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Examining the interactions between health and labour market earnings:

A comparison of foreign-born individuals and natives in the USA

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Examining the interactions between health and labour market earnings: A comparison of foreign-born individuals and natives in the USA

by

Michelle Aster White

(Canada)

Thesis submitted to the School of Public Policy,

Central European University, Budapest, in partial fulfillment of the requirements

of the Erasmus Mundus Master of Arts degree in Public Policy.

Accepted in conformance with the standards of the CEU.

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Budapest November 2017 I, the undersigned, **Michelle Aster White**, candidate for the Erasmus Mundus MA degree in Public Policy declare herewith that the present thesis is exclusively my own work, based on my research and only such external information as properly credited in notes and bibliography. I declare that no unidentified and illegitimate use was made of the work of others, and no part of the thesis infringes on any person's or institution's copyright. I also declare that no part of the thesis has been submitted in this form to any other institution of higher education for an academic degree.

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Abstract

Extensive research on integration of immigrants into native populations has focused on economic factors or health differences between immigrants and native populations. However, there is a gap in the literature in examining whether differing health variables have an effect on labour market outcomes. This seems to be an oversight as it is broadly acknowledged that health can be understood as a part of human capital. The thesis seeks to explore if differences exist between native populations and immigrant populations when we include health variables into existing models of human capital and its effect on wage earnings. The analysis will present a series of multiple regressions that include health variables to examine what impact they have on potential earnings and whether there are differences between immigrant and native populations. There are great implications for public policy as this would mean that health policies would have to be more broadly considered as they would affect labour market outcomes.

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Introduction

This thesis will seek to introduce health variables into a modified Mincer Equation to examine how the introduction of health as a consideration and part of human capital effects human capital's influence on potential wages earned for those participating in the American labour force. The research is grounded in a literature review of human capital theory which situates the methodological approach within existing research and helps to identify control variables that belong in the model. The selected model, the Mincer Equation, will briefly be discussed and problematized before moving forward with the study. The study will seek to examine what effect adding health variables has to the model overall, then breaking out the population into natives and foreign-born individuals to see how health, when controlling for other aspects of human capital, affects the earning capability of each group. These results will then be compared between the two groups as it may be that human capital, in terms of health, is valued and used differently by these two groups. The healthy migrant effect may have several implications here, however due to data restrictions it is beyond direct examination. Besides, any differences in labour market outcomes may simply be due to information asymmetry which begins to balance out over time as immigrants integrate into a recipient country's workforce (Guzi, Kahanec, & Kurekova, 2015; Bodvarsson & Van den Berg, 2013; Tompa, 2002). Furthermore, classical research into human capital theory would suggest that not all forms of human capital are equal in their impact (Bodvarsson & Van den Berg, 2013; Tompa, 2002; Berntson & Marklund, 2006).

Labour economics has been increasingly applied to studies of migration and the integration of immigrants to understand why people move and how they are able to integrate into recipient countries. However, the gap in research regarding health as part of human capital, and subsequent implications for labour market outcomes has also been carried forward here.

Health and labour tend to be treated separately, falling into very different fields of research which ask very different questions instead of examining how the two interact. However, there have been recent efforts to examine health within the context of integration, such as the addition of health as a component to MIPEX research (MIPEX, 2015a). Importantly, 'health' is complex, being a highly politicized good with likely spillover effects for other policy areas.

There are a number of reasons for the quantitative research gap in the interactions between health and labour economics. A major restriction has been limitations in data availability. Many countries do not distinguish survey respondents based on country of origin or other identifiers of immigration such as citizenship status (European Commission, 2008; United Nations, 2015; Rechel, 2011; Juhasz & Taller, 2010; Jasso et al., 2004; Gold et al, 2013). Furthermore, it is uncommon for health survey results to be linked up with labour market surveys, meaning a lack of harmonized data. There are cultural, political, and data security concerns which restrict researcher's ability to link up these datasets. There is also a split between countries, with traditional immigration recipient countries such as the United States, Canada, and Australia tending to collect more data on immigrants than, say, European countries (European Commission, 2008, Juhasz & Taller, 2010).

There are a number of reasons to select and focus on the American case. There are great variations in access to and associated costs of healthcare which would likely strengthen the benefits of health as an aspect of human capital. There have been recent changes to health policies that will have future impacts worth examining, providing a natural experiment in the impact of health policy change on other areas down the road. For now, this research is beyond the scope of this thesis, but it shows where future research could be conducted and the value in tackling American data for evidence-based policymaking. Regarding immigration flows, the USA is a large recipient country, making study important and providing possible lessons to countries not as familiar with immigration. Secondly, and perhaps most importantly, there is greater collection of and access to relevant data.

For these reasons it is important to further research in this area, especially as this research would contribute to evidence-based policymaking. Bureaucrats and politicians are increasingly calling for policies grounded in quantitative analyses upon which to make decisions. Furthermore, a main interest politically is for immigrants to enter the labour force and to contribute back into the system (Gaston, 2015). Additionally, underemployment poses its own challenges because if immigrants are underemployed they may be less self-sufficient, requiring greater use of social services. Due to the costs associated with service provision, government would be interested in policies that promote self-sufficiency. If health can be shown to have a benefit to labour market outcomes, this might either encourage spending in this area, or defend existing spending, as there is competition for limited resources between government agencies, especially in the wake of the 2008 financial crisis. If aspects of health such as access to healthcare affect immigrants differently than natives, it might suggest that there is a gap between these two groups, meaning targeted policies are needed if gaps are to be addressed in maintaining equitable access to healthcare. If health variables are not found to have a large or significant impact on labour market outcomes, or there is not a meaningful difference between immigrants and natives, government may take this as a sign that healthcare policy should not be targeted towards immigrants as a group but rather aimed at the whole population.

This research would also be useful to NGOs and civil society organizations who could use this information to appeal to or lobby their local representatives to protect health spending and the provision of targeted services. However, it may come as a bit of a blow if evidencebased policymaking in this area cannot provide a steady basis upon which to build a their case. This thesis will contribute to the literature through attempting to conduct intersectional, quantitative research on how health, as an aspect of human capital, impacts labour market earnings and whether there are differences between foreign-born and natives in the American population.

The thesis will be structured as follows: Chapter 1 will present a literature review of the relevant labour economics theories, migration theories, present and missing literature in the application of labour economics into the study of immigrant integration, including a justification and outline of the case study selected; Chapter 2 will present the methodology, hypotheses, dataset summary, and present some key variables used in the analysis; Chapter 3 will present the data and interpret the results; Chapter 4 will discuss policy implications of the findings; and the Conclusion will discuss areas for further research in addition to summarizing the thesis.

Chapter 1 – Literature Review

The following section will discuss the scholarship around human capital theory, migration theories regarding the labour force, the application of human capital theory to understanding differences between immigrants and natives in labour market outcomes, and gaps in the literature regarding health.

Human Capital Theory in Economics

Human Capital Theory traces back to Becker's work (Becker, 2007; Bodvarsson & Van den Berg, 2013; Currie & Madrian, 1999; Farre, 2016; Fidalgo et al, 2016; Jasso et al, 2004; Juhasz et al., 2010; McDonald et al., 2004; Neuman, 2014, Rechel, 2011; Rellstab et al, 2016; Tompa, 2002; Zimmerman et al, 2011) on human capital theory where it was understood to be a stock of knowledge and individual characteristics that makes up the individual's 'economic value', that is, their productivity (Becker, 2007; Bodvarsson & Van den Berg, 2013; Currie & Madrian, 1999; Farre, 2016; Fidalgo et al, 2016; Jasso et al, 2004; Juhasz et al., 2010; McDonald et al., 2004; Neuman, 2014, Rechel, 2011; Rellstab et al, 2016; Tompa, 2002; Zimmerman et al, 2011). Education has been widely studied as a core component of human capital, being found to play a large, significant role in worker's productivity (Becker, 2007; Bodvarsson & Van den Berg, 2013; Currie & Madrian, 1999; Farre, 2016; Fidalgo et al, 2016; Jasso et al, 2004; Juhasz et al., 2010; Lemieux, 2006; McDonald et al., 2004; Neuman, 2014, Rechel, 2011; Rellstab et al, 2016; Tompa, 2002; Zimmerman et al, 2011) and being correlated with the amount of wages earned (Becker, 2007; Bodvarsson & Van den Berg, 2013; Currie & Madrian, 1999; Farre, 2016; Fidalgo et al, 2016; Jasso et al, 2004; Juhasz et al., 2010; Lemieux, 2006; McDonald et al., 2004; Neuman, 2014, Rechel, 2011; Rellstab et al, 2016; Tompa, 2002; Zimmerman et al, 2011) Human capital includes work experience, talent or innate ability, and health (Becker, 2007; Bodvarsson & Van den Berg, 2013; Currie & Madrian, 1999; Farre, 2016; Fidalgo et al,

2016; Jasso et al, 2004; Juhasz et al., 2010; Lemieux, 2006; McDonald et al., 2004; Neuman, 2014, Rechel, 2011; Rellstab et al, 2016; Tompa, 2002; Zimmerman et al, 2011).

In many senses this form of capital behaves in a similar fashion to liquid capital as one can invest in one's own human capital, for example in pursuing further education, or utilize it in the production process (Becker, 2007; Bodvarsson & Van den Berg, 2013; Currie & Madrian, 1999; Farre, 2016; Fidalgo et al, 2016; Jasso et al, 2004; Juhasz et al., 2010; Lemieux, 2006; McDonald et al., 2004; Neuman, 2014, Rechel, 2011; Rellstab et al, 2016; Tompa, 2002; Zimmerman et al, 2011). Bodvarsson & Van den Berg claim that Becker understood this investment as a way of "maximiz[ing] the net present value of future earnings" (2013, 32). Becker (2007) would later return to the question of health, providing an overview of how health has been neglected in studies of human capital and how it interacts with other aspects of human capital, such as education (Becker, 2007).

Grossman expounded upon Becker's work through developing the concept of health as human capital, arguing that health "provides utility not only directly but also indirectly" (Grossman in Tompa, 2002, 183) because it acts as a consumption good, being an input into production but it is also a capital good that provides returns on investment (Tompa, 2002, 183). Without a good stock of health, the individual is unable to participate in the process of production, holds an associated cost in investment to restore these stocks, yet health also contributes to the efficiency and effectiveness of an individual's productivity (Becker, 2007; Bodvarsson & Van den Berg, 2013; Currie & Madrian, 1999; Farre, 2016; Fidalgo et al, 2016; Jasso et al, 2004; Juhasz et al., 2010; McDonald et al., 2004; Neuman, 2014, Rechel, 2011; Rellstab et al, 2016; Tompa, 2002; Zimmerman et al, 2011). The need for ongoing investment in health would suggest that health is endogenous (Becker, 2007; Tompa, 2002, 184, Currie & Madrian, 1999; Bodvarsson & Van den Berg, 2013). Tompa (2002) flags that aspects of human capital also interact with one another, such as health and education, although the nature of the interaction is unclear. Grossman's analysis tended to focus on human capital at the macroeconomic level, looking at the effect on development and changes in GDP (Grossman in Tompa, 2002; Bodvarsson & Van den Berg, 2013; Currie & Madrian, 1999; Farre, 2016; Fidalgo et al, 2016; Jasso et al, 2004; Juhasz et al., 2010; McDonald et al., 2004; Neuman, 2014, Rechel, 2011; Rellstab et al, 2016; Zimmerman et al, 2011). However, this does not tell us how different aspects of human capital benefit individual earnings. For this, we must examine microeconomic utilization of human capital theory.

While the emphasis was on education, Mincer developed a model to estimate the earning function of education and experience on potential wage earnings as a measure of the return on investment of human capital for the individual (Bodvarsson & Van den Berg, 2013; Currie & Madrian, 1999; Farre, 2016; Fidalgo et al, 2016; Jasso et al, 2004; Juhasz et al., 2010; Lemieux, 2006; Tompa, 2002; Wooldridge, 2002; Wooldridge, 2012).

While the original equation focused on education, other variables can easily be substituted in, explaining why the Mincer equation has become so prevalent (Becker, 2007; Lemieux, 2006; Wooldridge, 2002; Wooldridge, 2012).

The Mincer Equation, when expressed as a regression equation, looks like this:

$$LnY = \beta_0 + \beta_1 Schooling + \beta_2 Potential + \beta_3 Potential^2 + \varepsilon$$

Y is a log of wages earned, allowing the correlations to be interpreted as independent variables having a percentage effect on wages earned. The intercept, β_0 , assumes no education or experience. β_1 Schooling is the first independent variable, representing years of completed schooling. The second independent variable, β_2 Potential, represents potential experience (Calculated by taking age – schooling - 6). Due to how potential is calculated, age cannot be included in the regression as there would be a high degree of collinearity between age, schooling, and potential. Age would otherwise be an important variable as it is related to working age and retirement age~ amongst other things. $\beta_3 Potential^2$ is also present in the formula to capture a non-linear relationship in which there are eventually diminishing returns for potential. Finally, an error term is included in the regression.

To find the turning point for potential the partial derivative is calculated, with x_1 being *Potential*:

$$\frac{\delta y}{\delta x_1} = \beta_1 + 2\beta_2 x_1$$

And in understanding how a change in x_1 (*Potential*) affects y for a *ceteris paribus* effect:

$$\Delta y = (\beta_1 + 2\beta_2 x_1) \Delta x$$

Importantly, these human capital variables (*Schooling* and *Potential*) are treated as exogenous, for model simplification, although the literature on human capital variables holds them to be endogenous (Becker, 2007; Bodvarsson & Van den Berg, 2013; Lemieux, 2006; Wooldridge, 2002; Wooldridge, 2012; Tompa, 2002). Furthermore, potential spillover effects are not addressed in this model (Lemieux, 2006; Wooldridge, 2002; Wooldridge, 2012). Importantly, a portion of social capital is performative and social capital may act to distinguish rich people from poor, fostering connections for some within while excluding others (Bodvarsson & Van den Berg, 2013). A performative element also enters into consideration via the signals with which a prospective employee gives a potential employer that they have the requisite human

capital for the position (Becker, 2007; Bertson et al, 2006; Bodvarsson & Van den Berg, 2013; Lemieux, 2006; Wooldridge, 2002; Wooldridge, 2012; Fidalgo et al, 2016). This is done through credentialization in the case of education (Becker, 2007) but there does not seem to be a clear way of signaling health. Importantly, signaling is not a perfect process (Becker, 2007): one can signal a trait that one might not possess, signals may be misinterpreted or go unreceived. This calls into question what would be an appropriate measure of health and the potentially arbitrary nature of signal selection (Berntson & Marklund, 2006; Becker, 2007; Jasso et al, 2004; Fidalgo et al, 2016; Currie & Madrian, 1999; Bodvarsson & Van den Berg, 2013).

One prominent critique of human capital theory is that it assumes perfect substitutability between individuals with the same levels of human capital and is unable to explain imperfect substitutability or labour market segmentation (Becker, 2007; Tompa, 2002; Bodvarsson & Van den Berg, 2013; Berntson et al, 2006). Dual labour market theory was developed by Doeringer & Piore to focus on how employment status affects perceived employability (Doeringer & Piore, 1971 in Berntson et al, 2006, 225-228) by dividing employees into an internal segment that has access not only to more information on the job market than those in the external segment but also benefits from different rules that affect wages, career advancement, and job attainment (Berntson et al, 2006, 227). These divisions apply to wages, working conditions, employment type and stability, advancement, equity and due process (Doeringer & Piore, 1971 in Berntson et al, 2006, 227). Berntson et al. (2006) flag that the 'external' segment tends to have poorer health (2006, 227) as they are more likely to be exposed to occupational health risks (Kochan et al, 1994 in Berntson et al., 2006, 228). In regards to differences between immigrants and natives, these gaps may be associated with asymmetry of information between the two groups, with a period of adjustment being an inevitable part of labour markets (Guzi, Kahanec, & Kurekova, 2015, 3; Berntson et al, 2006;

Tompa, 2002). As such, differences are a natural outcome of the market. However, hypothetically immigrant workers are still interchangeable with natives that hold similar disadvantages.

Labour economics began to examine differences between natives and foreign-born workers, whether they were migrants or immigrants (Anderson & Blinder, 2011; Berntson et al., 2006; Bodvarsson & Van den Berg, 2013; Farre, 2016; Fidalgo et al, 2016; Guzi, Kahanec, & Kurekova, 2015; IOM, 2013; Jasso et al, 2004; Juhasz et al., 2010; Massey et al, 1993; McDonald et al., 2004; Neuman, 2014, OECD, 2015; Rechel, 2011; Rellstab et al, 2016; Tompa, 2002; Sundquist & Johansson, 1997; Zimmerman et al, 2011). These different categories of foreign-born workers had different implications for the study of their impact on recipient countries as the 'migrant' tends to be transient, prone to circular or cyclical migration between the sending and recipient country (Anderson & Blinder, 2011; Bengtsson & Scott, 2006; Bodvarsson & Van den Berg, 2013; Tompa, 2002; United Nations, 2015; Zimmerman et al., 2011). Migrants may not necessarily wish to reside within the recipient country longterm and are often viewed as less deserving of the recipient country's social services (Anderson & Blinder, 2011; Bodvarsson & Van den Berg, 2013; Gaston, 2015; United Nations, 2015; Woolf & Aron, 2013) due to this transience. By contrast, immigrants are migrants that seek to reside within the recipient country either permanently or for a long period of time (Anderson & Blinder, 2011; Bodvarsson & Van den Berg, 2013; Gaston, 2015; United Nations, 2015) and integrate into the recipient country in all aspects, including the job market. Importantly, 'immigrants' tend to hold formal, legal status whereas those with irregular status tend to be categorized as 'migrants'. In analyzing how foreign-born individuals interact with recipient country labour markets, the long-term nature of residence allows immigrants to adapt over time to the needs of the labour market, changing how they invest their time and how they exert their human capital (Bodvarsson &Van den Berg, 2013). This is why so many researchers focus on

longitudinal studies (Berntson et al., 2006; Bodvarsson & Van den Berg, 2013; Jasso et al, 2004; Rellstab et al, 2016; Sundquist & Johansson, 1997; Tompa, 2002; Neuman, 2014). Neuman also flags that migrant studies tend to focus on immigrants, who remain in the recipient country, as opposed to other migration patterns, such as cyclical migration (2014, 8).

Regarding health, it is common for many visa regimes in recipient countries to have a health aspect, requiring long-term residents to undergo health screenings and possess health insurance, an aspect of filtering on the part of the recipient country and one of self-selection on the part of the immigrant that likely differentiates them from the average citizen of their sending country. The idea of integration and permanent residence is an important one for public policy as immigrants are perceived as being more 'worthy' or deserving of services than migrants as they may be perceived as contributing to the recipient country via their taxes (Gaston, 2015). Perceptions of immigrants are complex, with great variations between countries depending on their history of immigration and their integration approaches. The question of difference and what the 'other' deserves illustrates one of the challenges of integration policies in that host societies play an important role in the success of integration and the persistence of 'othering' immigrants or migrants with implications on their lives, such as gaps in labour market involvement (Guzi, Kahanec, & Kurekova, 2015; Gaston, 2015). Recipient country attitudes towards migrant health and collecting this data also impact our understanding of immigrants' health and needs (Juhász et al, 2010; Rechel, 2011). If immigrants cannot be easily substituted for natives in the workforce due to reasons such as discrimination (Guzi, Kahanec, & Kurekova, 2015; Gaston, 2015), this problematizes the assumption of perfect substitutability between groups as outlined by Becker (2007; Tompa, 2002; Bodvarsson & Van den Berg, 2013). The implications here are that the same levels of human capital have different outcomes for different groups. Multi-dimensional disadvantages for immigrants may further exacerbate access to labour or health (Beiser & Hou, 2014; Bengtsson & Scott, 2006).

Neoclassical microeconomic theories of migration treat decisions made by immigrants as a complex cost-benefit analysis conducted by the individual or family unit which take into account institutional constraints, human capital, and asymmetry of information (Massey et al, 1993; Bodvarsson & Van den Berg, 2013). Their decision to migrate will ultimately depend on how their self-valued human capital compares to what they know of the recipient country's labour market and requirements for entry (Bodvarsson & Van den Berg, 2013; Gold et al, 2013; Lemieux, 2006; Massey et al, 1993; Tompa, 2002). This may mean that immigrants must invest more heavily in certain aspects of human capital or that they come with deeper stocks of certain human capital, as evidenced by the healthy migrant effect (Jasso et al, 2004). This may also suggest that certain aspects of human capital, such as health, are more relevant or useful for immigrants in potential wages earned compared to natives.

Health differences between immigrants and the native populations of recipient countries have been studied to better understand how migration and integration affect health (Zimmerman, Kiss, & Hossain, 2011; UN, 2015; Oxman-Martinez et al, 2015). A prevalent area of analysis has been the 'healthy migrant effect' which holds that migrants' initial health characteristics are better than the recipient nation or sending nation, often due to the factors enabling them to migrate in the first place (Jasso et al, 2004; Bodvarsson & Van den Berg, 2013; Farre, 2016; Tompa, 2002; Juhasz et al, 2010; McDonald et al, 2004; Rechel, 2011; Rellstab et al, 2016). Jasso et al. (2004) discuss how health selectivity may occur in legal immigrants who tend to have better overall health than either the recipient nation or the sending nation and how health was stratified based on visa type, but there being a paucity of studies which examine migrant health based on visa type. Phrased differently, migrants' health stock tends to be higher than natives or those that remain in the sending country, suggesting that health plays an important role in the cost-benefit analysis to migrate (Jasso et al., 2004; Farré, 2016). However, after arrival in the recipient country, a migrant's health stocks generally fall

until they match those of natives as a form of natural convergence (Jasso et al, 2004, Sundquist & Johansson, 1997) although it is contested (Jasso et al., 2004; Farré, 2016) whether convergence really occurs or whether immigrant's health tends to remain better than natives (Beiser & Hou, 2014). It may be that health is one aspect of human capital that immigrants subsequently change their investment in as they gain more information about the desired capital required to find employment and maximize potential earnings. This sort of longitudinal analysis will not be conducted here but is rather pointed out to show an area of current and further research in the field.

Research into the healthy migrant phenomenon and immigrants' health tends not to focus directly on the role health has in subsequent labour market outcomes. Additionally, research looking at both aspects tends to be more qualitative in nature (Beiser & Hou, 2014 for example), likely due to methodological challenges and a lack of available data to satisfactorily analyze both economic and health variables (European Commission, 2008; Becker, 2007). Few surveys or existing international data sets collect data on both health and labor while also breaking out respondents into a migrant subsection, such as country or place of birth (European Commission, 2008, Becker, 2007). While one-time targeted surveys do provide important data on a sub-section of the general population, in this case immigrants, the lack of longitudinal analyses or similar cross-sectional survey iterations restricts the ability to conduct analyses reliant on time, such as examinations of endogeneity (European Commission, 2008; Lemieux, 2006; Wooldridge, 2002; Wooldridge, 2012). There have been some efforts in this regard, with MIPEX and various Swedish studies (Bengtsson & Scott, 2006; Sundquist & Johansson, 1997). These difficulties are exacerbated when attempting cross-country comparisons, becoming too complex for most policymakers to conduct (Brownson et al, 2006; Burton, 2006; European Commission, 2008; Zimmerman et al, 2011). There has been some effort by the EU, UNDP, and UNHCR to get this data, but this data excludes native-born populations, focusing solely on immigrants (European Commission, 2008). It is likely that the sensitive nature of health data and privacy concerns over microdata within and across countries inhibit the ability of researchers & policy analysts to engage in evidence-based policymaking regarding health and labour market outcomes.

Why one case study?

It must be acknowledged that in conducting a study of the relationship between health and employment that health policies are not easily copied or transplanted due to differences in governmental structures and health regimes. This is made even more apparent when the distinction between native and immigrant populations regarding the role of health in labour market outcomes is brought into analysis as immigration policies and practices are varied across and within countries. A comparative quantitative analysis may not be feasible due to a lack of harmonized data in which comparable categories exist for health variables, economic variables, and demographic variables. While it is acknowledged that race- and ethnic-based differences are important to understanding national health trends and how health relates to other factors, there is a lack of comparable data across countries (Woolf & Aron, 2013, 170; Holder et al., 2017). Furthermore, while differences between countries could be noted, this is not as useful for national policymakers as the data itself would not necessarily reflect the particularities of their country and may pose problems in interpretation. So, an in-depth case study examination presents greater utility for policymakers, both within and external to that country context, as they can see how the analysis and interpretation were conducted,

determine whether they can conduct a similar study, and whether the results would be meaningful for them. Furthermore, some of the policy implications may be relevant for other contexts but it is left at the discretion of policymakers and policy advocates. Therefore, a single case study examination is a more fruitful mode of analysis as richer data is available

and an attempt at quantitative analysis to inform policymaking within that case context is more feasible. Furthermore, while it is not as grounded in evidence, external policymakers and stakeholders may be able to more easily learn from these findings and analysis. So, while the examination of a single case study most directly benefits policymakers from that country context, policymakers and stakeholders from other countries may learn from the exercise and findings.

Why the USA?

The USA was chosen as a case study for several important reasons. It is a traditional recipient country and has gone to great lengths to collect and analyze data on immigrants, which can be used to inform policy. It is also one of few countries to collect, and make widely available, labour market & economic data, demographic data, and health data that are linked and harmonized, and can thus be analyzed together. The US Census bureau also acts as a rich source of data, providing not only a broad demographic background of citizens but also an in-depth profile of immigration into the country, including information on how long

foreign-born individuals have resided within the country. This is useful not only for American policymakers, but provides external policymakers the opportunity to examine what can be done with data when it is thusly combined. Being able to interact with such a rich dataset allows evidence-based policymaking to be advanced as analysts can see what data can be interpreted in meaningful ways beyond descriptive statistics. In turn, this can provide them with a better idea of how to analyze their own data and push for changes to their own data collection that better capture operationalized concepts and provide meaningful evidence to support health policymaking or examine whether specialized health policies may be

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needed to bring greater equality between immigrants and native populations. This of course

assumes that equality is the policy goal, this is not always the case, especially in traditional sender countries who have recently faced an uptick in immigration.

The American Context

Looking at the age distribution of the USA working-age population can help us understand the evolving nature of the workforce and what role immigration can play in the workforce. Like much of the developed world, the baby boomer generation (those born between 1945-1960) will create a greater demand for services, including healthcare, as they age out of employment. However, unlike other developed countries, the USA has a relatively stable working-age population pyramid, meaning that policymakers need not be overly, or immediately, concerned about the consequences of a high dependency ratio (Lopez &

Radford, 2017; Martin, 2014; Passel & Cohn, 2011). In 2014 the share of population aged 65 and over in the USA was 14.5% (OECD, 2015, 213).

Many countries have a constrictive working-age pyramid and must also concern themselves with how they are going to cope with the shrinking tax base. Permissive migration and immigration policies which increase the workforce in a country are one solution countries

have in addressing demographic concerns around the current and future labour pool. The US fertility rate has been relatively stable and is still high in terms of other developed countries, also explaining why its age distribution has remained fairly stable and is aging at a slower rate than seen elsewhere (Lopez & Radford, 2017; Martin, 2014; Passel & Cohn,

2011). The OECD also credits higher fertility rates and migrants for slowing the aging of the US population (OECD, 2015, 192). Cynics may suggest that the current age distribution of the working-age population and the US fertility rate mean that there is not, or should not be, as great of an incentive to supplement the American workforce with immigrants. Yet, the USA is still a large recipient country. Consider that in 2014 there were 42.2 million

immigrants living in the USA (13.2% of the total population at the time) Lopez & Radford, 2017; Martin, 2014; Passel & Cohn, 2011). In 2010, the breakdown of immigrants based on country or region of origin was as follows: 29.4% from Mexico, 24.9% from South and East Asia, 23.7% from Latin America (excluding Mexico), and 14.5% from Europe & Canada. (Lopez & Radford, 2017; Martin, 2014; Passel & Cohn, 2011). As of 2014, approximately 25% of the US population (approximately 80 million people) were a 1st or 2nd generation

immigrant (MIPEX USA, 2016b).

According to the Pew Research Center's examination of the age pyramid of immigrants to the

USA, the spread trends towards immigrants being predominantly of working age, with a relatively normal distribution with the vast majority of immigrants falling between the age of

30 to 50. (Lopez & Radford, 2017; Martin, 2014; Passel & Cohn, 2011).

Interestingly, the United States has the highest count of foreign-trained doctors and nurses in the OECD, with over 200,000 doctors and almost 250,000 nurses having trained abroad in 2013, accounting for one quarter of all doctors and six percent of all nurses there (OECD, 2015, 86-87, 94). Approximately 50% foreign-trained doctors in the USA come from Asia (OECD, 2015, 86). This would suggest that the United States has been able to select high-

skill immigrants as part of its immigration policies.

Regarding health, the OECD reported that the USA is one of only three OECD countries without "universal health coverage for a core set of services" (OECD, 2015, 10)¹. It also spent more public funds on health care in 2013 then all but two of 13 high-income countries compared in the Commonwealth Fund's brief (Squires & Anderson, 2015)². When looking at health care spending as a percentage of GDP, in 2013 the USA spent 17.1% of its GDP on health care, almost twice that of the second-highest spender, France, which spent 11.6% of

¹ The other two countries are Greece and Poland.

² The thirteen high-income countries compared in the Commonwealth Fund report were: Australia, Canada, Denmark, France, Germany, Japan, Netherlands, New Zealand, Norway, Sweden, Switzerland, the United Kingdom, and the United States of America.

GDP (OECD, 2015). Other traditional recipient countries spending of GDP on health care were as follows: New Zealand (11.1%), Canada (10.7%), Australia (9.4%), and the United

Kingdom (8.8%) (OECD, 2015; Squires & Anderson, 2015).

Yet, despite having the highest health expenditure per capita in 2013 (8,713 USD at 2005 GDP price level) and the highest expenditure on health as a percentage of GDP (16.4% in 2013) the USA is not even amongst the top tier of OECD countries regarding the number of doctors or nurses per population (OECD, 2015, 215, 216, 21).

In the USA, the population percentage of uninsured people has decreased, down 2.9% from 2013 to 2014, and is expected to continue its downward trend due to the implementation of the Affordable Care Act in 2014 (OECD, 2015, 10). However, it is important to note that whether someone is insured does not speak to the quality of insurance or actual insurance coverage. So, while individuals may have some access to healthcare, out-of-pocket costs and differences in coverage may restrict true access to care (OECD, 2015, 20). The USA also performs poorly, compared to other OECD countries, regarding the prevention of avoidable hospital admissions for individuals with chronic conditions (OECD, 2015, 21). This likely exacerbates the cost of care for individuals with chronic conditions. Furthermore, despite

large spending on health, Americans tend to have a lower life expectancy due to higher mortality rates from "adverse socio-economic conditions...and poor access and co-ordination of care for certain population groups" in addition to a fragmented health system, and "few resources devoted to public and primary care" (OECD, 2015, 19, 46; Woolf & Aron, 2013).

So, while race and ethnicity may play a role inside the USA regarding health disparity between groups, no such comparable data exists from other countries to compare race- or ethnic-based disparities across countries (Woolf & Aron, 2013, 186). This poses a challenge in understanding health disparities for immigrants as race or ethnicity might have been an indirect way to analyze immigrants as a group. However, when it comes to a comparison

between countries, US health disadvantages are not isolated to any group in particular, whether via race & ethnicity, education, or socio-economic status but exist across the board, even for advantaged groups when compared to similar advantaged groups from other countries (Woolf & Aron, 2013, 186).

Interestingly, according to a 2015 OECD report, the USA does not collect data on unmet medical care needs, a gap that it shares with 10 other OECD countries, including traditional recipient countries Australia, Canada, and New Zealand (OECD, 2015, 25). This means that we cannot examine whether immigrants' perspectives on unmet medical care needs differ

from native populations, especially within traditional recipient countries. The USA spends a small percentage of its GDP on social services, such as housing assistance, employment programs, and disability benefits, relative to other countries (OECD, 2015, 4; Woolf & Aron, 2013). Social services tend to act as intervening variables as they either mitigate the costs of health or interact with health variables. This minimal investment by the USA may act somewhat of a baseline, meaning that when policymakers are interpreting results regarding the effect of health on labour market outcomes, the USA findings may act as a more generous portrayal. Countries with greater social service provision may expect to find that health policies may have less of an impact on labour market outcomes then what is found here. As it is, the literature tends to find the effect of health on employment as anywhere from negligible to somewhat important, but not as important as other facets of human capital.

Regarding immigration flows, the 1965 Immigration and Naturalization Act stimulated immigration while slowly shifting the country of origin away from Europe and Canada. In 2010, the breakdown of immigrants based on country or region of origin was as follows: 29.4% from Mexico, 24.9% from South and East Asia, 23.7% from Latin America (excluding Mexico), and 14.5% from Europe & Canada. (Lopez & Radford, 2017; Martin, 2014; Passel &

Cohn, 2011). This fits in with broader regional shifts in immigration, with neighbouring Canada – also a traditional recipient country – not opening up immigration to sending countries from Asia or Africa until the 1960s. (Martin, 2014).

As of 2014, approximately 25% of the US population (approximately 80 million people) were a 1st or 2nd generation immigrants (MIPEX, 2016b). Regarding immigration status in the USA, 2012-2013 estimates are that there were 19.3 million people were naturalized citizens, 13.3million were lawful permanent residents (whether this was through holding a Green Card or holding Legal Permanent Residence), 1.9 million were temporary visa-holders (this includes students and temporary, migrant workers), and 11.4 million individuals were undocumented migrants (MIPEX, 2016b). Family reunification has, and remains, the primary mode of permanent legal immigration into the United States, with approximately two-thirds of individuals using this method from 2011-2013 (MIPEX, 2016b). This means that the US immigration regime is less able to control the age of immigrants, meaning that older people outside of the working-age have easier access compared to other countries' immigration regimes. That being said, a focus on family reunification also means the entry of younger individuals not yet of working age who will subsequently enter the labour market. These individuals may benefit from a similar access to the education and social services available to the native US population, bringing their labour market outcomes more in line with natives.

Importantly, there has been congressional inaction on comprehensive immigration reform as immigration remains a highly politicized policy area in the USA (MIPEX, 2016b; Woolf & Aron, 2013). In the MIPEX examination of US policies towards immigrants they found that the path to citizenship is fraught with challenges in the form of insecure rights, backlogs, limited family visas, and large fees which act as roadblocks not only to citizenship but also subsequent employment and overall integration into the country (MIPEX, 2016b).

Immigration policies are piecemeal and each state with in the USA has some discretion in its immigration policies, which further complicates analysis. One federal policy, the Deferred Action for Childhood Arrivals (DACA) policy, may provide "slightly favourable opportunities in the US labour market" compared to other immigrants who must access the USA through other immigration pathways (MIPEX, 2016b)

Public health policies are also immensely convoluted within the USA. In the United States health coverage comes mainly from private health insurance providers (54%) with public coverage such as Medicare and Medicaid covering about 34.5% of the population in 2014 (OECD, 2015, 120). In the Mid-1960s the USA implemented federal insurance programs Medicare and Medicaid for vulnerable segments of the population, including low-income individuals, the elderly, and the disabled (Holder et al., 2017; OECD, 2015, 120). The implementation of the 2014 Affordable Care Act was a significant policy step towards expanding federal health coverage and as a consequence the percentage of uninsured citizens in the USA population is predicted to continue its decline (OECD, 2015, 10, 35). Regarding immigrants and federal health coverage, lawful permanent residents (LPRs) must wait an additional 5 years for the same entitlements as American citizens, although there are variations across states and immigrants may still face limited access to emergency Medicaid due to their documentation or the discretionary decision to treat from their service provider (MIPEX, 2016b). Federal laws are also in place that allow immigrants to access language support in accessing health services and local and state-level language services and policies also exist to facilitate access to health services (MIPEX, 2016b). Woolf & Aron (2013) stress that "The U.S. health system suffers from a large uninsured population, financial barriers to care, a shortage of primary care providers, and potentially important gaps in the quality of care" (2013, 207). Another important consideration for health policy and part of the American health landscape is that "low-income households are four to six times more likely to report unmet

needs for medical care and dental care for financial or other reasons than those with a high income" (OECD, 2015, 10). This is a challenge likely exacerbated by the economic crisis (OECD, 2015, 10) and sluggish recovery within and outside of the USA regarding the crisis. However, it may somewhat act as an equalizer in health capital as immigrants are required to be insured to have access and settle whereas citizens, especially the poor, are left uninsured. This must be kept in mind when interpreting differences in health or health as a form of human capital because immigrants may start off at an advantage relative to the native population. In understanding access or quality of care in the USA, it must also be pointed out that higher spending (which the USA has) does not necessarily mean greater access or a better quality of care (OECD, 2015, 22). An important question is therefore how can spending be made more efficient.

Policy Relevance

Conducting research on the role of health in labour market outcomes for immigrants and natives has policy relevance in that it may be used to inform policies related to healthcare provision broadly and the potential benefit of specialty policies targeted at immigrants. Taking an intersectional examination of health and labour market outcomes is crucial because the relationships between them, and the policies that shape how they interact, are not unidirectional. Finding correlations between health factors and labour market outcomes would opens up policymaking at either end. Being able to examine causality would be of a great benefit to evidence-based policymaking as it would better suggest which areas to target for new policies and subsequent experimentation may suggest possible policy outcomes. However, this form of policymaking is advanced, demanding the correct sort of data and

analysis to use. Policymakers may find better utility in examining correlations between health and labour market outcomes and going from there.

When it comes to health policy, it is readily admitted that there is room to improve health policies. Woolf & Aron (2013) argue that the simple fact that other developed countries are achieving better health outcomes means that it is possible for the United States to improve its health outcomes and provision and that without policy changes to address current deficiencies

that the existing disadvantage in American's health relative to other OECD countries will continue to grow (2013, 289-291). Immigrants make up a large portion of the US population and as such their health needs are also worthy of examination and concern. It may be that quantitatively found differences may better inform policymakers as to whether or not targeted policies are needed to bring immigrant's health outcomes closer to the native population.

Conversely, it may be that, if there is little difference between these groups that broader health policy reform targeted at the total population is more important for policymakers to pursue.

Currently health insurance acts predominantly as a market good, subject to employment status or an individual's ability to purchase it form the marketplace, which acts somewhat as a leveler based on income and employment status. One obvious policy area to pursue would be in shifting away from a strongly privatized system towards universal healthcare.

However, due to the sociopolitical context of the USA, which is heavily resistant to government interference (Woolf & Aron, 2013, 208-209), this is unlikely to happen. There have been recent steps by way of the Affordable Care Act and this may be the way for policymakers to go. Regrettably it is to soon to observe policy changes in the data, but this may be of future policy relevance.

If it is found that education, when controlling for health, is still the dominant driver of labour market outcomes then this would suggest to policymakers that more focus be paid to

education programs than health programs. Regardless, it is well acknowledged that improving education policies will affect health outcomes (Woolf & Aron, 2013, 189). It might be that US policymakers may have greater success in pursuing educational policies. This would also be useful for external policymakers and stakeholders to take note of. For instance, MIPEX suggests that immigrants would "benefit from more work-related English

and training programs approved by Congress" (MIPEX, 2016b).

While health is a worthy social good in and of itself, policymakers might find it easier to garner support for health reform or new policy development by framing it within the context of the benefit of good health to labour market outcomes, which tends to be politically more

palatable. However, if the subsequent analysis fails to show a meaningful impact or correlation between health outcomes and labour market outcomes, this approach is not viable. Furthermore, it would show other policymakers that using this analysis to bolster support for health policy reforms in their respective countries is not as useful or actionable so they should direct their efforts elsewhere.

Welfare service provision to immigrants has increasingly come under fire, especially in the wake of the 2008 financial crisis, with concerns that immigrants are overburdening existing systems (Gaston, 2015). If it is found that there is not a significant difference between immigrants and natives regarding access to health services or usage of health services, this may lead policymakers to pursue broader policy reforms that address healthcare costs or provision to the total population, looking instead to how healthcare provision can be made

more cost-effective for all.

If questions of what immigrants 'deserve' persists, it might also suggest to stakeholders and advocates that there are broader concerns about discrimination or roadblocks to integration that must be addressed in society more broadly.

Governments are increasingly seeking to develop measures that may indicate a policy's success or indicators that quantify and explain phenomena within the migrant population.

However, the ability to conduct evidence-based policymaking is asymmetrical as some countries have better capacities regarding data collection, retention, and analysis. While the

push towards capacity-building is admirable, various experts have acknowledged that inconsistent funding and commitment to data collection in new areas in conjunction with a

political topic has failed to remedy these challenges. The study below will hopefully illustrate how existing data can be utilized to conduct the research and analysis upon which evidence is constructed and then utilized.

Using the USA as a case study provides utility for policymaking in other countries due to its position as an established recipient country with an existing immigration regime. As such, countries who are still developing immigration policies may be interested the analysis as a thought exercise in what concerns they may face in future. Furthermore, while this study does not break into an examination of immigrants based on specific regions, it is important to note that the USA's geography and long relationship of migration from and through Mexico make it a more relatable case study for other countries than other traditional recipient countries who possess geographical barriers to unwanted migration inward. The USA may be more relatable of a case study because it has similar challenges in immigration and migration. As mentioned in a recent OECD report, certain health characteristics are also shared between the USA and other countries, such as unmet care needs between the rich and poor, with countries such as the Czech Republic and France facing similar challenges to the United States (OECD, 2015, 122).

Furthermore, while not discussed here, further policy relevance may be found in examining the USA from a meso- or micro-level analysis in which different states within the country are compared in the contest of their differing healthcare policies and experiments. After all, health
tends to fall not only at the federal level, but also the regional and local level (Woolf & Aron, 2013, 284).

Similar to the USA, other countries also face growing health care spending and the aftermath of the global financial crisis (Squires & Anderson, 2015, 5). Furthermore, taking an evidence-based approach to policies that include immigrants is of increasing relevance to states with aging populations who must seriously consider immigration and integration policies as a mode of stabilizing their economy and tax base (OECD, 2015, 192).

Chapter 2 – Empirical Strategy & Methodology

Methodology Plan and Framework:

This section will discuss the dataset, and methodological approach to analysis. The analysis was conducted using US Census microdata from 2011-2015. The data sample, restricted from 2011-2015, includes 15,637,457 observations and used a random sampling method to draw data from the population acquired during the 2010 census. Recoding and analysis were conducted using the SDA (IPUMS) interface. The 2011-2015 period was chosen as sampling procedures were changed with the American Community Survey. The American Community Survey dataset is essentially a sample of a sample, with monthly samples drawn from the decennial long-form census sample to produce annual estimates (United States Census Bureau, n.d., Blewett et al, 2016, Ruggles et al, 2015). A stratified sampling method is deployed there, creating these sub-samples for all 3,143 American counties (and other USA equivalents) in the USA to ensure that spatially-bound biases are not introduced into the annual samples (United States Census Bureau, 2014, Blewett et al, 2016, Ruggles et al, 2015). Due to the large sample sizes, on both accounts, and high response rates, the data is both valid and reliable, however in analyzing it we must keep in mind that all ACS data are estimates and due to changes between the 2000 and 2010 Census survey design, comparability across time is not possible.

Microeconomic data was chosen as working with individual data allows for greater ability to control variables that also fit into definitions of human capital, such as education, and other variables recognized as having an important role in labour market outcomes and health, such as age, and gender (Bodvarsson & Van den Berg, 2013, 139; Benach et al, 2010; European Commission, 2008). Being able to add these additional variables adds more nuance and decreases the likelihood of spurious correlations, although for regressions R-square values may be somewhat inflated as more variables are added into the model, mandating an adjusted R-square to assess the explanatory power of the regressions and findings.

The dataset was selected as it is one of the few readily available surveys or existing international data sets to collect data on both health and labour while also breaking out respondents into a migrant subsection, such as country or place of birth. While one-time targeted surveys do provide important data on a sub-section of the general population, in this case immigrants, a lack of survey iterations that would provide cross-sectional data or commitment to longitudinal studies has further restricted available data and possible analysis.

Some descriptive statistics will be provided to portray a better picture of the data, including frequencies. The frequency tables and cross-tabulations presented provide unweighted n-counts and all analyses are done without weights, where possible.

Based on the theoretical grounding, one would suspect that there may be simultaneity in the relationship between health and labour market outcomes, which would demand a simultaneous regression to address the problem of endogeneity and the related simultaneity bias (Bodvarsson & Van den Berg, 2013, Wooldridge, 2002, Wooldridge, 2012). When unbiased estimation is unlikely, such as we suspect a relationship between health and labour market outcomes, or we suspect that health variables may not be randomly assigned (the healthy migrant effect would suggest some sort of selection bias regarding health) (Becker, 2007, Bodvarsson & Van den Berg, 2013), researchers must address the simultaneity bias (Wooldridge, 2001, Wooldridge, 2002, Wooldridge, 2012). Otherwise researchers open themselves up to the risk of spurious relationships, with health not really having a significant impact on labour market outcomes (Wooldridge, 2002, Wooldridge, 2012). With the simultaneity bias, estimates of β will be biased, either underestimating or overestimating the effect of health (Becker, 2007; Lemieux, 2006; Wooldridge, 2001, Wooldridge, 2012). However, this form of analysis is beyond the

researcher and as such simultaneity will not be investigated here. Therefore, in interpreting the results, it must be acknowledged that underestimation or overestimation of the effect of health on labour market outcomes is likely present.

The predominant mode of analysis will be OLS multiple regression. As discussed earlier, the research conducted here will use a modified form of the Mincer Model to see what effects human capital (with health included) have on potential earnings (Bodvarsson & Van den Berg, 2013; Lemieux, 2006; Wooldridge, 2002; Wooldridge, 2012).

Due to restrictions coming out of using a cross-sectional dataset and analytical restrictions from the SDS (IPUMS) interface, this study will not be conducting experiments to test for endogeneity, rather suggesting that this be conducted as part of further research. Furthermore, American Community Survey health variables are somewhat limited, so an examination of endogeneity would benefit from a dataset which includes more micro-level health variables, similar to those discussed in the literature review. Lags cannot be constructed out of suspected endogenous variables as this would require two Census points and there are differences between 2010 and past Census regarding certain variables of interest, such as birthplace. Instead, a series of regressions will be conducted, introducing various control variables associated with human capital before introducing health variables. Importantly, this means that for the interpretation we can only establish and discuss correlation, not causation, and as part of our analysis we must assume, correctly or not, that all variables are exogenous (Bodvarsson & Van den Berg, 2013; Lemieux, 2006; Wooldridge, 2002; Wooldridge, 2012). Regressions will include control non-health variables such as: Age, 'gender' (sex), and education level as they are also aspects of human capital.

A more detailed discussion of the variables used in analysis is present in the Appendix.

Hypotheses

The first stage of hypothesis testing will be to determine the relationship between health and potential earnings.

HYP 1: Introducing health variables into the model increases the overall explanatory power.

The initial modified human capital model is presented below, including age, education, and sex. The subsequent regression equation, including two health variables, is shown below.

$$E(LogIncomeWages|X) = \beta_0 + \beta_1 AGE + \beta_2 educ + \beta_3 Female + \varepsilon$$

HYP2: When introduced as an aspect of human capital, health will have a significant effect on potential earnings for all individuals currently participating in the labour force.

E(LogIncomeWages|X)

$$= \beta_0 + \beta_1 AGE + \beta_2 educ + \beta_3 Female + \beta_4 Hcovany + \beta_5 disability + \varepsilon$$

The first regression model includes a number of measures of human capital but does not distinguish between foreign-born people or natives.

HYP 3: When introduced as an aspect of human capital, health will have a significant effect on potential earnings for immigrants currently participating in the labour force.

$$\begin{split} E(LogIncomeWages|X) \\ &= \beta_0 + \beta_1 AGE + \beta_2 educ + \beta_3 Female + \beta_4 rcBPL + \beta_5 Hcovany \\ &+ \beta_6 disability + \varepsilon \end{split}$$

The second regression model will separate out immigrants by defining the dependent variable as the log earnings for immigrants in the labour force.

HYP 4: When introduced as an aspect of human capital, health will have a significant effect on potential earnings for natives currently participating in the labour force.

The third regression model will separate out natives by defining the dependent variable as the log earnings for natives in the labour force.

HYP 5: The effect of health on potential earnings for immigrants will be larger than the effect of health on potential earnings for natives.

The percent changes in wage due to health variables will be compared between foreign born individuals and natives to see who seems to benefit more from these variables, controlling for the other aspects of human capital included in the regression model.

Summary of Dataset and Source

A detailed table of the variables created for analysis is included in the Appendices. However, this section will discuss the key variables used in the analysis, including some aspects of the computation that might affect interpretation.

To distinguish between immigrants and natives, immigrants will be identified as 'foreign-born' using country of birth and subsequently grouped together.

Regarding the dependent variable, a log of wage income was derived to measure the effect that any particular independent variable would have on potential wages earned. Further restrictions were placed on the dependent variable such that the log of wages, and the rest of the equation, only included those currently active in the labour force. There are a number of criticisms in operationalizing human capital, with some (Becker, 2007; Bodvarsson & Van den Berg, 2013; Lemieux, 2006; Wooldridge, 2002; Wooldridge, 2012) arguing that the 'intangible' nature of human capital is hard to capture or measure with existing data, a criticism that is also placed against studies of health more broadly.

Health can be identified in a number of ways such as: self-reported variables including unmet needs, life expectancy, healthy life years, communicable diseases, non-communicable diseases, mental health, access to health services, occupational health, and health variables associated with the migration process (Eurostat, 2016; Juhász et al, 2010; Benach et al, 2010). The multifaceted nature of health and long-term nature of studying health provides difficulties in short or medium-term analysis. Regarding health variables, a number of dummy variables were constructed, and are presented in the Appendices. Limitations to available data meant that health variables were confined to dummies of insurance coverage and disability. In examining health, it is well acknowledged that health is a basic need that impacts other aspects of migrants' lives in their recipient countries (IOM, 2015; United Nations, 2015; Juhász et al, 2010; MIPEX, 2016a; Rechel, 2011). Tompa points out that the health insurance provided by workers makes up a large part of the benefits received by workers (2002, 195), something that would be especially true for the American case. As such, the limitations discussed earlier regarding health variables are acceptable.

The measure of potential experience (PotExp) created is not a perfect measure as there were some computational challenges due to the available datasets. For example, the calculation to find potential experience is age minus schooling minus 6. However, in calculating potential experience for this analysis, age was restricted to a range of 16-67 to reflect those likely in the labour market as the age of work begins at 16 in the USA and 67 is a common age of retirement. 65 used to be the typical age of retirement, however 67 has been used instead to reflect the recent trend in increased retirement ages. While this may not be uniform across the USA, it is unlikely to effect the calculations too much. A greater challenge would be the education variable 'educ' which has some groups collapsed and as such is not a perfect numeric representation of educational attainment. However, it is the only one available for years 2011-2015. A Figure has been provided to illustrate how this cumulatively means that potential experience is likely overestimated in the regressions. This also means that the square of potential experience will also be overestimated. This may bias the results, however it is unavoidable for this dataset and must be accepted as a limitation of the model and dataset. This may also mean that the significance of experience is overstated in the model. To potentially address the bias, the model was further simplified, excluding the square of potential experience.

educ Educational attainment				
Variable I	Description			
Percent	Ν	Value	Label	
10.2	5,415,963	0	N/A or no schooling	
8.9	4,702,783	1	Nursery school to grade 4	
10.5	5,550,140	2	Grade 5, 6, 7, or 8	
3.1	1,636,566	3	Grade 9	
3.5	1,841,484	4	Grade 10	
3.4	1,780,123	5	Grade 11	
27.4	14,525,182	6	Grade 12	
10.4	5,497,925	7	1 year of college	
5.0	2,666,425	8	2 years of college	
0.2	126,810	9	3 years of college	
10.9	5,768,362	10	4 years of college	
6.4	3,407,170	11	5+ years of college	
	5,978,781		(No Data)	
100.0	58,897,714		Total	
I	Properties			
Data type	e: nume	eric		
Record/c	olumns: 1/84	4-845		

Tompa (2002) suggests that at the microeconomic level the accumulation of health capital may be reflected in higher profits or wages...a proxy for health-related productivity gains might be sickness absence...sickness absence may act as a proxy for productivity, consistent with the literature (Tompa, 2002, 192). However, this data was not available and therefore not incorporated into the analysis. Wages, income, labour force participation may act sufficiently as proxies for productivity (Tompa, 2002, 193). From Tompa's overview it is made clear that health is associated with wages and income, but the magnitude is sensitive to the health measure used (2002, 193).

CEU eTD Collection

Chapter 3 – Data Presentation & Interpretation

Hypothesis 1: Adding Health Variables Increases the Model's Explanatory Power

Regression Coefficients					Test That Each Coefficient = 0			
	В	SE(B)	Beta	SE (Beta)	T-statis	stic	Probabil	ity
AGE	.029	.000	.327	.000	98	5.917		.000
educ	.182	.000	.349	.000	1,05	0.561		.000
sex(d:2) - Female	439	.001	184	.000	-55	5.948		.000
Constant	7.507	.002			4,19	2.906		.000
Color coding:	<-2.0	<-1.0 <0.	0 >0.0	>1.0 >2.0	т			
Effect of each variable	e: N	egative	P	ositive				
Multiple R = .521	R-Squar =	ed .271	Adjus R-Sqi	sted uared =	.271	SE o (Roo	f Estimate ot MSE) =	

Table 2 Regression 1 - Regression Outputs

In examining the regression results without any health variables, all independent variables were found to be significant, with p-values of 0.000.

In examining the Adjusted R-Squared we can see that the explanatory power of our regression is weak. The regression can only explain 27.1% of the variation in our dependent variable. In interpreting the results, when holding all other variables in the model constant, age leads to a 32.7% increase in wages earned for every 1 year increase in age. When holding all other variables in the model constant, for every one unit increase in education, there is a 34.9% increase in wage earnings. Finally, when holding all other variables in the model constant, when we an 18.4% decrease in potential wage earnings in comparison to men.

Table 3 Regression 1 – Wald Chi-Square

G	ilobal Tests for	Groups of V	ariables		
Group	Wald		df	Adjusted	Б
Group	Chi-sq	Numerator	Denominator	Wald F	
All independent variables	2,483,264.964	3	6664951	827,754.739	.000

P = Probability that ALL B's in the group equal 0

The Wald Chi-Square indicates that the association between the independent variables and the dependent variables is robust.

Table 4 Regression 1 - Correlation Matrix

Correlation Matrix							
	AGE	educ	sex (d:2) - Female	LogIncomeWages			
AGE	1.00	.08	.01	.35			
educ	.08	1.00	.07	.36			
sex(d:2) - Female	.01	.07	1.00	16			
LogIncomeWages	.35	.36	16	1.00			
Color coding: <-0.45	<-0.30 <-(0.15 <0.00	>0.00 >0.	.15 >0.30 >0.45			

In examining the correlation matrix between the first model's variables, age and education are individually shown to be weakly correlated with the dependent variable, log of wages earned.

Table 5 Regression 1 - Allocation of Cases

Allocation of cases	
Valid cases	6,664,957
Cases excluded by filters	51,285,467
Cases with invalid codes on variables in the analysis	947,290
Total cases	58,897,714

The first regression model's allocation of cases is presented above, showing the total number of cases included here was 58,897,714. In the second regression there were 6,664,957 valid cases for the same 2011-2015 period. The second regression introduces our health variables to the model.

Table 6 Regression 2 – Allocation of Cases

Allocation of cases	
Valid cases	6,664,957
Cases excluded by filters	51,285,467
Cases with invalid codes on variables in the analysis	947,290
Total cases	58,897,714

Regro	ession C	Test That Each Coefficient = 0				
	В	SE(B)	Beta	SE (Beta)	T-statistic	Probability
AGE	.029	.000	.324	.000	977.484	.000
educ	.165	.000	.318	.000	938.634	.000
sex(d:2) - Female	447	.001	188	.000	-572.739	.000
Hcovany	.378	.001	.107	.000	315.741	.000
disability	425	.002	082	.000	-249.507	.000
Constant	7.343	.002			3,932.332	.000
		1				
Color coding:	<-2.0	<-1.0 <0	.0 >0.0	>1.0 >2.0	<u>T</u>	
Effect of each variable	e: N	egative	P	ositive		

Table 7 Regression 2 – Regression Outputs

Multiple R = .537 R-Squared = .289 Adjusted R-Squared = .289 SE of Estimate (Root MSE) = 1.005

In examining the regression results, all independent variables are statistically significant, with p-values of 0.000 conducted at the 95% confidence level.

In examining the Adjusted R-Squared we can see that the explanatory power of our regression is still weak. That is, our regression can only explain 28.9% of the variation in our dependent variable. In interpreting the results, when holding all other variables in the model constant, having any health insurance leads to a 10.7% increase in wages earned. When holding all other variables in the model constant, having a disability decreases wages earned by 8.2 percent.

Table	8	Regression	2	Wald	Chi-Square
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G	ilobal Tests for	Groups of V	ariables		
Group	Wald		df	Adjusted	ь
Group	Chi-sq	Numerator	Denominator	Wald F	P
All independent variables	2,706,519.106	5	6664947	541,303.496	.000

The Wald Chi-Square indicates that the association between the independent variables and the dependent variables is robust.

Table 9 Regression 2 Univariate Statistics

Univa	Univariate Statistics						
	Mean	Std Dev	B * Mean				
AGE	41.755	13.513	1.192				
educ	7.607	2.289	1.258				
sex(d:2) - Female	.485	.500	217				
Hcovany	.869	.337	.329				
disability	.056	.230	024				
LogIncomeWages	9.881	1.192					

The univariate statistics of the independent variables are presented above, including their standard deviations.

Hypothesis 2: Significant Effect of Health on Earnings

The findings for the second regression model, including health variables will be further discussed here.

In comparing the Adjusted R-Squared values between regression models with and without health variables, it was found that the addition of the two heath variables only increased the Adjusted R-Square value by 0.018. That means that the model of human capital specified only increased its explanatory power by 1.8% when variables about health insurance coverage and disability were included.

In the simplified models created here, we can see that the overall impact or explanatory power of these limited health variables on our model is very small, at less than 2%. Within the model including health variables, those health variables were found to be significant.

There are a number of reasons why this might be the case. It may be that the health variables included are insufficient to accurately capture health as an aspect of human capital.

Hypothesis 3: Modelling Foreign-Born Individuals

The third regression model intended to see what effect adding health variables to a model of human capital would have on potential wages earned for foreign-born individuals. The data from the third regression model is presented below.

In the third regression, there were 1,015,124 valid cases for years 2011-2015.

Table 10 Regression 3 – Allocation of Cases

Allocation of cases	
Valid cases	1,015,124
Cases excluded by filters	57,731,298
Cases with invalid codes on variables in the analysis	151,292
Total cases	58,897,714

Regression Coefficients				Test That Each Coefficient = 0		
	В	SE(B)	Beta	SE (Beta)	T-statistic	Probability
AGE	.021	.000	.228	.001	261.301	.000
educ	.119	.000	.330	.001	360.645	.000
sex(d:2) - Female	445	.002	200	.001	-232.682	.000
Hcovany	.389	.002	.152	.001	163.561	.000
disability	330	.005	056	.001	-65.517	.000
Constant	8.084	.004			1,950.312	.000
Color coding:	<-2.0	<-1.0 <0.	0 >0.0	>1.0 >2.0	т	
Effect of each variable	e: N	egative	P	ositive		
Multiple R = .506	R-Squar =	ed .256	Adjus R-Sq	sted uared =	.256 SE (Ro	of Estimate ot MSE) =

Table 11 Regression 3 – Regression Outputs

In examining the regression results, all independent variables are statistically significant, with p-values of 0.000.

In examining the Adjusted R-Squared we can see that the explanatory power of the regression is very weak, with 25.6% of the variation in our dependent variable explained by the model. Having any health insurance increases wages earned by 15.2% whereas having a disability decreases wages earned by 5.6%.

Table 12 Regression 3 Wald Chi-Square

Global Tests for Groups of Variables							
Crown	Wald		Adjusted				
Group	Chi-sq	Numerator	Denominator	Wald F	F		
All independent variables	348,518.916	5	1015114	69,703.508	.000		

P = Probability that ALL B's in the group equal 0

The Wald Chi-Square indicates that the association between the independent variables and the

dependent variables is robust.

Univariate Statistics			
	Mean	Std Dev	B * Mean
AGE	42.316	12.032	.888
educ	7.051	3.069	.838
sex(d:2) - Female	.449	.497	200
Hcovany	.753	.431	.293
disability	.037	.189	012
LogIncomeWages	9.891	1.106	

Table 13 Regression 3 Univariate Statistics

The univariate statistics of the independent variables used in the third model are presented above, including their standard deviations.

Table 14	4 Regressi	on 3 Corr	elation M	1atrix
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Correlation Matrix							
	AGE	educ	sex (d:2) - Female	Hcovany	disability	LogIncomeWages	
AGE	1.00	.00	.03	.17	.09	.24	
educ	.00	1.00	.07	.34	06	.37	
sex(d:2) - Female	.03	.07	1.00	.09	.01	16	
Hcovany	.17	.34	.09	1.00	.00	.28	
disability	.09	06	.01	.00	1.00	06	
LogIncomeWages	.24	.37	16	.28	06	1.00	
Color coding: <-0.45	<-0.30 <	-0.15 <0.00	>0.00 >0.	.15 >0.30	>0.45		

In looking at the correlation matrix presented here, it is shown that some of the variables might suffer from multicollinearity, something that should be addressed in future research. Potential experience was excluded from the model because it was found to be strongly correlated with variables such as age and education. It is interesting to note that there is a weak correlation between education and health insurance. The very weak correlation between age and health insurance is not surprising as older individuals would be more likely to have health insurance, either because they are better able to pay for it, or because they have acquired it through work or some other means. Disability is mildly correlated with age, which suggests that older individuals tend to have a higher chance of being disabled. Interestingly, the dummy variable for sex has a very weak correlation with disability, meaning that women are slightly more likely to report a disability than men.

Hypothesis 4: Modelling Natives

The fourth regression model intended to see what effect adding health variables to a model of human capital would have on potential wages earned for natives. The data from the fourth regression model is presented below.

In the fourth regression there were 5,649,833 valid cases for years 2011-2015.

Table 15 Regression 4 – Allocation of Cases

Allocation of cases	
Valid cases	5,649,833
Cases excluded by filters	52,451,883
Cases with invalid codes on variables in the analysis	795,998
Total cases	58,897,714

Regression Coefficients				Test That Each Coefficient = 0		
	В	SE(B)	Beta	SE (Beta)	T-statistic	Probability
AGE	.029	.000	.331	.000	926.923	.000
educ	.184	.000	.322	.000	889.141	.000
sex(d:2) - Female	446	.001	185	.000	-523.949	.000
Hcovany	.425	.001	.110	.000	305.398	.000
disability	415	.002	082	.000	-229.578	.000
Constant	7.113	.002			3,290.668	.000
Color coding:	<-2.0	<-1.0 <0.	0 >0.0	>1.0 >2.0	т	
Effect of each variable	e: N	egative	Po	ositive		
Multiple R .548 R-Squared .300 Adjusted = R-Squared =			ited Jared =	.300 SE o (Roo	f Estimate t MSE) =	

Table 16 Regression 4 – Regression Outputs

In examining the regression results, all independent variables are statistically significant, with p-values of 0.000. In examining the Adjusted R-Squared we can see that the explanatory power of our regression is weak. The regression can only explain 30% of the variation in our dependent variable. In interpreting the results, when holding all other variables in the model constant, having any health insurance leads to a 11.0% increase in wages earned for natives. When holding all other variables in the model constant, having all other variables in the model constant, having all other variables in the model constant, having a disability decreases wages earned by 8.2% for natives.

Global Tests for Groups of Variables								
Group	Wald		df	Adjusted				
Group	Chi-sq	Numerator	Denominator	Wald F				
All independent variables	2,426,216.359	5	5649823	485,242.928	.000			

P = Probability that ALL B's in the group equal 0

The Wald Chi-Square indicates that the association between the independent variables and the

dependent variables is robust.

Univariate Statistics				
	Mean	Std Dev	B * Mean	
AGE	41.654	13.759	1.211	
educ	7.707	2.104	1.421	
sex(d:2) - Female	.491	.500	219	
Hcovany	.890	.313	.378	
disability	.060	.237	025	
LogIncomeWages	9.880	1.206		

Table 18 Regression 4 – Univariate Statistics

The univariate statistics of the independent variables are presented above, including their standard deviations.

Table	19	Regre	ssion	4 –	Corre	elation	Matrix
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Correlation Matrix							
	AGE	educ	sex (d:2) - Female	Hcovany	disability	LogIncomeWages	
AGE	1.00	.10	.00	.12	.09	.37	
educ	.10	1.00	.06	.19	09	.37	
sex(d:2) - Female	.00	.06	1.00	.03	01	16	
Hcovany	.12	.19	.03	1.00	02	.21	
disability	.09	09	01	02	1.00	08	
LogIncomeWages	.37	.37	16	.21	08	1.00	
Color coding: <-0.45							

In looking at the correlation matrix for our model variables, it is interesting to note that having any health insurance has a weak correlation with the dependent variable. This is likely because the dependent variable was filtered so as to define the log income earnings for those present in the labour force and those in the labour force tend to have insurance in the USA, especially through their employer. Correlation between variables is not an issue for disability in this model.

Hypothesis 5: Comparing Foreign-born Outcomes to Natives

A comparison of the effect of health on wages was done between foreign-born individuals and natives. While we cannot say that these differences are statistically meaningful, they are anecdotally interesting. The findings, a comparison in the percent changes in wage due to health variables for foreign-born individuals and for natives is presented below, with other aspects of human capital being controlled for. The results are presented below:

	Hcovany	Disability
Foreign-born	+15.2%	-5.6%
Native	+11%	-8.2%

Table 20 Regression 3 & 4 - Comparison of Effects between Foreign-born and Natives

Interestingly, having health insurance seemed to be more important for the regression model of foreign-born people when looking that the percentage impact of health insurance on earnings. However, Natives had a greater negative impact of disability on their percentage impact on earnings than did foreign-born individuals. This was an unexpected finding, showing that health does not uniformly impact foreign-born individuals when compared to natives. It is important to note that there is likely a problem with the variables being endogenous, and therefore overestimated. However, this is an examination which would require future research to see how treating some variables as endogenous changes the regression results.

Chapter 4 – Policy Implications

Implications of the Analyses

In all models conducted, health played a small but significant explanatory role, however it was not nearly as useful as other, more conventional aspects of human capital such as education, an expected finding. In comparing the effects of health insurance between foreign-born individuals and natives, having health insurance caused a larger percent change in potential earnings than for natives. This is likely because without health insurance foreign-born individuals face greater barriers in accessing the labour market at all. Interestingly, having a disability had a larger percentage decrease on potential earnings for natives than it

did with foreign-born individuals, as seen in Table 20.

Within a broader policy context, it may not be worth linking health to labour market outcomes when attempting evidence-based policymaking. While findings here were significant, there was weak explanatory power overall in explaining percent changes in potential wage earnings. Methodological challenges to conducting the analysis also severely detract from its utility in providing a stable base for evidence-based policymaking around health, especially if the policymaker is interested in using labour market outcomes as a means to garner political support for a policy change or reform. The analyses also showed that in general education is far more important to understanding the role of human capital's affect on labour market outcomes then the health variables that were available. For those determined

to conduct an analysis along these lines, it may be worthwhile to find a dataset that is dedicated more towards health variables so that health as an aspect of human capital can be examined in a broader mode. While disability and insurance coverage are important health variables, especially for the USA, they do not portray the multi-faceted aspects of health

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discussed in the literature review. Problems of multicollinearity and endogeneity are likely and further weaken the impact of the results. As such, we cannot make any definitive statements about health's role in labour market outcomes either way. It is likely unfair to discard further examinations of health and its relationship to labour market outcomes, however challenges in data availability and methods at the policy analysts' disposal mean that evidence-based policymaking is likely unfeasible for most policymakers, who do not have the required econometric skillset to conduct more in-depth analyses. Nonetheless, the

health and labour was somewhat successful despite demanding need of further study. Policymakers interested in health policy should perhaps remain focused solely in the field of health, treating health outcomes as a good worth improving in and of themselves. It is likely that raising overall health outcomes for the total US population will mean better health and spillovers which, while difficult to quantify, are likely to exist and would require further

goal of the thesis to see if a statistically significant relationship could be found between

research.

Broader Implications

A broad criticism laid against health policies aimed at immigrants is that they do not consider the specific health needs of immigrant populations (MIPEX, 2016a). The USA ranks third in MIPEX 2014 ranking (MIPEX, 2016a), indicating that despite the challenges discussed earlier that the USA seems to be deploying targeted policies which do consider immigrants' needs. So, despite the challenges mentioned in the literature review, other countries may still be able to borrow targeted policies from the US context, should they be interested in them. However, if external policymakers are looking for an easy way to support health reforms grounded in their effects on labour market outcomes for natives and immigrants, they face an uphill analytical battle. It may be that targeted policies are not as important to overall

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population health as broader health policies that improve overall health outcomes, however further research would be required that also looks at municipal and regional or provincial levels. The analysis shows some of the pitfalls of attempting evidence-based policymaking, illustrating that one must either push for better data collection or, if this is not feasible, pursue other forms of policymaking.

Another route would be to incorporate in more holistic policies that include aspects of health within them, however it must then be acknowledged that it will be hard to empirically disentangle one aspect of a policy change from another. Furthermore, the analysis has shown both the benefits and pitfalls of using census data for analysis. The wealth of information and large dataset mean that a rather valid and robust analysis can be conducted. However, researchers must acknowledge that there may be issues with breadth and that the long distance between the census coupled with relatively quicker changes to policy mean that census data may not be useful in capturing short-term changes but rather long-term shifts. As such, policymakers must determine how responsive they need their data to be before conducting an empirical study.

Conclusion

This thesis sought to examine how health variables, when introduced to a modified Mincer Equation, might tell us what effect health – as a component of human capital – effects the potential wages earned for those participating in the American labour force. The thesis also sought whether there were differences in the effects of health for foreign-born individuals and natives. The thesis hypothesized that, based on a literature review of human capital theory, there would be some effect of health on labour market outcomes. The research found that when health was introduced into the modified model, there was a small but significant effect of health when other aspects of human capital were controlled for. However, methodological and analytical limitations mean that the results found are not necessarily meaningful and do not pose a great utility for policymakers. It may be an avenue to pursue for researchers, especially those interested in labour market outcomes. Causal links are infamously hard to establish and were not possible for a number of reasons, including analytical capability and

dataset restrictions. Some anecdotal differences were observed between foreign-born individuals and natives, however this is not a sufficient ground upon which to build a strong evidence-based policy. When compared to education, for instance, health is not nearly as important. This may suggest that educational policies are more beneficial to labour market outcomes than health policies. As such, the gap in research regarding health as a part of human capital persists, although this thesis has illustrated some of the important pitfalls in such an endeavor, suggesting that health policies may need to stay within their own field as the data and analysis are not yet ready for an intersectional examination of this nature. Data availability was a challenge and means that evidence-based policymaking in this area is likely unfeasible in the near future. The American context provided both a rich dataset and

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interesting challenges to health that made any quantitative analysis possible. Importantly,

access to insurance and disability status are very important in examining health outcomes within the US context. Using Census data provided its own challenges, especially in connecting the results to policy implications. Essentially, while rich in data, the Census may not be responsive enough to see short or medium-term effects of health policy on labour market outcomes. This is an important lesson for other countries. While we cannot use the data to point to a need for targeted policies regarding immigrants, the research has shown that health is still important. A more longitudinal analysis of health and labour market outcomes

is likely needed as an area of future research.

(12,993 words)

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Appendix 1: Construction of Dataset and Variables

The dataset was constructed from data downloaded from <u>https://usa.ipums.org</u>. Variables used in analysis are described below.

Immigrant is defined in this sample as someone Foreign-Born who is "either a non-citizen or a naturalized citizen"

Variable Name	Description	Defined	Type of Variable
AGE	Recode of Age	(16-67)	Numeric but bounded
rcAGE1	Recode of Age	0 = 16-40	Dummy Variable
		1 = 41-67	
rcAGE2	Recode of Age	1 = 16-25	Interval Ratio
		2 = 26-35	(Orumar)
		3 = 36-45	
		4 = 46-55	
		5 = 56-67	
		9 = Excluded values (all values 15 and below, 68 and above.)	
rcBPL	Recode of bpl,	0 = Native (USA)	Dummy Variable
	Bittiplace	1 = Foreign-Born	
		9 = Missing Data	
Yrsusa2	Years in US, Intervalled	0 = N/A = Native 1 = 0.5 years	Interval Ratio (Ordinal)
		2 = 6-10 years 3 = 11-15 years	

		4 = 16-20 years	
		5 = 21 + years	
		9 = Missing	
		. = (No Data)	
Hcovany	Any health insurance coverage	0 = No Health Insurance Coverage	Dummy Variable
		1 = With Health Insurance Coverage	
		. = No Data	
Hcovpriv	Private Health Insurance Coverage	1 = Without private health insurance coverage	Dummy Variable
		2 = With private health insurance coverage	
		. = (No Data)	
Hinsemp	Health Insurance through employer/union	1 = No insurance through employer/union	Dummy Variable
		2 = Has insurance through employer/union	
		. = (No Data)	
Hcovpub	Public Health Insurance Coverage	1 = Without public health insurance coverage	Dummy Variable
		2 = With public health insurance coverage	
		. = (No Data)	
rcEDUC	Recode of years of Education attained	1 = Not completed High School (Grade 11 and under, including N/A or no schooling)	Ordinal

		 2 = High School degree (Grade 12 attained) 3 = Some College/Uni (1-3 years of college) 4 = Undergrad (4 years of college) 5 = Graduate or Further Education (5+ years of college) . = (No Data) 	
rcEMPSTAT	Employment Status	0 = Unemployed, N/A, Not in labor force 1 = Employed	Dummy Variable
PotExp	Potential Experience = (SUM.n (AGE, - educ) – 6)	(educ has some aggregated years of education, and as such is not a perfect measure of educational level attained)	Numerical
PotExpSq	PotExp^2		Numerical
Labforce	Labor force status	0 = No, not in the labor force & N/A 1 = Yes, in the labor force	Dummy Variable
Classwkr	Class of Worker	0 = Self-employed 1 = Works for Wages . = (No Data) & N/A	Dummy Variable
Wkswork2	Weeks worked last year, intervalled	1 = 1-13 weeks 2 = 14-26 weeks 3 = 27-39 weeks	Interval-Ratio

rcMIGPLAC1	Recoded State or country of residence 1 year ago	4 = 40-47 weeks 5 = 48-49 weeks 6 = 50-52 weeks . = (No Data) & N/A 0 = USA & N/A 1 = Other Country . = (Missing Data)	Dummy Variable
Diffrem	Cognitive difficulty (whether the respondent has cognitive difficulties (such as learning, remembering, concentrating, or making decisions) because of a physical, mental, or emotional condition)	0 = No cognitive difficulty 1 = Has cognitive difficulty . = (No Data) & N/A	Dummy Variable
Diffphys	Ambulatory difficulty (whether the respondent has a condition that substantially limits one or more basic physical activities, such as walking, climbing stairs, reaching, lifting, or carrying)	0 = No ambulatory difficulty 1 = Has ambulatory difficulty . = (No Data) & N/A	Dummy Variable
Diffmob	Independent Living Difficulty (whether the respondent has any physical, mental, or emotional condition lasting six months or more that makes it difficult or impossible to perform activities outside the home alone)	0 = No independent living difficulty 1 = Has independent living difficulty . = (No Data) & N/A	Dummy Variable

disability	A recode in which 'Has/Yes' to any of diffrem, diffphys, diffmob, diffcare, diffsens	0 = No disability 1 = Disability . (No Data) [Not cleaned]	Dummy Variable
Increal=inctot*cpi99	Totalpersonalincome*CPI-Uadjustmentfactor1999dollars	-56677.5000- 69999993.0000	Numeric
LogIncomeWages	LN(Incwage*cpi-u adjustment factor to 1999 dollars)		Numeric
Higrade	Highest Grade attained	1-23	Numeric

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