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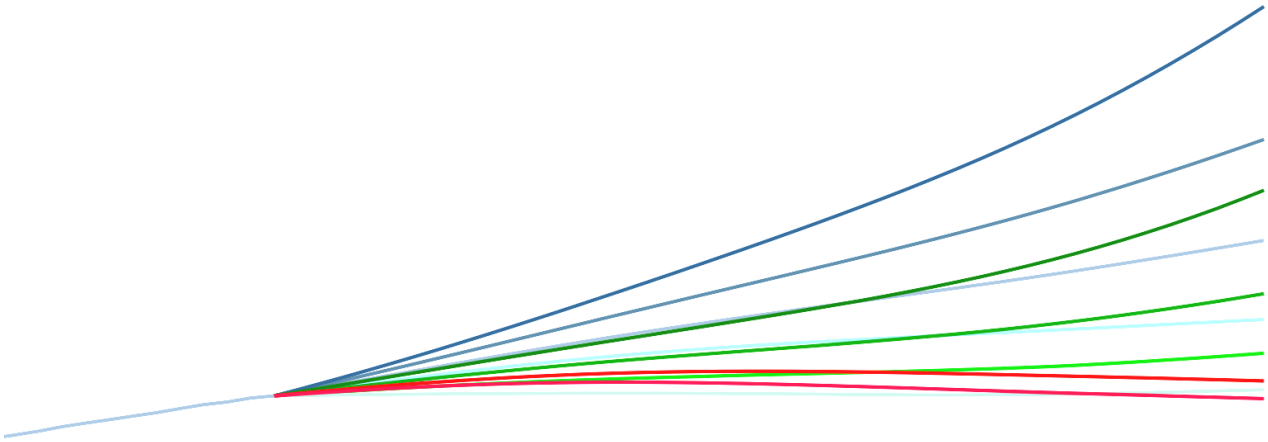

Choice and Consequence:

The Downstream Effects of US Immigration Admission Policies, 2020-2060

Justin Gest, George Mason University
Jack A. Goldstone, George Mason University
Annie Hines, University of California, Davis
Erin Hofmann, Utah State University
Guizhen Ma, Utah State University

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SNAPSHOT

What alternative futures do different immigration policies hold for the United States? Based on 40-year projections of demographic and economic outcomes under a variety of immigration policy scenarios, this study finds that low fertility rates and population aging cast a shadow over America's future. Across diverse scenarios, grave demographic and economic consequences would follow from more restrictive admissions policies. However, even the maintenance of current levels of immigration would weaken American prospects for strong economic growth and fiscal balance in the medium and long term. We find that it is only through increased immigration that the United States can achieve a sustainable working-age population, economic growth, and a solvent Social Security system. While these findings generally hold independent of whether the United States shifts from family-focused admissions to more labor-focused admissions, a labor-focused system would produce higher GDP per capita but more muted growth in population, total GDP, and weaker fiscal balances because of labor migrants' lower fertility rates and propensity to return to their countries of origin. The projections also suggest that unemployment rates are relatively unaffected by these policy choices. Altogether, this study forecasts some of the key consequences of immigration policy plans currently being debated in Congress.

EXECUTIVE SUMMARY

US immigration today reveals countervailing trends. On the one hand, the share of Americans who were born in another country is at the highest level since the turn of the 20th century. On the other hand, the country has begun to face a substantial decline in annual immigration flows—a rarity in recent history. These opposing demographic trends are a reflection of divergent trends in American immigration politics.

Current debates on immigration policy feature three principal groups of immigrations policy preferences. Hardline restrictionists wish to cut annual immigration flows to zero or net-zero numbers. Among those seeking to remain open to immigration, one faction favors the current system's emphasis on family migration, the basis of nearly two-thirds of all permanent visas issued over the previous decade. The other faction favors a reformed system that emphasizes labor migration, including more temporary and permanent visas for immigrants who fill low- and high-skilled labor needs or possess extraordinary credentials or investment capital. Moreover, even among those who favor higher levels of immigration, opinions differ over the desirable scale of annual immigration flows—the number of new arrivals each year.

To provide more concrete numbers to guide these debates and demonstrate the long-term implications of changes to US immigration policy, we project demographic and economic outcomes under a variety of alternative immigration policy scenarios. Our forecasts project outcomes over the next 40 years and explore six principal outcomes:

1) **Population Growth:** The largest increases in total population between 2020 and 2060 obviously occur in scenarios with higher annual immigration. However, the population grows more slowly in labor-focused scenarios than in scenarios that maintain the current visa mix of family and labor visas due to the higher emigration rates of labor immigrants on temporary visas (see Figure 1).

2) **Aging:** Higher annual immigration scenarios result in a larger working-age (16–64) share of the population. By 2060, the working-age share of the population is projected to be nearly 62 percent in very-high-immigration scenarios, but less than 56 percent in the case of zero net migration (see Figure 4). While this difference may seem modest, it makes a large difference in the ratio of workers to the growing elderly population. Compared to only 25 elderly persons per 100 working-age people in 2018, by 2060, the ratio reaches nearly 50 elderly persons per 100 working-age people in the case of zero net migration, but only 30 to 35 in the case of higher-immigration scenarios (see Figure 5).

3) **Race and Ethnicity:** As immigration increases, the White share of the American population declines. The Black population also declines, but to a lesser extent. The Asian population, which accounted for 5.6 percent of the total US population in 2018, drops to as low as 4.7 percent in the zero-immigration scenarios but reaches a high of 41.8 percent in the very-high labor-focused scenario. This is because the bulk of the increase will likely come from Asia given the declining fertility rate in Latin America. The Hispanic share of the population increases in all scenarios except for those that emphasize labor admissions.

4) **Economic Growth:** By 2060, the very-high-immigration scenario with the current visa mix forecasts total GDP exceeding $62.8 trillion. This represents an increase of over 40 percent relative to the scenario extending 2018 baseline trends, which projects total GDP close to $44.4 trillion in 2060 (see Figure 9). The zero-immigration scenario predicts real GDP of only $32 trillion, more than 27 percent lower than the baseline. The impact of immigration on America's future GDP is thus quite significant.

5) **Employment:** The fraction of working-age Americans employed is similar across all scenarios, and all projections show an average of between 71.5 percent and 72.5 percent of the working-age population actively working by 2060 (see Figure 12).

6) **Social Security:** In all cases, net income to the Social Security trust funds—driven by the difference between payroll tax contributions and benefit payouts—declines between 2018 and 2060. Some decline is unavoidable under current levels of taxes and benefits as the population rapidly ages. Still, the deficit depends considerably on the level of immigration. The Social Security trust fund shortfalls rise the most dramatically in the cases of zero immigration and zero net migration, while trust fund income per capita is highest in the case of very high immigration (see Figure 14).

Today's low fertility rates and ongoing population aging cast a shadow over America's future. As a result of these trends, our projections show that grave demographic and economic consequences will follow from more restrictive immigration policies. However, even the maintenance of current levels of immigration would weaken American prospects for strong economic growth and fiscal balance in the medium and long term. It is only through increased immigration that the United States can achieve a sustainable working-age population, economic growth, and a solvent Social Security system. These findings generally hold independent of whether or not the United States shifts to a more labor-focused admissions system. Such a system, however, produces slightly higher GDP per capita but more muted growth in population, total GDP, and weaker fiscal balances compared to a more family-unification-based system because of labor migrants' lower fertility rates and propensity to return to their countries of origin.

To account for the disruptions of the 2020 Covid-19 pandemic and Trump Administration policy, adjusted calculations appear in Appendix A at the conclusion of the report.

FULL REPORT

Context

US immigration today reveals countervailing trends. On the one hand, immigrants account for 13.7 percent of the US population and 17.2 percent of the civilian labor force[1] in 2020—the highest levels in the country since the turn of the 20th century. In 2020, among the approximately one million people who obtained Legal Permanent Resident status, 57 percent were admitted on family-based visas, while only 12.6 percent were admitted on employment-based visas—among the highest shares of family migration and lowest shares of labor migration in the world.[2] However, thanks to a variety of Trump administration executive orders, the growth in immigration in recent years has ended. In 2019, the immigrant share of the US population stalled for the first time since the Great Recession in 2008, falling below 2016 Census Bureau projections by over one million people.[3] The country now faces a new state of affairs—a substantial decline in the volume of immigration.

These opposing demographic currents reflect divergent trends in American immigration politics. Republicans are torn between their traditional desire to leverage the productivity, entrepreneurship, and economic growth that immigrants provide versus the need to assuage highly mobilized voters in their constituencies who are concerned about the cultural threat they believe immigrants pose. Over the course of the Trump administration, the White House first proposed shifting the US immigrant admission system to a points-based system focused on greater high-skilled migration, away from the family-based and lottery admissions routes, and then, less than one year later, leveraged the Covid-19 pandemic to cut all admissions to extraordinary, near-zero numbers.

For their part, Democrats are caught between three camps. The constituency most mobilized about immigration policy is immigrants' rights groups who advocate preserving the family-reunification-driven system produced by the 1965 Immigration and Naturalization Act. A second group, embracing human rights advocates and foreign policy liberals, seeks to broaden the US refugee and asylum program, which has historically rescued people being persecuted by their governments and victims of violent conflicts in which the United States had a hand. The third group includes a variety of influential business-focused immigration moderates who are promoting policies to expand the admission of unskilled laborers to fill less desirable jobs, professionals to address high-skilled labor shortages, and people with extraordinary talent to spur innovation and economic growth.

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[1] Migration Policy Institute, 2020.
[2] Department of Homeland Security, 2018. Boucher and Gest, 2018.
[3] Bier, 2020.

Across these subgroups and coalitions, there are three sets of admissions policy preferences. Hardline restrictionists wish to cut annual immigration volume to zero or net-zero numbers. Among those seeking to remain open to immigration, one faction favors the current system's emphasis on family migration, the basis of nearly two-thirds of all permanent visas over the previous decade. The other faction favors a reformed system that emphasizes labor migration, including more temporary and permanent visas for immigrants who fill low- and high-skilled labor shortages or possess extraordinary credentials or investment capital. Moreover, even among those who favor higher levels of immigration, opinions differ over the desirable scale of annual immigration flows—the number of new arrivals each year.

The result of these cacophonous agendas is that Congress has passed no major overhauls of federal immigration law in over three decades, leaving selection rules and procedures stuck in a sort of policy formaldehyde. The political and policy debates have been largely unmoored from the potential downstream effects of competing plans and policy choices. To provide more concrete numbers to guide these debates and demonstrate the long-term implications of changes to US immigration policy, we project demographic and economic outcomes over the next 40 years under a variety of alternative immigration policy scenarios.

The Scenarios

We examine three categories of actions to shape immigration policy, focusing on multiple scenarios within each category. First, we consider two situations in which immigration is halted, restricting either immigration, or net migration, to zero.[4] Second, we consider the situation in which the current visa mix[5] remains the same. These cases assume that the visa mix (and therefore demographic makeup) of immigrants to the United States will remain the same from 2018 to 2060.[6] Third, we consider a category of policies that emphasize labor migration, in which 65 percent of all immigrant visas are labor visas—which inverts the current visa mix. The remaining 35 percent of immigrants are admitted on family, student, refugee, and other visas. These three categories of action—a halt, a maintenance of the current visa distribution, and a labor emphasis—reflect the three primary visions espoused by the aforementioned political camps.

Within the latter two categories, we examine four possible scenarios related to annual volume: First, we consider a "constant"-migration scenario, in which the net migration rate remains at 2018 levels. Second, a "low"-migration scenario assumes that the net migration rate is held 50 percent lower than its 2018 level until 2060. Third, a "high"-migration scenario assumes that net migration rates are held at a level that is 50 percent higher than 2018. And fourth, a "very-

[4] The zero-net-migration scenario assumes that the difference between immigration and emigration is zero; that is, no more immigrants can arrive in the United States in a given year than the number that leave.
[5] Boucher, Anna, and Justin Gest. *Crossroads: Comparative Immigration Regimes in a World of Demographic Change*. New York: Cambridge University Press, 2020.
[6] We hold the net migration rate for each age/sex/race/ethnicity group proportional to the 2018 levels.

high"-migration scenario assumes that net migration rates are 100 percent higher than 2018 levels until 2060.

For context, the average net migration rate per 1,000 population from 2015 to 2020 was 2.929 persons. A low-immigration scenario corresponding to a 50 percent reduction is the 1965–1970 period, when the net migration rate averaged 1.521 migrants per 1,000. The US net migration rate peaked from 1995 to 2000 at 6.48, more than double the current net migration rate and similar to the very-high-immigration scenario.[7] Thus, the scenarios we explore are all within the historical range of actual US annual immigration flows. The six different levels of immigration, combined with different visa mixes, generate 10 scenarios, demonstrating a range of policies that Congress could pursue in either a more restrictive or more liberal direction.

We then determine the effects of these 10 alternative scenarios on a variety of demographic and economic outcomes. Taking into consideration US Census fertility and mortality rates, the demographic outcomes include **(1) population growth**, **(2) aging**, and **(3) racial/ethnic composition**. Our methods account for differences in net migration rates by age, sex, race, and ethnicity and assume that the net migration rates in each scenario, as set by the policy choice in that scenario, remain constant from 2018 to 2060.[8] While these projections account for differences in the immigration and emigration rates of temporary and permanent immigrants, we do not distinguish between documented and undocumented migrants.

We then project **(4) economic growth** using a method that estimates Gross Domestic Product (GDP) based on the population share of immigrants, their skill distribution, and the degree to which immigrant workers can replace similar native workers in the production process.[9] In other words, we consider how well immigrants can perform the same tasks as natives and vice versa. We predict the skill distribution of the working population by separating immigrants and natives into high-skilled and low-skilled groups by education: those who have completed a high school degree or less, and those who have completed at least some college education or more.

Next, we predict **(5) employment effects** by mapping average employment rates in 2018 to the demographic projections at the age-sex-race-ethnicity-nativity level. Finally, we examine fiscal effects by estimating income and costs to the **(6) Social Security** trust funds. Using the 2018 and 2019 Current Population Survey (CPS), we estimate the average wage income and Social Security benefits for each age, sex, race/ethnicity, and nativity group. Then, we calculate average individual payroll tax contributions based on wage income. Lastly, we adjust for reporting errors in the CPS and account for interest and other income to the Social Security

[7] United Nations Population Divisions, World Population Prospects, 2019.

[8] We make projections based on net migration rates, rather than immigration rates, because research suggests that changes to US immigration policy has indirect effects on emigration. In the zero-immigration scenario, we assume that immigration rates, rather than net migration rates, remain constant at zero. Appendix B describes our calculations of net migration rates in detail.

[9] We use the multi-nest Constant Elasticity of Substitution model proposed by Borjas, 2003, Ottaviano and Peri, 2012, and Doquier, Ozden, and Peri, 2013, to study the labor market effects of immigration.

trust funds to obtain estimates that are in line with administrative totals from the Social Security Administration (SSA).

Our methods extend techniques used in previous studies to analyze the impact of immigration on labor markets and fiscal balances. Specifically, prior studies use the economic model we apply to understand the effects of immigration on the employment and wages of native-born workers.[10] More recently, economists have adapted this model to understand the potential impact of deporting undocumented immigrants on GDP.[11] By combining these established methods with our demographic projections, we apply these methods to understand the effects of immigration policy on GDP over the next 40 years. Similarly, our projections of the state of the Social Security trust funds relies on accounting methods similar to those used to estimate the fiscal impacts of immigrants in California.[12] Again, by combining this approach to accounting for fiscal impacts with demographic projections of the future composition of immigrants in the United States, we estimate the impact of varying immigration levels on Social Security in the future. Appendix B contains a detailed description of these methodologies.

[10] Borja, 2003, Ottaviano and Peri, 2012, and Doquier, Ozden, and Peri, 2013.
[11] Edwards and Ortega, 2017.
[12] Clune, 1998.

Table 1: Alternative Immigration Policy Scenarios

Zero migration			**Current composition**	**Labor migration**
Zero net migration	Net migration rate held at zero	Low	Net migration rate held 50% lower than 2018 level; demographic composition of immigrant flows remains the same.	Net migration rate held 50% lower than 2018 level; 65% labor visas; 35% family, student, refugee, and other visas.
Zero immigration	Immigration to the US held at zero	Constant	Net migration rate remains at 2018 levels; demographic composition of immigrant flows remains the same.	Net migration rate remains at 2018 levels; 65% labor visas; 35% family, student, refugee, and other visas.
		High	Net migration rate held 50% higher than 2018 levels; demographic composition of immigrant flows remains the same.	Net migration rate held 50% higher than 2018 levels; 65% labor visas; 35% family, student, refugee, and other visas.
		Very High	Net migration rate held 100% higher than 2018 levels; demographic composition of immigrant flows remains the same.	Net migration rate held 100% higher than 2018 levels; 65% labor visas; 35% family, student, refugee, and other visas.

Table 2: Outcomes of Interest

Population growth	Total projected population of the US, by year, scenario and nativity.
Aging	Working-age share of total population, elderly dependency ratio, youth dependency ratio.
Race and ethnic distribution	Share of population by race/ethnicity: white, black, Hispanic, Asian, and other.
Gross domestic product (GDP) and GDP per capita	Total economic output and output per person.
Employment rates	Ratio of employed persons to total population.
Social Security	Net Social Security cash flows – the difference between benefits paid to individuals and payroll tax contributions.

1. Population Growth

We begin by examining the impact of alternative policies on the total population residing in the United States. Total population has been increasing at a fairly consistent rate from 2000 to 2020. As we would expect, the largest projected increases in total population from 2020 to 2060 occur in scenarios with higher annual immigration. However, the population grows more slowly in the labor-focused visa scenarios than in scenarios with the current visa mix due to the higher emigration by labor immigrants on temporary visas (see Figure 1). While most scenarios result in population increases, following or exceeding current trends, the US population declines in the zero immigration scenarios and the low labor-focused scenario, falling from 327 million in 2018 to 320 million in the zero-immigration scenario and to 310 million in 2060 in the case of low labor-focused migration. As we note below, this has major consequences for Social Security and GDP, as the lower population overwhelmingly reflects a smaller working-age population, not fewer seniors. Similarly, while the foreign-born population has been consistently rising over the past two decades, in the low- and zero-migration scenarios, it falls below current levels by 2040 (see Figures 2 and 3).

The estimates for our baseline scenario are consistent with other population projections. A 2015 report by the US Census Bureau predicts a population increase from 319 million to 417 million between 2014 and 2060, with 78 million foreign-born in the United States in 2060.[13] A similar projection by the Pew Research Center predicts a total population of 441 million in 2065 with current immigration trends.[14] Our baseline scenario of constant immigration volume with the current visa mix falls between these two estimates, predicting a total population of 429 million in 2060, with a foreign-born population of 84 million.[15]

[13] Colby and Ortman, 2015.

[14] Pew Research Center, 2015.

[15] Using a similar methodology, a 2008 report by the Pew Research Center projected a 438 million total population in 2050, up from 296 million in 2005, with 81 million foreign-born, similar to our baseline projection of 75.5 million foreign-born in 2050 (Passel and Cohn, 2008). For recent years, these projections are slightly higher, but still close, to more recent estimates of the foreign-born population, predicting a foreign-born population of over 49 million by 2020. Our most recent estimate places the 2018 foreign-born population at just under 45 million.

Figure 1: Population Growth, 2018–2060

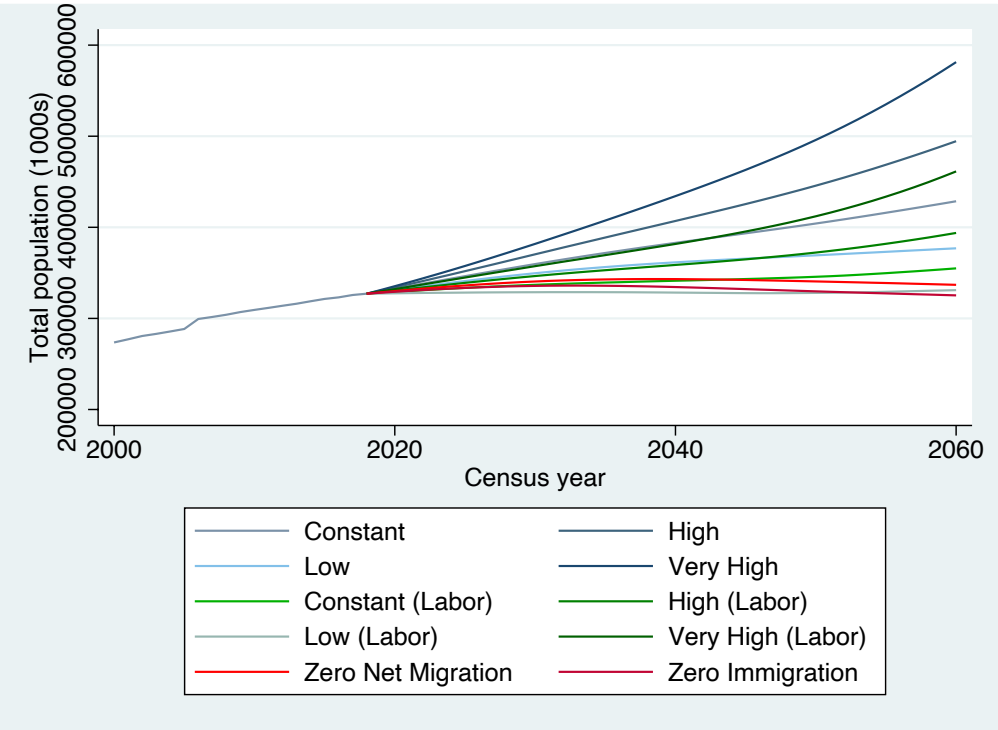


Figure 2: Foreign-Born Population Growth, 2018–2060

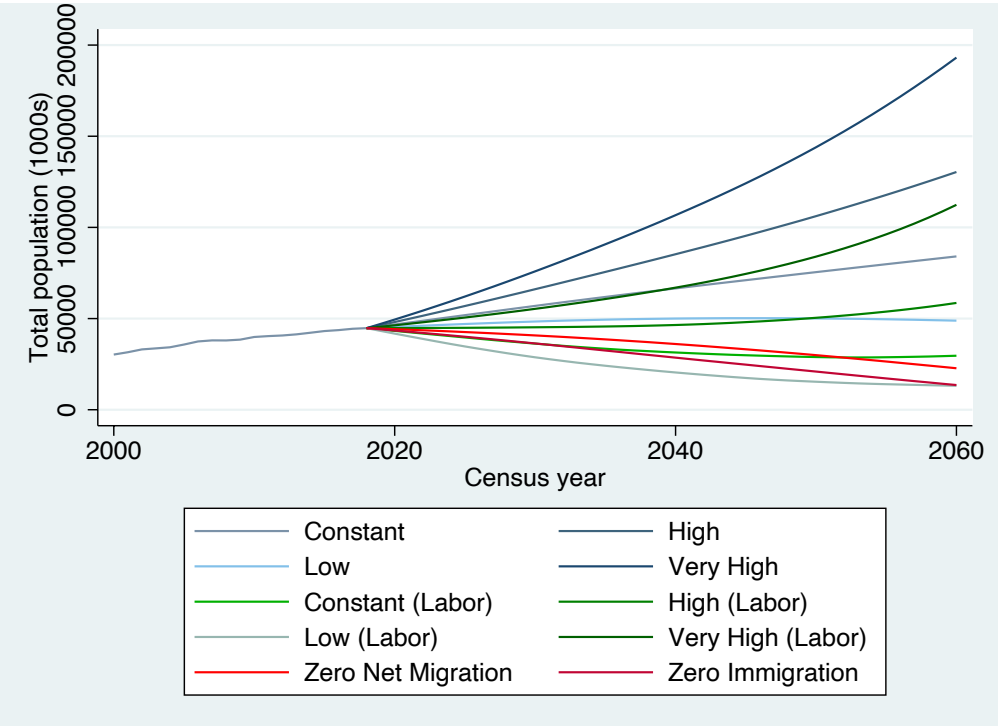
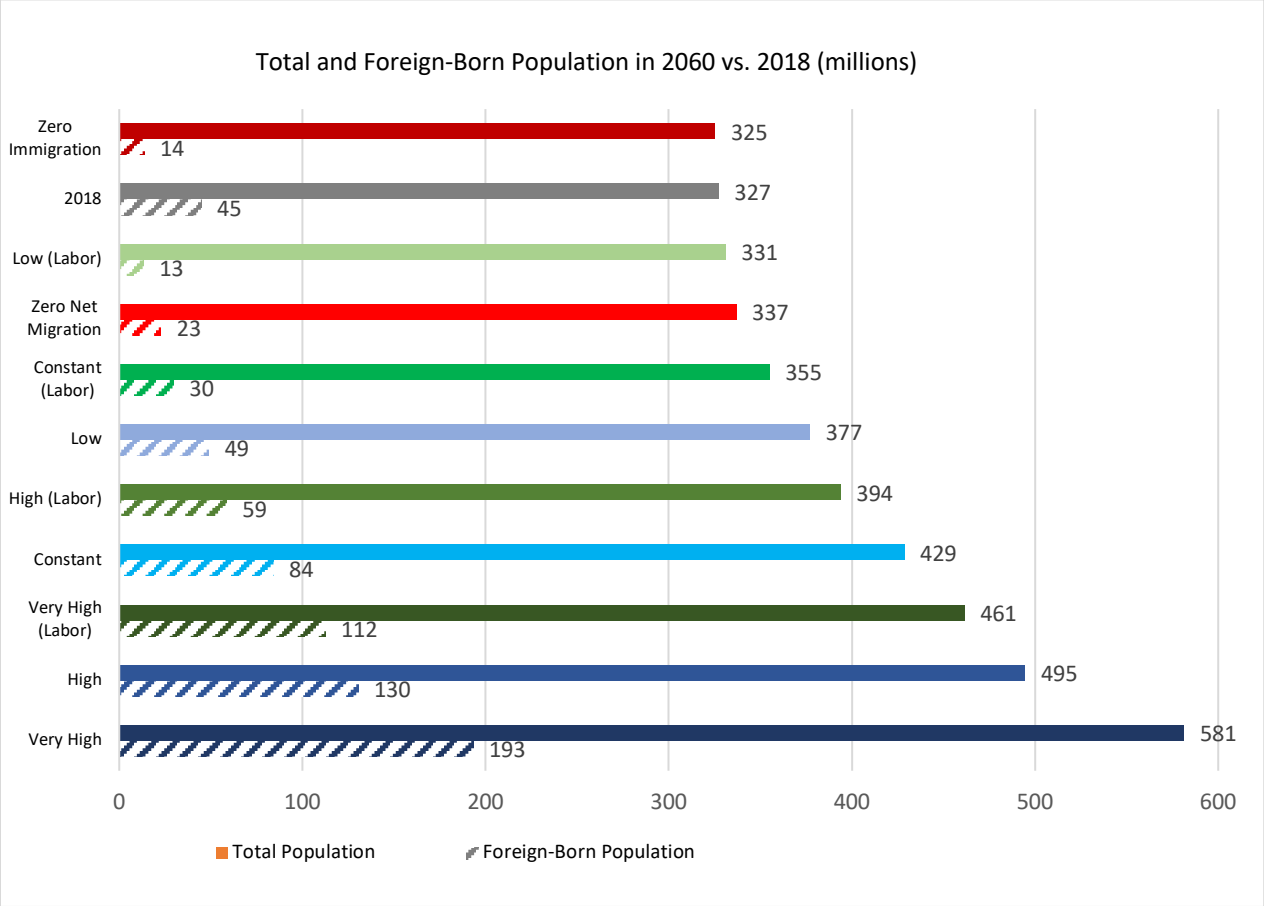


Figure 3: Projected Population in 2060 Compared with 2018



2. Population Aging

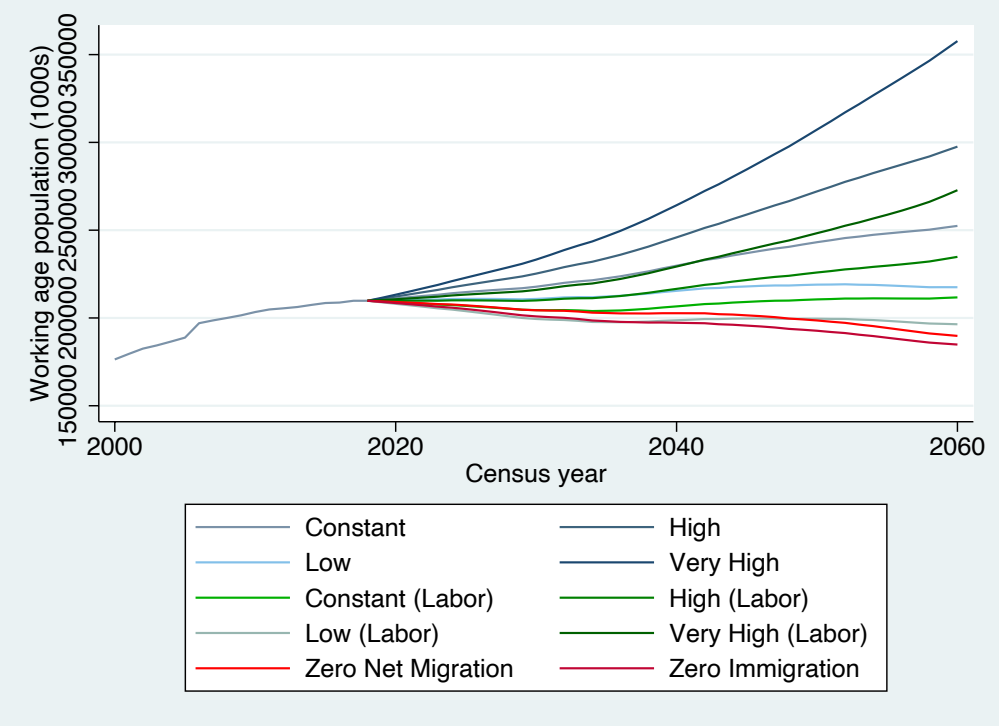
Population aging varies substantially across policy scenarios and is more salient as immigration declines. The working-age population grows far more rapidly with high immigration than it would under a continuation of the current trend, while it actually falls in zero-migration scenarios (see Figure 4). Immigrants tend to be younger than the native population, and high-immigration scenarios result in a larger working-age (16–64) share of the population: In 2060, the working-age share of the population is nearly 62 percent in the case of very high flows but less than 56 percent in the case of zero net migration (see Figure 5). While the working-age share continues to follow its current decline—as a result of the large, aging baby-boom cohort and rising life expectancy—it declines much more rapidly without immigration.

An aging population tends to put additional pressure on government-funded health care and pensions, because a larger working-age population contributes to social insurance through taxes while the elderly consume more benefits. Variation in the senior ratio—the ratio of the elderly (65+) population to the working-age (16–64) population—is even larger across scenarios. Compared to only 25 elderly persons per 100 working-age people in 2018, the ratio reaches nearly 50 elderly persons per 100 working-age people in the case of zero net migration (see Figure 6). Again, while the senior ratio has been increasing for nearly two decades and continues upward regardless of immigration policy, it rises more rapidly in low- and zero-immigration scenarios. By 2060, the senior ratio is lowest in the case of very high immigration at 31.4 elderly persons per 100 working-age people. Thus, the increase in the senior ratio by 2060 ranges from 25 percent above current levels in the low-immigration scenario to almost 100 percent in the high-immigration scenario.

For context, the average senior ratio in Northern Europe was approximately 29.8 in 2020, while the highest senior ratios of all countries were Italy (36.6), Finland (36.6), and Greece (34.8).[16] Inversely, the youth ratio—the ratio of the youth population (0–15) to the working-age population (16–64)—is larger with a higher volume of immigration (see Figure 7). The main fiscal cost of a young population is from expenses associated with education; however, the variation in the youth ratio is much smaller across scenarios than the senior ratio. Despite declining from 2000 to 2018, the youth ratio actually increases by 2060 with very high labor immigration, while it continues to drop to its lowest point under zero net migration.

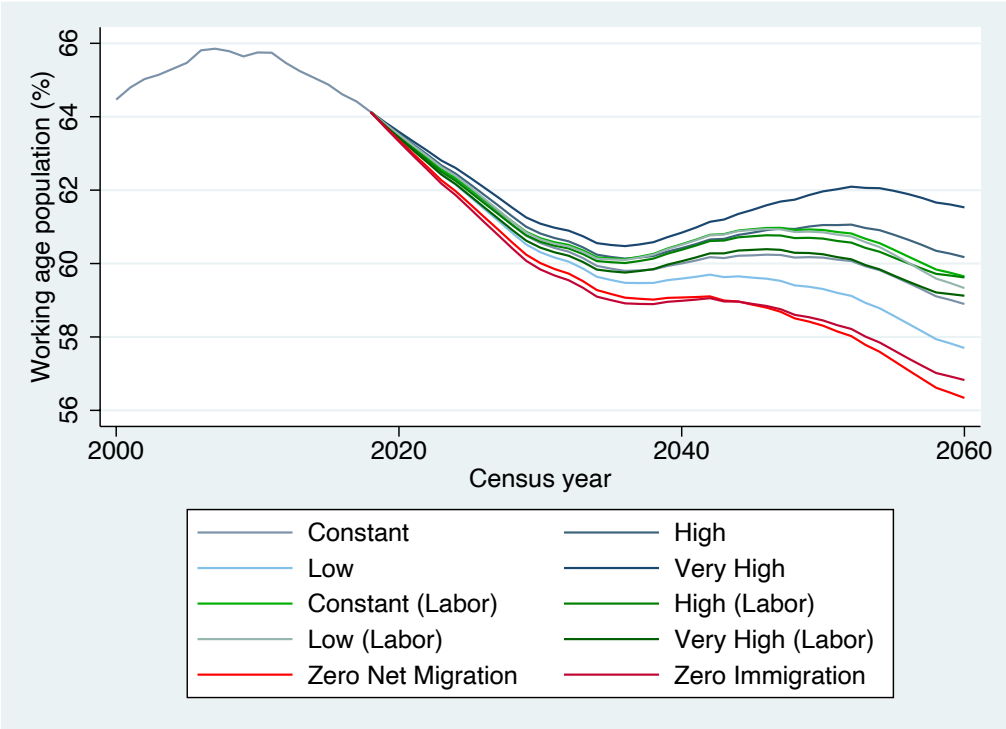
[16] United Nations, 2019.

Figure 4: Working-Age Population



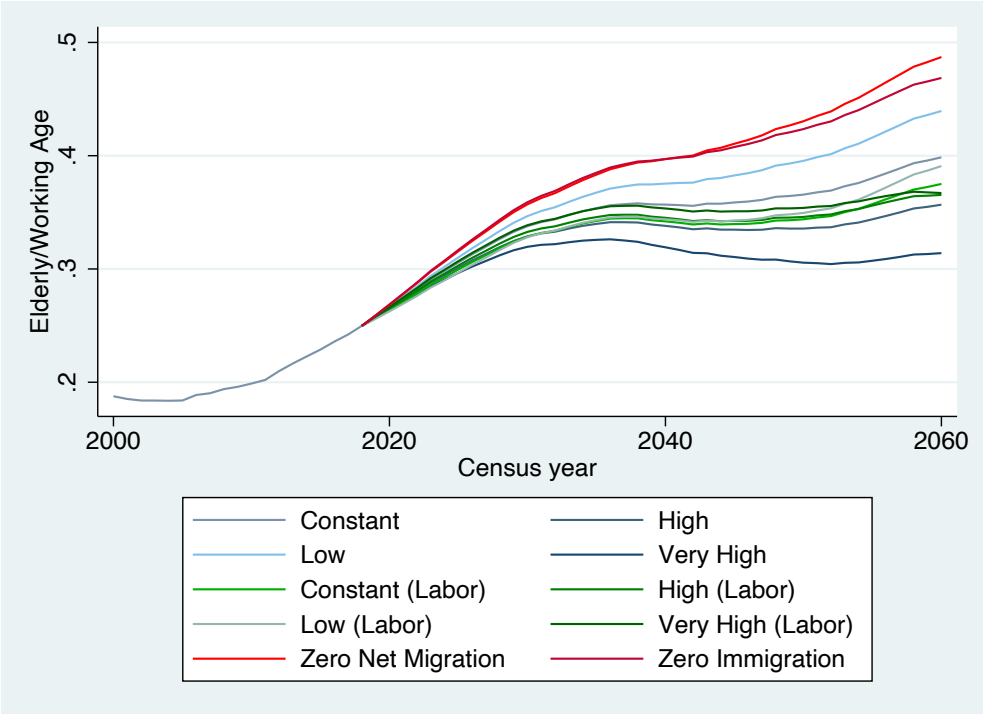
Notes: Working-age population is defined as ages 16–64.

Figure 5: Working-Age-Population Share



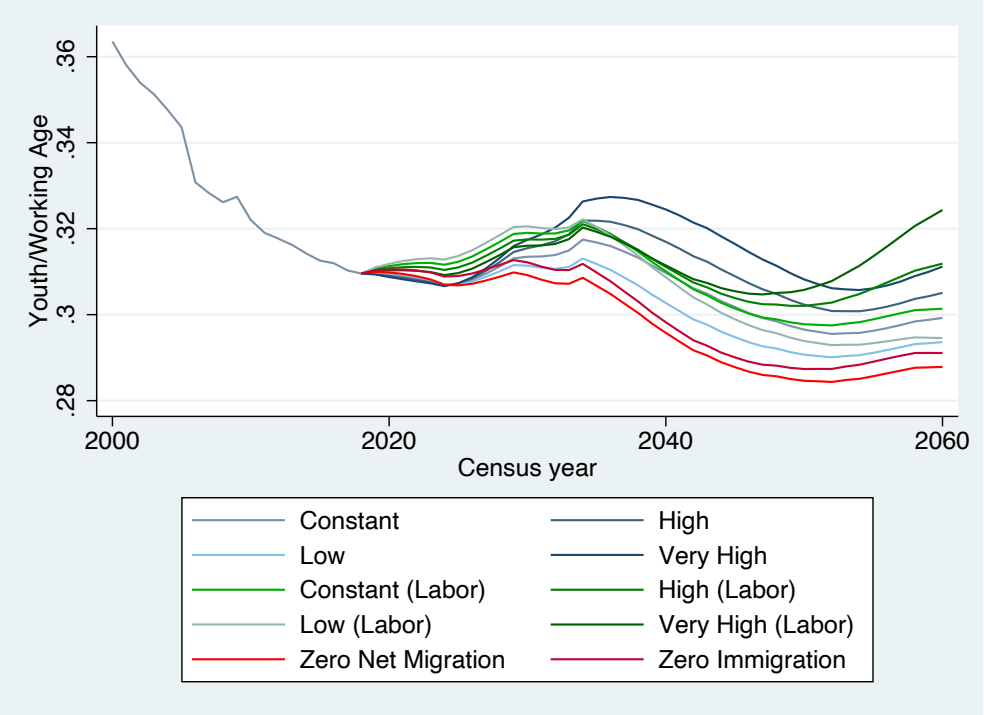
Notes: Working-age population is defined as ages 16–64. The working-age population share is the ratio of the working-age population to the total population *100.

Figure 6: Senior Ratio



Notes: The senior ratio is the ratio of the elderly (65+) population to the working-age (16–64) population.

Figure 7: Youth Ratio



Notes: The youth ratio is the ratio of the youth (0–15) population to the working-age (16–64) population.

3. Race and Ethnic Distribution

The most significant changes to the racial and ethnic distribution of the country occur among the White, Asian, and Hispanic populations. As immigration volume increases, the White share of the population declines. The Black population also declines, but to a lesser extent. The Asian population, which accounted for 5.6 percent of the total US population in 2018, varies dramatically across scenarios. Asian population shares drop to as low as 4.7 percent of the national population in the zero-immigration scenarios and reach a high of 41.8 percent in the very-high labor-focused scenario. The Hispanic share of the population increases in all scenarios except for those that emphasize labor immigration. Policies that emphasize labor migration increase the Asian share of immigrants while decreasing the Hispanic share, largely because more Hispanic immigrants arrive through family visas, while more work visas have historically been granted to immigrants from the Asian continent (see Figure 8).

It is worth acknowledging that estimates related to race and ethnic distribution are subject to people's self-reported identity choices, which may change over time. Earlier in American history, ethnic groups, including the Irish, Italians, Greeks, and Jews, assimilated into a revised and expanded understanding of "Whiteness."[17] With the same pressures of assimilation and discrimination in effect, it is possible that people identifying as Hispanic or biracial today may identify as white in coming decades.[18] Already, many Hispanics have European heritage and self-identify as White. Greater rates of intermarriage may expand the number of people with marginal claims to Whiteness, altering race and ethnic distributions independent of immigration admissions.[19]

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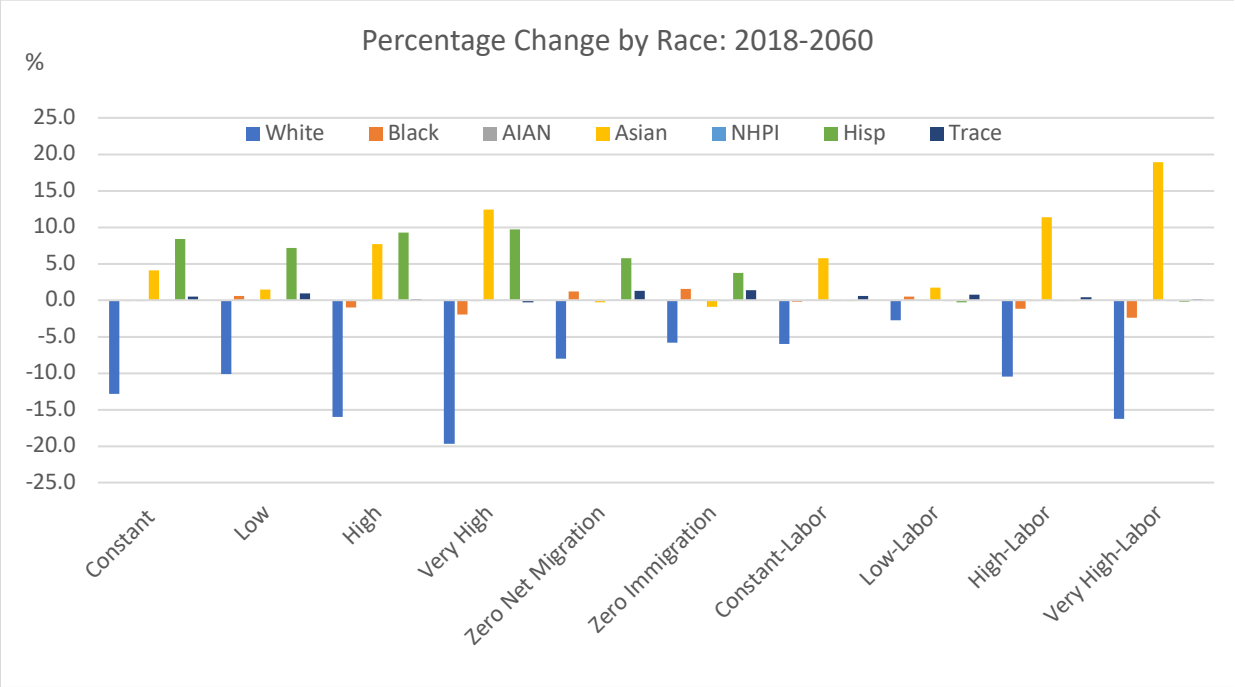
[17] Alba, Richard D., and Victor Nee. *Remaking the American Mainstream: Assimilation and Contemporary Immigration*. Cambridge: Harvard University Press, 2003.

[18] Alba, Richard. *The Great Demographic Illusion: Majority, Minority, and the Expanding American Mainstream*. Princeton: Princeton University Press, 2020.

[19] Alba, Richard, Brenden Beck, and Duygu Basaran Sahin. "The Rise of Mixed Parentage: A Sociological and Demographic Phenomenon to Be Reckoned With." *The Annals of the American Academy of Political and Social Science* 677:1 (2018): 26–38.

Figure 8: Population Change by Race and Ethnicity, 2018–2060



4. Gross Domestic Product

We examine the impacts of the different scenarios on economic growth, measured as changes in Gross Domestic Product (GDP), and average individual income, measured as changes in GDP per capita. While total GDP growth indicates the overall size of the economy and impacts fiscal conditions, GDP per capita is a better measure of average individual welfare. For example, higher GDP growth increases revenues available to pay the national debt, while growth in GDP per capita corresponds to higher individual income.

In our model, GDP depends on the size and skill composition of the labor force, and immigrants' share of the labor force. The skill composition depends on the visa mix. Policies that emphasize labor migration result in a larger share of high-skilled workers, with the high-skilled share of the working-age population reaching over 65 percent in the case of very high labor migration by 2060 and remaining below 61 percent under current policies (see Figure 9). While the high-skilled labor share has increased steadily from 2000 to 2018, it levels off in all the immigration policy scenarios, which focus only on changes in skill composition due to immigration and do not extrapolate from the overall rise in education workers in the United States in recent decades. All GDP projections are expressed in constant 2018 dollars and assume constant labor productivity growth of 1.4 percent per year.

Over the 43-year period, total GDP is consistently highest in the very-high-immigration scenario and lowest in the case of zero immigration (see Figure 10).[20] In all cases, GDP continues on its current upward trajectory, and the main determinant of variation in total GDP across policy scenarios is changes in the size of the labor force. Despite more high-skilled workers in the scenarios that emphasize labor migration, GDP grows faster under policies that maintain the current visa mix, compared to the corresponding scenarios that emphasize labor migration due to higher population growth. By the end of the projection period in 2060, the very-high-immigration scenario with the current visa mix predicts that total GDP will exceed $62.8 trillion.[21] This represents an increase of over 41 percent relative to the baseline scenario of constant immigration volume that maintains the current visa mix, which predicts total GDP close to $44.4 trillion in 2060 (see Table 3). The lowest prediction and most dramatic loss to GDP relative to the baseline scenario occurs with zero immigration, where real GDP is more than 27.6 percent lower than baseline. In this case, real GDP is only $32 trillion by 2060.

[20] For simplicity, each scenario is color coded. Current-visa-mix scenarios are blue, labor-emphasis scenarios are green, and zero-migration scenarios are red. Darker shades represent more restrictive policies. For example, the low-immigration, current-visa-mix scenario is light blue, while the very-high-immigration, current-visa-mix scenario is dark blue

[21] All GDP projections are in constant 2018 dollars and are not affected by inflation.

Relative to the commonly cited 10-year projections made by the Congressional Budget Office (CBO), our projections are somewhat lower due to methodological differences. While the benefit of our model is in directly comparing differences in a labor force with immigrant workers versus native workers, the CBO model takes a longer-term view and incorporates more variables into their model. However, the CBO prediction of 2028 GDP is over $2.4 trillion, similar to our prediction in the baseline scenario with current migration rates.[22] In 2012, CBO projected 2018 GDP fairly accurately, underestimating 2018 GDP by less than 6 percent.[23] Therefore, our estimates of GDP are in line with CBO projections that have proven reliable in the past.

To understand average gains and losses per person under different scenarios, we also examine the size of the economy relative to the size of the total population, or GDP per capita.[24] Similar to real GDP, the largest increase in GDP per capita occurs in the very-high-immigration scenarios, with a $45,500 gain from 2018 to 2060 and gain of over 4.4 percent relative to the baseline scenario of constant immigration (see Table 3). Due to productivity gains, GDP per capita continues to follow an upward trend in all scenarios, similar to overall GDP. However, in the low-, constant-, and high-immigration scenarios, GDP per capita is higher when emphasizing labor migration than maintaining the current visa mix. In the very-high-immigration scenarios, GDP per capita is higher when maintaining the current visa mix. Here, the higher growth in the size of the labor force, combined with constant productivity gains for each worker, outweigh gains from more high-skilled workers in the labor-focused scenarios. Differences in real GDP due to population growth, which were substantial across the labor-focused and current-visa-mix scenarios, level out when scaling the size of the economy by the size of the population. The largest loss to GDP per capita relative to current policy occurs in the case of zero net migration, where GDP per capita is 5.3 percent lower in 2060 relative to the case of constant immigration volume.

Finally, we adjust these projections to account for the possibility that a higher average level of education from high-skilled immigration makes the workforce more productive by accelerating technological growth and innovation.[25] While GDP remains higher in the current-visa-mix scenarios due to population growth, GDP is relatively higher in the labor-focused migration scenarios than it is without externalities. GDP per capita is also higher in all labor-focused scenarios than the corresponding case that maintains the current visa mix due to the higher share of high-skilled workers under policies that emphasize labor migration. As the share of skilled workers has a large influence on economic growth, the very-high labor-focused scenario yields a nearly 5 percent gain in per capita GDP relative to the baseline scenario (see Table 4). Again, the largest losses relative to the baseline scenario in 2060 occur in the case of zero net migration, where GDP per capita is 4.6 percent lower than baseline.

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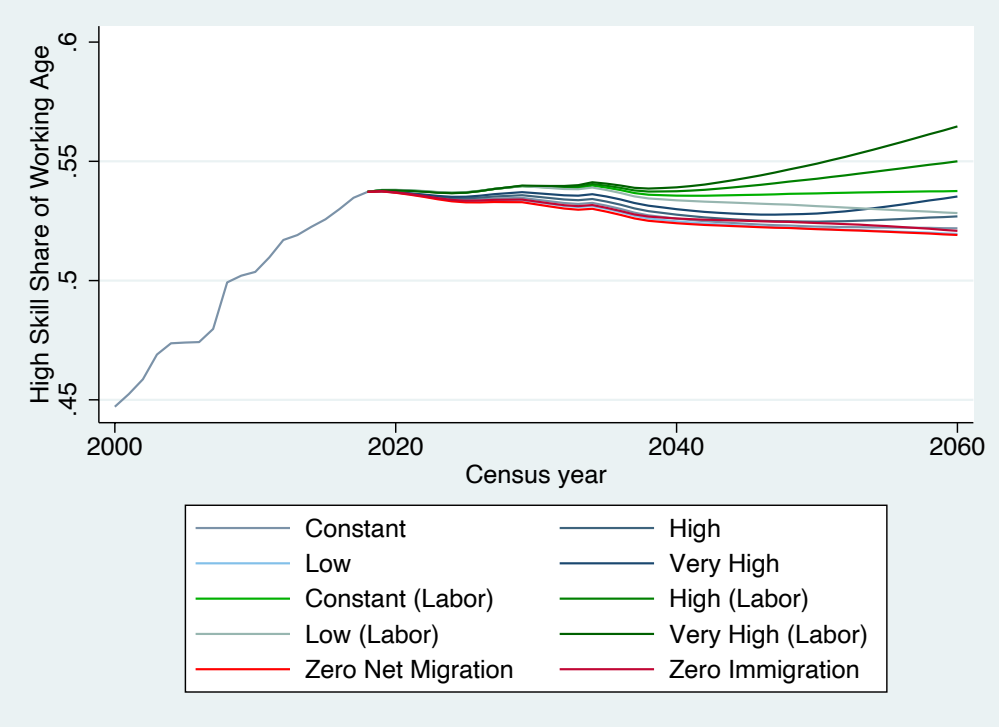
[22] Congressional Budget Office, 2019.
[23] Congressional Budget Office, 2012.
[24] As discussed in Appendix B, the methods used in these projections underestimate real GDP growth over time, but they do allow comparisons of changes in the immigrant share of the labor force across scenarios.
[25] These adjustments are explained in Appendix B on Human Capital Externalities.

Figure 9: High-Skill-Labor Share



Note: Employment is weighted by hours worked in the past year.

Table 3: GDP by Scenario, 2018 vs. 2060

	GDP Δ(2060 − 2018)	%	PC Δ(2060 − 2018)	%
Constant	23.891	0.000	40.907	0.000
Constant (Labor)	16.955	-15.624	42.858	1.884
High	31.849	17.925	43.191	2.205
High (Labor)	21.199	-6.064	43.214	2.227
Low	17.649	-14.061	38.539	-2.287
Low (Labor)	14.013	-22.250	41.590	0.660
Very High	42.380	41.647	45.500	4.435
Very High (Labor)	27.896	9.022	42.232	1.280
Zero Immigration	11.645	-27.585	36.155	-4.588
Zero Net Migration	12.523	-25.607	35.368	-5.347
Total	22.000	-4.260	40.955	0.047

Notes: Total GDP in 2018 dollars, in trillions. GDP per capita is the ratio of total GDP to the total population, in 1000s. 2018 GDP is $20.8 trillion, and GDP per capita is $62,669.

Table 4: GDP by Scenario, 2018 vs. 2060, with High Externalities

	GDP $\Delta(2060-2018)$	%	PC $\Delta(2060-2018)$	%
Constant	23.770	0.000	40.624	0.000
Constant (Labor)	17.643	-13.839	44.797	4.039
High	31.618	17.727	42.725	2.033
High (Labor)	22.286	-3.353	45.972	5.177
Low	17.675	-13.767	38.607	-1.953
Low (Labor)	14.443	-21.066	42.888	2.192
Very High	42.144	41.502	45.094	4.327
Very High (Labor)	29.529	13.009	45.771	4.983
Zero Immigration	11.883	-26.849	36.888	-3.618
Zero Net Migration	12.693	-25.019	35.874	-4.599
Total	22.368	-3.165	41.924	1.258

Notes: Total GDP in 2018 dollars, in trillions. GDP per capita is the ratio of total GDP to the total population, in 1000s. 2018 GDP is $20.8 trillion, and GDP per capita is $62,669.

Figure 10: Total GDP

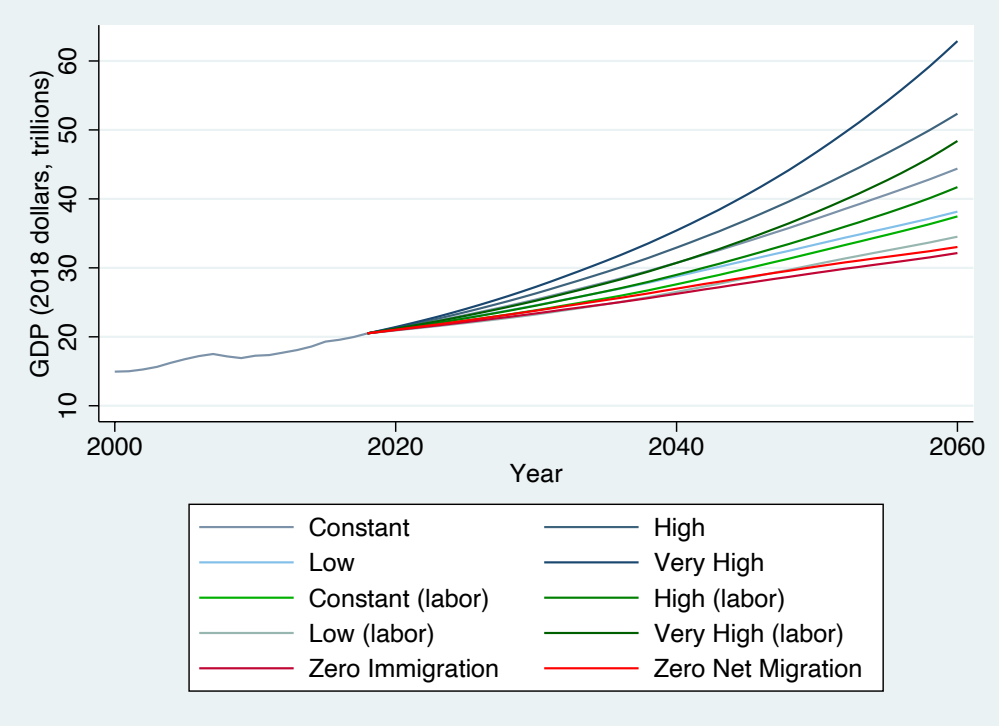
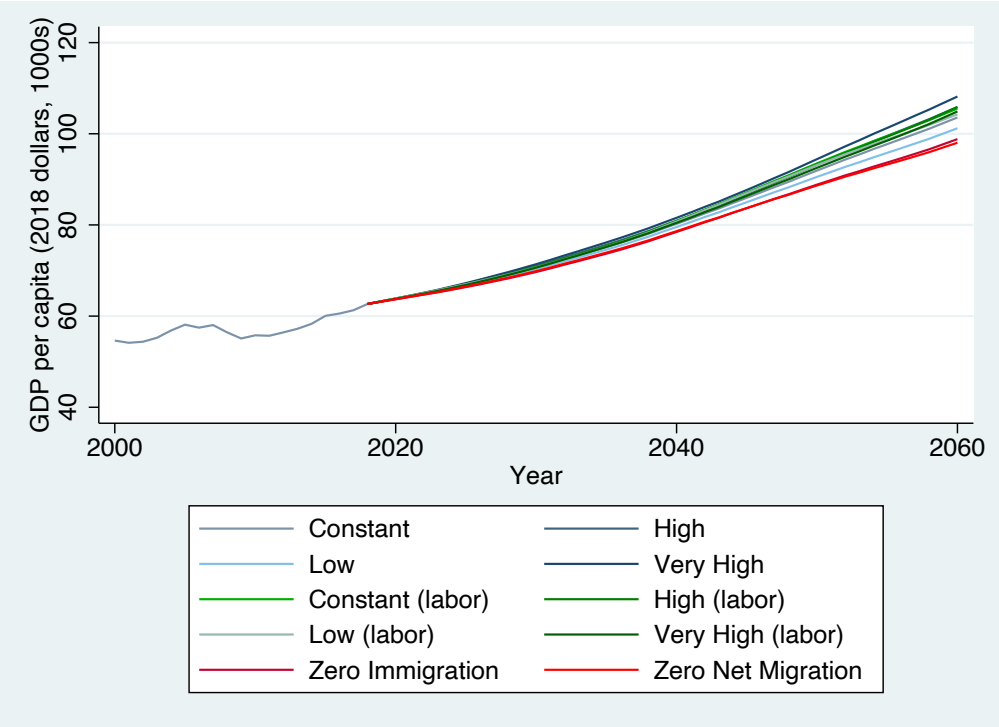


Figure 11: GDP Per Capita



5. Employment

Employment rates are similar across scenarios, and all projections show the proportion of the working-age population in active employment to be between 71.5 percent and 72.5 percent by 2060 (see Figure 12).[26] From 2000 to 2018, overall proportions employed varied more dramatically due to changes in labor force participation and business cycles. Future projections abstract from these factors and focus on the impact of changes in the immigrant composition. The greatest change due to immigration occurs in the case of very high labor migration, where the proportion working declines more sharply after 2040. This is due to the increasing share of Asian immigrants relative to Hispanic immigrants in the labor-focused scenarios: on average, Hispanic immigrants have higher proportions of their working-age population actively working than Asian immigrants (see Table 5).

Deviations in employment rates are very small across all scenarios. Over the course of 43 years, the highest average proportion employed is 72.5 percent in the case of very high migration, and the lowest average proportion employed is 72.1 percent in the case of high or very high labor migration (see Table 6). These results suggest that even large changes in immigration policy are unlikely to have significant impacts on employment, despite the fact that immigrants generally have a higher proportion employed (by over five percentage points in 2018) than the native-born (see Table 5). Finally, these small changes in employment rates align with the above projections of relatively small changes in GDP per capita across scenarios.

[26] These estimates, which rely on the American Community Survey (ACS), are higher than the official CBO estimates using the Current Population Survey (CPS) because of differences in how the surveys are conducted and how the employment questions are asked. Additionally, our estimates do not account for business cycle changes or changes in labor force participation, which drives most of the variation seen in employment rates from 2000 to 2018.

Figure 12: Employment Rates

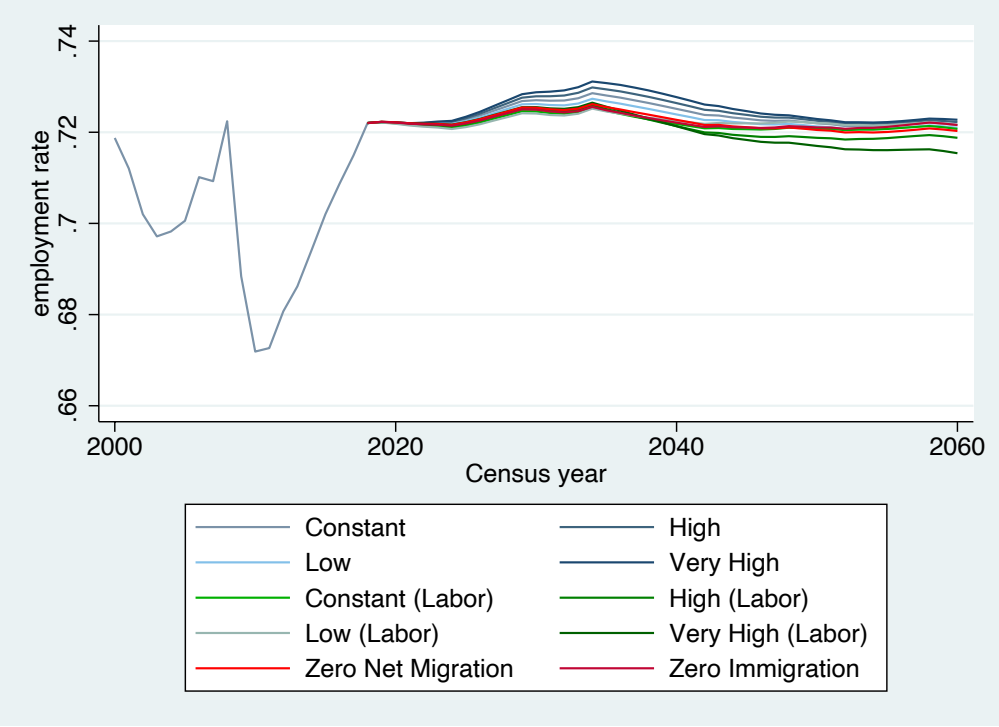


Table 5: Employment Rates by Race/Ethnicity, 2018

	Total	Foreign Born	Native Born
White	0.744	0.733	0.744
Black	0.673	0.768	0.659
Hispanic	0.705	0.740	0.678
Asian	0.724	0.733	0.699
Other	0.665	0.723	0.658
Total	0.702	0.739	0.688

Table 6: Average Overall Employment Rates by Scenario, 2018-2060

	Total	Foreign Born	Native Born
Constant	0.724	0.738	0.720
Constant (Labor)	0.722	0.715	0.721
High	0.724	0.737	0.718
High (Labor)	0.721	0.714	0.720
Low	0.723	0.738	0.721
Low (Labor)	0.722	0.717	0.722
Very High	0.725	0.736	0.717
Very High (Labor)	0.721	0.715	0.720
Zero Immigration	0.722	0.731	0.722
Zero Net Migration	0.722	0.718	0.722
Total	0.723	0.726	0.720

6. Social Security

Prior research finds minimal fiscal consequences from changes in the volume of immigration to the United States.[27] While immigrants tend to be younger and can help finance Social Security and public health care programs through their tax contributions, they also tend to be less educated and have higher fertility rates. The net impact of immigrants depends on their age, education, and the duration of their stay in the host country.[28] On average, high-skilled immigrants represent a slight surplus, while low-skilled immigrants represent a small deficit. As we look further out (to 2060) and examine a wider range of immigration levels compared to prior studies, we do find notable differences among scenarios in their impact on fiscal balances.

In examining the fiscal effects from different immigration policy scenarios, we focus on income and costs to the Social Security trust funds.[29] The main determinant of trust fund income is payroll tax contributions, which we estimate using individual wage income reported in the Current Population Survey (CPS). We estimate trust fund costs by measuring individually reported Social Security benefit receipts. In all cases, net Social Security trust fund income per capita, driven by the difference between income from payroll tax contributions and costs of benefit payouts, declines between 2018 and 2060 (see Figure 13), following prior trends. However, the smallest deficits in Social Security cash flows in 2060 occur in the high- and very-high-immigration scenarios, whether high immigration is achieved by maintaining the current visa mix or by emphasizing labor migration (see Table 7).

Highlighting the potential negative fiscal consequences of reducing immigration, Social Security costs per capita[30] rise the most dramatically in the cases of zero immigration and zero net migration, while per capita income tends to be higher in the labor-focused scenarios (see Figure 14). Over the past two decades, trust fund costs have steadily increased. Trust fund income has also increased, but not as quickly as costs, and income per capita has varied substantially due to changes in individual wage income that translate into changes in payroll tax contributions. On average, natives receive more Social Security benefits than non-natives, both because the native population is older and because temporary and undocumented immigrants pay taxes to finance social insurance programs but are not eligible to consume them. Therefore, a drop in the immigrant population increases the benefit payout to the average individual, but it does not increase average payroll tax contributions. In all cases except very-high-immigration volume, Social Security trust fund income per person is higher in the labor-focused scenarios due to the

[27] Lee and Miller, 2000; Storesletten, 2003; Rowthorn, 2008, Hanson, 2009.

[28] Kerr and Kerr, 2011; Orrenius, 2017.

[29] For simplicity, we follow the CPS and refer all Old Age, Survivors, and Disability Insurance (OASDI) benefits, administered by the Social Security Administration, as "Social Security." Because we account for Social Security income using self-reported data from the CPS, our estimates of total Social Security benefits in 2018 are lower than administrative totals. Projections of Social Security cash flows are in constant 2018 dollars and are not affected by inflation.

[30] Social Security trust fund income and costs per capita are scaled by total population, not the total number of beneficiaries. Average payroll taxes and benefit payouts relative to individual wages and demographics remain unchanged over time.

higher employment rate and skill level, and thus higher taxes, of immigrants in these scenarios (see Table 8). Average costs per capita are much higher in the zero immigration and zero-net-migration scenarios due to a more rapidly aging population (see Table 9).

To put these estimates in context, Social Security accounted for 4.9 percent of GDP and almost 24 percent of federal spending in 2018. In the baseline case of constant immigration with the current visa mix, our projections show a 27 percent increase in trust fund costs per capita over the 43-year period, from $3,022 in 2018 to $3,839 in 2060. Holding other elements of the federal budget constant, $3,839 per capita corresponds to 30.5 percent of federal spending. Contrast this with the most extreme case of zero net migration, where per capita costs increase by nearly 48 percent by 2060 to $4,460, which would represent over 35 percent of federal spending. Costs remain the lowest in 2060 in the high- and very-high-immigration scenarios that maintain the current visa mix (see Table 10). With very high immigration, Social Security trust fund costs increase to $3,181 per capita by 2060, which corresponds to less than 25.3 percent of federal spending in 2018.

Relative to 10-year projections made by the Social Security Administration (SSA), our model projects both lower costs and lower income, with a larger deficit overall. Specifically, we project a deficit in 2028 ranging from $174 billion in the case of very high immigration to $257 billion with zero immigration. SSA projections include high-cost, low-cost, and intermediate scenarios, which vary assumptions, including the total fertility rate, mortality improvements, and unemployment, to provide a range of estimates. The 2028 projections cover a broad range of possible outcomes: a surplus of over $100 billion under low-cost assumptions, a deficit of $180 billion in the intermediate case, and a much larger deficit of over $400 billion under high-cost assumptions.[31] Historically, SSA projections have overestimated net income to the trust funds. For example, while the 2010 trustees report predicted a net surplus of nearly $150 billion in 2018 in the intermediate scenario, the actual net income was $3.4 billion.[32] Nonetheless, our model's projections fall well within the range of estimates provided by SSA, and the trends are consistent: high immigration can have a positive impact on cash flows for the Social Security trust fund, while low- or zero-immigration scenarios stretch the deficit between income and costs even further. In 2019, the Social Security Board of Trustees predicted that trust fund costs would exceed income in 2021 and predicted that reserves would be depleted by 2035, while an increase in annual net migration of 335,000 immigrants would extend the reserve depletion to 2036.[33] These projections confirm that higher immigration can delay the depletion of Social Security reserves by increasing payroll tax contributions with a younger workforce.

[31] Social Security Administration, 2019.
[32] Social Security Administration, 2010.
[33] Congressional Research Service, 2020; Social Security Administration, 2019: pp. 180–181.

Table 7: Net Social Security Trust Fund Income, Δ (2060–2018)

	2018	2060	Δ(2060–2018)
Constant	3.140	-460.634	-463.774
Constant (Labor)	3.140	-350.467	-353.607
High	3.140	-346.848	-349.988
High (Labor)	3.140	-318.564	-321.704
Low	3.140	-535.099	-538.239
Low (Labor)	3.140	-387.219	-390.359
Very High	3.140	-171.941	-175.081
Very High (Labor)	3.140	-319.205	-322.345
Zero Immigration	3.140	-551.237	-554.377
Zero Net Migration	3.140	-603.715	-606.855
Total	3.140	-404.493	-407.633

Note: Net income in constant 2018 dollars, in billions.

Table 8: Net Social Security Trust Fund Income Per Capita, Δ(2060–2018)

	2018	2060	Δ(2060–2018)
Constant	0.010	-1.075	-1.084
Constant (Labor)	0.010	-0.987	-0.997
High	0.010	-0.701	-0.711
High (Labor)	0.010	-0.809	-0.818
Low	0.010	-1.419	-1.429
Low (Labor)	0.010	-1.170	-1.179
Very High	0.010	-0.296	-0.305
Very High (Labor)	0.010	-0.692	-0.701
Zero Immigration	0.010	-1.695	-1.704
Zero Net Migration	0.010	-1.792	-1.802
Total	0.010	-1.064	-1.073

Note: Net income per capita in constant 2018 dollars, in thousands.

Table 9: Social Security Trust Fund Income Per Capita, Δ (2060–2018)

	2018	2060	Δ(2060–2018)
Constant	3.067	2.809	-0.258
Constant (Labor)	3.067	2.893	-0.173
High	3.067	2.861	-0.206
High (Labor)	3.067	2.908	-0.159
Low	3.067	2.766	-0.301
Low (Labor)	3.067	2.863	-0.204
Very High	3.067	2.922	-0.145
Very High (Labor)	3.067	2.899	-0.168
Zero Immigration	3.067	2.745	-0.322
Zero Net Migration	3.067	2.720	-0.347
Total	3.067	2.839	-0.228

Note: Income per capita in constant 2018 dollars, in thousands.

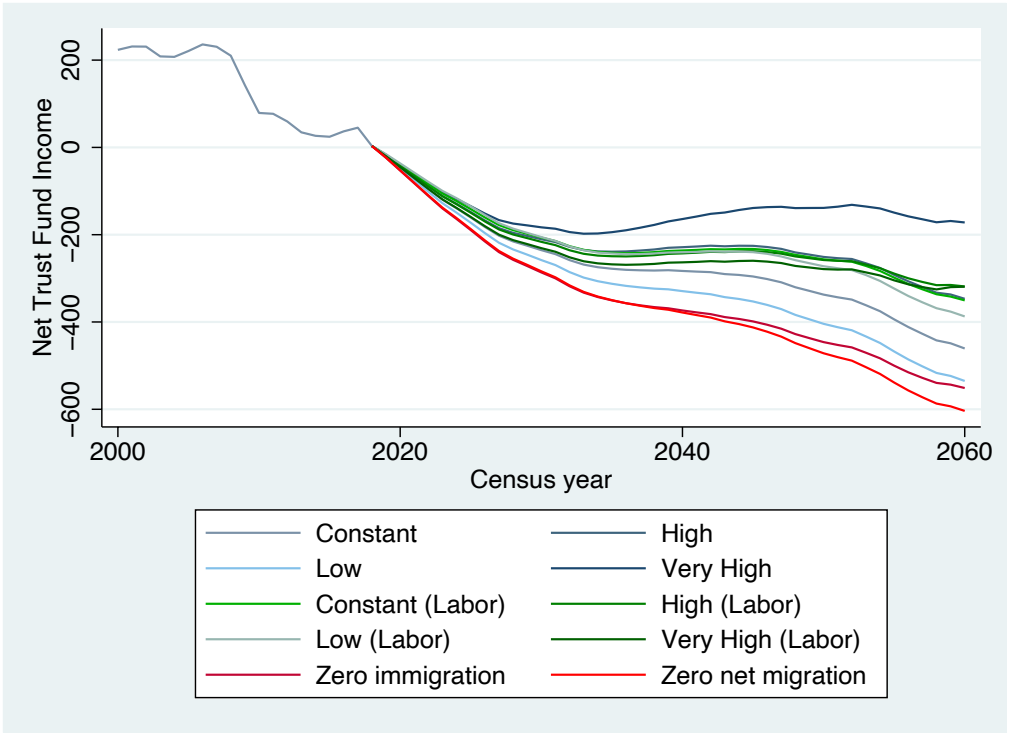
Table 10: Social Security Trust Fund Costs Per Capita, Δ (2060–2018)

	2018	2060	Δ(2060–2018)
Constant	3.022	3.839	0.817
Constant (Labor)	3.022	3.836	0.814
High	3.022	3.521	0.499
High (Labor)	3.022	3.674	0.652
Low	3.022	4.137	1.115
Low (Labor)	3.022	3.986	0.964
Very High	3.022	3.181	0.159
Very High (Labor)	3.022	3.549	0.527
Zero Immigration	3.022	4.388	1.366
Zero Net Migration	3.022	4.460	1.438
Total	3.022	3.857	0.835

Note: Costs per capita in constant 2018 dollars, in thousands.

Figure 13: Net Social Security Trust Fund Income

Total



Per Capita

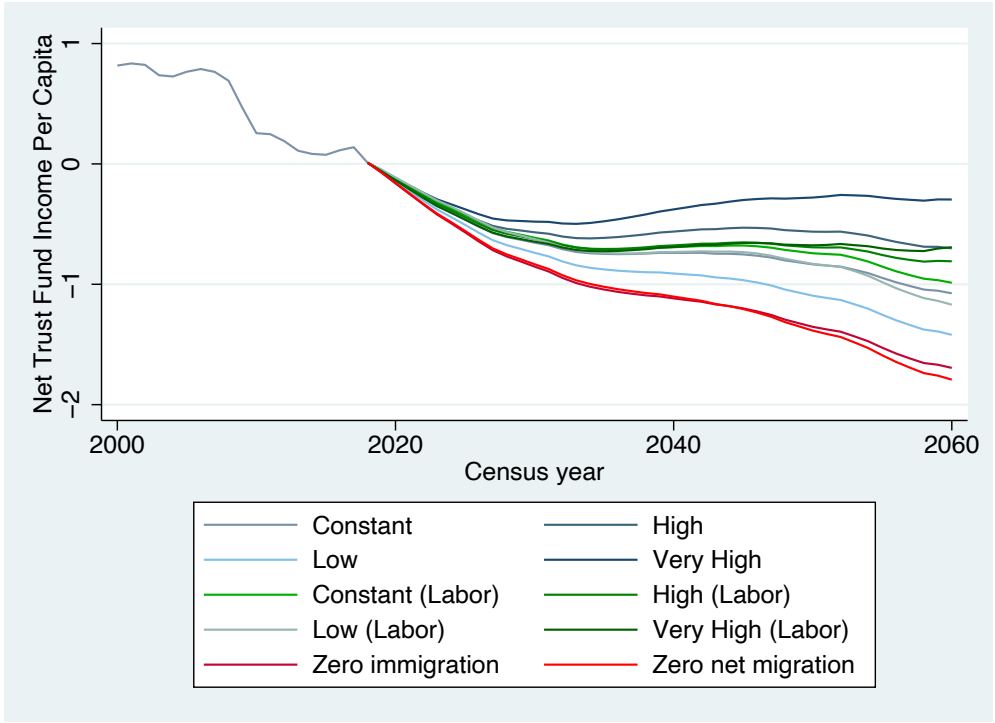
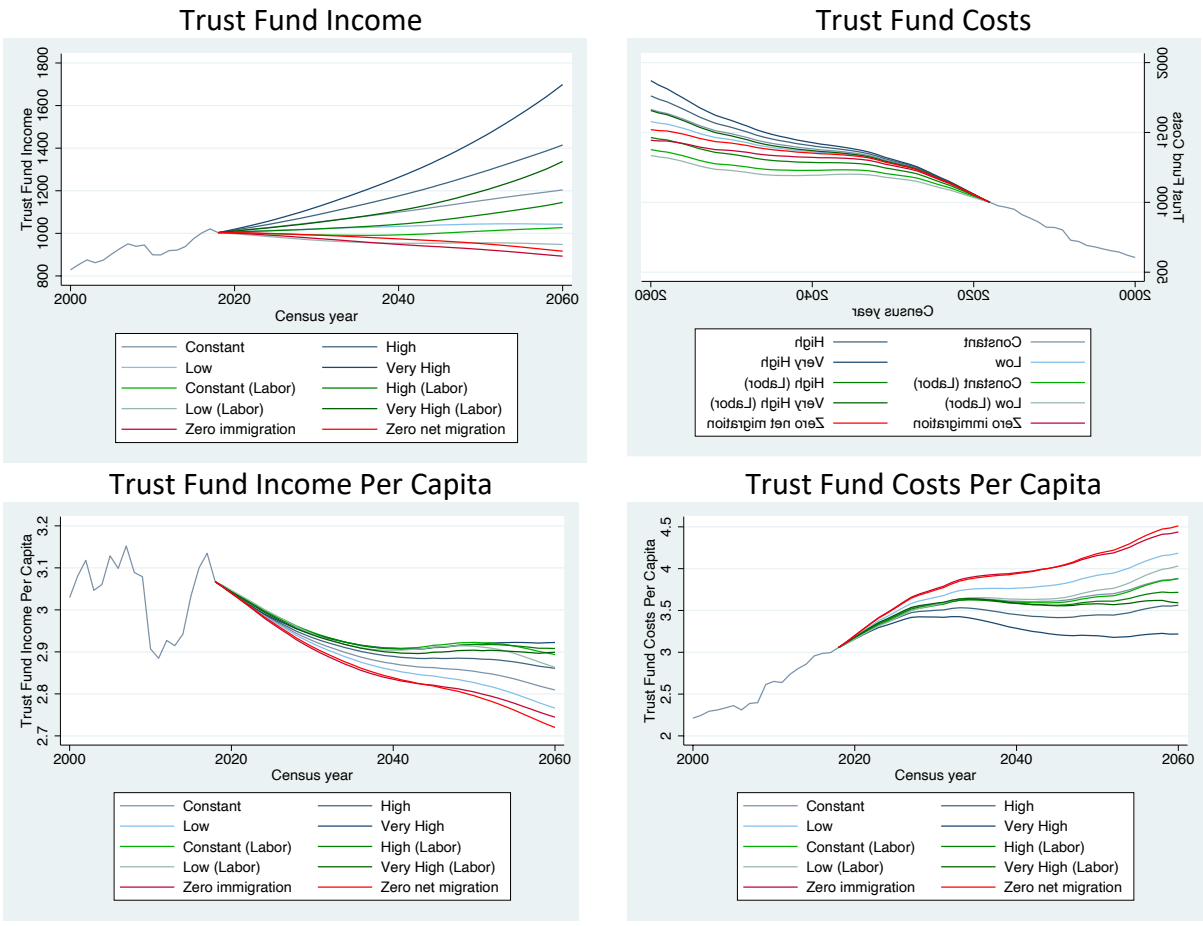


Figure 14: Social Security Trust Fund Income and Costs



Conclusion

This report's projections are estimates subject to a variety of informed assumptions, but, importantly, they predict the scale and direction of long-term policy outcomes depending on possible changes in US immigration policy.

It is clear that heavily restricting immigration exacerbates the aging of the population, reduces the size of the economy, and lowers average individual incomes—a fate sealed by the current age structure and decreasing fertility rates. Social Security balances are also the most strained in low- or zero-immigration scenarios. These results raise questions for hardline restrictionists who advocate severe admissions cuts.

However, even the maintenance of current levels of immigration would also weaken American prospects for productivity and fiscal balance in the medium and long run. Given our aging population and plummeting American fertility rates in recent years, the economic and demographic data suggest that it is only through increased immigration that the United States can achieve a sustainable working-age population, strong economic growth, and a solvent Social Security system.

These effects of increasing immigration largely hold independent of whether or not the United States pursues a more labor-focused immigration policy. We find that a more labor-focused visa regime would produce higher GDP per capita but more muted population growth, total GDP, and weaker fiscal balances because of labor migrants' lower fertility rates and propensity to return to their countries of origin. There are thus trade-offs to consider between the labor-based and current visa regimes. Maintaining the current, predominantly family visa mix would also increase the Hispanic population share, while emphasizing labor migration would increase the Asian population share. If one's goal is to maximize total GDP growth to help pay off the national debt or maintain the US global economic role, then the current visa regime will give the best result. If a higher priority is placed on raising GDP per capita, then one may prefer a high-immigration regime that emphasizes labor-focused admissions, which raises the share of high-skilled workers.

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APPENDIX A: 2020 COVID / TRUMP ADJUSTMENTS

2020 was an unusual year. A series of immigration restrictions imposed by the Trump Administration —limiting international student enrollments, capping refugees, reducing consular capacity for visa processing – and travel restrictions stemming from Covid-19 likely reduced net immigration to the U.S to near-zero levels. It is possible that we will see a sharp "bounce back" when vaccines are universally available and the Biden Administration seeks to implement major reforms to immigration that encourage more skilled workers, more students, and more temporary workers to come to the US. Under such a scenario, it is reasonable to expect that the net effect of the 2020 migration halt will be overcome by 2021 or 2022, leaving our long-term projections unaffected.

However, it is also possible that it takes several years to overcome the impact of 2020 on immigration to the US. Potential migrants may remain discouraged, Covid may take all of 2021 to be mitigated, and reforming immigration policy may be contentious and time-consuming — possibly even deferred. So we have calculated an additional projection to see how much a multi-year lowering of immigration following the 2020 shock would affect our "baseline" projections for population and GDP.

In this projection, we assume that net migration has fallen to zero for 2020; that in 2021 net migration is only half of what our baseline projection had estimated for that year; that in 2022 net migration is three-quarters of what our baseline projection had estimated for that year; and that in 2023 net migration returns to the baseline trajectory. This provides an idea of how large or small an effect this short-term reduction of migration from the "Trump/Covid immigration shock" would have on longer-term outcomes.

For each economic outcome, we apply the same methods described in the scenarios above. The results remain in line with the original, pre-Covid scenarios. The slight downward shift in net migration due to Covid results in slightly lower GDP in 2060, with total GDP in our baseline scenario increasing by $21.199 trillion from 2018-2060, rather than $21.891 trillion in the pre-Covid projections. Similarly, baseline GDP per capita increases by $40,740 from 2018-2060, compared with $40,907 in the pre-Covid projections. Average employment rates remain the same in most scenarios. See the supplemental figures and tables that follow.

Similarly, fiscal projections remain close to the original projections, with net income to the Social Security trust fund falling by $466 billion in the baseline scenario, compared with -$1,106, compared with a decline of less than $464 billion in the pre-Covid projections, resulting in a difference of less than 0.6 percent. Accounting for less migration due to Covid has a larger impact on the very high immigration scenarios, with a decline of $345 billion in the very high labor immigration scenario, compared with $322 billion in the pre-Covid projections, a difference of approximately 7 percent. See the supplemental figures and tables that follow.

Figure 1: Population growth, 2018-2060

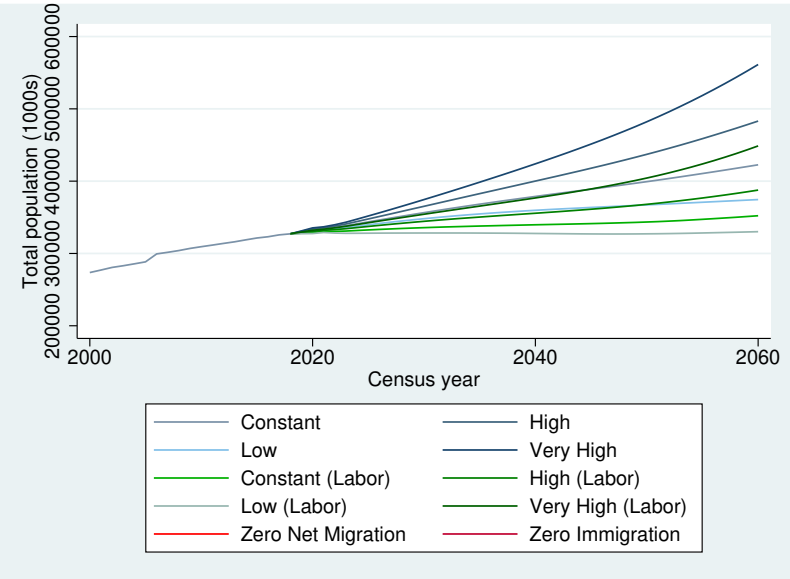


Figure 2: Foreign-Born Population growth, 2018-2060

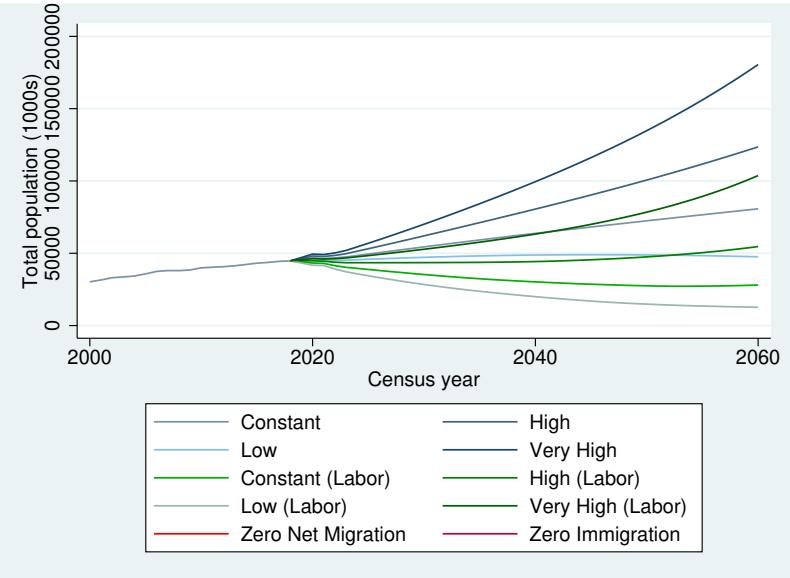


Figure 3: Projected population in 2060 compared with 2018

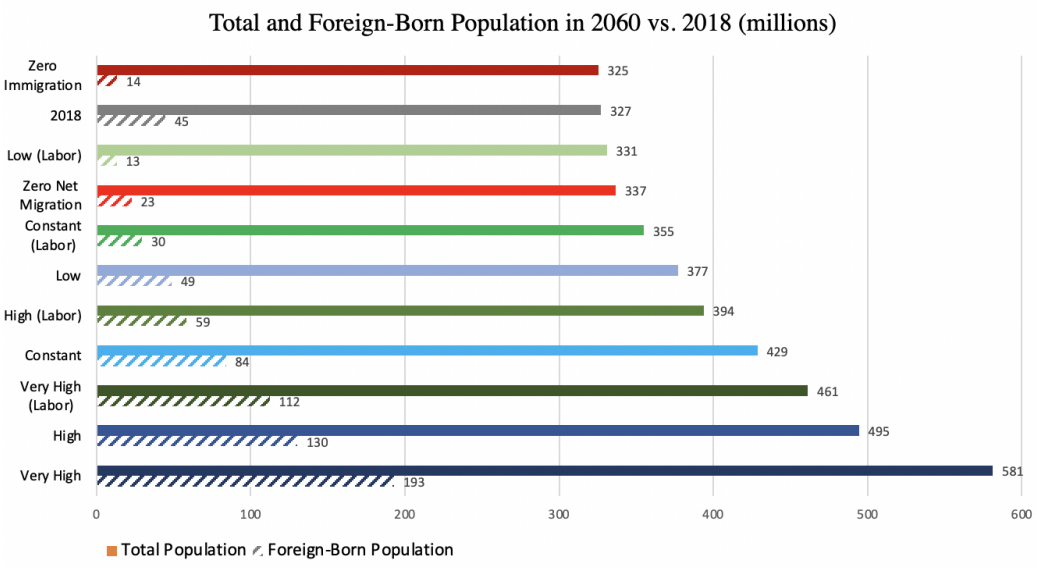
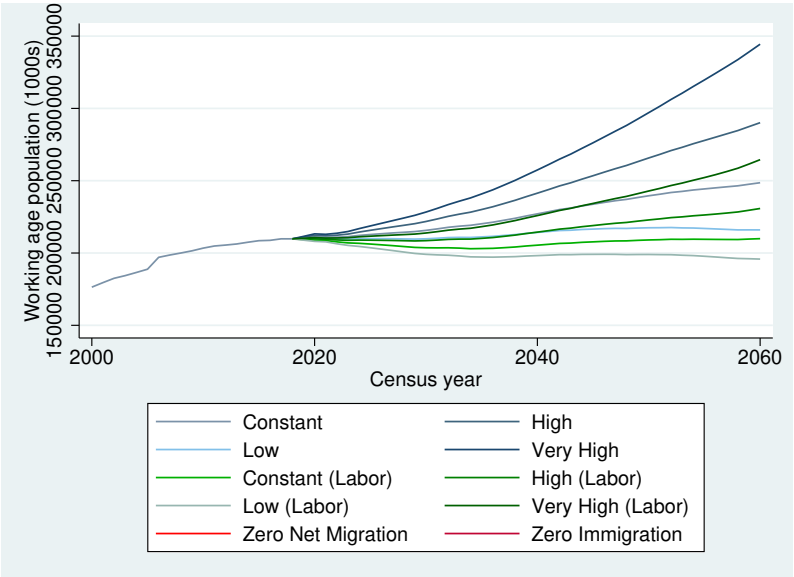
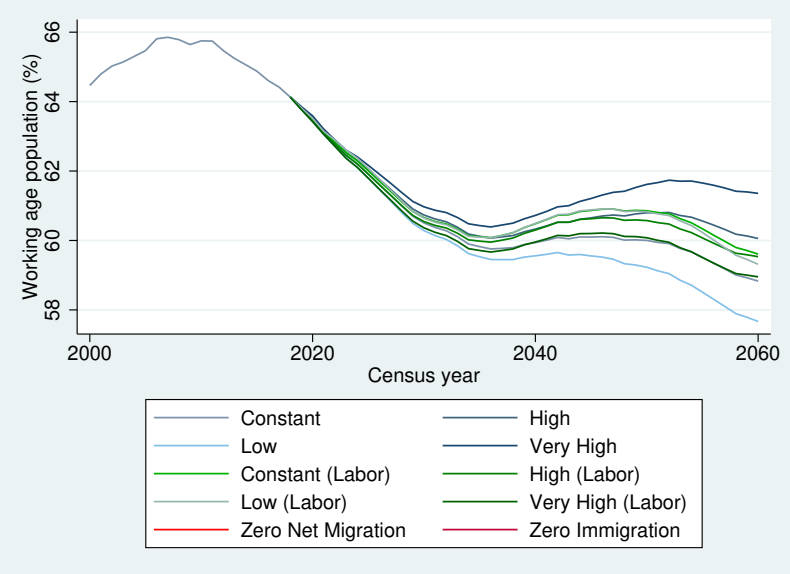


Figure 4: Working Age Population



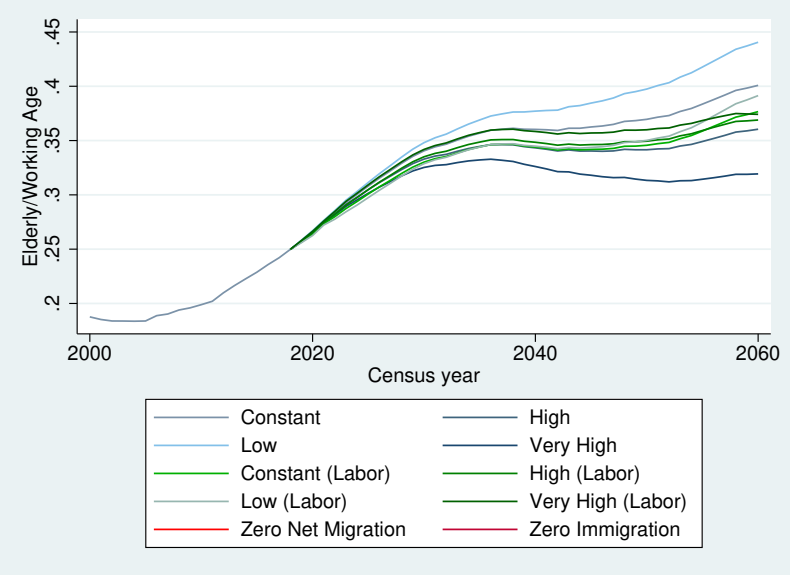
Notes: Working age population is defined as ages 16-64. The working age population share is the ratio of the working age population to the total population *100.

Figure 5: Working Age Population Share



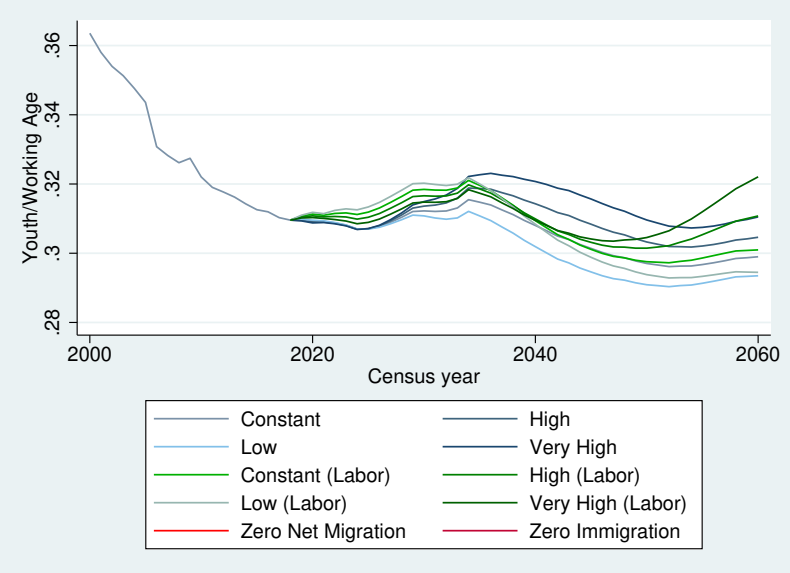
Notes: Working age population is defined as ages 16-64. The working age population share is the ratio of the working age population to the total population *100.

Figure 6: Senior Ratio



Notes: The senior ratio is the ratio of the elderly (ages 65+) population to the working age (ages 16-64) population.

Figure 7: Youth Ratio



Notes: The youth ratio is the ratio of the youth (ages 0-15) population to the working age (ages 16-64) population.

Figure 8: Population Change by Race and Ethnicity, 2018-2060

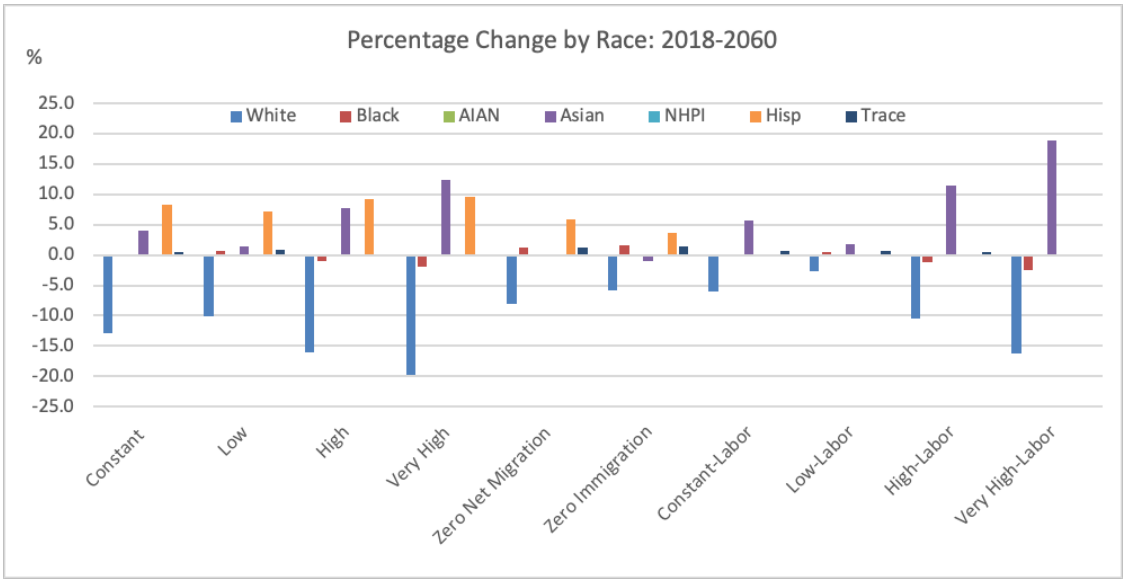
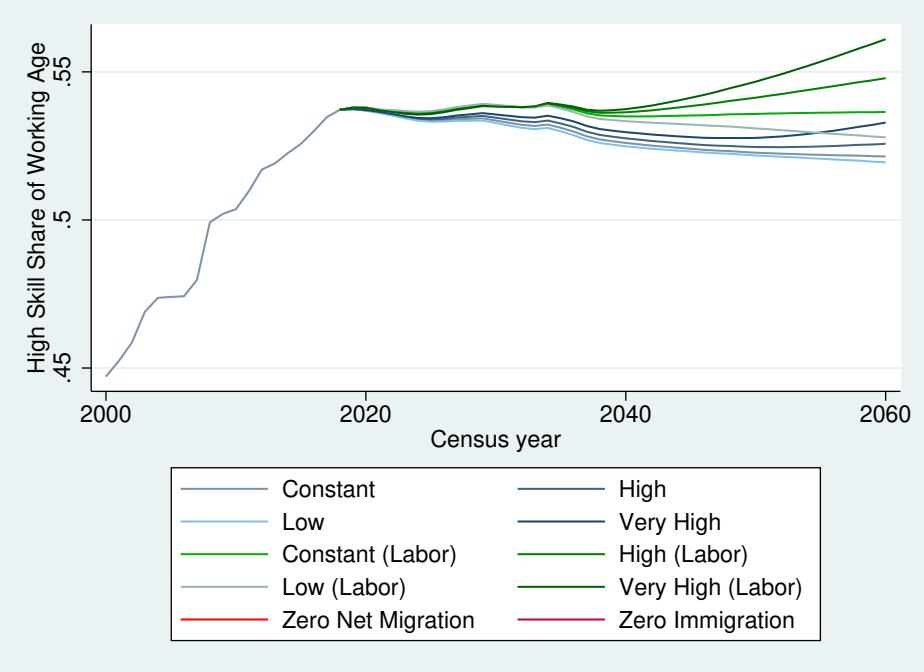


Figure 9: High Skill Labor Share



Notes: Employment is weighted by hours worked in the past year.

Table 1: GDP by scenario, 2018 vs. 2060

	GDP $\Delta(2060-2018)$	%	PC $\Delta(2060-2018)$	%
Constant	23.199	0.000	40.740	0.000
Constant(Labor)	16.611	-15.075	42.709	1.905
High	30.506	16.721	42.920	2.108
High(Labor)	20.453	-6.283	42.976	2.163
Low	17.372	-13.334	38.455	-2.209
Low(Labor)	13.891	-21.299	41.517	0.751
Very High	39.986	38.413	45.096	4.213
Very High (Labor)	26.417	7.365	41.892	1.115
Total	23.554	0.813	42.038	1.256

Notes: Total GDP in 2018 dollars, in trillions. GDP per capita is the ratio of total GDP to the total population, in 1000s. 2018 GDP is $20.8 trillion and GDP per capita is $62,669.

Table 2: GDP by scenario, 2018 vs. 2060, with high externalities

	GDP $\Delta(2060-2018)$	%	PC $\Delta(2060-2018)$	%
Constant	23.077	0.000	40.451	0.000
Constant(Labor)	17.267	-13.331	44.573	3.997
High	30.262	16.486	42.414	1.903
High(Labor)	21.466	-3.696	45.589	4.982
Low	17.399	-13.029	38.528	-1.866
Low(Labor)	14.310	-20.117	42.786	2.264
Very High	39.696	38.135	44.580	4.003
Very High (Labor)	27.896	11.059	45.189	4.594
Total	23.922	1.938	43.014	2.485

Notes: Total GDP in 2018 dollars, in trillions. GDP per capita is the ratio of total GDP to the total population, in 1000s. 2018 GDP is $20.8 trillion and GDP per capita is $62,669.

Figure 10: Total GDP

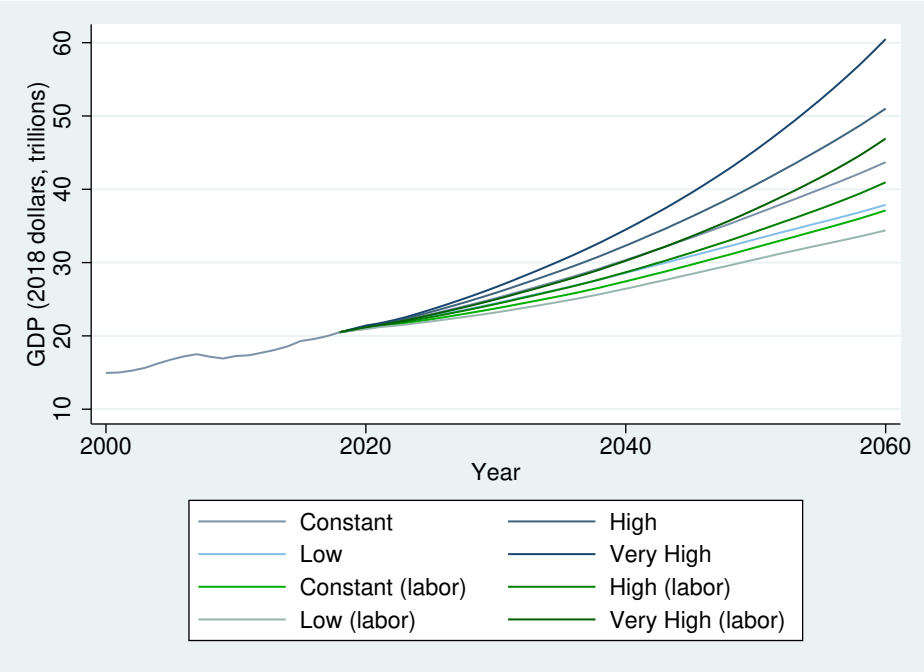


Figure 11: GDP Per Capita

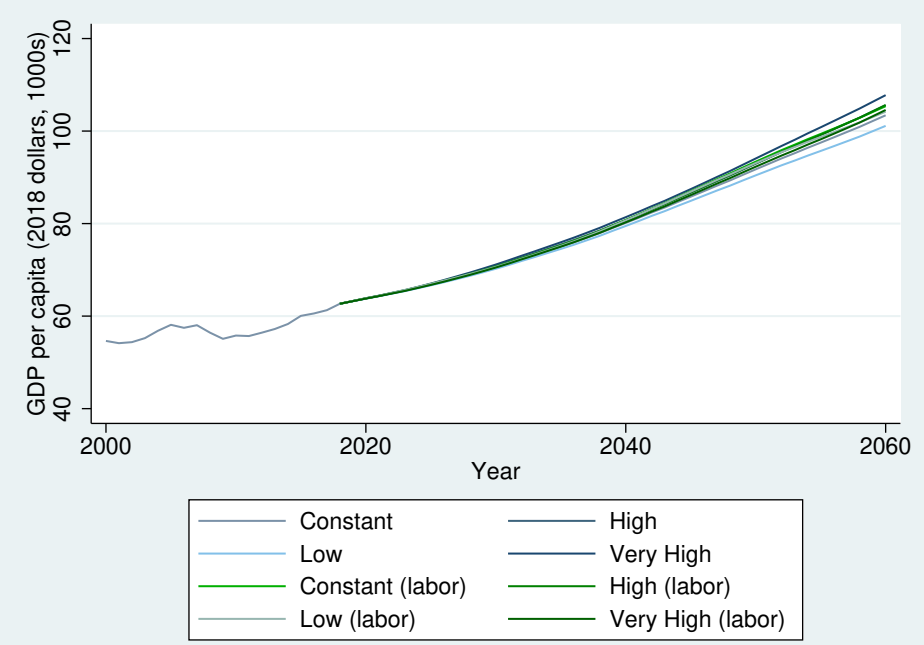


Figure 12: Employment Rates

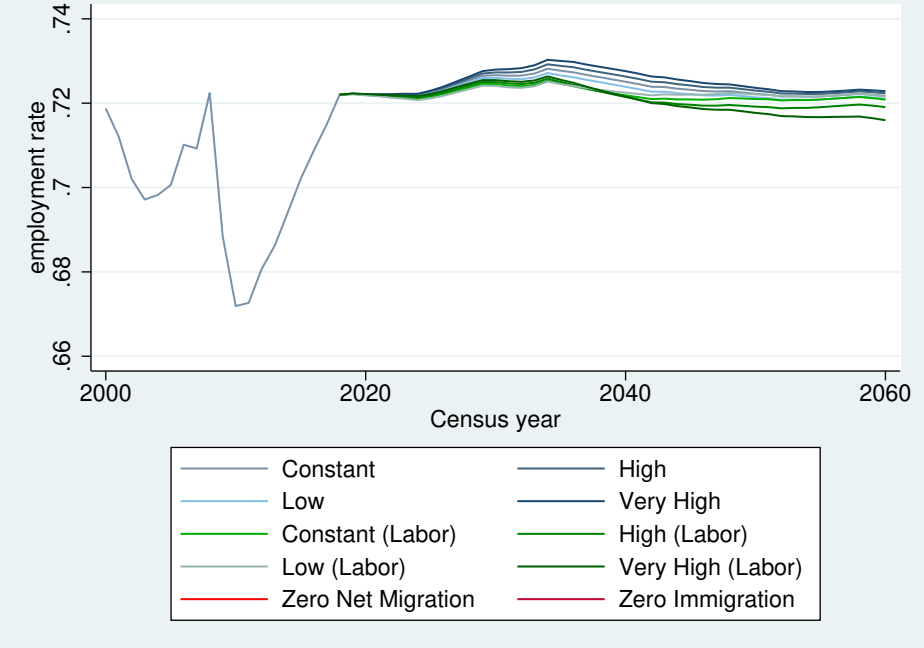


Table 3: Employment rates by race/ethnicity, 2018

	Total	Foreign Born	Native Born
White	0.744	0.733	0.744
Black	0.673	0.768	0.659
Hispanic	0.705	0.740	0.678
Asian	0.724	0.733	0.699
Other	0.665	0.723	0.658
Total	0.702	0.739	0.688

Table 4: Average overall employment rates by scenario, 2018-2060

	Total	Foreign Born	Native Born
Constant	0.724	0.738	0.720
Constant(Labor)	0.722	0.715	0.721
High	0.724	0.738	0.719
High(Labor)	0.721	0.715	0.721
Low	0.723	0.738	0.721
Low(Labor)	0.722	0.717	0.722
Very High	0.725	0.737	0.718
Very High (Labor)	0.721	0.716	0.720
Total	0.723	0.727	0.720

Table 5: Net Social Security Trust Fund Income, $\Delta(2060 - 2018)$

	2018	2060	$\Delta(2060 - 2018)$
Constant	3.140	-463.217	-466.357
Constant(Labor)	3.140	-354.106	-357.246
High	3.140	-356.772	-359.912
High(Labor)	3.140	-328.520	-331.660
Low	3.140	-535.151	-538.291
Low(Labor)	3.140	-388.261	-391.401
Very High	3.140	-198.212	-201.352
Very High (Labor)	3.140	-342.555	-345.695
Total	3.140	-370.849	-373.989

Net income in constant 2018 dollars, in billions.

Table 6: Net Social Security Trust Fund Income Per Capita, $\Delta(2060 - 2018)$

	2018	2060	$\Delta(2060 - 2018)$
Constant	0.010	-1.096	-1.106
Constant(Labor)	0.010	-1.005	-1.015
High	0.010	-0.739	-0.748
High(Labor)	0.010	-0.847	-0.857
Low	0.010	-1.429	-1.438
Low(Labor)	0.010	-1.176	-1.186
Very High	0.010	-0.353	-0.363
Very High (Labor)	0.010	-0.763	-0.773
Total	0.010	-0.926	-0.936

Per capita in 2018 dollars, in 1000s.

Table 7: Social Security Trust Fund Income Per Capita, $\Delta(2060 - 2018)$

	2018	2060	$\Delta(2060 - 2018)$
Constant	3.067	2.806	-0.261
Constant(Labor)	3.067	2.889	-0.177
High	3.067	2.854	-0.213
High(Labor)	3.067	2.901	-0.166
Low	3.067	2.765	-0.302
Low(Labor)	3.067	2.861	-0.206
Very High	3.067	2.910	-0.156
Very High (Labor)	3.067	2.887	-0.180
Total	3.067	2.859	-0.208

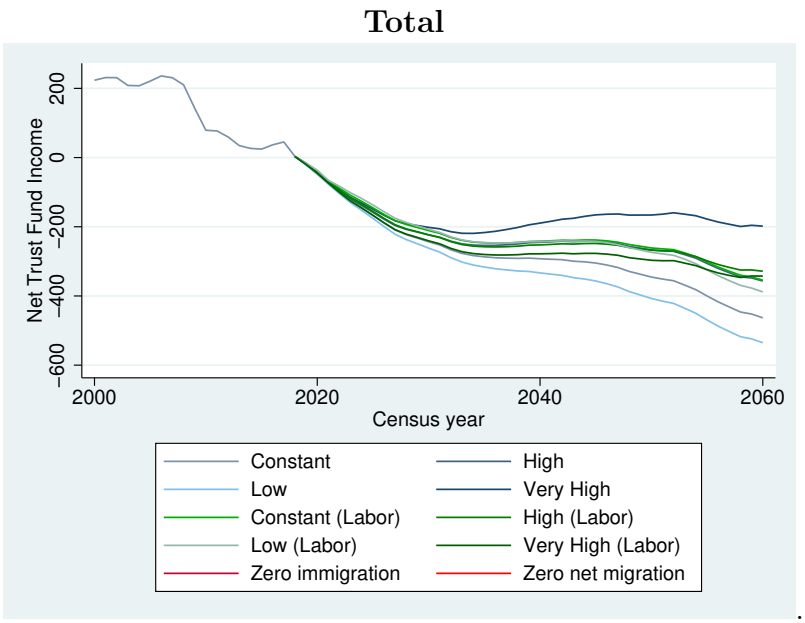
Per capita in 2018 dollars, in 1000s.

Table 8: Social Security Trust Fund Costs Per Capita, $\Delta(2060 - 2018)$

	2018	2060	$\Delta(2060 - 2018)$
Constant	3.022	3.857	0.835
Constant(Labor)	3.022	3.850	0.828
High	3.022	3.551	0.529
High(Labor)	3.022	3.705	0.683
Low	3.022	4.145	1.123
Low(Labor)	3.022	3.991	0.969
Very High	3.022	3.226	0.204
Very High (Labor)	3.022	3.608	0.586
Total	3.022	3.741	0.720

Per capita in 2018 dollars, in 1000s.

Figure 13: Net Social Security Trust Fund Income



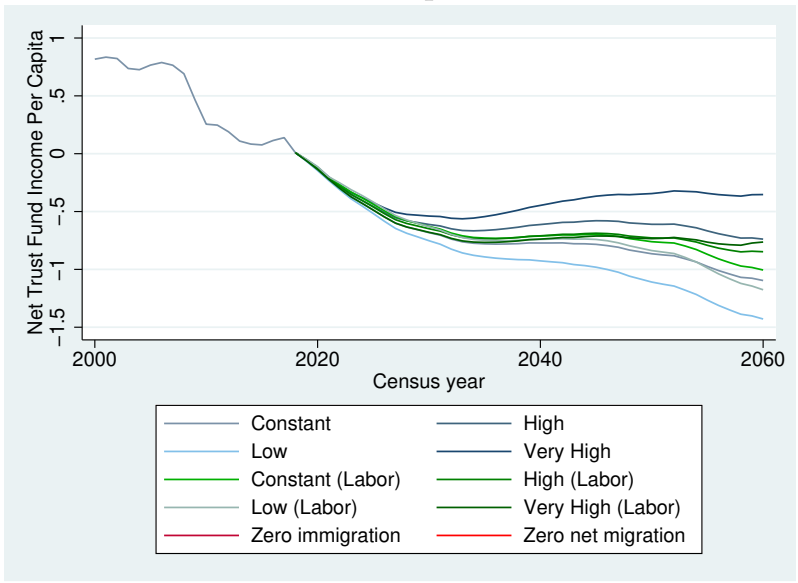


Figure 14: Social Security Trust Fund Income and Costs

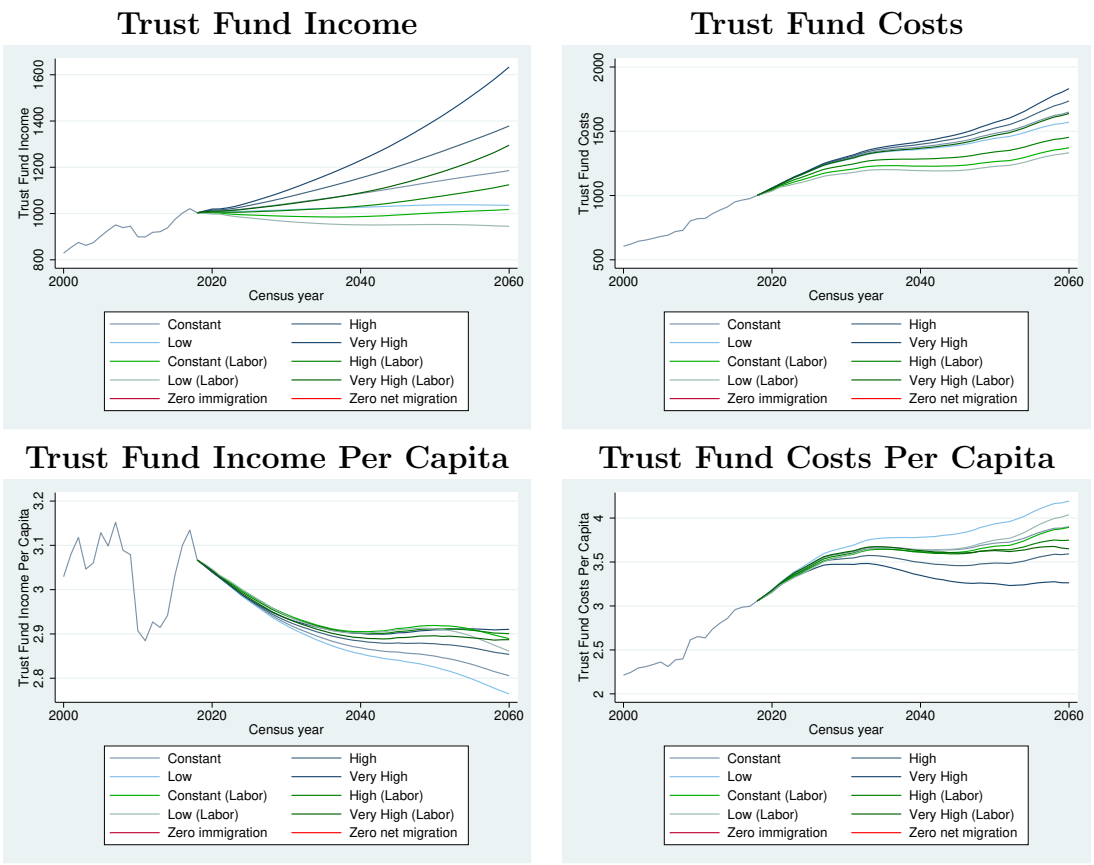


Table 9: GDP by scenario, 2018 vs. 2060, with intermediate externalities

	GDP $\Delta(2060-2018)$	%	PC $\Delta(2060-2018)$	%
Constant	23.126	0.000	40.567	0.000
Constant(Labor)	17.003	-14.033	43.824	3.155
High	30.359	16.580	42.616	1.985
High(Labor)	21.058	-4.740	44.536	3.845
Low	17.388	-13.151	38.499	-2.003
Low(Labor)	14.141	-20.592	42.277	1.656
Very High	39.812	38.246	44.786	4.087
Very High (Labor)	27.299	9.566	43.858	3.188
Total	23.773	1.485	42.620	1.989

Notes: Total GDP in 2018 dollars, in trillions. GDP per capita is the ratio of total GDP to the working age population, in 1000s. 2018 GDP is $20.8 trillion and GDP per capita is $62,669.

APPENDIX B: METHODOLOGICAL APPROACH

Population Growth, Aging, Race and Ethnicity

Demographic projections of population growth, aging, and race and ethnic composition are based on the fertility rate and the net migration rate for each age, sex, race/ethnicity, and nativity group. We apply estimated fertility rates across demographic groups from the Census Bureau. These predictions assume that fertility rates across ethnic groups will converge linearly by 2100.[34] We calculate net migration rates using data from the 2018 American Community Survey and fertility and mortality rates projected in the Census's 2017 National Projections, described in more detail below. We project population changes under the assumption that the new net migration rates from the immigration policy specified in any scenario remain constant from 2018 to 2060, except for the zero immigration scenario, which assumes a constant zero immigration rate and lets net migration become negative.

To examine the effects of changes in the visa mix, we focus on a labor-focused scenario in which 65 percent of new immigrants enter on work visas, 13.6 percent on student and exchange visitor visas, and the remaining 21.4 percent on a mix of family reunification, refugee, and diversity visas. To determine the race/ethnicity composition of these visa categories, we begin with State Department data on visas issued in the past five years. This data includes information on the country of citizenship for visa recipients, but not their race or ethnicity. We apply the following assumptions to estimate the race and ethnicity of recent visa recipients:

- All immigrants from Canada and Europe are non-Hispanic White.
- All immigrants from Western Hemisphere countries other than Canada are Hispanic.
- All immigrants from Africa are non-Hispanic Black.
- All immigrants from Asia are Asian.
- From Australia, New Zealand, and Oceania, 90 percent of work and student migrants are non-Hispanic White and 10 percent are Pacific Islander. Among other immigrants from these countries, 50 percent are non-Hispanic White and 50 percent are Pacific Islander.

The State Department does not provide information about the age and sex composition of immigrants, so we rely on data from the Department of Homeland Security (DHS) on the age and sex distribution of work immigrants and other immigrants to make these calculations. DHS does not provide information on student immigrants, so we apply the distributions for work immigrants to students. We apply these race/ethnicity and age/sex breakdowns to the total number of immigrants in 2017 to estimate the population of immigrants in each race/age/sex

[34] Overall, this convergence represents decreased fertility over time, although for some age/race groups, such as Asian women over 30, projected fertility rates do increase.

category. We then divide the immigrant population in each category by the corresponding total population to get immigration rates for each race/age/sex category.

Finally, to convert immigration rates into net migration rates, we apply emigration rates by sex, age group, and ethnicity (Hispanic origin) from Census's 2017 National Population Projections. Specifically, we apply the Census Bureau's estimated emigration rate for recent non-Hispanic immigrants to students and exchange visitors, who are assumed to have the highest emigration rates. We assign the emigration rates for recent Hispanic immigrants to all immigrants on employment visas, emigration rates for earlier Hispanic immigrants to all other Hispanic immigrants, and emigration rates for earlier non-Hispanic immigrants to all other immigrants.

The individual scenarios are calculated by holding the net migration rate constant for the entire 43-year projection period, which is not a likely outcome in the real world. Other population projections (such as those done by the Census Bureau) have varied the immigration rate, rather than the net migration rate, under the assumption that changes to US policy would affect immigration, but not emigration. While US immigration policy does not affect emigration directly, demographers have long been aware of possible indirect effects on emigration.[35] Because the emigration effects of the substantial changes in immigration policy that our projections assume are difficult to predict, we have chosen the simpler path of varying the net migration rate rather than the immigration rate to construct our different scenarios.

Employment Rates

Employment rates are based on the 2018 American Community Survey, taking the average proportion employed for each race-age-sex-nativity group. The ACS sample is limited to the working-age population, ages 16 to 64, and it excludes individuals living in group quarters. The employment rate is measured as the ratio of total employed persons to working-age population. Employment rate projections come from mapping these 2018 employment rates onto demographic projections at the race-age-sex-nativity level for each of the nine scenarios. This methodology assumes that the employment rate of each age-race-sex-nativity cell remains constant over time, so the only changes to employment come from predicted demographic changes. It also assumes that recently arrived immigrants have the same employment rate as prior cohorts of arrivals, within age-sex-race-nativity groups.

Gross Domestic Product

We predict GDP from 2018 to 2060, using the multi-nest Constant Elasticity of Substitution (CES) framework proposed by Borjas (2003), Ottaviano and Peri (2012), and Özden and Peri (2013) to examine the labor market impacts of immigration inflows. Edwards and Ortega (2017) use this framework to predict the economic consequences of removing unauthorized immigrants. The crucial determinants of GDP in this model are the population share of

[35] Massey, D. S., Durand, J., & Malone, N. J. (2002). Beyond smoke and mirrors: Mexican immigration in an era of economic integration. Russell Sage Foundation.

immigrants, their skill distribution, and the degree of substitutability between immigrants and natives in production. In other words, the degree of substitutability measures how well immigrant workers can perform the same tasks and contribute the same skills as native-born workers, and vice versa. All GDP projections are in constant 2018 dollars, and as discussed in detail below, we follow current trends and project constant productivity growth of 1.4 percent per year.

To determine the skill composition of the working population, we categorize immigrants and natives into high-skilled and low-skilled groups by education. This method places workers into two categories: those who have completed a high school degree or less, and those who have completed at least some college education or more. In practice, this is determined by educational attainment of each race-age-sex-nativity group in the demographic projections. If the skill distribution remains balanced, the overall percent change in GDP approximates the change in the immigrant share, implying that GDP per capita will be fairly constant.[36]

The multi-nest CES model allows for imperfect substitution between high-skilled and low-skilled workers—it accounts for differences across high- and low-skilled workers that lead them to perform different tasks, specialize in different skills, and make different contributions to production. Similarly, this model accounts for imperfect substitution between immigrant and native workers within a skill group. For example, within the low-skilled group, native workers may specialize in more communication and language-intensive tasks than immigrant workers (Peri and Sparber, 2009). These two levels of grouping and workers—high- and low-skilled, immigrants and natives—explain most of the wage effects of immigration in prior research. While more disaggregated models that separate workers by finer education or experience levels are useful for looking at distributional effects on these groups, their impact on the aggregate effect is limited due to the higher degree of substitutability across more similar types of workers.[37]

To measure employment and average wages by age, sex, race/ethnicity, and nativity, we use data from the 2018 American Community Survey. Following Ottaviano and Peri (2012), the sample used to determine employment is composed of the working-age population, not in group quarters, and restricted to people who worked at least one week in the past year. Employment is weighted by hours worked in the past year, and total projections of labor supply are obtained by multiplying the population in each age-race-sex-nativity group by the average weighted fraction of employment in that group in the 2018 ACS.[38] To measure wages, the sample restrictions follow those of the employment sample, but further restrict the sample to those with positive wage income and eliminate the self-employed. Weekly wages are the ratio of total wage income to weeks worked in a year and are scaled by hours worked. These wages

[36] With high-skilled immigration, and/or strong externalities that also affect growth, GDP growth may be greater than the increase in immigration, leading to an increase in GDP per capita.
[37] Results using a labor aggregate consisting only of high- and low-skilled workers, and assuming immigrants and natives are perfect substitutes with the same relative productivity, are similar.
[38] Results are similar when using a measure of labor supply that does not weight employment by hours worked.

are calculated by skill group and nativity status. All GDP projections are given in constant 2018 dollars.

Theory: Complementary Workers

The theoretical framework is based on a Cobb-Douglas production function with constant returns to scale. We assume that the long-run capital stock is proportional to the size of the productivity-adjusted labor supply.[39] We also assume an exogenous rate of annual technological progress, r. Following CBO forecasts of potential labor productivity, we set $r = 1.014$, assuming 1.4 percent productivity growth per year.

$$\begin{aligned} Y_t &= A_t K_t^{\alpha} L_t^{(1-\alpha)} \\ &= A_t(\bar{k}L_t)^{\alpha} L_t^{(1-\alpha)} \\ &= A_t \bar{k}^{\alpha} L_t \\ A_t &= A_0 r^t \end{aligned}$$

Workers differ according to two sets of characteristics. First, we divide workers into two skill groups (e=1,2) representing those with a high school degree or less and those with at least some college education. Education is a proxy for high-skilled and low-skilled workers.[40] Then we categorize workers according to their nativity status (m = n, f), denoting native and foreign-born workers. We combine these workers in the production function using a multi-nested CES aggregator with two levels, allowing for different elasticities of substitution between workers at each level. The first level consists of high-skilled and low-skilled workers with elasticity of substitution σ_e. The second level consists of native and foreign-born workers with elasticity of substitution σ_m. Following Ottaviano and Peri (2012), CES aggregator for immigrants and native workers within each skill group is as follows, suppressing time subscripts for clarity:

$$L_i = \left(\theta_1 L_1^{\frac{\sigma_m - 1}{\sigma_m}} + \theta_2 L_2^{\frac{\sigma_m - 1}{\sigma_m}} \right)^{\frac{\sigma_m}{\sigma_m - 1}}$$

Next, we aggregate high- and low-skilled workers using:

$$L = \left(\theta_1 L_1^{\frac{\sigma_e - 1}{\sigma_e}} + \theta_2 L_2^{\frac{\sigma_e - 1}{\sigma_e}} \right)^{\frac{\sigma_e}{\sigma_e - 1}}$$

[39] This model assumes that capital adjusts to changes in the labor supply. Projecting over a 40-year period, assuming perfect capital adjustment is reasonable.

[40] Some research divides workers into three groups: high school dropouts, high school graduates, and those with at least some college education. The difference between these approaches hinges on the assumption of whether high school graduates and high school dropouts are substitutes. Because research finds the clearest evidence of complementarities between workers with a high school degree or less and workers with some college or more, we focus on these two groups.

Following the literature, we use values for the elasticity of substitution following Doquier, Ozden, and Peri (2013) and Ottaviano and Peri (2012) and use $\sigma_m = 20$ and $\sigma_e = 2$. The relative values of σ_m and σ_e imply that immigrant and native workers within a skill group are more similar in terms of observable skills than college and non-college educated workers. Thus, differences in the shares of high- and low-skilled workers across scenarios impact our results substantially more than differences in the shares of immigrant and native workers within a skill group.

Assuming wages represent the marginal product of labor, relative productivities and labor supplies determine the relative wages of native and foreign-born workers in each skill group (e=1,2).

$$\frac{w_e^{Nat}}{w_e^{FB}} = \frac{\theta_e^{Nat}}{\theta_e^{FB}} \frac{Nat_e}{FB_e}^{\frac{-1}{\sigma_m}}$$

Normalizing $\theta_e^{FB} = 1$, the relative productivity of native and immigrant workers is $\theta_e^{Nat-FB} = \left(\frac{w_e^{Nat}}{w_e^{FB}}\right) * \left(\frac{Nat_e}{FB_e}\right)^{\frac{-1}{\sigma_m}}$. Taking information on relative wages and labor supplies from the 2018 ACS, we can back out values for θ_e^{Nat-FB} and apply the same method determine the relative productivity of high- and low-skilled workers.

Theory: Human Capital Externalities

To account for human capital externalities, we can extend this model to allow for a higher share of high-skilled workers to have positive spillover effects on the economy. This accounts for the possibility that immigration boosts productivity and innovation in addition to increasing labor supply. For example, Hunt and Gauthier-Loiselle (2010) show that foreign-born college graduates increased US GDP by 1.4–2.4 percent per year through patenting activity in the 1990s. Far from technology being fixed, as is the case in the framework above, immigrants contribute to technological progress. Peri (2012) finds that immigrants increase total factor productivity, essentially increasing the efficiency of production, concluding that a 1 percent increase in employment due to immigration increases income per worker by 0.4 to 0.5 percent.

The key difference with externalities is in the parameter A, representing total factor productivity (TFP). In practice, TFP is a measure of our ignorance—everything that relative labor supply, worker productivities, and the elasticity of substitution can't explain. Here, we allow TFP to vary according to the fraction of high-skilled workers in the economy as follows:

$$Y_t = A_t K_t^{\alpha} L_t^{1-\alpha}$$

$$A = A_0 r^t e^{(\lambda * f_{ht})}$$

f_h is the fraction of high-skilled workers in the economy; specifically, $f_h = \frac{Nat_2+FB_2}{Nat_1+FB_1+Nat_2+FB_2}$. The key parameter is λ, which determines the extent to which high-skilled workers affect the overall productivity of the economy. Following Doquier, Ozden, and Peri (2013), we consider multiple values of λ: 0, 0.45, and 0.75. $\lambda = 0$ corresponds to the scenario above without any externalities from high-skilled workers and corresponds to estimates from Acemoglu and Angrist (2001). The upper threshold, $\lambda = .75$ corresponds to the extent of schooling externalities found by Moretti (2004). This upper threshold represents one of the highest level of externalities found in past research and a very optimistic scenario for the positive impact of high-skilled workers. Table 11 shows results from the intermediate scenario, where $\lambda = .45$.

Related Literature and Forecasts

The Penn Wharton Budget Model shows the impact on GDP and GDP per capita in response to an increase, not a decrease, in net legal immigration, and changes in the share of skilled or educated immigrants. In response to a 100 percent increase in immigration, this model predicts an increase in GDP per capita[41] in 2050 of $7,600, or real GDP per capita of $83,700 relative to a baseline prediction of $76,100. This corresponds to an approximate 2 percent increase relative to baseline. The model also predicts a 19 percent increase in real GDP in 2050, relative to baseline predictions. Our model projects a much larger increase in GDP in the corresponding scenario of very high immigration. In this case, we estimate a 41.6 percent increase in real GDP and a 4.4 percent increase in GDP per capita. A large part of this difference can be attributed to higher population growth in our model and the related 1.4 percent increase in productivity per worker. Treyz and Evangelakis (2018) use the REMI PI+ macroeconomic policy model to estimate the impact of eliminating all migration between 2018 and 2060. Although the effects of increasing rather than decreasing immigration are not necessarily symmetric, their estimates are similar to the Penn Wharton Budget Model, and they predict 20 percent lower GDP in 2060 relative to current forecasts and a 2 percent decline in GDP per capita relative to baseline predictions.

[41] PWBM defines GDP per capita as GDP divided by the resident population.

Table 11: GDP by Scenario, 2018 vs. 2060, with Intermediate Externalities

	GDP Δ(2060 − 2018)	%	PC Δ(2060 − 2018)	%
Constant	23.818	0.000	40.737	0.000
Constant (Labor)	17.366	-14.557	44.017	3.172
High	31.710	17.806	42.911	2.102
High (Labor)	21.848	-4.446	44.860	3.987
Low	17.664	-13.885	38.580	-2.086
Low (Labor)	14.271	-21.542	42.367	1.576
Very High	42.238	41.560	45.257	4.370
Very High (Labor)	28.870	11.397	44.342	3.486
Zero Immigration	11.788	-27.144	36.594	-4.007
Zero Net Migration	12.625	-25.255	35.672	-4.899
Total	22.220	-3.607	41.534	0.770

Notes: Total GDP in 2018 dollars, in trillions. GDP per capita is the ratio of total GDP to the working-age population, in 1000s. 2018 GDP is $20.8 trillion, and GDP per capita is $62,669.

Social Security

To determine contributions and payments from Social Security, we pool data from the 2018 and 2019 Current Population Survey, Annual Social and Economic Supplement (CPS ASEC).[42] The CPS asks respondents to report personal income in a variety of categories, including wage income and income from Social Security benefits. To estimate payroll tax contributions to the Social Security trust funds, we multiply individual wage income by 12.4 percent, the Social Security contribution of the FICA tax, and estimate the average tax payments for each by age, race, sex, and nativity group. To estimate costs accrued to the trust funds from benefit payouts, we calculate average individual income received from Social Security in the CPS, again by age, race, sex, and nativity status. Next, we multiple the average payroll tax contributions and benefit payouts for each age-sex-race-nativity group by the estimated population in that group under alternative immigration policy scenarios. Therefore, benefits and contributions relative to individual wages and demographics remain constant over time. Social Security benefits and contributions per capita are scaled by the total population, not the number of beneficiaries.

To project total income and costs to the Social Security trust funds, a measure that allows us to estimate the solvency of the Social Security system over time and make comparisons to current

[42] Two years of the survey provides a larger sample, allowing for better estimates of average benefits and contributions within age-race-sex-nativity cells. Income is adjusted to real 2018 dollars. The 2018 survey reports 2017 income, and the 2019 survey reports 2018 income.

balances, we make two additional corrections. First, we make corrections for reporting errors in the CPS that allow us to match our estimates of trust fund income and costs to administrative totals reported by the Social Security Administration (SSA). All income in the CPS is self-reported, and prior studies show that the CPS underreports OASDI benefits.[43] Participants may forget or choose not to report benefits and payments, and beneficiaries of OASDI and SSI beneficiaries my confuse the two programs (SSA, 2016), with the result that the estimates of Social Security benefits reported here are lower than the administrative totals.[44] Therefore, we up-weight reported benefits in the CPS to match SSA's reported benefit payouts. The SSA total is about 27 percent higher than the CPS total. In addition, we make a small down-weighting adjustment to estimated payroll tax contributions to match SSA's reported income from payroll taxes. SSA's reported total is about 94 percent of our initial estimate from the CPS. Finally, we account for income to the trust funds from taxation of benefits and interest, as well as additional administrative costs, to obtain measures of trust fund income and costs that are in line with 2018 administrative totals.

This methodology does involve limitations, mainly due to the reliance on survey data that is necessary to get estimates across detailed demographic categories. The CPS does not collect information on Social Security payments to individuals under the age of 15, nor does it separate old-age insurance from disability insurance in Social Security. Therefore, these projections include both old-age and disability benefits. In addition, this method projects changes in benefits paid out and taxes collected due solely to population and demographic changes and does not account for potential changes due to increases in real wages over time.[45]

Related findings on the fiscal impact of immigration

A large body of academic research has examined the fiscal impacts of immigration. Some papers use macroeconomic models, incorporating multiple generations, to estimate individuals' fiscal costs and contributions over their lifecycles. These models hinge on key assumptions about how to allocate the costs of public goods, such as national defense, and the evolution of interest rates and public benefit systems over time (Orrenius, 2017). The general consensus is that high-skilled immigrants are a slight net positive, and low-skilled immigrants are a slight net drain. Their children are usually more educated and therefore make a larger contribution in their working years. But they are very small impacts relative to the size of the economy, and,

[43] While the CPS refers to these benefits as Social Security, SSA uses the more specific Old Age, Survivors, and Disability Insurance, or OASDI.

[44] In 2018, SSA reported $988.6 billion in benefit payments, while the CPS reports approximately $779 billion, or less than 80 percent of total benefits.

[45] We recognize that productivity growth also has the potential to improve Social Security balances if such growth allows total output to grow faster than total benefit payments. In addition, a younger labor force, resulting from high-migration scenarios, may spur more productivity growth and thus increase payroll tax contributions to Social Security, relative to benefit payouts. However, we are assuming that productivity growth continues as estimated by the CBO and do not adjust for differences in the age structure of the labor force across policy scenarios.

taken together, the small positive of high-skilled immigrants and small negative of low-skilled immigrants tend to cancel each other out under most assumptions.

A wide range of studies (Lee and Miller, 2000; Storesletten, 2003; Rowthorn, 2008, Hanson, 2009) find that changing the volume of immigration to the United States has minimal fiscal consequences overall. While immigrants tend to be younger and can help finance Social Security and public health care through taxes, they also tend to be less educated and have higher fertility. Storesletten (2003) estimates that one immigrant has a net fiscal benefit of $7,400 over their lifetime, on average, while Kerr and Kerr (2011) and Orrenius (2017) show that the net impact of immigrants depends on their age, education, and the duration of their stay in the host country. Highly skilled immigrants tend to have larger positive impacts, and the net costs of immigrant tend to occur at the state and local level, where public schooling costs are a key factor in establishing immigrants' fiscal impact. Orrenius (2017) estimates that a representative immigrant with more than a college degree can make a net fiscal contribution of over $800,000 over a 75-year period, while a representative immigrant without a high school degree has a net fiscal cost of $117,000. However, this cost is less than the cost of the average native with less than a high school degree, and, due to government financing through public debt, the net fiscal burden of the US population, with or without immigrants, is negative.