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CITIZENSHIP AS A SOCIAL DETERMINANT OF HEALTH:  
HEALTHCARE ACCESS AND UTILIZATION IN THE WAKE OF THE PUBLIC CHARGE  
POLICY CHANGE

by

ERROL L. PIERRE

A dissertation submitted to the faculty of the Zicklin School of Business in partial fulfillment of the requirements for the degree of Doctor of Business Administration, Baruch College, The City

University of New York

2022

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This manuscript has been read and accepted by the faculty of the Zicklin School of Business  
in satisfaction of the dissertation requirement for the degree of  
Doctor of Business Administration.

Alex Mills
Chair/CoChair of Examining Committee
[Signature]
04/02/2022
Cynthia Thompson
Chair/CoChair of Examining Committee
[Signature]
04/02/2022
Ana Valenzuela
Academic Director, DBA
[Signature]
04/02/2022

BARUCH COLLEGE, THE CITY UNIVERSITY OF NEW YORK

## ABSTRACT

Citizenship as a Social Determinant of Health:  
Healthcare Access and Utilization in the Wake of the Public Charge Policy Change

by

Errol L. Pierre

Advisors: Alex Mills, Ph.D. & Cynthia Thompson, Ph.D.

Research shows that many non-medical factors, called *social determinants of health*, impact health outcomes. These social determinants include both socioeconomic factors, such as income and education, and public policies, such as laws and regulations affecting access to healthcare. This study proposes that citizenship status is also a social determinant of health and supports this proposition by examining the impact of citizenship status on healthcare access and utilization in New York. The study data consist of enrollments, disenrollments, and paid medical expenses incurred by patients enrolled in Medicaid or the Essential plan, both of which are government-sponsored health plans. In addition to studying differences between citizens and non-citizens, the study leverages a 2019 policy change in U.S. immigration regulations, known as the *Public Charge rule*, as a natural experiment. The change in the Public Charge rule explicitly tied the use of public health benefits to non-citizen recipients' ability to remain in the United States. Compared with U.S. citizens, non-citizens were more likely to disenroll from healthcare coverage after the implementation of the rule change. Among those who remained enrolled, there was little difference in plan utilization between citizens and non-citizens. The change in policy linking immigration to healthcare appears to have created a new barrier for non-citizens to access healthcare services.

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## CONTENTS

	Page
LIST OF TABLES.....	vii
LIST OF FIGURES.....	viii
INTRODUCTION.....	1
LITERATURE REVIEW.....	3
HYPOTHESIS DEVELOPMENT.....	22
DATA SOURCES & VARIABLES.....	25
RESEARCH DESIGN & METHOD.....	31
RESULTS.....	36
RESEARCH LIMITATIONS.....	43
CONTRIBUTIONS & CONCLUSIONS.....	45
REFERENCES.....	49

## TABLES

Table 1. Number of Observations by Citizenship and Gender.....	26
Table 2. Number of Observations by Primary Language and Citizenship.....	28
Table 3. Hazard Model: Disenrollment by Citizenship Status.....	37
Table 4. Hazard Model: Disenrollment after Public Charge Implementation.....	38
Table 5. Hazard Model: Utilization by Citizenship Status.....	39
Table 6. Hazard Model: Utilization by Healthcare Service and Citizenship Status.....	41
Table 7. Linear Regression of Healthcare Costs by Citizenship Status.....	42



## FIGURES

Figure 1. Number of Observations by Citizenship and Gender.....	27
Figure 2. Visual of a Differences-in-Differences Analysis for Enrollments.....	34
Figure 3. Visualization of a Differences-in-Differences Analysis for Utilization.....	34

## INTRODUCTION

On September 22, 2018, the U. S. Department of Homeland Security (DHS) announced a proposed regulation that would update the rules pertaining to the Inadmissibility on Public Charge Grounds, a 55-year-old provision under Section 212(a)(4) of the Immigration and Nationality Act (Bowman, 2018). The proposed regulation directly creates barriers for non-citizen immigrants (non-citizens) seeking entrance into the United States, as well as for those already legally present, by linking non-citizens' use or potential use of Medicaid and other federal non-cash programs to the possibility of attaining citizenship, to being able to maintain their current immigration status, and to the possibility of deportation. The goal of the new regulation is to ensure that non-citizens seeking to enter the country and those already present have the means to support themselves financially so that they will not be a financial burden on the American taxpayer (Miroff, 2018). As such, a non-citizen using public benefits, including Medicaid, is deemed a *Public Charge*, which is considered a negative factor in determining whether an immigrant is legally allowed to enter the United States or is entitled to stay if already living here. An individual becomes a Public Charge when they use a government program that provides "any maintenance or financial assistance rendered from public funds or funds secured by taxation." This policy originated in the amended Immigration Act of 1917, which specifies in Section 3 that persons deemed Public Charges are to be excluded from entering the United States and in Section 19 that those persons who became a Public Charge within five years after entry could be deported (Alpert, 1939, p. 20).

Under previous presidential administrations, Medicaid was not considered during Public Charge determinations. However, the Trump administration expanded the scope of Public Charge determinations to include Medicaid and

other non-cash benefits, a change that had not happened in more than 50 years (Jordan, 2020). Despite the policy change, data from the U.S. Citizenship and Immigration Services (USCIS) shows that non-citizens benefit from public assistance at nearly the same rate as U.S. citizens. Specifically, in 2013, 3.7% of non-citizens in the United States accepted cash benefits and 22.7% accepted non-cash benefits. In 2015, 3.4% of U.S. citizens accepted cash benefits and 22.1% accepted non-cash benefits (Miroff, 2018). Since usage is similar regardless of citizenship status, the new policy from the Trump administration presents the opportunity for a natural experiment in which behavior changes resulting from linking healthcare to immigration policy can be observed. Specifically, in this natural experiment, the treatment group comprises non-citizens impacted by the policy change, and the control group comprises U.S. citizens, not impacted by the policy change. This study exploits the Public Charge policy change as a natural experiment to determine the health impact and outcomes of the change in immigration policy and its enforcement.

This research contributes to the literature on the connection between healthcare coverage and immigration policy in the context of healthcare enrollment and utilization (Castaneda et al., 2015; Delara, 2016; Boen & Hummer, 2019; Wallace et al., 2019; Dunn & Dyck, 2000). This research also examines U.S. citizens and non-citizens to see how these two cohorts access and use healthcare differently.

### **Citizenship Status**

For purposes of this research, I used the most common classifications for citizenship status. Non-citizens include the following four classifications: *undocumented persons* – individuals who either overstay a visa or enter the United States without proper inspection at a port of entry; *refugees* – individuals who permanently reside in the United States after leaving their country of

origin to escape war, persecution, or a natural disaster; *non-permanent residents* – individuals admitted for a specific period of time, including tourists, students, diplomats, and crewpersons; and *permanent residents* – individuals who have green cards and are lawfully admitted for permanent residency in the United States.

U.S citizens are classified in two ways: *naturalized citizens* – U.S. citizens granted lawful permanent resident status after meeting the requirements established by Congress in the Immigration and National Act; *U.S. citizens* – persons, by birth or through citizenship of a parent, who have the right to live and work in the United States and to receive federal assistance (McAlvanah & Siwulec, 1978).

## **LITERATURE REVIEW**

### **Historical Context: Citizenship Status & Health Policy in America**

Throughout the years, American sentiments toward non-citizens have changed (Bennett, 1966). This section provides an overview of those changes as they relate to non-citizens and of how immigration laws have intersected with health policy throughout the years.

Non-citizens have remained a relatively small portion of the U.S. population. Since the nation's founding, this group has never exceeded 15% (Radford, 2019). Today, with more than 44.4 million foreign-born residents in America, the number remains relatively the same, with non-citizens making up 13.5% of the population as of 2017 (Young, 2017).

However, despite the small population size, federal public benefit programs like the Supplemental Nutrition Assistance Program (SNAP), Medicaid health benefits, and

Supplemental Security Income (SSI) have excluded various non-citizens, undocumented persons, and other non-permanent residents over the years, thus creating a unique link between citizenship status and healthcare coverage (Broder et al., 2021).

This link has existed since the founding of this country. In this section, I break down the history of the intersection of citizenship status and health policy into six key time periods – 1776-1865, 1865-1920, 1920-1965, 1965-1986, 1986-2016, and 2016-2020 – denoting either a period when key immigration legislation that impacted health policy was passed or a period when sentiments and attitudes toward non-citizens broadly shifted.

### **Immigration and Health Policy in America: 1776 to 1865**

Even before the founding of America, citizenship status was linked to federal assistance and protection under the law. For example, prior to the signing of the U.S. Constitution in 1787, the Articles of Confederation, ratified in 1781, mentions the immigration of non-citizens only once. By stating in Article 4 that “the free inhabitants” of each state “shall be entitled to all privileges and immunities,” the United States officially differentiated between slaves brought to North America against their will and White settlers and indentured servants who migrated to America of their own volition (Daniels, 2002, p. 271). Thus, the United States is eventually founded with citizenship status being directly connected to one’s ability to access federal assistance under the auspices of “privileges” assumed through citizenship.

### **Immigration and Health Policy in America: 1865–1920**

The definition of citizenship in the United States did not change until 1868 when the 14<sup>th</sup> Amendment to the U.S. Constitution was ratified, granting citizenship to all persons born or naturalized in the United States with equal protection under the laws, finally including former

slaves. However, 12 years later, the United States passed the Chinese Exclusion Act of 1882, prohibiting the immigration and naturalization of non-citizen Chinese workers. This became the most significant and restrictive immigration law ever written based on race and class and directly impacted the ability of non-citizen Chinese to receive and use healthcare benefits (Lee, 2002).

### ***Immigration Act of 1882***

The Immigration Act of 1882 was the first immigration statute signed into law excluding “any person unable to take care of himself or herself without becoming a Public Charge” (USCIS, 2018, p. 2). This was the first time this terminology is used to refer to non-citizens as a burden to the state, and it would have impactful effects on future immigration policy decisions in the United States. From 1892 to 1920, 309,435 non-citizens were excluded from entry into America, and more than 50% of the exclusions were due to the likelihood of their becoming a Public Charge (USCIS, 2019).

Healthcare and immigration policies were further intertwined as fear of diseases coming ashore from foreign lands grew during the late 1800s. The Immigration Act of 1891 was signed 27 years before the 1918 Spanish flu pandemic and brought about laws that excluded non-citizens based on the perceived presence of disease or illness. In fact, “the association of immigrants with disease persisted even as healthcare improved substantially with the introduction of vaccines that all but eliminated age-old scourges such as cholera, yellow fever, and smallpox” (Higham, 1988, as cited in Merkel & Stern, 2002, p. 758).

### **Immigration and Health Policy in America: 1920 – 1965**

By 1920, non-citizens made up 13.2% of the U.S. population. At the time, the United States, motivated by sentiments of nativism and protectionism, favored limiting the number of

non-citizens admitted into the country. These new sentiments eventually manifested in policy and law, as exemplified below (Ngai, 1999).

### ***Immigration Act of 1924***

The Immigration Act of 1924 capped immigration at 150,000 persons per year and included country quotas aligned with the foreign representation in America at the time the law went into effect. This led to non-citizens continuing to disproportionately come from Western European countries, as they had since the late 1800s. This law also sought to link immigration rules to eligibility for citizenship for the first time in the country's history, thus further controlling which non-citizens could enter the United States and which non-citizens already present could stay (Parker, 1924).

### ***Social Security Act***

The Social Security Act of 1935 passed and established a new welfare program providing retirement benefits, disability insurance, and survivors' benefits (Martin & Weaver, 2005). The newly offered benefits were provided to all legal, employed residents in America, regardless of citizenship status (McAlvanah et al., 1978). However, major unions pushed back against these policies (Derickson, 1994) because they feared Chinese immigrants were a threat to the labor movement due to their willingness to work for below-market wages (Fahrmeir et al., 2002). Despite evidence that non-citizen immigrants did not have enough leverage or influence to successfully organize and fight for wages, union efforts to thwart the immigration of non-citizens continued (Burgoon et al., 2018).

The Social Security Act also excluded agricultural and domestic employees from Old-Age Insurance coverage, thereby purposefully excluding more than 65% of the Black labor force

as well as large non-citizen immigrant populations from receiving these newly enacted benefits (Lieberman, 1995, cited by Davies & Derthick, 1997). Other non-citizen ethnicities, which included Mexicans, Indians, Japanese, and Filipinos, had exclusion rates as high as 66% (DeWitt, 2010). Lieberman explains, “[T]he Old-Age Insurance provision of the Social Security Act was founded on racial exclusion” (Lieberman, 1995, p. 514). This example is an early indication of the systemic racism embedded into laws that were fair on the surface but disproportionately impacted minority and immigrant communities.

### ***Filipino Repatriation Act of 1935***

The United States also signed into law the Filipino Repatriation Act of 1935, which provided free transportation to Filipino residents who wished to return home but did not have the means to do so. The law also reclassified all Filipinos as aliens, which meant they were barred from social programs that provided healthcare (Ngai, 2002).

### ***Executive Order No. 9066***

After the attack on Pearl Harbor, President Franklin D. Roosevelt signed Executive Order No. 9066, which evacuated all “persons of Japanese ancestry,” whether they were citizens or legal aliens. This required moving 110,000 Japanese Americans into 10 “tarpaper concentration camps” until January 2, 1945. When Assistant Secretary of War John McCloy, learned of these developments, he stated, “The Constitution is just a scrap of paper,” believing that without habeas corpus or due process, this became a situation of American citizens becoming “guilty by reason of race” (Civil Rights Digest, 1976, p. 8). Living conditions within those internment camps were precarious, with the Japanese internees being exposed to various health hazards with little or no access to healthcare (Moss, 2007).



By 1960, the various immigration policy restrictions over the previous 40 years had resulted in non-citizens shrinking to only 5.4% of the United States population. In fact, non-citizens fell from 13.9 million people to 9.7 million people during that time (Budiman et al., 2020).

### **Immigration and Health Policy in America: 1965–1986**

By the 1960s, American views on immigration began to change. The civil rights movement was gaining momentum, and Lyndon Johnson became president in 1964 (Reimers, 1983). As a result, there was political pressure for new and different policies.

#### ***Immigration and Nationality Act of 1965***

The passing of the Immigration and Nationality Act of 1965 eliminated all previous national origin quotas, thus opening the door to more non-citizens and refugees. In addition, the new law called for a transitional period through 1968 that would transfer quotas previously allocated to Western European countries to underrepresented countries in Africa, Asia, and Southern and Eastern Europe (Friedman, 1973). As a result, immigration ballooned, increasing from 9.6 million in 1970 to 31.1 million in 2000. The percentage of non-citizen immigrants in the United States grew from 4.7% to 11.1% by 2000 (Gibson & Jung, 2002).

#### ***Social Security Amendments of 1965***

On July 30, 1965, President Johnson signed Social Security Amendments of 1965, creating the Medicare and Medicaid programs, still considered to be the most comprehensive healthcare programs ever signed into U.S. law (Berkowitz, 2005).

Medicare coverage helped insure older adults with high mortality rates that were unable to receive employer-sponsored healthcare due to their burden of disease (Marmor, 1973, as cited by Berkowitz, 2005). After the creation of Medicare, the proportion of people with healthcare coverage increased dramatically, from 70.7% in 1963 to 80.8% by 1968. For people over 65 years of age, the increase was even more pronounced, from 54.2% in 1963 to 96.0% by 1968 (Cohen et al., 2009). U.S. citizens and permanent residents who had lived in the country for at least five consecutive years were eligible for Medicare, but non-permanent residents and undocumented persons were not. The decision to exclude this population was reaffirmed by the 1976 U.S. Supreme Court decision *Mathews v. Diaz* (McAlvanah et al., 1978).

Older non-citizens were less likely than older U.S. citizens to enroll in Medicare Part A and B. However, inequality persisted even among non-citizens. For example, Siddharthan (1991) found that prior to 1970, many Cubans were afforded asylum and allowed into the United States as refugees, unlike many Haitian immigrants, who, without asylum, did not qualify for Medicare, which “severely burdened a health care system [that was] already struggling to provide basic health care to an indigent native population” (Siddharthan, 1991, p. 407).

The Medicaid program enabled Americans with lower incomes to enroll in health insurance, leading to improved life expectancy rates despite program underfunding and various eligibility gaps (Engel, 2007). U.S. citizens and non-citizen permanent residents, including asylum seekers but excluding undocumented persons, are eligible for Medicaid benefits. U.S. states receiving federal Medicaid funding must adhere to these eligibility requirements. Notwithstanding their eligibility, today non-citizens who are recipients of Medicaid benefits are at risk of being considered a Public Charge, possibly negatively impacting their ability to keep their green card or gain citizenship. At the time of the creation of the Medicaid program, the

Public Charge provision applied to only 1% of the non-citizen determinations (USCIS, 2019), and assigning the designation of Public Charge was at the sole discretion of the U.S. Attorney General (McAlvanah et al., 1978). Today, the designation of Public Charge is determined by the Department of Homeland Security (DHS).

### ***Illegal Immigration***

By 1977, the U.S. General Accounting Office concluded, “It appears that illegal aliens have considerable economic impact on medical programs,” especially state and locally funded programs (Staats, 1977, p. 7). Because of the high number of undocumented persons living in the United States, changes to the Social Security Act in 1974 prohibited undocumented persons from acquiring a Social Security number for the purposes of work, which essentially eliminated them from participation in the Social Security program (McAlvanah et al., 1978). Since most people in the United States received healthcare coverage through their employer, the inability to acquire a Social Security number became yet another barrier to healthcare for undocumented persons.

Such rules notwithstanding, research at the time showed that non-citizens use substantially fewer public services than do native families, largely because of the non-citizens typically fall into younger age groups. In addition, non-citizens seem to pay as much in state and local taxes as U.S. citizens pay, yet they do not reap the same benefits (Simon, 1984, p. 67).

### **Immigration and Health Policy in America: 1986–2016**

As a result of increased illegal immigration into the United States, Congress created the U.S. Select Commission on Immigration and Refugee Policy (the Commission), chaired by Reverend Theodore Hesburgh, which sought to put together recommendations on thwarting the increase. The Commission released its findings in 1981, and the findings greatly influenced the creation and passing of the Immigration Reform Act of 1986 (Daniels, 2002). The new law

required employer sanctions and rules whose purpose was to stem the flow of undocumented persons into the United States (Finch, 1990). Many of the undocumented persons were of Hispanic – disproportionately Mexican – descent (Robinson & Gilbertson, 1987). The bill did three main things: removed the incentive for employers with five or more employees to hire illegal immigrants, provided a pathway to citizenship for immigrants legally in America as of January 1, 1982, and banned hiring practices that were solely based on immigration status while expanding the ability for guest workers to enter and leave the country periodically (Fuchs, 1990).

In 1986, the six states with the most immigrants, including the most illegal immigrants, were California, New York, Florida, Texas, New Jersey, and Illinois (U.S. Immigration and Naturalization Service, 1989). These undocumented persons labored in poor work conditions for low wages, and they were at higher risk for disease. Yet by law, their citizenship status meant they lacked access to quality healthcare (Dallek, 1980).

However, immigration continued to increase. In 1990, 1.8 million legal and 300,000 undocumented immigrants entered the United States from Asia, Mexico, and the Caribbean (Merkel & Stern, 2002). As undocumented populations grew, states began to examine the cost more closely to the state of healthcare for undocumented persons. As a result, individual states began to implement cost-cutting measures by restricting these populations' access to healthcare. For example, California passed Proposition 187 in 1994, which limited healthcare services provided to undocumented men and women and their families (Goldman et al., 2005). Proposition 187 would later be found unconstitutional; however, by then, anti-immigrant attitudes and perceptions were pervasive throughout the state, resulting in the enactment of further policies that focused on limiting the increasing number of people of Mexican descent in the state. The city of Los Angeles went further and enacted policies to slow the flow into the city

of people of Chinese descent, and in Florida, policies were enacted to limit the number of people of Cuban descent allowed to enter the state (Carrasquillo et al., 2000).

During this period, fear of HIV/AIDS was also a factor and led to even more immigration rules centered around health status and the presence of diseases. In 1987, President Ronald Reagan's administration added HIV/AIDS to the registry of diseases that barred entry into the United States. On June 10, 1993, President Bill Clinton signed the National Institutes of Health Revitalization Act, which added HIV/AIDS to the list of communicable diseases and which, in turn, continued to bar migrants with this disease from entering the United States (Merkel & Stern, 2002). As a result, from 1991 to 1993, roughly 158 people of Haitian descent who had been granted asylum were instead held in Guantanamo Bay as detainees. After a federal court ruling from Judge Sterling Johnson stopped the United States from detaining people in an "HIV prison camp," the United States permitted the Haitians to enter the country (Friedman, 1993). However, with their entry came stigma and discrimination, which would impact these non-citizens living in America more than a decade later (Curran & Jaffe, 2011, p. 64).

### ***Personal Responsibility and Work Opportunity Reconciliation Act***

President Clinton signed the largest welfare reform plan of its time into law on August 22, 1996. The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA) (U. S. Department of Health & Human Services, 1996) fundamentally changed the social welfare program by making work requirements a prerequisite for receiving government assistance and benefits. This greatly impacted immigrants and their access to healthcare. Although the PRWORA limited non-citizens' eligibility for Medicaid coverage and other public benefits, individual states still had the option to include non-citizens in their Medicaid programs regardless of employment status. The PRWORA also instituted a five-year waiting period for

eligibility for federally funded Medicaid that applied to non-citizens arriving in the United States after 1996. In addition, the law stated that newly arriving, older immigrants would not be eligible for Social Security or Medicaid until they obtained citizenship (Choi, 2006). In 1997, the same restrictions were placed on the States Children's Health Insurance Program (SCHIP), impacting children under 18 years of age (Goldman et al., 2005).

Prior to the enactment of the PRWORA, immigrants were less likely to enroll in Medicaid compared with native-born Americans, and the new law exacerbated this reluctance to enroll, with the proportion of immigrants in Medicaid dropping by 3%, compared with only 1.6% for native-born Americans (Kandula et al., 2004). In addition, older immigrants were less likely to enroll in Medicare due to their lack of work history in the United States, which led to 45% of non-citizen, older adults having no healthcare coverage whatsoever. In addition, even when younger non-citizens received healthcare through their employer, they were not able in most instances to cover an elderly parent with their health plan (Choi, 2006).

### ***Patient Protection and Affordable Care Act***

As a result of the policies described above, uninsured and underinsured populations grew and the national sentiment toward healthcare reform began to change. Healthcare issues would greatly shape the 2008 presidential campaigns, as the country reeled from the Great Recession that began in December 2007. Upon entering office, President Barack Obama referred to the current healthcare system as “one of the nation’s most intractable and long-standing problems” and said that it was a “health care system that fell far short of its potential” (Obama, 2016, p. 526). He made it a major focus of his administration, and during his first term, he signed into law the Patient Protection and Affordable Care Act (ACA), the most consequential healthcare legislation since 1965.

A few months after the ACA was passed, Cindy Mann, the Deputy Administrator and Director of the Center for Medicaid and Children’s Health Insurance Program (CHIP) Services, released guidance to all state health officials on July 1, 2010, regarding the implementation of the Children’s Health Insurance Program Reauthorization Act of 2009, which allowed states to cover legally present children and pregnant women under either CHIP or the ACA, regardless of how long the children had been in the United States (Mann, 2010). This change greatly increased enrollment for non-White non-citizen children (Bustamante et al., 2018). Prior to these changes, controlling for sociodemographic factors, Black and Hispanic children were more likely to lack healthcare coverage and more likely to have worse health outcomes than White children (Shone et al., 2003).

Despite these advancements, however, the ACA excluded 11 million undocumented persons that were residing in the country as of 2013. Their exclusion was problematic in that undocumented persons were nearly twice as likely to report not having visited a doctor in the past year compared with U.S. citizens, which led to forgone care and higher costs (Wallace et al., 2013).

### **Presidency of Donald J. Trump: 2016–2020**

Immigration policies dramatically changed during the Trump administration, negatively impacting healthcare for non-citizens. As Pierce, Bolter, and Selee (2018) noted, “The president’s words and deeds on immigration signified a fundamental shift in thinking and policy about the direction of immigration and America’s future” (p. 6). During the 2016 presidential election, Trump repeatedly stated he would seek to repeal and replace the ACA, which would leave 19.7 million fewer people without healthcare coverage and add \$33.1 billion to the deficit (Collins & Beutel, 2016). During his campaign, Trump presented non-citizens as a threat to U.S.

democracy, the economy, and security (Pierce, 2019). He campaigned on creating stricter immigration rules, building a wall across the southern border that the neighboring country would pay for, conducting “extreme vetting” of refugees seeking asylum, and prohibiting all Muslim non-citizens from entering the United States. He also sought to end birthright citizenship, which would have eliminated automatic citizenship for children born in the United States of undocumented parents (Liu, 2016).

President Trump’s healthcare choices would have left many U.S citizens and non-citizens without access to health insurance. His administration was unable to repeal the ACA, but it put immigration policies in place that exacerbated the inability of non-citizens to access healthcare, despite research showing that “as a group, immigrants tend[ed] to be healthier than native-born populations. They [were] also far less likely to have insurance” (Parmet, 2018).

Within five days of taking office in 2017, President Trump issued various executive orders seeking to dramatically change the U.S. immigration system. He issued an immigration ban on eight majority Muslim countries and added thousands of additional troops to the southern border (Pierce & Selee, 2017). Within the first two years of his presidency, many immigrants, especially those of Hispanic descent, were feeling afraid, anxious, and angry, perceiving the anti-immigrant policies and rhetoric of the Trump administration to be discriminatory and racist (Wray-Lake et al., 2018).

### ***Inadmissibility on Public Charge Grounds***

The Trump administration’s desire to match rhetoric with policy led to the release of its draft rule changes to the Public Charge on August 14, 2019. The final rule was set to go into effect 60 days later, on October 15, 2019. However, several lawsuits from various states argued



that the Department of Homeland Security could not implement the rule as it was written, resulting in injunctions against implementation. The U.S. Supreme Court stayed the last remaining injunction on February 21, 2020, and the administration made the rule official three days later, on February 24, 2020 (USCIS, 2020).

The rule redefined a Public Charge as “an alien who receives one or more public benefits (as defined in the final rule) for more than 12 months, in total, within any 36-month period (such that, for instance, receipt of two benefits in one month counts as two months)” (USDHS, 2020, p. 1). The adjudicating office must also evaluate the non-citizen’s age, health, family status, assets, education, skills, and prospective immigration status and must review affidavits in support of and in opposition to the non-citizen being deemed a Public Charge. Lastly, the rule change added federally funded Medicaid as one of the public benefits to be considered during determination of the status of Public Charge. Other benefits considered include SSI, Temporary Assistance for Needy Families (TANF), SNAP, and public housing. The non-citizens impacted the most by these policy changes were primarily non-permanent residents (via holders) followed by permanent residents (green card holders) (USCIS, 2020). Detrimental effects from linking healthcare coverage to citizenship status became apparent before the start of the coronavirus pandemic. Then, within a month after its start, the pandemic resulted in double-digit unemployment rates in the United States, leaving large numbers of previously insured people without healthcare coverage; yet Medicaid enrollment in California, a state with a large population of non-citizens, was shrinking during the same period. Policy experts believe this shrinkage was primarily due to the revised Public Charge rule and the fact that a non-citizen’s enrollment in Medicaid could negatively impact their citizenship and residency status (Bluth & Hart, 2020).

The history of laws enacted in the United States that impact both healthcare and immigration policy is important context for understanding the relevance of the Public Charge policy change and its impact on non-citizens. The original Public Charge text was enacted more than a decade ago in 1882. Yet the original Public Charge rule and the modifications to it over the years continue to affect the lives of many non-citizens today. In the following section I will discuss important non-medical social determinants of health and will propose citizenship status as an additional important factor in understanding and predicting health outcomes.

### **Social Determinants of Health**

Over the last 30 years, healthcare experts have increasingly been focusing on social determinants of health (SDOH), defined as “the factors apart from medical care that can be influenced by social policies and shape health in powerful ways” (Braveman & Gottlieb, 2014, p. 19). Health outcomes and the burden of disease can be substantially attributed to the conditions in which people are born, live, and work (Marmot, 2017; Gurewich et al., 2020). The U.S. government categorizes SDOH into five main domains: economic stability, education access and quality, healthcare access and quality, neighborhood and built environment, and social and community context (U.S. Department of Health and Human Services, 2020). Research has shown SDOH can contribute to health inequities and health disparities. In fact, only 10% to 15% of preventable mortalities in the United States are attributed to lack of access to medical services (McGinnis et al., 2002). Most factors contributing to health outcomes are outside the realm of medicine and medical treatments and have to do with social factors (Mackenbach et al., 1989; Stringhini et al., 2010; Braveman et al., 2014). Research shows that the patients living in poverty in America have the highest levels of sickness and premature death. Patients with lower incomes have higher disease burdens than those with higher incomes (Marmot et al., 2008). There is

evidence that investments in childhood development, economic opportunities, and education could do more for improving health outcomes and extending life than would simply providing medical care (Wilensky, 2016). The importance of SDOH is further supported by the findings from the World Health Organization's Commission on the Social Determinants of Health, which set forth three recommendations to "close the gap in various health inequities by: improving daily living conditions – housing, early child development, healthcare, and social protection; tackling the unequal distribution of resources; and measuring and understanding the problem" (Epstein et al., 2009, p. 1). The United States has followed suit: the Office of Disease Prevention and Health Promotion, which is under the U.S. Department of Health and Human Services, has launched a Healthy People 2030 initiative focused on five key social determinants: economic stability, education, social and community context, health and healthcare, and neighborhood and built environment (Healthy People 2030, 2021).

Despite its likely effect on healthcare access and quality, citizenship status is currently missing from the list of key SDOH (Marmot & Allen, 2014). Throughout U.S. history, immigration and citizenship status have been tethered to healthcare coverage, and this tether has influenced non-citizens' use of healthcare benefits. Citizenship status also affects income opportunity, housing security, educational opportunity, and feelings of societal belonging. "Being an immigrant limits behavioral choices and indeed, often directly impacts and significantly alters the effects of other social positioning, such as race/ethnicity, gender, or socioeconomic status, because it places individuals in ambiguous and often hostile relationships to the state and its institutions, including health services" (Castaneda et al., 2015, p. 378). Citizenship status can have a profound effect on a person's health and ability to secure health services. In fact, citizenship status likely influences many of the SDOH.

Even with access to healthcare, individuals with a language barrier may receive less effective care, may report lower patient satisfaction rates, and may have poorer health outcomes. Non-citizens are more likely to have a lower income, which in turn relates to a poorer health status. The income inequality hypothesis supports these statements. It postulates that a causal relationship between income inequality and healthcare disparities likely exists (Pinkett & Wilkinson, 2015).

Another factor in access to healthcare is fear. Households with undocumented persons live in fear of deportation, which can lead to living in the shadows. This fear greatly impacts the household's ability or willingness to use the available government programs that lead to good health and personal well-being, even if some of the household members are legal non-citizens. In fact, Seeman, McEwen, Rowe, and Singer (2001) studied close to 1,200 men and women over seven years and found that those who had lower incomes suffered from higher stress levels and faced worse health outcomes. The authors' findings resulted in a concept they called "allostatic load," which refers to wear and tear on the body that accumulates because of chronic stress (Seeman et al., 2001). Non-citizens entering a new country are at risk of experiencing allostatic load. They face challenges with social support systems, suffer from little to no social influence and power in advocating for themselves, struggle with social integration, and experience racism. These hurdles are on top of the hardships caused by potentially entering the country at a lower socioeconomic status than the national average (Delara, 2015).

Braveman and Gottlieb et al. (2014) found that although income and education are important predictors of health, they have not been consistently predictive for Hispanic immigrants in the United States. This inconsistency is due to a phenomenon called the "Hispanic paradox," which observed that Hispanic non-citizens entering the country characterized by low

socioeconomic statuses were healthier than native-born White populations and had better-than-expected health outcomes (Franzini et al., 2001). These findings have been attributed to the health screenings done at American ports of entry as well as to the selection bias that occurs with migrating from another country. Specifically, it appears that healthier and more mobile individuals tend to have the wherewithal to migrate to new countries (Franzini et al., 2001).

According to Mead (2020), Black and Hispanic non-citizens who have been in the United States for longer periods of time “respond only weakly to chances to get ahead through education and work,” suggesting that both ethnic groups prefer to stay in their current socioeconomic status rather than seeking a better life (Mead, 2020, p. 1). Mead, an influential policy expert whose research greatly influenced welfare reform under the Clinton administration, also believes that U.S. policies do not contribute to the plight of these individuals, which includes poverty and lack of access to healthcare. Such beliefs can dampen policy making that seeks to remove barriers, lift communities out of poverty, and improve health outcomes. Mead’s most recent research article was retracted by *Society*, the journal that published it, and several administrators from his employer, New York University, wrote a public statement condemning his work. Nevertheless, his beliefs are still pervasive within our society today (Thuman, 2020).

Research has also emerged suggesting that non-citizens have worse health outcomes than their native-born counterparts because of the intersection of health and immigration policies, which inserts a disproportionate number of barriers to a positive health experience. Specifically, research has found that the prevalence of chronic diseases in non-citizens is associated with restrictive immigration and healthcare policies (Hall & Cuellar, 2016). In addition, Choi (2006) found a relationship between age, access to healthcare coverage, and citizenship status, revealing that older non-citizens newly arrived in the United States were the least likely to obtain coverage,

as they face more structural barriers than many others, including restrictions on employment eligibility and lack of access to public assistance programs. Language barriers add further hurdles to non-citizens seeking coverage. Enrolling into public programs can be complicated and when marketing materials are not translated into different languages or written at an appropriate reading level for public consumption, it can become one of the factors that leads to lower enrollment rates in public programs and higher rates of uninsured Asian immigrants (DeNavas-Walt et al., 2014; Goldman et al., 2005, as cited by Sohn, 2016). In addition, when healthcare coverage is not continuously active because of issues with citizenship status, the rate of distrust of physicians increases among minority, non-citizen patients due to the inability of patients to build a long-term, reliable relationship with their physician (Blendon et al., 1995; Gamble, 1993; Peterson, 2002; Stepanikova et al., 2006). The lack of continuous healthcare coverage can also lead to gaps in care that cause non-citizens to make uninformed short-term healthcare decisions, which can lead to long-term negative impacts. Even when physicians recommend the same healthcare treatments and surgeries that they recommend to citizens, non-citizens still may make uninformed, short-term choices (Einbinder & Schulman, 2000; as cited by Sohn, 2016).

Lastly, there is evidence that the harsh rhetoric used by President Trump and his administration regarding immigration has had a significant effect on some people's behavior. Non-citizen communities have been more likely to "stay under the radar," leading to fewer applications for public benefits despite their entitlement and eligibility to them. In addition, there has been an increase in Haitians under temporary protective status leaving America prematurely to avoid arrest or deportation despite their eligibility to stay (Pierce, 2019). According to one recent survey, the Public Charge ruling exclusively caused nearly one third of all non-citizen families with low incomes to avoid using public benefits due to citizenship status concerns

(Jenco, 2020). It appears that the harsh rhetoric alone may have influenced families to deny themselves access to healthy food and high-quality, affordable healthcare due to their fear of deportation, even during the coronavirus pandemic (Jenco, 2020).

## **HYPOTHESIS DEVELOPMENT**

### **Research question: Is citizenship status a social determinant of health?**

First, I examined the link between citizenship status and healthcare by analyzing how non-citizens differ from U.S. citizens in accessing and using Medicaid or the Essential Plan. The Essential Plan is a New York health insurance program for residents that do not meet the eligibility requirements for Medicaid or the Child Health Plus Program. All observations in this study have income levels at or below 138% of the Federal poverty level. To do so, I observed behavior changes between both cohorts before and after the announcement and implementation of the Public Charge rules issued by the Trump administration in 2019.

For the reasons discussed in previous sections, non-citizens appear to be more inclined than U.S. citizens to disenroll from Medicaid because use of government benefits, including Medicaid, can jeopardize non-citizens' ability to stay in the United States legally.

***H1: Non-citizens are more likely to disenroll from Medicaid or the Essential Plan than are U.S. citizens.***

Second, I exploited the natural experiment created by the revised Public Charge policy by observing if differences in disenrollment patterns exist between non-citizens and U.S. citizens. Compared with U.S. citizens, I hypothesized that non-citizens are more likely to disenroll from Medicaid following both the announcement of and the implementation of the revised Public

Charge policy because they believe that staying enrolled in Medicaid after the implementation of the revised policy would result in negative Public Charge determinations, which could potentially lead to deportation.

***H2: Compared with U.S. citizens, non-citizens are more likely to disenroll from Medicaid or the Essential Plan following the announcement of the revised Public Charge rule.***

***H3: Compared with U.S. citizens, non-citizens are more likely to disenroll from Medicaid or the Essential Plan following implementation of the revised Public Charge rule.***

Third, a certain subset of non-citizens likely stayed enrolled in Medicaid after the announcement of the revised Public Charge policy as well as after its implementation in order to continue to use their health benefits despite the threat of deportation. These individuals perceive access to care more important than living in the United States for various reasons, including a higher disease burden, misinterpretation of the law due to language barriers, or prior plans to leave the United States anyway. Another subset of non-citizens likely uses their healthcare coverage benefits after the announcement, but not after implementation. Therefore, I hypothesize that non-citizens use the benefits of their healthcare coverage more than U.S. citizens do between the announcement of the revised policy and its implementation, but less than U.S. citizens after implementation. Non-citizens seek to use their benefits as much as possible to capitalize on their coverage before implementation of the revised Public Charge policy puts them at risk of a negative Public Charge determination. Unlike younger and/or healthier non-citizens, I hypothesize that older non-citizens are more likely to stay enrolled even after the policy's implementation, but they are less likely to use their benefits because they are afraid of a negative Public Charge determination.



The revised Public Charge policy has faced many court challenges from various State Attorneys General. As a result, some states (NY, VT, CT) that appealed the ruling did not enforce the Public Charge policy after the implementation date, whereas other states did (Montoya-Galvez, 2020), and this difference led to confusion among non-citizens. Non-citizens might have been confused about the start date of the new policy. It is also possible that they were unclear about which states implemented the new federal policy, because the various court rulings did not allow the policy to take effect in certain states as originally scheduled.

Fear of government tracking can lead to less use of Medicaid to avoid attention from federal agencies looking to enforce immigration policies. Many non-citizens live in mixed-status families, and the action of one member of the household can impact the entire household. As such, undocumented persons, non-permanent residents, and even permanent residents who are enrolled in Medicaid or the Essential Plan are less likely to use their benefits compared with U.S. citizens after the implementation of the revised Public Charge policy.

***H4: U.S. citizens use more healthcare services than non-citizens.***

To examine the differences between how U.S. citizens changed their use of healthcare benefits and how non-citizens changed their use of healthcare benefits, I observed their utilization before and after implementation of the revised Public Charge policy.

***H5: Compared with U.S. citizens, non-citizens are more likely to use healthcare services following the announcement of the revised Public Charge rule.***

***H6: Compared with U.S. citizens, non-citizens are less likely to use healthcare services following implementation of the revised Public Charge rule.***

Lastly, I hypothesize that the average healthcare costs of non-citizens are lower on average than the average healthcare costs of U.S. citizens. Many factors drive this difference, including higher proportions of younger populations among non-citizens enrolled in Medicaid compared with U.S. citizens and SDOH factors like language barriers and limited access to government programs. Delara (2016) has shown that healthcare costs for non-citizens were less on average than U.S. citizens.

***H7: On average, the healthcare costs of non-citizens are lower than the healthcare costs of U.S. citizens.***

## **DATA SOURCES & VARIABLES**

To observe and measure the relationship between citizenship status and healthcare, I used data from one of the largest not-for-profit health plans in New York state. The dataset was comprised of a sample of Medicaid and Essential Plan eligible members earning less than 138% of the federal poverty level. Medicaid and the Essential Plan are government-sponsored healthcare coverage programs that offer similar benefits to enrollees with low incomes. The Essential Plan does not have a residency requirement, but Medicaid enrollment requires at least five years of legal residency in the United States to receive federal fund matching from the Centers for Medicare and Medicaid Services. Thus, by default, U.S. citizens are more likely to enroll in Medicaid, and non-citizens disproportionately enroll in the Essential Plan.

The dataset was comprised of claims from individuals with at least 6 months of active coverage during the 18-month study period of August 1, 2018, through February 29, 2020. To avoid possible confounding effects of the coronavirus pandemic, I did not include data beyond February 29, 2020. I removed various outliers from the dataset: when cost per claim exceeded

the 90<sup>th</sup> percentile; when claims per person or claims per month exceeded the 95<sup>th</sup> percentile; and when the costs per month exceeded the 99<sup>th</sup> percentile. These outliers represented rare, catastrophic claims substantially higher than the other claims and their presence skews the overall dataset. With the removal of these outliers, I reduced the sample size from 931,572 to 795,704. All individuals included in the dataset resided in the state of New York and were enrolled in either Medicaid or the Essential Plan during the study period. Females represented 56.8% of the sample; males represented 43.2%, (see Table 1).

**Table 1**

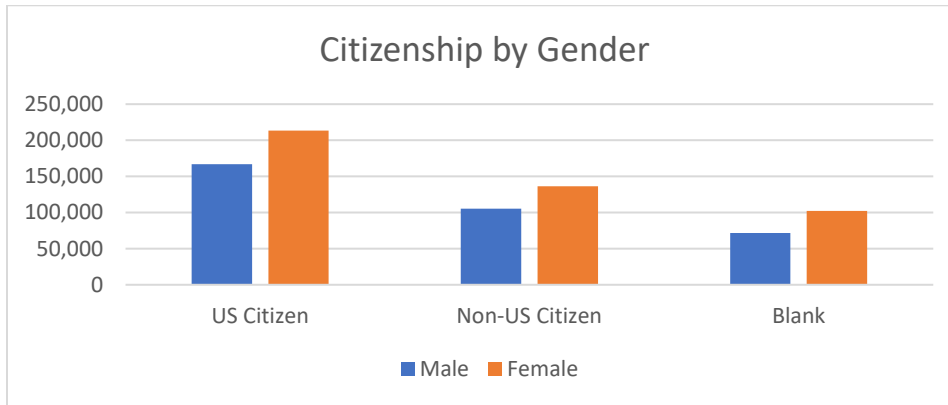
*Number of Observations by Citizenship and Gender*

<b>Citizenship Description</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>
U.S. Citizen	147,160 (44.14%)	186,213 (55.85%)	333,373 (41.89%)
Naturalized Citizen	19,634 (41.96%)	27,158 (58.03%)	46,792 (5.88%)
Permanent Resident	101,216 (44.23%)	127,609 (55.76%)	228,825 (28.76%)
Non-Permanent Resident	3,931 (30.67%)	8,887 (69.33%)	12,818 (1.60%)
Missing	71,664 (41.21%)	102,232 (58.79%)	173,896 (21.85%)
<b>Total</b>	<b>343,605 (43.18%)</b>	<b>452,099 (56.81%)</b>	<b>795,704 (100%)</b>

The dataset comprised individuals aged 18 through 64 of varying citizenship status, including U.S. citizens, both native-born and naturalized, and non-citizens, both permanent residents and non-permanent residents. U.S. citizen observations totaled 380,165 (47.7%), and non-citizen observations totaled 241,643 (30.4%) (see Figure 1).

**Figure 1**

*Number of Observations by Citizenship and Gender*



Of the non-citizens, 94.6% were permanent residents; 5.3% were non-permanent residents. More than 173,896 of observed claims (21.9%) lacked citizenship status information (categorized under “Missing” in Table 1).

The observed data included information on gender, race, citizenship status, primary language, Charlson index measuring comorbidities, age, the number of primary care physician visits, specialist visits, emergency room visits, plan description details, and unique claim numbers by date of service. Unique claim numbers used to link claims to each unique de-identified member through a consistently applied master person identification number.

Though information on race was included in the dataset, many individuals chose not to disclose their racial identity. Studies have found that many Hispanics and Asian/Pacific Islanders opt not to include their racial identity and end up in race categories like *missing* or *other*, which can skew the results. As Eicheldinger and Bonito state, “The importance of correctly identifying the race/ethnicity of Medicare beneficiaries when conducting studies of health services utilization cannot be overstated in a period of sensitivity to reports of health care disparities” (Eicheldinger & Bonito, 2008, p. 37). As a result, for purposes of this research, I dropped

observations from the dataset that did not contain race information. The final sample size was 795,704 observations. And although I included race in my analysis, I used it only as an explanatory independent variable.

English is the primary language for more than two thirds of the sample (70.0%). Within specific groups in the sample, English is the primary language for 84.4% of native-born U.S. citizens; it is the primary language for 59.0% of naturalized U.S. citizens. Among non-citizen permanent residents, 53.1% speak a language other than English as their primary language, and 47.0% speak English as their primary language. Among non-citizen non-permanent residents, 57.1% speak English as a primary language, 43.0% speak a language other than English as their primary language (see Table 2). A small percentage (0.05%) of those included in the sample did not provide language information and are categorized under “Missing” in Table 2.

**Table 2**

*Number of Observations by Primary Language and Citizenship*

<b><u>Citizenship</u></b>	<b><u>English</u></b>	<b><u>Non-English</u></b>	<b><u>Missing</u></b>	<b><u>Total</u></b>
U.S. Citizen	281,333 (84.39%)	52,001 (15.60%)	39 (0.01%)	333,373 (41.89%)
Naturalized Citizen	27,535 (58.85%)	19,233 (41.10%)	24 (0.05%)	46,792 (5.88%)
Permanent Resident	107,075 (46.79%)	121,383 (53.05%)	367 (0.16%)	228,825 (28.76%)
Non-Permanent Resident	7,320 (57.11%)	5,491 (42.84%)	7 (0.05%)	12,818 (1.61%)
Missing	131,661 (75.71%)	38,838 (22.33%)	3,397 (1.95%)	173,896 (9.29%)
<b>Total</b>	<b>554,924 (69.74%)</b>	<b>236,946 (29.78%)</b>	<b>3,834 (0.05%)</b>	<b>795,704 (100%)</b>

## **Variables**

### *Dependent Variables*

**Disenrollment.** Disenrollment is the likelihood of Medicaid or Essential Plan members to disenroll from their healthcare coverage. Healthcare coverage typically lasts one year from the date of enrollment, at which time eligible plan members can decide to reenroll

for another year of coverage or have the coverage lapse. Disenrollments can happen midyear for various reasons, including changes in income, family size, and residence, which can affect eligibility. Other external factors, such as the implementation of the Public Charge policy, can also contribute to earlier-than-expected disenrollments.

**Utilization.** Utilization is the measure of healthcare use based on the frequency of medical claims submitted to the health plan by a physician or medical professional and paid. The utilization measured for the purpose of this study include primary care, specialist, emergency room, urgent care, and inpatient visits. To be counted as a claim, the medical service must be provided, and the cost paid by the health plan within the observational period of the study. Medicaid and Essential Plan members have low to no cost-sharing when accessing care. As a result, the cost of healthcare visits does not represent a significant barrier to care. Other barriers do exist, such as transportation, physician office hours, language barriers, and fear.

### *Independent Variable*

**Citizenship Status.** Citizenship status denotes whether a member is a U.S. citizen or a non-citizen. U.S. citizens include native-born and naturalized citizens. Non-citizens include permanent and non-permanent residents. Citizenship status is an optional, self-reported field in the online enrollment process for Medicaid and the Essential Plan.

### *Explanatory/Independent Variables*

**Age.** Age is the date of birth provided at the time of enrollment. Healthcare use tends to have a positive correlation with age, that is, older individuals tend to use their benefits

more than younger individuals. Non-citizens in the dataset tend to be younger on average than U.S. citizens.

**Charlson Index.** The Charlson Index predicts the 10-year mortality for patients who have a range of comorbid conditions. This regularly accepted index in health policy research categorizes diseases based on the International Classification of Diseases (ICD) diagnosis codes included in claims and administrative data. Patients with a Charlson Index score of zero have no comorbidities present. The higher the score, the greater the disease burden and use of healthcare services (Sundararajan et al., 2004).

**Gender.** Gender is the self-reported sex, female or male. Females tend to enroll in Medicaid and Essential Plan more than males. There was no “other” category available for selection during the online enrollment process.

**Health Plan.** This variable denotes the type of health plan in which an individual was enrolled at the time of the observation. Enrollees 18 years of age or older, with incomes below 138% of the federal poverty level are eligible for Medicaid or the Essential Plan. New York state residents are eligible for Medicaid or the Essential Plan based on the federal income requirement as well as certain other eligibility criteria including citizenship status and duration in America. The New York State Department of Health governs these plans, but independent managed care organizations administer them. This study looks at data from one of the largest managed care organizations in the state. For purposes of the study, plan enrollment needed to be consistent throughout the duration of the study period to remain in the dataset.

**Language.** Language is the self-reported primary language based on two values: English and non-English. English is the primary language for 85% of U.S. citizens and approximately 53% of non-citizens.

**Month.** This variable denotes the month in which an observed claim or disenrollment took place during the 18-month period of August 1, 2018, through February 29, 2020. Including month-based fixed effects is important in controlling for the fact that enrollments are typically on an annual basis.

**Race.** Race is the self-reported race or ethnicity. The study included Asian, Black, Hispanic, White, and Missing (no race/ethnicity reported).

**After Announcement.** This variable denotes whether each observation in the study occurred after August 14, 2019, when the federal government announced the revised Public Charge rule.

**After Implementation.** This variable denotes whether each observation in the study that occurred after October 15, 2019, when the federal government implemented the revised Public Charge rule.

## **RESEARCH DESIGN & METHOD**

### **Natural Experiment**

The announcement and implementation of the Public Charge rule presents the opportunity for a natural experiment because the circumstances surrounding this event are not governed nor controlled by this research study (Craig et al., 2012, 2011, as cited by Leatherdale,



2017). It is important in a natural experiment to control for any forms of endogeneity or simultaneity. Endogeneity occurs when variables appear to be missing, which may affect the validity of the analysis, and when a relationship occurs between a dependent variable and the independent variables, which also may affect the validity of the analysis. Simultaneity occurs when two events seem to happen at the same time in the same context, which can call into question whether a correlation exists (Bliese et al., 2019). I contend, however, that the announcement and implementation of the revised Public Charge rule was exogenous enough to expose links between citizenship status, healthcare access, and use of healthcare benefits and that, therefore, this natural experiment can exploit the announcement and implementation of the Public Charge rule to show compelling evidence of its impact.

Using the data, I analyze changes in disenrollment rates and healthcare use among various citizenship statuses based on both the announcement date of the revised Public Charge policy, August 14, 2019, and its implementation date, October 15, 2019. This study uses a randomly assigned cross-section of various variables, including age, gender, citizenship status, race, primary language, claims, Charlson Index scores, and disenrollment dates. The study period includes 18 months of data from August 1, 2018, to February 29, 2020.

## **Research Design**

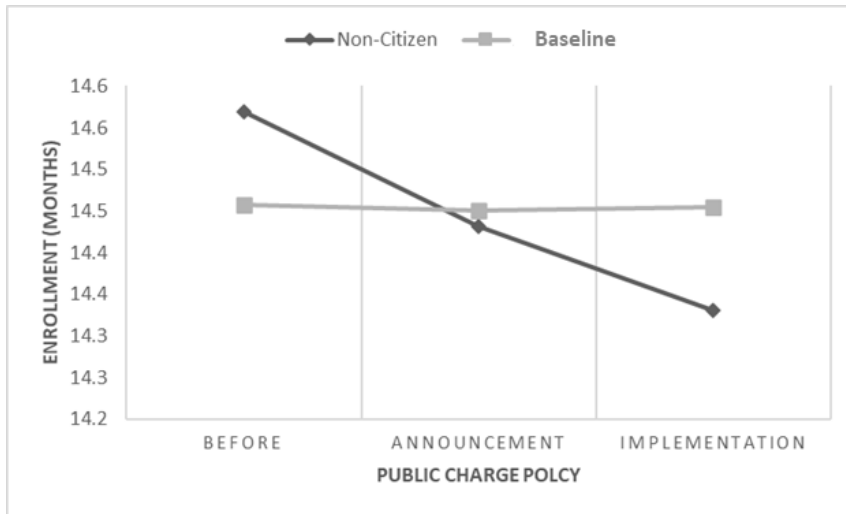
I estimate the association between the announcement and implementation of the revised Public Charge policy and the proportion of non-citizens who either disenroll from coverage or decrease their healthcare use through a differences-in-differences analysis, an approach that compares the average changes in a treatment group's outcome before and after a policy change.

### *Differences-in-Differences Hazard Model*

To understand the impact of the revised Public Charge policy, the study observes differences in healthcare coverage and use before and after the enactment of the policy change. I use the differences-in-differences method to ensure that other time-dependent trends do not impact the results. Public health researchers commonly use this method to eliminate the threat of inaccurate conclusions arising from potential changes in behavior (Dimick & Ryan, 2014). With the differences-in-differences approach, I observe the differences between and changes in two groups, U.S. citizens and non-citizens, before and after the Public Charge policy change. By using the differences-in-differences method, I control for any outside factors and unobserved variables that could manipulate the outcomes of either cohort (see Figure 2). By including month fixed effects, I control for seasonality during the study period because it covers 18 months of data and because not every month had two observations. Therefore, I can evaluate observations between U.S. citizens and non-citizens before and after the announcement and implementation of the revised Public Charge policy. Figure 2 shows a visual design of enrollment rates before and after the announcement and implementation of the revised policy. Prior to the announcement, non-citizens are enrolling at lower rates than U.S. citizens. After the announcement, enrollment of non-citizens plateaus, and the gap between U.S. citizen and non-citizen enrollments widens. Lastly, after implementation of the policy, non-citizens begin disenrolling, further widening the gap between U.S. citizens and non-citizens. Since I track the differences between the two cohorts prior to the policy change and control for month-based fixed effects, this study removes the possibility of outside trends skewing or manipulating the results.

**Figure 2**

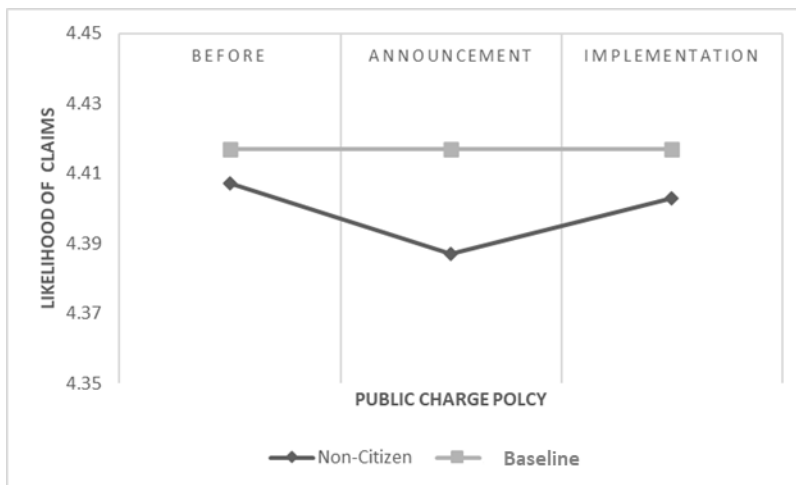
*Visual of a Differences-in-Differences Analysis for Enrollments*



To analyze the impact of the Public Charge policy on healthcare use, I measure medical utilization. As Figure 3 shows, the likelihood of a medical claim changes before the announcement of the revised Public Charge policy as well as after the announcement and again after implementation.

**Figure 3**

*Visualization of a Differences-in-Differences Analysis for Utilization*



### ***Hazard Regression Model***

To properly measure the differences in disenrollment and healthcare use between U.S. citizens and non-citizens, I used a hazard regression model. Hazard models measure the frequency or occurrence of a specific event and are based on hazard and survival functions. Survival time is the time between a defined starting point and a specific event, or between two events. The hazard model assumes that the hazard ratios of any two cohorts being analyzed are independent of time (Malehi et al., 2015). Medical researchers commonly use a hazard model to examine the survival times of patients in conjunction with one or more variables, such as disenrollment and paid medical claims (Giganti et al., 2015). For this study, I measure two events: disenrollment from healthcare coverage and individual medical claims. Since the dataset covers August 1, 2018, through February 29, 2020, the time that exists between August 1<sup>st</sup> and the presence of either a disenrollment event or a medical claim is the survival time for that specific observation. The intent of the hazard model is to measure the differences in disenrollment rates and paid medical claim rates between U.S. citizens and non-citizens, in order to observe if a significant difference exists between the two cohorts and to measure whether these rates change after the announcement and implementation of the Public Charge policy. Hazard models are preferred approaches for these types of statistical analyses because the data are censored. In other words, a disenrollment or a paid medical claim could be present outside the study period (Bewick et al., 2004). Examining these rates determines the survival of each cohort.

## RESULTS

### Disenrollment

I analyze data from 795,704 Medicaid and Essential Plan members enrolled in the same managed care plan based in New York state from August 1, 2018, through February 29, 2020. Without considering the public charge policy, when controlling for age, gender, race, Charlson Index score, healthcare coverage, and enrollment month, non-citizens disenroll from healthcare coverage at a 10.5% higher rate<sup>1</sup> than U.S. citizens (Table 3, row 5). Since non-citizens stay enrolled longer than U.S. citizens, H1 is not supported.

Several reasons could explain this observation. Perhaps prior to the Public Charge policy change, U.S. citizens, more so than non-citizens, were losing eligibility due to income changes and other qualifying life events arising from the improved economy during 2018 and 2019. However, the top two reasons for disenrollment in Medicaid or the Essential Plan are failure to renew coverage and nonpayment of premiums. Thus, non-citizens being enrolled in Medicaid or the Essential Plan for longer durations could be because those individuals use the benefits and believe the coverage has value, or because citizens have better outside options, such as employer-sponsored plans.

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<sup>1</sup> Odds ratio calculation:  $\text{Exp}(-0.111)-1 = -10.5\%$

**Table 3***Hazard Model: Disenrollment by Citizenship Status*

Predictors	<b>Disenrolled</b>	
	<i>Estimates</i>	<i>p</i>
(Intercept)	-14.458***	<0.001
Age	-0.022***	<0.001
Gender (Male)	0.601***	<0.001
Charlson Index	-0.309***	<0.001
Non-Citizen	-0.111***	<0.001
Observations	2,365,498	
R <sup>2</sup>	0.036	

*p*<0.05 \*\**p*<0.01 \*\*\**p*<0.001***Public Charge Announcement – Disenrollment***

The difference-in-difference in disenrollment rates between U.S. citizens and non-citizens after the public charge announcement are insignificant, when holding all variables constant (Table 4, row 9). Thus, H2 is not supported. The announcement of the policy appeared to affect citizens and non-citizens equally.

This lack of significant difference-in-differences may be because the mere announcement of the policy change does not materially impact non-citizens immediately. In addition, non-citizen communities need to fully understand the revised policy before taking actions they perceive as necessary, and as these populations have lower rates of English as a primary language, the information needs to be disseminated in their primary languages, which takes time. Lastly, non-citizens may feel incentivized to take advantage of their healthcare coverage upon the announcement, fearing loss of coverage when the policy is enacted. This notion of higher healthcare usage after the announcement of the revised Public Charge policy is discussed later in the paper.

***Public Charge Implementation – Disenrollment***

The difference-in-differences in disenrollment rates between U.S. citizens and non-citizens after implementation of the revised Public Charge policy is significant (Table 4, row 10). Non-citizens disenroll from Medicaid and Essential Plan coverage at an 8.1% higher rate<sup>2</sup> than U.S. citizens after the implementation. Therefore, H3 is supported.

This finding reiterates the premise that holding all things equal, after immigration rules impacting healthcare coverage go into effect, non-citizens for the most part are more likely to disenroll from their coverage so as not to jeopardize their residency in the United States.

**Table 4**  
*Hazard Model: Disenrollment after Public Charge Implementation*

Predictors	<u>Disenrolled</u>	
	<i>Estimates</i>	<i>p</i>
(Intercept)	-14.450***	<0.001
Age	-0.022***	<0.001
Gender (Male)	0.601***	<0.001
Charlson Index	-0.309***	<0.001
Race/Ethnicity (Asian)	-0.618***	<0.001
Race/Ethnicity (Black)	0.231***	<0.001
Race/Ethnicity (Hispanic)	-0.975***	<0.001
Non-Citizen	-0.046 **	0.005
Non-Citizen - After Announcement	0.026	0.348
Non-Citizen - After Implementation	0.124***	<0.001
Observations	2,365,498	
R <sup>2</sup>	0.036	

*p*<0.05    \*\**p*<0.01    \*\*\**p*<0.001

<sup>2</sup> Odds ratio calculation:  $\text{Exp}(-0.046 + 0.124) - 1 = 8.1\%$

## Utilization

Non-citizens incur paid medical claims at a 1.0% higher rate<sup>3</sup> than their U.S. citizen counterparts (see Table 5, row 8). Thus, H4 is not supported. On average, non-citizens appear to use primary care services at a rate that is 20.3% higher<sup>4</sup> than U.S. citizens (Table 7, column 2, row 8). Non-citizens' greater use of primary care services may be due to the result of the increased ethnic diversity in primary care physicians specifically in New York City, the source of the sample I use in the study. For example, nationwide, as of 2019, 31% of White doctors practice primary care and internal medicine. This is compared to 42.1% of Black doctors, 38.4% of Hispanic doctors, and 35% of Asian doctors (AAMC, 2019). The higher proportion of ethnically diverse primary care physicians could be a factor in increased utilization with those physicians. In my review of the literature, I did not come across research on this factor, but older studies exist that speak to the importance of patients with limited English proficiency connecting with primary care physicians that speak their primary language, which can lead to improved healthcare, fewer specialist and emergency room visits, and higher primary care utilization (Chandrashekar et al., 2021; Garcia et al., 2019).

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<sup>3</sup> Odds ratio calculation:  $\text{Exp}(0.010)-1 = 1\%$

<sup>4</sup> Odds ratio calculation:  $\text{Exp}(0.185)-1 = 20.3\%$



**Table 5***Hazard Model: Utilization by Citizenship Status*

Predictors	Utilization	
	Estimates	p
(Intercept)	-4.417***	<0.001
Age	0.008***	<0.001
Gender (Male)	-0.241***	<0.001
Asian	0.145***	<0.001
Black	-0.046***	<0.001
Hispanic	0.082***	<0.001
Charlson Index	0.098***	<0.001
Non-Citizen	0.010***	<0.001
Observations	2,365,498	
R <sup>2</sup>	0.258	

*p*<0.05    \*\**p*<0.01    \*\*\**p*<0.001

### ***Public Charge Announcement – Utilization***

Non-citizens incur paid medical claims at a 2.7% higher rate<sup>5</sup> after the announcement of the revised Public Charge policy (Table 6, column 1, row 9). As a result, H5 is supported. In fact, overall healthcare utilization after the announcement increases compared with prior to the announcement. Specifically, non-citizens use primary care 25.7% more<sup>6</sup> after the announcement as compared to U.S. Citizens (Table 6, columns 2 & 4, row 9). However, there was no discernable difference in emergency room utilization between non-citizens and U.S. citizens, which makes sense because emergency services are generally not discretionary (Table 7, column 3, row 9). The increase in use of services after the announcement of the revised Public Charge policy may be because upon learning of the impending revisions to the policy, non-citizens felt a sense of urgency to utilize healthcare services before implementation of the policy and possible loss of healthcare coverage. Non-citizens’ concerns about loss of coverage after implementation

<sup>5</sup> Odds ratio calculation:  $\text{Exp}(0.030 + -0.003) - 1 = 2.7\%$

<sup>6</sup> Odds ratio calculation:  $\text{Exp}(0.185 + 0.044) - 1 = 25.7\%$

of the revised policy may also help explain why they do not disenroll from Medicaid or Essential Plan coverage after the announcement any more than do U.S. citizens.

### ***Public Charge Implementation – Utilization***

Overall, no statistical difference exists in paid medical claims between non-citizens and U.S. citizens after implementation of the revised Public Charge policy (Table 7, column 1, row 10). The only area of significance for non-citizens in healthcare utilization after implementation is in specialist care, for which the number of paid medical claims is almost as high as the number for primary care (Table 6, column 4, row 10). As such, H6 is not supported. At first glance, these observations may seem immaterial. However, significant observed differences exist between U.S. citizens' and non-citizens' utilization of healthcare services before implementation, which implies that non-citizens utilize fewer services after implementation.

Multiple factors may contribute to these findings. Non-citizens who remain enrolled in their health plan after implementation are inclined to use healthcare services more judiciously, since use potentially leads to deportation. Second, the increase in non-citizen specialist visits after implementation could be because non-citizens who remain enrolled in Medicaid or Essential Plan coverage have a higher disease burden than non-citizens who disenroll after implementation.

This hazard model can explain 26% of the variation in the use of healthcare services.

**Table 6***Hazard Model: Utilization by Healthcare Service and Citizenship Status*

Predictors	<b>All Utilization</b>		<b>PCP Utilization</b>		<b>ED Utilization</b>		<b>Specialist Utilization</b>	
	<i>Estimates</i>	<i>p</i>	<i>Estimates</i>	<i>p</i>	<i>Estimates</i>	<i>p</i>	<i>Estimates</i>	<i>p</i>
(Intercept)	-4.417***	<0.001	-5.584***	<0.001	-5.650***	<0.001	-5.681***	<0.001
Age	0.008***	<0.001	0.011***	<0.001	0.022***	<0.001	0.016***	<0.001
Gender (Male)	-0.241***	<0.001	-0.300***	<0.001	-0.066***	<0.001	-0.146***	<0.001
Asian	0.145***	<0.001	0.635***	<0.001	-0.862***	<0.001	-0.190***	<0.001
Black	-0.047***	<0.001	-0.079***	<0.001	0.431***	<0.001	-0.125***	<0.001
Hispanic	0.082***	<0.001	0.096***	<0.001	0.243***	<0.001	0.130***	<0.001
Charlson Index	0.098***	<0.001	0.077***	<0.001	0.057***	<0.001	0.132***	<0.001
Non-Citizen	-0.003	0.296	0.185***	<0.001	-0.200***	<0.001	-0.098***	<0.001
Non-Citizen – A.A.	0.030***	<0.001	0.044***	<0.001	0.023	0.207	0.025**	0.004
Non-Citizen – A.I.	0.014*	0.033	0.002	0.817	0.016	0.417	0.041***	<0.001
Observations	2,365,498		2,365,498		2,365,498		2,365,498	
R <sup>2</sup>	0.258		0.173		0.048		0.128	

A.A. = After Announcement; A.I. = After Implementation

*p*<0.05 \*\**p*<0.01 \*\*\**p*<0.001**Healthcare Costs**

The cost of healthcare per person averages \$2,672 over the 18 months of observations. This per-person average includes U.S. citizens, naturalized citizens, and non-citizen residents, both permanent and non-permanent. As Table 7 shows, naturalized citizens on average have lower per-person healthcare costs than all other citizenship categories. However, controlling for gender, age, disease burden as measured by the Charlson Index, and enrollment duration, there is no statistical difference in per-person healthcare costs between U.S. citizens and non-citizens, despite research described above in the literature review (Table 7, row 2). As a result, H7 is not supported. Many factors could explain this observation. Since New York City, the site of this study, has higher rates of ethnically diverse primary care physicians, it is possible that non-citizens in this study are more likely to access care than non-citizens' national average. In 2019, New York City was ranked No. 12 in healthcare access by Medbelle, a digital health startup company (Ellison, 2020). Also in 2019, *U.S. News & World Report* ranked New York No. 10 out

of 50 states in overall healthcare access, No. 5 in Adult Wellness Visits, and No. 7 in Child Wellness Visits (U.S. News & World Report, 2019).

**Table 7**  
*Linear Regression of Healthcare Costs by Citizenship Status*

Predictors	<b>Healthcare Costs</b>	
	<i>Estimates</i>	<i>p</i>
(Intercept)	2,672***	<0.001
U.S. Citizen	-476	0.090
Naturalized Citizen	-1512**	<b>0.001</b>
Permanent Resident (Non-citizen)	295	0.289
Non-Permanent Resident (Non-citizen)	2,841	0.013
Gender (Male)	8,851***	<0.001
Charlson Index	2,750***	<0.001
Enrollment Duration	-96**	<b>0.001</b>
Age	-501***	<0.001
Observations	1,685,570	
R <sup>2</sup> / R <sup>2</sup> Adjusted	0.1781 / 0.1781	

*p*<0.05 \*\**p*<0.01 \*\*\**p*<0.001

## RESEARCH LIMITATIONS

### Internal Validity

This study is not without limitations. To estimate a potential causal effect of the public charge rule, the non-citizen and U.S. citizen cohorts must have parallel trends in outcomes. That is, without the Public Charge announcement and implementation, the differences between both cohorts should remain constant over time. We controlled for month fixed effects to mitigate this issue. As seen in Figure 1, which shows a parallel trend prior to the announcement of the revised Public Charge policy, the change between non-citizens and U.S. citizens is small until implementation of the revised policy.

Unmeasured variables may exist that impact the observations of the Medicaid-eligible sample in the dataset. If other events occurred during the research period that changed the perception of Medicaid or the Essential plan in New York City, such events may have driven a variety of changes in behavior more than did the Public Charge rule or may have impacted utilization trends. For example, in 2019, the unemployment rate was at its lowest level in U.S. history. The improved economy during this time might have disproportionately resulted in more non-citizens moving to workplace plans due to increases in income. This means their disenrollment rates could be artificially higher. But I postulate that this is unlikely because the improved economy also would have helped citizens. Another possible factor is that the Trump administration increased ICE raids in New York during this study. Perhaps these raids had more to do with disenrollment and paid medical claim changes than did the revised Public Charge policy. Specifically, rather than the changed law affecting Medicaid enrollment and utilization, heightened concerns generated from ICE raids could have negatively affected enrollments and healthcare utilization as immigrants remained indoors due to fear. If this were the case, it would still support the idea that immigration status is a social determinant of healthcare access because ICE raids target non-citizens.

While the data tracks Medicaid and Essential plan enrollees for eighteen months, we do not know the reason why individuals disenrolled. For example, individuals in the study might have moved out of the research service area. In addition, deaths, new jobs or promotions that increase income, or pregnancies that change Medicaid eligibility status, are all factors that could have impacted the credibility of the analysis. In addition, over the course of the 18-month-long study, the healthcare preferences of Medicaid and Essential Plan enrollees in the dataset could have changed, resulting in changes to disenrollment rates and/or paid medical claims that have

little to do with the revised Public Charge policy. Physician patterns and behaviors could have changed over the 18 months. In addition, factors such as hospital closures, changes to reimbursement rates, and changes to the claim administration process could have led to behavior changes in Medicaid and Essential Plan enrollees. I postulate that these unmeasured factors would be unlikely to greatly affect the outcome of this study, either because they would have affected citizens and non-citizens similarly, or because they would have had only local effects and the data set included individuals from a large geographic area.

### **External Validity**

The sample available only contains Medicaid and Essential Plan-eligible participants. They may not accurately reflect the behavior of all low-income individuals eligible for these plans in America or that something about the Medicaid and Essential Plan enrollees makes them inherently different from similarly situated populations in other health plans. It may not be possible to generalize the findings from this study as a result.

## **CONTRIBUTIONS & CONCLUSIONS**

Observing how citizenship status may affect both disenrollment rates and healthcare utilization is important to future research and policy making, especially for policies that affect immigrant populations residing in the United States. If citizenship status can indeed negatively impact health outcomes, researchers need to reevaluate the current list of SDOH to ensure it is all-encompassing. With an extended definition of SDOH, through the recognition of citizenship

status as a determinant, policy makers can more effectively remove barriers that cause poor health outcomes, potentially leading to lower healthcare costs overall.

Citizenship status is an inescapable barrier to healthcare in America for non-citizens, especially for those living in a lower socioeconomic status. Historically, government programs have determined the level of access or coverage based on citizenship status. As such, individuals must provide their citizenship status when enrolling or renewing eligibility in certain social programs. Medicaid coverage provides the clearest example. Since the federal government requires Medicaid enrollees to have at least five years of residency in the United States for purposes of allocating funding to individual states, each state is vigilant about verifying citizenship and residency for all the populations that enroll. This vigilance leads to policies and procedures that eligible Medicaid enrollees may find to be bureaucratic and intimidating processes that present barriers to enrollment. These barriers are nuanced. First, one in ten people in the United States lives in a mixed-status household, which is described as a household with at least one person who is undocumented, a legal permanent resident, or a legal non-permanent resident. For example, undocumented children may be residing with lawfully present parents or young native-born children may be residing with an undocumented parent. These families are concentrated in a few major cities in the United States, including New York City, Miami, Los Angeles, and Houston. These families face difficulties enrolling in a single health plan due to their mixed eligibility. Second, income is a key eligibility requirement, and since non-citizens disproportionately work in lower-wage jobs, and employers across the country are inconsistent in the enforcement of legal hiring practices, the income eligibility requirement places many non-citizens in a precarious position. Some may make too much money for government-sponsored healthcare coverage, but not enough money to purchase healthcare coverage offered to them

through their employer. Conversely, non-citizens may not be working enough hours to be full time, rendering them ineligible for employer coverage, or they may work for a smaller employer with fewer than 100 employees, which is not required to offer healthcare coverage to its employees. Third, immigrants over the last five years have faced increased scrutiny, violence, discrimination, and deportations. When factoring in all these barriers, accessing high-quality healthcare that is dependent on income and citizenship status criteria becomes a difficult task. Researchers and policy makers need to better understand the extent to which these factors dissuade enrollment or utilization of healthcare services altogether.

If fewer non-citizens enroll in healthcare coverage for which they are eligible, at the microeconomic level those populations will have poorer health outcomes, which can impact work productivity and result in even more dependency on the federal government. At the macroeconomic level, fewer non-citizens enrolling leads to lower-quality healthcare and higher healthcare costs because those populations will seek care in an emergency room setting.

Finally, there are negative externalities to high uninsured rates in America, especially for non-citizens, as best seen in the recent coronavirus pandemic. Many uninsured individuals were unable to get tested despite best efforts of state and federal agencies (Galletly et al., 2021; Capps & Gelatt, 2020; McFarling, 2020; Page et al., 2020). As a result, they may have unknowingly spread COVID-19. If they were able to get a test and the test was positive, getting treatment was difficult, thus potentially impacting healthy individuals negatively. As such, ensuring that U.S. residents have access to affordable, quality healthcare coverage is quintessential to public health overall. Removing the barriers to non-citizens being able to access high-quality healthcare could generate public health benefits that arguably outweigh the costs to the taxpayer. Such a policy would be in direct contradiction to the public charge policy.



A potential reform to improve access and healthcare utilization rates for non-citizens, is standardizing Medicaid eligibility rules across the country. Today, individual states can determine Medicaid eligibility, which leaves a patchwork of coverage options that differ state to state leaving certain immigrant populations without equal access to healthcare. Providing better access to non-citizens would have positive externalities in that when non-citizens are healthy, they participate in the workforce more, thus generating tax revenue and creating a better standard of living for themselves and their families.

Today, citizenship status is political, partisan, and stigmatized. Paradoxically, it is used in applications and databases to obtain government and social service programs. These two realities force many into the shadows. More consideration of these findings will help policy makers remove the stigma of immigration, which in turn will help improve health outcomes and lower overall healthcare costs while improving the quality of healthcare.

Further research around citizenship status as a social determinant of health should include replication studies with different cohorts of patients. Further research into why non-citizens disenroll from healthcare coverage and why they increase healthcare utilization would also be beneficial. Additionally, learnings from other countries around the world should be included in future research projects on this topic as well. Lastly, better understanding of the drivers of higher healthcare costs in the non-citizen population would be illuminating. Although research suggests non-citizens on average incur lower healthcare costs, this study suggests otherwise. To better understand healthcare costs for non-citizens, further research is needed.

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