

Online Resource

Research Brief Title

A First Look: Disparities in COVID-19 Mortality Among US-born and Foreign-born Minnesota Residents

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Minnesota's Immigrant Population

Minnesota is home to over 470,000 immigrants who add diversity to the predominantly white, US-born population. Characteristics of this population, as well as the US-born Minnesota population and foreign-born US population, can be seen in Online Resource Table 1. In Minnesota, Black, Asian, and Latino immigrants all comprise significant portions of the immigrant population. In addition, Minnesota has one of the highest per capita refugee resettlement rates (ILCM, 2018) and is home to a large Somali population. This contributes to a high proportion of Black immigrants when compared to national statistics, as 26.3% of Minnesota's immigrant population is Black, compared to 9.7% of the US immigrant population (see Online Resource Table 1). The educational attainment of Minnesota immigrants displays a bimodal distribution, as immigrants are much more likely to have less than a high school diploma, but also more likely to have a graduate or professional degree when compared to US-born Minnesotans. In comparison with foreign-born in the US as a whole, however, the foreign-born population in Minnesota has a slightly higher educational attainment. Finally, immigrants in Minnesota are more likely to be employed than US-born Minnesotans, but they remain more likely to live in poverty when compared to Minnesota's US-born residents or the foreign-born population of the United States.

Online Resource Table 1. Comparison of selected characteristics of US- and foreign-born populations^a

	Minnesota			Minnesota	All US	
	Foreign-born	US-born	% Difference	Foreign-born	Foreign-born	% Difference
Total population	8.4%	91.6%	-90.8%	8.4%	13.7%	-38.7%
Age (median)	39.7	38.1	4.2%	39.7	45.7	-13.1%
Race and Hispanic/Latino origin						
White alone, Not Hispanic or Latino	15.3%	84.8%	-82.0%	15.3%	17.4%	-12.1%
Black or African American	26.3%	4.8%	447.9%	26.3%	9.7%	171.1%
Asian	35.8%	2.3%	1456.5%	35.8%	27.2%	31.6%
Hispanic or Latino origin (of any race)	21.2%	4.1%	417.1%	21.2%	44.2%	-52.0%
Educational attainment (25+)						
Less than high school graduate	22.8%	4.5%	406.7%	22.8%	26.3%	-13.3%
High school graduate (includes equivalency)	20.4%	24.9%	-18.1%	20.4%	22.3%	-8.5%
Some college or associate's degree	21.1%	33.2%	-36.4%	21.1%	18.7%	12.8%
Bachelor's degree	20.1%	25.0%	-19.6%	20.1%	18.5%	8.6%
Graduate or professional degree	15.7%	12.4%	26.6%	15.7%	14.2%	10.6%
Employment status						
Employed	71.1%	66.8%	6.4%	71.1%	64.3%	10.6%
Poverty status						
Below 100 percent of the poverty level	15.4%	8.4%	83.3%	15.4%	13.7%	12.4%
Citizenship	56.0%	100.0%	-44.0%	56.0%	51.6%	8.5%

DATA NOTES

Table ID : S0501 American Community Survey

Vintage : 2019 ACS 1-Year Estimates Subject Tables

^a Race and Hispanic/Latino origin will not add to 100% due to excluded categories.

Online Resource Detailed Methods

Race Categories

In constructing population denominators, to assign multiracial individuals to a single racial group, we used a race-bridging algorithm developed by Liebler and Halpern Manners (2008). The algorithm predicts a respondent's preferred single race response using a combination of factors including the combination of races reported by those who reported multiple races. The algorithm was designed to approximate, using public-use data, the race-bridging algorithm used by the National Center for Health Statistics.

Nativity Categories

Nativity was coded as a binary variable, with foreign equal to one and US-born equal to zero. In both population data and death certificate data, individuals who indicated they were born in the United States were coded as zero, and individuals who indicated they were born elsewhere (including US territories and "other") were coded as one. We treated those born in US territories as "foreign-born" to reflect the social and legal status of lacking full political rights in the United States.

Age and Gender Standardization

To standardize foreign-born and US-born Minnesota COVID-19 mortality, we re-weighted the mortality by the age and gender distribution of the state of Minnesota, as measured by the 2015-2019 American Community Survey 5-year estimates. Ages under 20 were dropped from analysis due to a small number of foreign-born individuals, and 15-year age groups were created beginning at age 20 and top-coded at age 65.

Analysis Sample

Descriptive statistics include all 2020 COVID-19 deaths among Minnesota residents that provided a nativity designation. Of the 5,668 COVID-19 deaths recorded among Minnesota residents in 2020, eight (0.14%) did not record nativity and were dropped. This resulted in COVID-19 mortality descriptive statistics that include a total of 5,660 death certificates.

The standardized rates and statistical analysis drew from the census of 2020 COVID-19 death certificates in Minnesota among Minnesota residents (n=5,668). Deaths among young people (0-19) were excluded due to the low level of COVID-19 mortality (n=3) and Native American deaths were excluded due to the lack of comparison group among the foreign-born (n=72). This resulted in 5,593 death certificates. In addition, these analyses were restricted to death certificates with complete information for the variables race, gender, age, and place of birth. In total, 6 cases (0.11%) were dropped due to unknown nativity, 2 cases (0.04%) were dropped due to unknown race, and 2 cases (0.04%) were dropped due to unknown race and nativity. This resulted in a pool of 5,583 death certificates for analysis. The negative binomial regression observations (n=837) represent the permutation of groups by race, age, nativity, and gender once deaths among the Asian population were dropped (population size in each cell enters through the offset term).

Online Resource Table 2. Negative binomial regression results of COVID-19 deaths

Independent Variable	Model 1	Model 2	Model 3	Model 4
Foreign	1.678* (2.52)	2.432*** (8.35)	1.604*** (6.08)	1.274* (2.12)
Age (recentered at mean)		1.147*** (20.67)	1.139*** (24.53)	1.139*** (24.57)
Age squared (age recentered at mean)		1.000* (-2.27)	1.000 (-0.45)	1.000 (-0.31)
Female		0.520*** (-6.16)	0.596*** (-8.11)	0.597*** (-8.04)
Black			3.919*** (15.41)	3.424*** (11.74)
Latino			3.314*** (11.59)	2.850*** (6.96)
Foreign * Black				1.580* (2.57)
Foreign * Latino				1.522* (1.97)
Inalpha	5.720*** (26.17)	0.562*** (-3.62)	0.125*** (-6.77)	0.122*** (-6.72)
N	837	837	837	837

Negative binomial regression with exponentiated coefficients; t statistics in parentheses

Boldface indicates statistical significance (* p<0.05, ** p<0.01, *** p<0.001)

Online Resource References

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