%) | Currently prefers English at home (%) | Understand very well (%) | Speak very well (%) | Read very well (%) | Write very well (%) | Balanced bilingual[b] (%) | Write (%) | Balanced (%) |
|---|---|---|---|---|---|---|---|---|---|
| Total generation[a] | 72.3 | 70.8 | 40.0 | 30.7 | 23.0 | 17.3 | 37.0 | 17.3 | 37.0 |
| 1.5 | 94.1 | 52.4 | 54.8 | 46.6 | 34.3 | 25.8 | 50.6 | 25.8 | 50.6 |
| 2.0 | 87.3 | 69.6 | 49.1 | 33.8 | 25.3 | 19.1 | 44.5 | 19.1 | 44.5 |
| 2.5 | 58.4 | 88.9 | 24.5 | 15.9 | 13.3 | 10.5 | 24.5 | 10.5 | 24.5 |
| 3+ | 13.7 | 98.4 | 5.4 | 2.8 | 2.6 | 1.6 | 5.3 | 1.6 | 5.3 |
| Ethnicity | | | | | | | | | |
| Mexican | 77.2 | 60.7 | 52.9 | 43.3 | 40.0 | 31.5 | 55.1 | 31.5 | 55.1 |
| Salvadoran, Guatemalan | 94.5 | 51.3 | 70.5 | 60.3 | 53.7 | 40.8 | 75.3 | 40.8 | 75.3 |
| Other Latin American | 86.7 | 68.8 | 65.0 | 50.4 | 42.5 | 32.1 | 66.7 | 32.1 | 66.7 |
| Chinese | 91.7 | 56.4 | 43.9 | 36.5 | 18.0 | 9.2 | 31.2 | 9.2 | 31.2 |
| Korean | 89.2 | 63.7 | 36.3 | 31.4 | 21.8 | 15.9 | 40.2 | 15.9 | 40.2 |
| Vietnamese | 96.3 | 53.4 | 41.5 | 33.7 | 14.7 | 11.4 | 35.6 | 11.4 | 35.6 |
| Filipino | 78.3 | 88.8 | 31.6 | 14.4 | 12.1 | 9.4 | 23.8 | 9.4 | 23.8 |
| Other Asian | 89.7 | 60.2 | 49.5 | 39.8 | 9.4 | 6.7 | 27.7 | 6.7 | 27.7 |
| White (non-Hispanic) | 24.1 | 95.6 | 13.5 | 8.6 | 5.0 | 3.0 | 10.2 | 3.0 | 10.2 |
| Black (non-Hispanic) | 8.8 | 98.8 | 3.0 | 0.9 | 1.9 | 1.2 | 3.0 | 1.2 | 3.0 |

*Note:* IIMMLA = Immigration and Intergenerational Mobility in Metropolitan Los Angeles Study, CILS = Children of Immigrants Longitudinal Study. Adapted "Exploring the Socioeconomic Benefits of Bilingualism in Southern California" by R. G. Rumbaut, in R. M. Callahan and P. C. Gándara (Eds.), *The Bilingual Advantage, Language, Literacy, and the U.S. Labor Market* (Table 8.3, p. 194), 2014, Bristol, England: Multilingual Matters. Copyright 2014 by R. M. Callahan and P. C. Gándara.

[a]Generational cohorts: 1.5 = foreign born, arrived in U.S. in childhood; 2.0 = U.S.-born, both parents foreign-born; 2.5 = U.S.-born, one parent foreign-born, one parent U.S.-born; 3+ = U.S.-born, both parents U.S.-born. [b]Balanced bilingual = understands, speaks, reads, and writes a non-English language *very well* or *well* (on all four dimensions). Conversely, those who are not include English monolingual students and limited bilingual students (who understand, speak, read, and write a non-English language *not well* or at all). Balanced bilingual individuals encompass both fluent bilingual students (proficiency of *very well* on all four dimensions) and moderate bilingual students (*well* on average).

socioeconomic status remained a very strong predictor in both models. What is especially significant in these analyses is that balanced bilingualism (as described in Table 5) has a strong negative effect on dropping out in both models ($p < .001$). English monolingual students and limited bilingual students are 66% more likely to drop out of high school than balanced bilingual students. The literature suggested that the reason for this is probably related to the fact that balanced bilingual students experience more family cohesion, a lower incidence of parent–child conflict, and a greater respect for parental authority (cf., Feliciano, 2001; Portes & Rumbaut, 2001).

The second question posed by Rumbaut (2014) was: What are the effects of bilingualism on occupational status? For this analysis, he ran multiple linear regressions, with the same set of predictors, and two models. In Model 2, high school GPA (a proxy for cognitive ability) and total years of education are entered. In both models, all levels of bilingualism have significant positive effects ($p < .05$) on the occupational prestige of employed bilingual individuals compared to monolingual individuals in the sample, although fluent bilingualism has the strongest effect, followed by moderate and then limited bilingualism. (Regressions for both of the above questions are in the appendix.)

Finally, the third question posed by Rumbaut (2014) regarded annual earnings. As in the prior analysis, Rumbaut ran multiple linear regressions for two models, with the second model again controlling for GPA and total years of education—both likely predictors of earnings. The results are depicted in Figure 1.

According to Rumbaut (2014):

> [i]n both models, bilingualism has direct and positive effects on earnings compared to the English monolingual reference group, but the strength of the effect is greater as the level of bilingualism increases.... Fluent bilinguals earn about $2,800 more than English monolinguals ($p < .001$), and $2,200 more with GPA and total education controlled; moderate bilinguals earn respectively about $2,200 and $1,900 more than English monolinguals ($p < .001$), and even limited bilinguals earn about $1,000 more ($p < .05$).

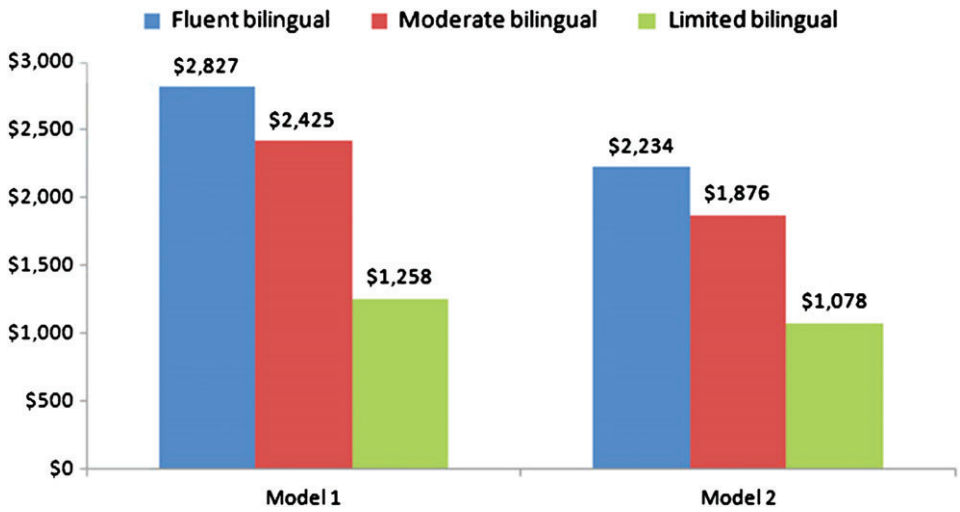


**Figure 1** Regressions of annual earnings on level of bilingualism among young adults in Southern California. Model 1 controls for age, gender, ethnicity, parents' socioeconomic status, and living with parents (while native-parentage English monolingual individuals are the referent group). Model 2 controls in addition for high school GPA and total years of education attained in adulthood. Bilingualism levels are measured on a 4-item scale of ability to understand, speak, read, and write the non-English language (fluent bilingual = *very well* on all four; moderate = *well* on all four; limited = *less than well*). Earnings (regression coefficients) in annual dollars, net of other variables in the models. Results for fluent and moderate bilingual individuals are significant at $p < .001$; for limited bilingual individuals at $p < .05$. Data from Immigration and Intergenerational Mobility in Metropolitan Los Angeles Study (IIMMLA) and Children of Immigrants Longitudinal Study (CILS) San Diego merged samples.

Rumbaut (2014) concluded that "the results presented above offer consistent, convergent and compelling evidence for the benefits of fluent bilingualism — and even of moderate or balanced bilingualism — in the labor markets and local economy of Southern California" (p. 204).

Finally, Lucrecia Santibañez and her colleague Estela Zárate in their paper *Bilinguals in the United States and College Enrollment* (Santibañez & Zárate, 2014), attempted to answer three questions about the effect of bilingualism on educational outcomes. The authors' perspective is that educational attainment is a critical mediator of labor market outcomes and so the relationship between bilingualism (or conversely monolingualism) and educational attainment is important for explaining later occupational status and earnings. The questions Santibañez and Zárate posed are:

- Do bilingual students attend college at a higher rate than monolingual English-speaking students?
- Do bilingual students attend 4-year colleges at a higher rate than monolingual English-speaking students?
- Does the effect of being bilingual hold among different Spanish bilingual individuals?

To answer these questions, Santibañez and Zárate (2014) used data from the Educational Longitudinal Study (ELS), administered by the National Center for Education Statistics (NCES). The ELS 2002 is designed to follow students from 10th grade (in 2002) into young adulthood. In the base year of data collection (2002), the ELS collected information on students' academic achievement in mathematics and reading standardized tests, demographic information, and information about students' and parents' college expectations and parents' participation in school activities. Subsequent waves of data collection took place in 2004, 2006, and, most recently, in 2012. In the third round of data collection in 2006, information was collected about students' college decisions, financial aid considerations, enrollment in post-secondary education, employment and earnings, and living situation. In addition, high school completion status was updated for those who had not completed high school as of the 2004 follow-up. This study made use of the first and third waves of data for respondents who completed the base-year survey (in 2002) as well as the second follow-up survey (in 2006).

In spite of the comprehensiveness of the data collected in the ELS, like other national datasets, it still suffers from the absence of measures of native language proficiency, and English proficiency is based on self-report. With these limitations in mind, Santibañez and Zárate (2014) employed a factor analysis, using questions about the use of native language in the home and age of arrival in the United States for first or 1.5 generation students, to create four categories of language

**Table 6** Educational Longitudinal Study Racial/Ethnic Distribution and Language Characteristics by Group

| Characteristic | Full sample | Native English | Bilingual | High-use bilingual [a] | Primary language dominant |
|---|---|---|---|---|---|
| *N* | 16,197 | 12,658 | 1,632 | 1,029 | 954 |
| Race/ethnicity | | | | | |
| Hispanic | 15.3% | 8.0% | 55.6% | 62.0% | 64.5% |
| Asian | 3.9% | 15.0% | 20.4% | 19.2% | 16.7% |
| Black | 14.1% | 15.4% | 5.3% | 3.7% | 6.5% |
| White | 61.1% | 68.8% | 14.4% | 13.1% | 8.7% |
| Native language | | | | | |
| Spanish | 7.7% | — | 59.9% | 64.4% | 65.3% |
| Chinese | 2.1% | — | 16.1% | 14.0% | 15.1% |

*Note:* Numbers do not all sum to 100% due to rounding and *other* (not represented). Data from the Educational Longitudinal Study, 2002, retrieved from http://nces.ed.gov/surveys/els2002/

[a]High-use bilingual category is a subset of the bilingual category.

speakers: primary language (PL) dominant (i.e., weaker English), bilingual (uses native language at least sometimes with family members), high-use bilingual (uses the home language frequently in conversation with family members), and English monolingual (the reference group).[8] The two language groups included in the total sample were Spanish (the largest) and Asian languages.

Table 6 describes the racial and ethnic distribution of the sample in Santibañez and Zárate (2014), as well as the percentage of each group that falls into the four language categories. While a higher percentage of Asian students are bilingual, reflecting more recent group migration, than are Hispanic students, their total numbers are small.

Santibañez and Zárate (2014) employed logistic regression models to estimate whether 10th graders ever attended college. In some models, they used a state-level fixed effect to capture fixed differences across states, such as the costs of higher education and the availability of statewide financial aid policies. The authors also included numerous control variables to account for the background characteristics of students and other factors that could affect going to college in this population.

Controlling for myriad background characteristics that have been found to have a relationship to college attendance, including socioeconomic status, gender, college expectations, 10th grade math and reading scores, and parent participation in school activities, Santibañez and Zárate (2014) found that,

> bilinguals [including both Spanish- and Asian-language speakers] have some advantage over the reference group (English monolinguals), while high-use bilinguals have even higher odds of college going. Results for high-use bilinguals with state fixed effects are similar, suggesting that even within states these differences persist. In addition, we found that the odds of going to college are significantly higher for first- and second-generation students compared to third-plus generation students (i.e., those with no immediate immigrant background). In fact, being second-generation offered an advantage (nearly doubled the odds) of enrolling in college, compared to being third-plus generation . . . [however] only high-use bilinguals appear to have higher odds of going to a four-year college relative to the reference group (English monolinguals). (p. 225)

Turning to Spanish speakers, Santibañez and Zárate (2014) explored whether the above findings were robust for only Spanish-speaking students. Here the researchers noted that the Spanish-speaking bilingual individuals are more likely to be recent immigrants and demonstrate lower socioeconomic status than the larger aggregate bilingual population. Their parents are also less likely to have either graduated from high school or attended college, all factors that tend to be associated with *not* going to college in the Latino population (Gándara & Contreras, 2009). Nonetheless, the findings

> suggest that Spanish bilinguals are more likely to enroll in college than English monolinguals, all else held equal. Results are significant at the 95% confidence level for bilinguals and high-use bilinguals. This holds for the state fixed effects model as well . . . [and] the odds of going to a four-year college are significantly higher for high-use Spanish bilinguals relative to English monolinguals, clearly highlighting the bilingual advantage. The results remain

> unchanged when we include a control for the age at which the student came to the United States. Even though Spanish bilinguals are more likely to be recent immigrants, and differ demographically and socioeconomically from the full sample . . . the language "advantage" persists even when holding these other variables constant. (Santibañez & Zárate, 2014, pp. 226–227)

Thus, Santibañez and Zárate (2014) concluded:

> Among Spanish speakers, the most consistent advantage of bilingualism exists among Spanish-language bilinguals who frequently speak the native language with family members. Our results suggest that high-use Spanish bilinguals have significantly higher odds of ever attending college, as well as first attending a four-year college right after high school than the reference group (mostly native English speakers) . . . The existing body of work on immigrant students illustrates the mechanisms by which native language use yields benefits. One body of work suggests that youth who both maintain their native language and are English proficient have wider social networks offering more resources and supports (Stanton-Salazar & Dornbursch, 1995; Valenzuela, 1999; Zhou & Bankston, 1994). In contrast to English monolinguals, high-use bilinguals are able to include both English monolinguals and co-ethnic individuals in their social and support networks. Native language use with parents also lessens the cultural dissonance that may result when youth acculturate to U.S. cultural norms faster than their parents (Portes & Rumbaut, 2001). Minimizing potential cultural conflict between parents and children is associated, in turn, with higher academic achievement (Portes & Rumbaut, 2001) . . . [Thus] we argue that the urgency to divest immigrant youth of their parents' native language, often intimated in public debates, may cause more harm than benefit in the long run. In fact, the pressure of linguistic assimilation may cause more harm than benefit, by reducing the chances that these young people have to gain the advantage of a college education, which increases their economic value in the U.S. labor market. (pp. 228–231)

## Conclusion

This report began with an historical and demographic overview of bilingualism in the United States. It is a tale of increasing diversity and corresponding suppression of immigrant languages and of failure to compensate workers for this particular human capital. The first papers that were chronicled here included analyses that reflect the longstanding finding that bilingualism does not pay in the U.S. labor market. Robinson-Cimpian (2014) found, as others have before him, that there is a small wage penalty for the average bilingual working male (bilingual workers in the same job category are paid about 2% less than monolingual English speakers), although no such gap existed among females. However, he did find that there may be a *hiring* premium for bilingual women, as they are somewhat more likely to be employed than monolingual females.

Acknowledging the general problem of lack of compensation for bilingualism in the workforce, Alarcón et al. (2014a) tested the hypothesis that bilingual workers would be better compensated in particular employment areas—health and public safety—where the need for accurate interpersonal communication is not only high, but can constitute a life-or-death situation. Alarcón et al. (2014a) further speculated that compensation might be affected positively in a border area where being able to speak Spanish is especially desirable, even necessary. Somewhat surprisingly, they found, as did Robinson-Cimpian (2014), that there was a slight penalty for bilingualism, that most bilingual workers are not compensated for this skill and that, in fact, there appeared to be a *glass ceiling* where monolingual workers were more likely to hold higher ranking jobs than bilingual workers with similar education and experience. The researchers could find no other rational explanation for this than that employment discrimination against Mexicans continues to linger in the Southwest and that this is aided by the decreased access to higher education opportunities for this population group. The second study by Alarcón et al. (2014b) examined the question of whether the wage penalty—or at least failure to compensate bilingual workers for their language skills—would hold in an area with considerable demand for Spanish-speaking employees in these same fields but in a more distant part of the state of Texas, where the supply of bilingual workers is not as great. Again, Alarcón et al. (2014b) found no wage premium for bilingualism. The researchers concluded that what economists generally think of as human capital—skills that are developed and that enhance a worker's value—is thought of by employers as a heritage trait, a byproduct of being born into an immigrant family and not a skill that requires any effort to acquire and, therefore, need not be compensated. The dataset Alarcón et al. (2014b) used,

American Community Survey, does not provide information about the literacy skills of workers in either their first or second language.

Alarcón et al. (2014b) did concede that a potential problem with their and others' analyses that find no wage premium for bilingual workers could be *unobserved differences* in actual language proficiency, in both Spanish and English. That is, subjects may rate their proficiency higher than employers do, and even if *good*, their English may not equal that of native speakers. Evidence that this may indeed be a factor in earlier research is found in subsequent studies reported here. For studies that used newer or unique datasets that allow for more accurate measurement of bilingualism and *biliteracy*, which focus on younger cohorts of students and workers, and ask about outcomes in addition to wage premiums, findings begin to look quite different. Examining two different sets of data and focusing on recent high school and college graduates, Agirdag (2014) found that, indeed, young Spanish bilingual individuals do earn more than their monolingual counterparts *who share "immigrant roots,"* and there is a significant cost to language assimilation for this group. Rumbaut (2014) examined questions of high school dropout, occupational prestige, and earnings with datasets developed specifically to answer questions about effects of language use on these outcomes and finds that, in all cases, bilingualism yields an advantage — with significantly lower dropout and higher occupational prestige and earnings than monolingual English speakers. Santibañez and Zárate (2014) added, by analyzing data on a group of 20-somethings from the newest national longitudinal dataset, that Spanish bilingual individuals are more likely to go to college and to go to a 4-year college than monolingual or limited Spanish bilingual individuals. They, like Agirdag, argued that there is a cost to language assimilation, and, in the case of the Santibañez and Zárate study, that cost can amount to hundreds of thousands of dollars in lost income associated with failure to complete a college degree (cf., Baum, Ma, & Payea, 2013).

Today's newspapers are filled with stories about the growing linguistic diversity in the United States. Nearly 60 million people — or more than one in five in the United States — speak a language other than English at home . Of those, almost two thirds (62%) speak Spanish, but another 15% also speak one of several Asian languages, with Chinese leading the group at about 5%. Growth in other-than-English language speakers has been dramatic over the last three decades: from about 23 million persons in 1980 to nearly 60 million today. The Census Bureau estimates that the United States will continue to add more other-than-English speakers to the population in the future, though it anticipates that the growth will be slower than in the last few decades (Ryan, 2013).

While most of these 60 million speakers of other languages also speak English, many prefer to carry on day-to-day interactions in their native language. It is common to hear that communicating with others in one's native language creates a sense of personal *understanding* among the speakers, and these other-than-English speakers often feel a greater sense of confidence with another person who speaks their language (cf., Porras et al., 2014). This linguistic diversity represents new markets. It also represents potential bridges to diverse groups and cultures, both foreign and domestic.

Facts and figures from the 2010 U.S. Census drive home the fact that the nation is increasingly bilingual, yet still not well documented is the extent to which bilingualism is being acquired by native English speakers. The explosion in dual-language programs across the country (cf., Center for Applied Linguistics at http://www.cal.org) and the growth of International Baccalaureate programs in the United States (Aldana & Mayer, 2014) that require competence in two languages suggests that these numbers must be growing. *U.S. News and World Report* recently argued that maintaining and teaching languages other than English will be key to the success of the nation's schools in the coming century (Suárez-Orozco, 2013). While these same economic, social, and political opportunities have changed how we think about language and bilingualism, Ruiz's (1984) framing of language in the United States as either a resource or a problem was particularly apt. Bilingualism among the children of immigrants in the United States represents a previously untapped national resource, and the rush to provide bilingual instructional options for monolingual English speakers is more evidence that Americans increasingly see this as important human capital. What the country will do with that potential remains to be determined.

Today's young language minority population is unique; their experiences have made them distinct from previous generations, and not only with respect to their access to social media and entrance into a global economy. Children of immigrants today are coming of age in a majority-minority era. Their linguistic and cultural caché is becoming normative, and employers increasingly prefer employees who can reach a wider client base and work collaboratively with colleagues across racial, ethnic, and cultural lines. The new economy calls for a multilingual approach to educating America's children, and the evidence now suggests that these young multilingual individuals will be well rewarded in the future for this human capital that they bring to school and to the labor market. The lesson for America's schools is that, while

*transitional bilingual education* is practiced in some schools and districts as a means to quickly transition speakers of other languages into English, it is in *maintaining* their primary language that both individuals and the society will reap the greatest benefit.

## Notes

1 Throughout the report the preferred label for persons of Spanish-speaking origin is *Latino*, but depending on labels used by different sources, the term *Hispanic* is also employed. They are, for all practical purposes, interchangeable in the context of this report.
2 See Silverman (2011). Quotes on pp. 20–23.
3 See, for example, Genesee et al. (2006).
4 For example, during the week of May 29, 2013, Univision beat out all competition for the #1 spot in network television viewing among 18- to 34-year-olds.
5 *Other* refers to those individuals who indicated *Hispanic* on the census form but either omitted the subcategory or represented another subgroup.
6 Income levels were determined based on a PEW research model (Pew Research Center, 2012). Cut points are set at less than 67% of median income = lower; 67–200% of median = middle; and 200% + = upper. Median earnings were calculated using total persons' earnings, including full- and part-time workers, after excluding earnings of zero; thus, the median earnings are lower than those public data that calculate only for full-time workers.
7 Some of these countries or regions of origin, particularly Mexico and Central America, have indigenous languages that are spoken instead of or in addition to Spanish. Due to the restrictions of the question in the ACS, this study was unable to analyze the extent to which Indigenous languages were used as language of instruction or are spoken in the home. Therefore, we understand that other languages may have been used in schooling or may be spoken in the home.
8 The researchers acknowledge that a latent class analysis (LCA) could be used to create the language categories; however, the primary goal with the principal components factor analysis (PCFA) was one of data reduction. Both LCA and PCFA can be used for this purpose; however, factor analysis is perhaps more traditional, straightforward, and easier to interpret, as well as more familiar to most researchers.

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## Appendix

**Table A1** Descriptive Statistics

| | Male | | | | Female | | | |
|---|---|---|---|---|---|---|---|---|
| Variable | Bilingual, $N = 143,255$ | Monolingual, $N = 93,454$ | Std. diff. | $p$ value | Bilingual, $N = 152,874$ | Monolingual, $N = 93,749$ | Std diff. | $p$ value |
| In labor market | 0.78 | 0.79 | −0.02 | <0.0001 | 0.71 | 0.71 | 0.00 | 0.6771 |
| Employed (if in LM) | 0.91 | 0.9 | 0.04 | <0.0001 | 0.92 | 0.92 | 0 | 0.4439 |
| Logged annual wages (if employed) | 10.37 (0.91) | 10.42 (0.95) | −0.05 | <0.0001 | 10.08 (0.93) | 10.09 (0.97) | −0.00 | 0.3887 |
| Prop. PUMA Spanish speaking | 0.34 (0.24) | 0.22 (0.19) | 0.52 | <0.0001 | 0.34 (0.24) | 0.22 (0.19) | 0.52 | <0.0001 |
| Age | 40.67 (14.24) | 39.76 (13.83) | 0.06 | <0.0001 | 41.72 (14.23) | 40.69 (13.85) | 0.07 | <0.0001 |
| Educational attainment | | | | <0.0001 | | | | <0.0001 |
| Less than high school diploma | 0.22 | 0.18 | 0.11 | | 0.18 | 0.14 | 0.09 | |
| High school diploma | 0.33 | 0.34 | −0.02 | | 0.31 | 0.32 | −0.02 | |
| Some college | 0.28 | 0.31 | −0.05 | | 0.32 | 0.34 | −0.03 | |
| Bachelor's degree | 0.11 | 0.12 | −0.04 | | 0.13 | 0.14 | −0.02 | |
| Master's, professional, or PhD | 0.06 | 0.06 | 0.00 | | 0.07 | 0.06 | 0.01 | |
| Marital status | | | | <0.0001 | | | | <0.0001 |
| Married | 0.55 | 0.49 | 0.11 | | 0.55 | 0.52 | 0.06 | |
| Widowed | 0.01 | 0.01 | −0.01 | | 0.04 | 0.03 | 0.02 | |
| Divorced | 0.09 | 0.1 | −0.03 | | 0.13 | 0.13 | 0.00 | |
| Separated | 0.03 | 0.02 | 0.03 | | 0.04 | 0.03 | 0.05 | |
| Never married | 0.32 | 0.37 | −0.10 | | 0.24 | 0.28 | −0.09 | |
| Race | | | | <0.0001 | | | | <0.0001 |
| White | 0.63 | 0.69 | −0.13 | | 0.64 | 0.7 | −0.13 | |
| Black | 0.01 | 0.03 | −0.11 | | 0.02 | 0.03 | −0.10 | |
| Other | 0.35 | 0.25 | 0.21 | | 0.33 | 0.24 | 0.21 | |
| American Indian/Alaska Native/Native Hawaiian/Pacific Islander | 0.01 | 0.03 | −0.13 | | 0.01 | 0.03 | −0.15 | |
| Year of U.S. entry | | | | <0.0001 | | | | <0.0001 |
| N/A — born in the U.S. | 0.68 | 0.91 | −0.58 | | 0.67 | 0.91 | −0.59 | |
| 1919 – 1979 | 0.16 | 0.05 | 0.33 | | 0.17 | 0.05 | 0.35 | |
| 1980 – 1989 | 0.09 | 0.02 | 0.30 | | 0.09 | 0.02 | 0.29 | |
| 1990 – 1999 | 0.05 | 0.01 | 0.23 | | 0.05 | 0.01 | 0.23 | |
| 2000 – 2010 | 0.02 | 0.00 | 0.12 | | 0.02 | 0.00 | 0.12 | |
| Citizenship process | | | | <0.0001 | | | | <0.0001 |
| Born in the U.S. | 0.65 | 0.91 | −0.64 | | 0.66 | 0.92 | −0.64 | |
| Born in Puerto Rico/Guam/U.S. Virgin Islands/North Marianas | 0.06 | 0.02 | 0.23 | | 0.07 | 0.01 | 0.25 | |
| Born abroad of American parents | 0.01 | 0.01 | 0.00 | | 0.01 | 0.01 | 0.00 | |
| Citizen by naturalization | 0.27 | 0.06 | 0.57 | | 0.26 | 0.05 | 0.56 | |
| Class of worker (if employed) | | | | <0.0001 | | | | <0.0001 |
| Private for-profit company | 0.75 | 0.75 | −0.01 | | 0.65 | 0.67 | −0.05 | |
| Private not-for-profit company | 0.04 | 0.04 | 0.00 | | 0.09 | 0.09 | 0.00 | |
| Local government | 0.08 | 0.08 | 0.01 | | 0.14 | 0.12 | 0.07 | |
| State government | 0.04 | 0.04 | −0.01 | | 0.06 | 0.06 | 0.01 | |
| Federal government | 0.04 | 0.04 | 0.00 | | 0.03 | 0.03 | −0.01 | |
| Self-employed, not incorporated | 0.00 | 0.01 | −0.02 | | 0.00 | 0.00 | −0.02 | |
| Self-employed, incorporated | 0.04 | 0.04 | 0.03 | | 0.02 | 0.02 | 0.02 | |
| Family business, without pay | 0.00 | 0.00 | 0.01 | | 0.00 | 0.00 | −0.01 | |
| Weeks worked in the past 12 months | | | | <0.0001 | | | | 0.0017 |
| 50 – 52 | 0.84 | 0.83 | 0.02 | | 0.79 | 0.78 | 0.02 | |
| 48 – 49 | 0.03 | 0.03 | −0.01 | | 0.03 | 0.03 | 0.00 | |
| 40 – 47 | 0.04 | 0.05 | −0.02 | | 0.06 | 0.06 | −0.01 | |
| 27 – 39 | 0.04 | 0.04 | −0.02 | | 0.05 | 0.05 | −0.02 | |
| 14 – 26 | 0.03 | 0.03 | 0.00 | | 0.04 | 0.03 | 0.00 | |
| Less than 14 | 0.03 | 0.03 | 0.02 | | 0.03 | 0.03 | −0.01 | |

*Note:* LM = labor market, PUMA = Public use microdata area. Adapted from "Labor Market Differences Between Bilingual and Monolingual Hispanics," by J. P. Robinson-Cimpian, in R. M. Callahan and P. C. Gándara (Eds.), *The Bilingual Advantage, Language, Literacy, and the U.S. Labor Market* (Table 4.1, pp. 86 – 88), 2014, Bristol, England: Multilingual Matters. Copyright 2014 by R. M. Callahan and P. C. Gándara.

**Table A2** Average Within-PUMA, Bilingual – Monolingual Labor Market Differences, by Gender, Outcome, and Model

| | Male | | | Female | | |
|---|---|---|---|---|---|---|
| Variable | Model 1 | Model 2 | Model 3 | Model 1 | Model 2 | Model 3 |
| Civilian labor market participation | | | | | | |
| Estimate | −0.004 | −0.011* | −0.011* | 0.010* | 0.019* | 0.019* |
| Standard error | −0.003 | −0.003 | −0.003 | −0.003 | −0.002 | −0.002 |
| Std. difference | −0.011 | −0.030 | −0.030 | 0.023 | 0.044 | 0.044 |
| Employment (if in the civilian labor market) | | | | | | |
| Estimate | 0.008* | 0.003 | 0.002 | 0.001 | −0.001 | −0.001 |
| Standard error | −0.001 | −0.002 | −0.002 | −0.002 | −0.002 | −0.001 |
| Std. difference | 0.031 | 0.012 | 0.008 | 0.004 | −0.004 | −0.004 |
| Logged annual wages (if employed) | | | | | | |
| Estimate | −0.022* | −0.025* | −0.020* | −0.019* | −0.001 | 0.000 |
| Standard error | −0.005 | −0.004 | −0.004 | −0.006 | −0.005 | −0.004 |
| Std. difference | −0.027 | −0.031 | −0.025 | −0.022 | −0.001 | 0.000 |
| Models also include: | | | | | | |
| Age (lin., quad., cubed) | | X | X | | X | X |
| Educational attainment | | X | X | | X | X |
| Marital status | | X | X | | X | X |
| Race | | X | X | | X | X |
| Citizenship process | | X | X | | X | X |
| Year of U.S. entry[a] | | | X | | | X |
| Class of entry | | | X | | | X |
| Weeks worked | | | X | | | X |

*Note:* PUMA = Public use microdata area. Adapted from "Labor Market Differences Between Bilingual and Monolingual Hispanics," by J. P. Robinson-Cimpian, in R. M. Callahan and P. C. Gándara (Eds.), *The Bilingual Advantage, Language, Literacy, and the U.S. Labor Market* (Tables A1, A2, and A3, pp. 100–109), 2014, Bristol, England: Multilingual Matters. Copyright 2014 by R. M. Callahan and P. C. Gándara.

[a]Only included in models predicting logged annual wages.

*$p < 0.0001$.

**Table A3** Other Descriptive Statistics

| | All the sample | | A. High symbolic analysts | | B1. Low public contact | | B2. Possibility of public contact | | C1. Nurses | | C2–C5. High in-person services | | D. Low in-person service | | E. Manual work | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variable | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| Sociodemographic variable | | | | | | | | | | | | | | | | |
| Age | 41 | 12 | 43.4 | 10.9 | 39.4 | 12 | 38.8 | 13 | 42.4 | 11.2 | 37.3 | 11.1 | 42.8 | 12.6 | 46.1 | 11.1 |
| Males | 0.34 | 0.47 | 0.48 | 0.5 | 0.17 | 0.38 | 0.1 | 0.3 | 0.2 | 0.4 | 0.48 | 0.5 | 0.23 | 0.42 | 0.43 | 0.5 |
| Females | 0.66 | 0.47 | 0.52 | 0.5 | 0.83 | 0.38 | 0.9 | 0.3 | 0.8 | 0.4 | 0.52 | 0.5 | 0.77 | 0.42 | 0.57 | 0.5 |
| No. of children | 0.88 | 1.14 | 0.82 | 1.11 | 0.85 | 1.1 | 0.8 | 1.11 | 0.79 | 1.08 | 0.98 | 1.17 | 0.9 | 1.2 | 0.77 | 1.07 |
| Married | 0.57 | 0.49 | 0.66 | 0.47 | 0.5 | 0.5 | 0.49 | 0.5 | 0.58 | 0.49 | 0.57 | 0.5 | 0.54 | 0.5 | 0.64 | 0.48 |
| Educational attainment | | | | | | | | | | | | | | | | |
| Less than high school | 0.13 | 0.34 | 0.02 | 0.13 | 0.04 | 0.19 | 0.06 | 0.24 | 0 | 0.06 | 0.03 | 0.17 | 0.38 | 0.48 | 0.46 | 0.5 |
| High school | 0.19 | 0.39 | 0.1 | 0.3 | 0.3 | 0.46 | 0.29 | 0.46 | 0.04 | 0.19 | 0.17 | 0.37 | 0.28 | 0.45 | 0.31 | 0.46 |
| Some college | 0.42 | 0.49 | 0.32 | 0.47 | 0.54 | 0.5 | 0.55 | 0.5 | 0.55 | 0.5 | 0.52 | 0.5 | 0.29 | 0.46 | 0.2 | 0.4 |
| Bachelors | 0.16 | 0.37 | 0.24 | 0.43 | 0.09 | 0.29 | 0.08 | 0.27 | 0.31 | 0.46 | 0.21 | 0.41 | 0.04 | 0.19 | 0.02 | 0.13 |
| Above bachelors | 0.1 | 0.29 | 0.33 | 0.47 | 0.03 | 0.16 | 0.01 | 0.12 | 0.09 | 0.29 | 0.07 | 0.25 | 0.01 | 0.1 | 0.01 | 0.1 |
| Origin variables | | | | | | | | | | | | | | | | |
| U.S.-born | 0.74 | 0.44 | 0.82 | 0.38 | 0.85 | 0.36 | 0.81 | 0.39 | 0.81 | 0.39 | 0.82 | 0.39 | 0.55 | 0.5 | 0.5 | 0.5 |
| Latin America | 0.23 | 0.42 | 0.13 | 0.34 | 0.13 | 0.34 | 0.16 | 0.37 | 0.14 | 0.35 | 0.16 | 0.36 | 0.44 | 0.5 | 0.48 | 0.5 |
| Puerto Rico, U.S. Islands, and other developed countries | 0.02 | 0.12 | 0.03 | 0.16 | 0.01 | 0.09 | 0.01 | 0.09 | 0.03 | 0.16 | 0.02 | 0.13 | 0.01 | 0.08 | 0.01 | 0.07 |
| Other developing countries | 0.01 | 0.12 | 0.02 | 0.13 | 0.02 | 0.13 | 0.02 | 0.13 | 0.02 | 0.16 | 0.01 | 0.1 | 0.01 | 0.1 | 0.01 | 0.1 |
| Years since migration (=0 for natives) | 6.7 | 13 | 4.71 | 11.9 | 4.67 | 12.1 | 5.02 | 11.9 | 4.96 | 11.8 | 4.61 | 11 | 11.3 | 14.9 | 12.6 | 14.8 |
| Job-related variables | | | | | | | | | | | | | | | | |
| Criminal justice | 0.25 | 0.43 | 0.32 | 0.47 | 0.18 | 0.39 | 0.19 | 0.4 | 0.02 | 0.13 | 0.4 | 0.49 | 0.17 | 0.38 | 0.14 | 0.35 |
| Health–government | 0.09 | 0.28 | 0.1 | 0.3 | 0.09 | 0.29 | 0.06 | 0.24 | 0.11 | 0.31 | 0.06 | 0.25 | 0.1 | 0.3 | 0.11 | 0.31 |
| Health–private | 0.67 | 0.47 | 0.58 | 0.49 | 0.73 | 0.45 | 0.74 | 0.44 | 0.87 | 0.33 | 0.54 | 0.5 | 0.72 | 0.45 | 0.75 | 0.43 |
| Full-time worker | 0.28 | 0.45 | 0.82 | 0.39 | 0.78 | 0.42 | 0.74 | 0.44 | 0.9 | 0.3 | 0.73 | 0.44 | 0.52 | 0.5 | 0.72 | 0.45 |
| Part-time worker | 0.28 | 0.45 | 0.18 | 0.39 | 0.22 | 0.42 | 0.26 | 0.44 | 0.1 | 0.3 | 0.27 | 0.44 | 0.48 | 0.5 | 0.28 | 0.45 |
| Arizona | 0.12 | 0.32 | 0.13 | 0.34 | 0.12 | 0.32 | 0.11 | 0.31 | 0.13 | 0.33 | 0.14 | 0.34 | 0.09 | 0.28 | 0.11 | 0.31 |
| California | 0.25 | 0.43 | 0.32 | 0.47 | 0.33 | 0.47 | 0.29 | 0.45 | 0.25 | 0.43 | 0.24 | 0.43 | 0.18 | 0.38 | 0.24 | 0.43 |
| New Mexico | 0.05 | 0.22 | 0.05 | 0.22 | 0.05 | 0.22 | 0.05 | 0.23 | 0.05 | 0.22 | 0.05 | 0.22 | 0.05 | 0.22 | 0.05 | 0.21 |
| Texas | 0.58 | 0.49 | 0.5 | 0.5 | 0.5 | 0.5 | 0.55 | 0.5 | 0.57 | 0.5 | 0.57 | 0.5 | 0.69 | 0.46 | 0.6 | 0.49 |
| No. of observations | 7,695 | | 1,423 | | 402 | | 677 | | 845 | | 2,142 | | 1,844 | | 362 | |

*Note:* Adapted from "The Occupational Location of Spanish-English Bilinguals in the New Information Economy: The Health and Criminal Justice Sector in the U.S. Borderlands With Mexico," by A. Alarcón, A. Di Paolo, J. Heyman, and M. C. Morales, in R. M. Callahan and P. C. Gándara (Eds.), *The Bilingual Advantage, Language, Literacy, and the U.S. Labor Market* (Table 5.3, pp. 126–128), 2014a, Bristol, England: Multilingual Matters. Copyright 2014 by R. M. Callahan and P. C. Gándara.

**Table A4** Multinomial Regression Model of Language Background/Occupation Relationship With Additional Control Variables

| Variable | A. High symbolic analysts Δ Prob | B1. Low public contact Δ Prob | B2. Possibility of public contact Δ Prob | C1. Nurses Δ Prob | C2–C5. High in-person services Δ Prob | D. Low in-person service Δ Prob | E. Manual work Δ Prob |
|---|---|---|---|---|---|---|---|
| English only | 0.020* | −0.002 | −0.018** | −0.030** | 0.035*** | −0.019* | 0.015** |
| | (0.01) | (0.006) | (0.008) | (0.012) | (0.008) | (0.011) | (0.007) |
| Fluent bilingual (reference group) | | | | | | | |
| Limited English proficiency | −0.018 | −0.011 | −0.019* | −0.063*** | −0.024** | 0.110*** | 0.024*** |
| | (0.014) | (0.009) | (0.011) | (0.016) | (0.01) | (0.015) | (0.007) |
| Age | 0.016*** | −0.001 | −0.010*** | −0.010*** | 0.006*** | −0.006** | 0.004*** |
| | (0.003) | (0.002) | (0.002) | (0.003) | (0.002) | (0.002) | (0.002) |
| Age (squared) | −0.001*** | 0.001 | 0.001*** | 0.001 | −0.001*** | 0.000*** | −0.000** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Female (ref. male) | −0.060*** | 0.033*** | 0.084*** | −0.052*** | 0.028*** | 0.022 | −0.054*** |
| | (0.016) | (0.008) | (0.009) | (0.017) | (0.011) | (0.016) | (0.013) |
| Children | −0.011* | −0.017** | −0.017 | 0.01 | 0.018*** | 0.024*** | −0.007* |
| | (0.006) | (0.007) | (0.012) | −0.008 | −0.007 | −0.008 | −0.004 |
| Married (ref. single or other situations) | 0.047*** | 0.007 | −0.028 | 0.047*** | −0.036*** | −0.059*** | 0.022** |
| | −0.014 | −0.013 | −0.021 | −0.017 | −0.016 | −0.018 | −0.009 |
| Female children | 0.017** | 0.018** | 0.014 | −0.005 | −0.025*** | −0.024*** | 0.004 |
| | −0.008 | −0.008 | −0.012 | −0.009 | −0.007 | −0.009 | −0.004 |
| Female married | −0.011 | −0.010 | 0.034 | −0.067*** | 0.055*** | 0.024 | −0.025** |
| | −0.018 | −0.014 | −0.023 | (0.021) | (0.018) | (0.021) | (0.01) |
| Education: 12th grade with no diploma or less (reference group) | | | | | | | |
| Education: high school | 0.054*** | 0.055*** | 0.062*** | 0.117*** | 0.016*** | −0.206*** | −0.098*** |
| | (0.012) | (0.010) | (0.013) | (0.018) | (0.005) | (0.023) | (0.018) |
| Education: some college | 0.089*** | 0.038*** | 0.046*** | 0.193*** | 0.140*** | −0.353*** | −0.154*** |
| | (0.011) | (0.009) | (0.012) | (0.018) | (0.007) | (0.022) | (0.017) |
| Education: bachelor's | 0.215*** | 0.005 | −0.018 | 0.236*** | 0.211*** | −0.471*** | −0.176*** |
| | (0.016) | (0.009) | (0.013) | (0.021) | (0.011) | (0.022) | (0.017) |
| Education: master's, professional school, or PhD | 0.525*** | −0.010 | −0.048*** | 0.123*** | 0.097*** | −0.509*** | −0.177*** |
| | (0.022) | (0.009) | (0.012) | (0.023) | (0.011) | (0.022) | (0.017) |
| Latin America | −0.041** | −0.047*** | −0.033** | −0.001 | 0.005*** | 0.082*** | 0.034*** |
| | (0.020) | (0.013) | (0.016) | (0.026) | (0.018) | (0.023) | (0.013) |
| Puerto Rico, U.S. Islands, and other developed countries | 0.021 | −0.052*** | −0.033 | 0.030 | 0.046*** | −0.017 | 0.005 |
| | (0.036) | (0.016) | (0.027) | (0.047) | (0.031) | (0.044) | (0.028) |
| Other developing countries | −0.047 | −0.031 | 0.010 | −0.083** | 0.014*** | 0.112** | 0.025 |
| | (0.029) | (0.019) | (0.033) | (0.042) | (0.026) | (0.054) | (0.030) |
| Years since migration (=0 for natives) | 0.000 | 0.001** | 0.000 | 0.000 | 0.000*** | −0.001 | −0.001* |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.000) |
| Health services (private sector—reference group) | | | | | | | |
| Health services (public sector) | 0.019** | −0.011 | 0.017* | 0.113*** | −0.147*** | 0.039*** | −0.031*** |
| | (0.010) | (0.007) | (0.010) | (0.013) | (0.005) | (0.012) | (0.005) |
| Criminal justice | 0.004 | 0.003 | −0.021** | −0.007 | −0.009*** | 0.030** | 0.001 |
| | (0.015) | (0.009) | (0.011) | (0.019) | (0.010) | (0.015) | (0.008) |
| Employed full-time (ref. employed part-time) | −0.040*** | −0.016*** | −0.021*** | 0.064*** | −0.098*** | 0.128*** | −0.017*** |
| | (0.009) | (0.005) | (0.007) | (0.012) | (0.006) | (0.010) | (0.005) |
| Texas (reference group) | | | | | | | |
| Arizona | −0.012 | 0.005 | −0.005 | 0.007 | −0.009*** | −0.008 | 0.022** |
| | (0.013) | (0.008) | (0.010) | (0.016) | (0.011) | (0.015) | (0.010) |
| California | 0.009 | 0.023*** | 0.024*** | −0.007 | −0.031*** | −0.031*** | 0.014** |
| | (0.010) | (0.007) | (0.009) | (0.013) | (0.008) | (0.011) | (0.007) |
| New Mexico | −0.005 | 0.000 | 0.006 | 0.003 | −0.039*** | 0.027 | 0.009 |
| | (0.017) | (0.011) | (0.014) | (0.022) | (0.012) | (0.021) | (0.012) |

*Note:* Fluent bilinguals are the reference group. Number of observations = 7,695. Pseudo $R^2 = 0.22$. Adapted from "The Occupational Location of Spanish-English Bilinguals in the New Information Economy: The Health and Criminal Justice Sector in the U.S. Borderlands With Mexico," by A. Alarcón, A. Di Paolo, J. Heyman, and M. C. Morales, in R. M. Callahan and P. C. Gándara (Eds.), *The Bilingual Advantage, Language, Literacy, and the U.S. Labor Market* (Table 5.4, pp. 126–128), 2014a, Bristol, England: Multilingual Matters. Copyright 2014 by R. M. Callahan and P. C. Gándara.

**Table A5** Overall Model of Wages by Language Group

| Dependent variable: Log (hourly wages) | |
|---|---|
| Monolingual English | 0.060*** |
| | (0.014) |
| Fluent bilingual | Reference category |
| Limited English proficient | −0.097*** |
| | (0.023) |
| A. High symbolic analysts | Reference category |
| B. Low symbolic analysts | −0.396*** |
| | (0.015) |
| C. High in-person services | −0.115*** |
| | (0.013) |
| D. Low in-person service | −0.426*** |
| | (0.019) |
| E. Manual work | −0.446*** |
| | (0.027) |
| Female (ref. male) | −0.070*** |
| | (0.019) |
| Children at home | 0.045*** |
| | (0.009) |
| Married (ref. single or other situations) | 0.089*** |
| | (0.021) |
| Female children | −0.039*** |
| | (0.010) |
| Female married | −0.036 |
| | (0.024) |
| Years of schooling | 0.094*** |
| | (0.003) |
| Potential experience | 0.025*** |
| | (0.002) |
| Square of potential experience | −0.000*** |
| | (0.000) |
| Years since migration (=0 for natives) | 0.014*** |
| | (0.004) |
| (Years since migration)$^2$ | −0.000*** |
| | (0.000) |
| Criminal justice (ref. health services) | 0.023* |
| U.S.-born | Reference category |
| Latin America | −0.218*** |
| | (0.059) |
| Puerto Rico, U.S. Islands, and other developed countries | −0.096 |
| | (0.061) |
| Other developing countries | −0.140** |
| | (0.070) |
| Border | Reference category |
| Dallas-Fort Worth | 0.054*** |
| | (0.013) |
| Constant | 1.498*** |
| | (0.052) |
| No. of observations | 8698 |
| $R^2$ | 0.425 |
| Adjusted $R^2$ | 0.424 |

*Note:* Robust standard error in italics within parentheses. Adapted from "Returns to Spanish-English Bilingualism in the New Information Economy: The Health and Criminal Justice Sectors in the Texas Border and Dallas-Tarrant Counties," by A. Alarcón, A. Di Paolo, J. Heyman, and M. C. Morales, in R. M. Callahan and P. C. Gándara (Eds.), *The Bilingual Advantage, Language, Literacy, and the U.S. Labor Market* (Table 6.1, pp. 147–148), 2014b, Bristol, England: Multilingual Matters. Copyright 2014 by R. M. Callahan and P. C. Gándara.

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

**Table A6** Models of Wages by Occupational Group and Language Group

| Dependent variable: Log (hourly wage) | A. High symbolic analysts | B1. Low public contact | C. High in-person services | D. Low in-person services | E. Manual work |
|---|---|---|---|---|---|
| Monolingual English | 0.038 | 0.039 | 0.076*** | 0.077* | 0.004 |
| | (0.034) | (0.024) | (0.020) | (0.040) | (0.069) |
| Fluent bilingual | | | Reference category | | |
| Limited English proficient | −0.063 | −0.098*** | −0.025 | −0.062 | −0.161** |
| | (0.064) | (0.034) | (0.038) | (0.039) | (0.074) |
| Female (ref. male) | −0.087** | 0.057 | −0.052* | −0.078* | −0.142** |
| | (0.043) | (0.046) | (0.028) | (0.043) | (0.065) |
| Children at home | 0.073*** | 0.048* | 0.037*** | 0.013 | −0.033 |
| | (0.018) | (0.029) | (0.011) | (0.026) | (0.031) |
| Married (ref. single or other situations) | 0.150*** | 0.148** | 0.004 | 0.079 | 0.186*** |
| | (0.046) | (0.065) | (0.029) | (0.053) | (0.067) |
| Female children | −0.031 | −0.062** | −0.043*** | −0.029 | 0.035 |
| | (0.021) | (0.030) | (0.014) | (0.028) | (0.039) |
| Female married | −0.101* | −0.097 | 0.033 | 0.039 | −0.208** |
| | (0.054) | (0.067) | (0.034) | (0.061) | (0.086) |
| Years of schooling | 0.135*** | 0.055*** | 0.105*** | 0.049*** | 0.017** |
| | (0.006) | (0.006) | (0.005) | (0.007) | (0.008) |
| Potential experience | 0.044*** | 0.019*** | 0.030*** | 0.013*** | 0.015** |
| | (0.004) | (0.003) | (0.002) | (0.003) | (0.007) |
| Square of (potential experience) | −0.000*** | −0.001*** | −0.000*** | −0.000** | −0.000* |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Years since migration (=0 for natives) | 0.012 | 0.006 | 0.013** | 0.007 | 0.016 |
| | (0.012) | (0.007) | (0.006) | (0.008) | (0.014) |
| (Years since migration) | −0.000 | −0.000 | −0.000** | −0.000 | −0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| | −0.035 | 0.105*** | 0.011 | 0.248*** | 0.156** |
| | (0.024) | (0.028) | (0.019) | (0.034) | (0.076) |
| U.S.-born | | | Reference category | | |
| Latin America | −0.148 | −0.119 | −0.269*** | −0.177* | −0.266* |
| | (0.163) | (0.098) | (0.082) | (0.107) | (0.154) |
| Puerto Rico, U.S. Islands, and other developed countries | −0.011 | −0.058 | −0.130 | −0.181 | −0.070 |
| | (0.172) | (0.110) | (0.080) | (0.154) | (0.096) |
| Other developing countries | −0.061 | −0.077 | −0.070 | −0.302*** | −0.034 |
| | (0.169) | (0.119) | (0.105) | (0.111) | (0.367) |
| Border | | | Reference category | | |
| Dallas-Fort Worth | 0.078** | 0.149*** | 0.000 | 0.066 | 0.123** |
| | (0.032) | (0.024) | (0.019) | (0.040) | (0.055) |
| Constant | 0.577*** | 1.531*** | 1.277*** | 1.783*** | 2.082*** |
| | (0.117) | (0.104) | (0.078) | (0.105) | (0.159) |
| No. of observations | 2,170 | 1,387 | 3,803 | 1,020 | 318 |
| $R^2$ | 0.341 | 0.220 | 0.238 | 0.271 | 0.311 |
| Adjusted $R^2$ | 0.336 | 0.211 | 0.235 | 0.259 | 0.272 |

*Note:* Adapted from "Returns to Spanish-English Bilingualism in the New Information Economy: The Health and Criminal Justice Sectors in the Texas Border and Dallas-Tarrant Counties," by A. Alarcón, A. Di Paolo, J. Heyman, and M. C. Morales, in R. M. Callahan and P. C. Gándara (Eds.), *The Bilingual Advantage, Language, Literacy, and the U.S. Labor Market* (Table 6.2, pp. 149–150), 2014b, Bristol, England: Multilingual Matters. Copyright 2014 by R. M. Callahan and P. C. Gándara.

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$; robust standard error in italics within parentheses.

**Table A7** Model of Wages by Geographic Location and Language Group

| Dependent variable: Log (hourly wage) | Border | Dallas-Fort Worth |
|---|---|---|
| Monolingual English | 0.059*** | 0.069*** |
| | (0.021) | (0.019) |
| Fluent bilingual | Reference category | |
| Limited English proficient | −0.041* | −0.040 |
| | (0.025) | (0.041) |
| Female (ref. male) | −0.098*** | −0.048** |
| | (0.032) | (0.024) |
| Children at home | 0.019 | 0.067*** |
| | (0.012) | (0.013) |
| Married (ref. single or other situations) | 0.088*** | 0.091*** |
| | (0.032) | (0.029) |
| Female children | −0.015 | −0.059*** |
| | (0.015) | (0.014) |
| Female married | 0.001 | −0.053* |
| | (0.038) | (0.031) |
| Years of schooling | 0.089*** | 0.099*** |
| | (0.005) | (0.004) |
| Potential experience | 0.021*** | 0.028*** |
| | (0.003) | (0.002) |
| (Potential experience)$^2$ | −0.000*** | −0.000*** |
| | (0.000) | (0.000) |
| Years since migration (=0 for natives) | 0.019*** | 0.007 |
| | (0.006) | (0.006) |
| (Years since migration)$^2$ | −0.000*** | −0.000 |
| | (0.000) | (0.000) |
| Criminal justice (ref. health services) | 0.089*** | −0.023 |
| | (0.019) | (0.015) |
| A. High symbolic analysts | Reference category | |
| B. Low symbolic analysts | −0.437*** | −0.370*** |
| | (0.027) | (0.018) |
| C. High in-person services | −0.089*** | −0.120*** |
| | (0.024) | (0.015) |
| D. Low in-person services | −0.399*** | −0.439*** |
| | (0.031) | (0.023) |
| E. Manual work | −0.448*** | −0.441*** |
| | (0.045) | (0.034) |
| U.S.-born | Reference category | |
| Latin America | −0.302*** | −0.082 |
| | (0.083) | (0.083) |
| Puerto Rico, U.S. Islands, and other developed countries | 0.009 | −0.104 |
| | (0.095) | (0.081) |
| Other developing countries | −0.136 | −0.093 |
| | (0.144) | (0.088) |
| Constant | 1.577*** | 1.454*** |
| | (0.083) | (0.065) |
| No. of observations | 2,979 | 5,719 |
| $R^2$ | 0.423 | 0.420 |
| Adjusted $R^2$ | 0.419 | 0.418 |

*Note:* Adapted from "Returns to Spanish-English Bilingualism in the New Information Economy: The Health and Criminal Justice Sectors in the Texas Border and Dallas-Tarrant Counties," by A. Alarcón, A. Di Paolo, J. Heyman, and M. C. Morales, in R. M. Callahan and P. C. Gándara (Eds.), *The Bilingual Advantage, Language, Literacy, and the U.S. Labor Market* (Table 6.3, pp. 151–152), 2014b, Bristol, England: Multilingual Matters. Copyright 2014 by R. M. Callahan and P. C. Gándara.

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$; robust standard error in italics within parentheses.

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