



Mortality and Race and Ethnicity in the United States

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A Survey of Existing Literature

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A Survey of Existing Literature

Executive Summary

Mortality rates have decreased significantly over the 20th century, but patterns of mortality disparities by race and ethnicity persist in the United States. People are usually categorized by one racial group and one ethnic group, usually of their own choice — that is common on applications, health forms and the like. In biological terms, human physical variations can and do tend to overlap with little scientific variation among races. Proponents of race as a social construct theorize there is as much or more genetic variation within major population groups as between them.

For this paper, we examined existing¹ literature including surveys, studies and research about factors, proven and perceived, for variations in mortality. The canvass could have continued indefinitely because there is a plethora of research reflecting increased scrutiny and interest in diversity, equity and inclusion (DEI) initiatives in the United States, health care and otherwise. The purpose of this research is to aid actuaries in their work in identifying, measuring, modeling and analyzing possible mortality differentials when considering full U.S. population analysis.

The author did not find uniformity among the papers surveyed regarding definitions of race and ethnicity. The 43 papers under consideration divided data into categories with varying definitions, often in conflict. For example:

1. “Black,” “white” and “Hispanic” may all be considered as mutually exclusive categories.
2. “Non-Hispanic white” and “Hispanic” bifurcate ethnicity within only one race.
3. “Asian Pacific Islanders” covers multiple categories of American Indian, Alaska Native, Asian, Native Hawaiian and Pacific Islander.
4. “Mexican American (U.S.-born)” and “Mexican immigrants” may be the only two categories representing Hispanic.
5. “Puerto Ricans” and “Hispanics” distinguish between those born in a U.S. territory versus those born in the 50 U.S. states or Washington, D.C.
6. “White” and “Caucasian” may represent contradicting definitions of two categories commonly thought to be synonymous.
7. “Multiracial” is generally not considered requiring individuals to categorize themselves as a single race or ethnicity.
8. “Non-Hispanic Black” and “non-Hispanic white” is another distinction not relevant to race.

In addition, there have been shifting definitions of race and ethnicity over time — e.g., categories that exist today did not exist decades ago. Another example is the Native American population — one paper reports that since 1960, this population has principally grown because more persons openly identify as Native American, not that the population of Native Americans is increasing.

¹ “Existing” refers to current publicly available published literature.

The majority of studies reviewed finds mortality differs by race and ethnicity. Furthermore, gaps in mortality still exist among racial and ethnic groups despite convergences in socioeconomic status, medical care, access to health care, public health advocacy, rates of insurance coverage, and legal and social rights.

Historically, the group with generally the lowest mortality has been whites, against which all other racial and ethnic groups have been compared. Currently, Blacks/African Americans generally have the highest mortality rates, followed by Native Americans, whites, Hispanics/Latinos and Asian/Pacific Islanders.

Socioeconomic and health status appear to be the two main predictors of the magnitude of differences in mortality by race and ethnicity. Other interrelated factors include health care access; racial discrimination; migration; specific disease prevalence; and behavioral, lifestyle and other perhaps unexpected factors such as medical training and disease visual presentation.

The so-called Hispanic Paradox is discussed in several papers. That “immigrant advantage” refers to a pattern of considerably lower levels of mortality in immigrants compared to their U.S.-born counterparts. The immigrant advantage has been observed in both the Hispanic/Latino and Asian populations in the United States, which contain a higher percentage of first- and second-generation immigrants than the white or Black non-Hispanic/Latino populations.

Data limitations, data gaps and any bias in data and methodology, as mentioned in the studies, can be important indicators of the comprehensiveness and robustness of each paper’s results and conclusions. Those variations are cause for the reader to exercise caution if attempting to use those studies.

Suggested areas for additional future research include:

1. Neighborhood or contextual risks, where proximity to, for example, health care and pharmacies, affects different racial and ethnic populations differently.
2. Premature death factors such as suicide, drug overdoses and alcoholism, with credible data for all groups, especially marginalized groups such as Native Americans in the “deaths of despair” study.
3. Health care inequities among persons with disabilities and diet by racial and ethnic groups.



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Section 1: Survey of Existing Literature

This paper presents a review of existing literature related to the association between mortality and race and ethnicity in the United States. This paper's purpose is to aid actuaries in their work in identifying, measuring, modeling and analyzing possible mortality differentials when considering full U.S. population analysis and to provide objective and insightful information for ongoing diversity, equity and inclusion (DEI) discussions.

This paper is not in and of itself a study of mortality containing mathematically calculated actuarial values. Findings — statistics, data, analyses and conclusions quoted — are from the literature studied, not tabulated by the paper's author. No numerical methods were used to analyze the data in any of the papers, and any charts presented are visualizations excerpted from the papers studied.

The author examined existing literature found in publicly available sources. The canvass could have continued indefinitely because there is a plethora of recent and ongoing research reflecting increased scrutiny and interest in DEI initiatives and disparities, health care and otherwise in the United States.

The methodology for selecting papers was as follows:

1. The author randomly collected a wide variety of papers related to mortality, race and ethnicity in the United States.
2. The author scrutinized each paper for inclusion or exclusion.
 - a. Inclusion criteria.
 - i. The purpose was relevant to the topic of interest.
 - ii. The analysis and conclusions were robust.
 - iii. The source fit into one of the established four categories.
 - b. Exclusion criteria.
 - i. Small sample size.
 - ii. Study's age.
 - iii. Number of papers from a single source.

1.1 DESCRIPTION OF RESEARCH PAPERS

The author examined approximately 60 research papers, ultimately selecting 43 for inclusion in this paper.

1.1.1 RESEARCH ORGANIZATIONS

The papers studied were authored by researchers generally affiliated with four main types of organizations including but not limited to:

1. Government.
 - a. [U.S. Department of Health and Human Services](#).
 - i. [National Institutes of Health](#).
 1. [National Institute on Aging](#).
 - ii. [Centers for Disease Control and Prevention \(CDC\)](#).
 1. [National Center for Health Statistics](#).
 2. [National Death Index](#).
 3. [National Health Interview Survey](#).
 - b. [U.S. Department of Veterans Administrations](#).
2. Health care organizations.
 - a. [Diabetes and Metabolism Nemours Children's Clinic](#).
3. Universities.

- a. [Johns Hopkins University School of Medicine](#).
4. Other, e.g., industry bodies, nonprofit organizations.
 - a. [Society of Actuaries \(SOA\)](#).
 - b. [Center for American Progress](#).
 - c. [Kaiser Family Foundation \(KFF\)](#).

1.1.2 PURPOSE OF RESEARCH PAPERS

The purpose of each research paper is listed in Appendix A: Table of Purpose, Data, Methodology and Bias.

1.1.3 COMPARISON OF RESEARCH PAPERS

The most prevalent similarities and differences in the papers reviewed include but are not limited to:

1. Factors.
2. The meaning and measurement of certain factors.
3. Mathematical analysis methods.
4. Correlation and causation factors.
5. Controlled factors not included in all papers.
6. Controlled factors not the same in all papers containing this analysis.
7. Data sets (source and size).
8. Conclusions.

All papers may not be specifically mentioned or referenced in the body of the report because many papers drew and supported other papers' conclusions.

Additionally, when commenting on a paper in this report, in most cases the author uses the Society of Actuaries Research Institute's preferred terms for race and ethnicity. Therefore, terminology may be inconsistent with the paper being summarized. When directly quoting a paper, the underlying source terminology is used.

1.2 DEFINITION OF RACE AND ETHNICITY

1.2.1 CLASSIFICATION OF RACE AND ETHNICITY

"Race" is defined as "any one of the groups that humans are often divided into based on physical traits regarded as common among people of shared ancestry."²

In biological terms, human physical variations can and tend to overlap with little scientific variation between races. In fact, one paper (Templeton 2013) reports, "One commonly used threshold is that two populations with sharp boundaries are considered to be different races if 25% or more of the genetic variability that they collectively share is found as between population differences." The paper then later purports, "... there are no sharp boundaries separating human populations, and the degree of genetic differentiation among human groups, even at the continental level, is extremely low. Using the threshold definition, there are no races in humans." Proponents of race as a social construct theorize there is as much or more genetic variation within the major population groups

² Merriam-Webster. "Race, noun (1). Retrieved October 14, 2022, from <https://www.merriam-webster.com/dictionary/race>.

than between them. Furthermore, in 2020, the American Medical Association (AMA) adopted new policies to recognize race as a social construct.³

In the United States, the federal government offers six categories for race on its 2020 census questionnaire:⁴

1. “White — originating in Europe, the Middle East or North Africa.”
2. “Black⁵ or African American — originating in any of the Black racial groups of Africa.”
3. “American Indian or Alaska Native — original peoples of North, Central and South America.”
4. “Asian — including but not limited to Chinese, Filipino, Asian Indian, Vietnamese, Korean, Japanese and Other Asian.”
5. “Native Hawaiian and Pacific Islander — originating in Hawaii, Guam, Samoa or other Pacific Islands.”
6. “Some Other Race — identifying with no other category.”⁶

Definitions of race in this report follow definitions most generally used in the United States and may not be applicable to other regions of the world where race is defined differently.

On the other hand, “ethnicity” is defined as “a particular ethnic affiliation or group”⁷ and “ethnic” is defined as “of or relating to large groups of people classed according to common racial, national, tribal, religious, linguistic, or cultural origin or background.”⁸ The U.S. government offers this guidance on its 2020 census questionnaire: “The category ‘Hispanic, Latino, or Spanish origin’ includes all individuals who identify with one or more nationalities or ethnic groups originating in Mexico, Puerto Rico, Cuba, Central and South America, and other Spanish cultures.” In the United States, ethnicity is typically divided into Hispanic/Latino and non-Hispanic/Latino groups.

People are usually categorized by one racial group and one ethnic group, typically of their own choice—this is common on job applications, health forms and the like. However, the 2000 U.S. Census Bureau issued a brief⁹ about race and Hispanic origin, saying “Every census must adapt to the decade in which it is administered.” “One of the most important changes for Census 2000 was the revision of the questions on race and Hispanic origin to better reflect the country’s growing diversity.” The census also allowed individuals to choose more than one racial category, which 2.4% of the respondents chose.

1.2.2 CONFLATION OF RACE AND ETHNICITY

Many studies did not completely differentiate race and ethnicity. The 2000 U.S. Census Bureau brief clearly states, “The federal government considers race and Hispanic origin to be two separate and distinct concepts.” The paper also mentions that “Hispanics may be of any race.” A person can be Hispanic (ethnicity) and Black (race), Hispanic

³ AMA (November 16, 2020). New AMA policies recognize race as a social, not biological, construct. Press release. Retrieved October 14, 2022, from <https://www.ama-assn.org/press-center/press-releases/new-ama-policies-recognize-race-social-not-biological-construct>.

⁴ U.S. Census Bureau. Additional Instructions for Respondents. Question: “Is Person 1 of Hispanic, Latino or Spanish origin?” Retrieved October 14, 2022, from <https://www.census.gov/programs-surveys/decennial-census/technical-documentation/questionnaires/2020/response-guidance.html>.

⁵ Papers use the terms “Black” and/or “African American.” This paper uses the term “Black or African American” on first reference and “Black” on subsequent references.

⁶ U.S. Census Bureau. Additional Instructions for Respondents, Question: “What is Person 1’s race?” Retrieved October 14, 2022, from <https://www.census.gov/programs-surveys/decennial-census/technical-documentation/questionnaires/2020/response-guidance.html>.

⁷ Merriam-Webster. Ethnicity, noun. Retrieved October 14, 2022, from <https://www.merriam-webster.com/dictionary/ethnicity>.

⁸ Merriam-Webster. Ethnic, adjective. Retrieved October 14, 2022, from <https://www.merriam-webster.com/dictionary/ethnic>.

⁹ U.S. Census Bureau. Census 2000 Brief: Overview of Race and Hispanic Origin:2000. Retrieved October 14, 2022, from <https://www.census.gov/library/publications/2001/dec/c2kbr01-01.html>.

(ethnicity) and white (race), or Hispanic (ethnicity) and any other race. Some papers did not appear to consider or apply this delineation.

Other studies both included and excluded various groups outside of the three mainly studied groups: the Black and white races and the Hispanic and non-Hispanic ethnicities.

Papers divided data into categories such as but not limited to:

1. Black, white and Hispanic — comparing all three as mutually exclusive categories.
2. Non-Hispanic white and Hispanic — bifurcating ethnicity within only one race.
3. Asian Pacific Islanders — covering multiple categories of American Indian, Alaska Native, Asian, Native Hawaiian and Pacific Islander.
4. Mexican American (U.S.-born) and Mexican immigrants — using only these two categories to represent Hispanic.
5. Puerto Ricans vs. Hispanics — distinguishing between being born in a U.S. territory versus being born in the 50 U.S. states or Washington, D.C.
6. White and Caucasian — contradicting definitions of two categories commonly thought to be synonymous.
7. Multiracial — excluding this category.
8. Non-Hispanic Black, non-Hispanic-white.

In addition, there have been shifting definitions of race and ethnicity over time — e.g., the categories that exist today did not exist decades ago. For example, the Native American or American Indian population has principally grown as a result of more persons identifying as American Indian, not that the population of American Indians is actually increasing.

1.3 DATA

1.3.1 DATA VARIATIONS

Studies using the largest sources of data generated more credible results. Population data from sources such as the U.S. Census Bureau, the CDC and various national institutes have the largest and most complete data sets. Data in other studies centered around, for example:

1. Specific groups such as veterans.
2. Specific healthcare recipients such as Medicare/Medicaid.
3. Specific geographic areas such as cities and counties.
4. Specific health record systems such as from healthcare systems and foundations.
5. Specific age groups such as infants.
6. Specific diseases such as kidney failure.

1.3.2 DATA LIMITATIONS

The most common limitation authors mentioned is a small sample size. Surveys tend to have low response rates, and it can be challenging to draw conclusions from small data sets.

Much of the data is self-reported because each person chooses their own identity. A multiracial person may choose one race over another. In addition, some aspects, such as ethnicity, are not directly and/or correctly observable by others who are reporting the data. That can call into question the data's accuracy.

Missing data was another difficulty, especially around Hispanics/Latinos for which the definition and measurement may have historically been reported inaccurately. For example, data surrounding Hispanics/Latinos who return to their native countries is another challenge.

Study periods vary — some were as small as five years, some were around 20 years and one was over the entire 20th century. The smallest study period covers some portion of the two-plus years of 2019-2022 for COVID-19 mortality.

1.3.3 DATA GAPS

Some studies reported noticeable gaps in data because data availability was challenging. Underreporting of data was another limitation. For example, one study (Turra et al. 2008) mentioned that the Social Security data excludes a large portion of the Hispanic/Latino population (25%-50%), which may be attributable to immigration and perhaps fear of lack of documentation. Another paper (Markides et al. 2005) describes incomplete data on Hispanics/Latinos as a whole, because vital records did not begin collecting data on Hispanic mortality until 1980.

Yet another study (Arias et al. 2021) cited potential measurement errors of death rates for “American Indian”, “Asian and Pacific Islander”, and “Alaska Native” groups, which tend to be underreported. As a result, caution must be exercised when utilizing and analyzing these data sets.

1.3.4 COMPARISON OF RESEARCH DATA

Nonuniform data classifications and categorizations, data variations, limitation and gaps created complications in comparing analyses and conclusions over multiple papers.

Section 2: Mortality Disparities

Overall mortality rates have declined significantly over the 20th century, but mortality disparities by race and ethnicity persist. The majority of studies reviewed asserts mortality differs by race and ethnicity. Furthermore, gaps in mortality still exist among racial and ethnic groups despite improvements in socioeconomic status, medical care, access to health care, public health advocacy, rates of insurance coverage, and legal and social rights (National Institutes of Health 2022).

Historically, the group with generally the lowest mortality has been whites, against which all other racial and ethnic groups have typically been compared. Currently, Blacks or African Americans (“Blacks” hereafter) generally have the highest mortality rates, followed by Native Americans, whites, Hispanics/Latinos and Asian/Pacific Islanders (Miller 2020). Differentials among racial groups are highest at the youngest ages, where Blacks have nearly twice the death rate of whites and lower death rates at the very oldest ages (Population Reference Bureau 2002). As expected, older age mortality rates are greatly affected by the accumulation of factors over one’s lifetime.

Hispanics/Latinos, on the other hand, appear to have lower mortality than both races in certain instances, with nativity and migration playing a role specifically for this ethnic group. As with Blacks, and for similar reasons, mortality rates for Hispanics/Latinos are higher at younger ages and lower at older ages.

Although U.S. life expectancy increased by 2.3 years from 2000 to 2019, it was inconsistent across all racial and ethnic groups. The average life expectancy in the United States is 78.9 for whites, 75.3 for Blacks, and 73.1 for the Native American population (National Institutes of Health 2022). That discrepancy persists despite the fact that life expectancy for Blacks has increased 3.9 years, more than any other racial and ethnic group, with the Hispanic/Latino and white populations experiencing an increase of only 2.7 and 1.7 years, respectively.

However, data from a more recent study¹⁰ shows overall 2019-2020 life expectancy as 77.0 years, a decline of 1.5 years in 2020, with a decrease of 1.2, 2.9 and 3.0 years, respectively, for the white, Black and Hispanic/Latino populations, largely reflecting the disproportionate COVID-19 mortalities for these groups.

While the majority of research is about adult mortality rates, several studies reported on infant mortality rates. Black babies are nearly 2.5 times more likely to die in the first year of life than their white counterparts. In addition, maternal mortality¹¹ rates follow the same pattern as do excess deaths for premature deaths. In 2020, the maternal mortality rate for Black women was 55.3 per 100,000 live births, nearly three times the rate for white and Hispanic/Latina women, which was 19.2 and 18.2, respectively. The increases from 2019 to 2020 for Black and Hispanic/Latina women were significant — 26% and 44%, respectively, while less significant, 7%, for white women (Hoyert 2022).

2.1 PREVALENT FACTORS

The most prevalent indicators of U.S. mortality are socioeconomic status and underlying health characteristics. While there exists strong evidence of correlation between those two factors, there is less direct evidence of causation. In other words, while people with higher socioeconomic status have greater access to better health care,

¹⁰ KFF (January 26, 2022). Key Facts on Health and Health Care by Race and Ethnicity: Life Expectancy. Retrieved October 14, 2022, from <https://www.kff.org/report-section/key-facts-on-health-and-health-care-by-race-and-ethnicity-health-status-outcomes-and-behaviors/#:~:text=Provisional%20data%20from%202020%20show,males%20at%20only%2068%20years.>

¹¹ The World Health Organization defines “maternal death” as “the death of a women while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.” (Hoyert, 2022).

which generally results in better health outcomes, even wealthy people die of incurable diseases despite exceptional health care.

2.1.1 SOCIOECONOMIC

The specific definition of socioeconomic status varies among papers, most including some combination of education, family income, marital status and occupation/employment status. It is a common indicator of social stratification and income inequality. Differential gains by income further create disparity in the lifetime value of, for example, Social Security retirement benefits. That is also described as the gap in wealth, both intergenerational and life-course cumulative character of wealth.

Most studies suggest that factor accounts for approximately 50% of mortality differences. Although nonwhite groups are closing the socioeconomic gaps, the mortality gap is not closing at the same rate.

There is a strong correlation between socioeconomics and mortality but not 100% causation:

1. Socioeconomic factors and mortality rates are both lower for Hispanics/Latino than Blacks.
2. Socioeconomic factors and mortality rates are both lower for Hispanics/Latinos than whites.
3. The expectation is an inverse relationship between socioeconomic factors and mortality rates, but that's not always the case for Hispanics/Latinos.

When controlled for socioeconomic factors, the Black-white adult mortality differences narrow considerably. An even more pronounced pattern exists for the Hispanic/Latino population, which tends to exhibit significantly lower mortality rates than non-Hispanic/Latino whites. In many papers, that is referred to as the "Hispanic Paradox." One explanation is that immigrants are typically chosen by higher educational and better health characteristics, more so than the residual population in the sending country. That superior health status seems to wear off over time the longer immigrants live in the United States.

Most Hispanics/Latinos in the United States still experience socioeconomic disadvantages based on factors such as immigration status, degree of acculturation, language barriers and types of work. Despite all those facts, the Hispanic Paradox is well studied and well documented.

Socioeconomic factors are mentioned in 21 papers (Hummer 2011; Osel 2012; Cha and Cohen 2022; Saluja and Bryant 2021; Cohen 2004; Isaacs et al. 2021; Schwartz Center for Economic Policy Analysis 2017; Beydoun et al. 2016; Schwandt et al. 2021; Kian 2020; Sloan et al. 2010; Elo and Drevendstedt 2004; Lopez III et al. 2021; Rodriguez-Lonebear et al. 2020; Abrafo-Lanza et al. 1999; Borrell and Lancet; Crimmins et al. 2007; Fenelon 2017; Reyes et al. 2020; Samuel et al. 2021; Yehia et al. 2020).

2.1.2 HEALTH

Health status is an important determinant of mortality. Underlying health factors such as obesity, high blood pressure, hypertension and diabetes are typical comorbidities that exacerbate poor health outcomes. Those and other disease categories vary by racial and ethnic groups, e.g., cancer and cirrhosis of the liver, which can be affected by behavioral factors such as smoking and alcoholism, environmental factors or nutrition. Therefore, mortality rates by disease category vary by racial and ethnic groups.

One paper (Cohen 2004) suggests the need for a "life-course approach" to the study of health. The concept is that the accumulation of events over the course of one's life impacts one's general well-being and health outcomes (e.g., chronic diseases). These events could include various life-course factors such as socioeconomic status, stress, work, migration and family histories, and childhood and adulthood health experiences. The author purports that those

factors exhibit different patterns across racial and ethnic groups, thereby contributing to the differential impacts on older adult health by race or ethnic group.

There is an inverse relationship between socioeconomic status and diseases prevalence, disability and health issues. Even some cause-specific mortality (e.g., cardiovascular disease) can be partially explained by socioeconomic, health-related and dietary factors.

Underlying health factors are mentioned in 10 papers (Hummer and Chinn 2011; Williams, Lawrence, and Davis 2019; Harper et al. 2007; Hoyert 2022; Miller 2020; Arias et al. 2021; Lopez III et al. 2021; Rodriguez-Lonebear et al. 2020; Abrafo-Lanza et al. 1999; Crimmins et al. 2007).

2.1.3 HEALTH CARE

2.1.3.1 Access

The racial and ethnic disparities in mortality are also impacted by access to health care (and access to quality health care), which is intertwined with socioeconomic factors and discrimination. The United States does not have universal health care, and approximately 32 million Americans did not have health insurance in 2020 (Cha and Cohen 2022).¹²

Many health-related programs that support needy families — e.g., Medicaid and nutrition assistance — have experienced a steady reduction in funding. Families of color are historically more likely to utilize such programs compared to their white counterparts.

Racial/ethnic mortality disparities may potentially be mitigated by equal-access health care systems, such as the Veterans Health Administration (VHA). These systems strive to eliminate financial barriers to health care. A study of VHA health care access found, after adjusting for comorbidities, few racial/ethnic disparities in all-cause mortality and mortality for a few other specific diseases.

Access to health care is mentioned in nine papers (Anderson et al. 2020; Cha and Cohen 2022; Cohen 2004; Elo and Drevenstedt 2004; Wong et al. 2019; Lopez III et al. 2021; Crimmins et al. 2007; Samuel et al. 2021; Yehia et al. 2020).

2.1.3.2 Discrimination

Discrimination is mentioned in multiple studies as a factor by which individuals perceive they are treated in health care. It is, of course, a much broader societal issue that affects more than mortality. The studies reviewed present these examples of discrimination in health care and the resulting effect on mortality rates.

According to one study (Cohen 2004), “... there is a massive amount of compelling evidence that suggests a strong corollary relationship between the poor health of African Americans and the institutionalized racism that is infused within the history, environment, social and economic arrangements of the United States.” This study shows that the forms of discrimination may have changed over the century, but ways exist to ignore and exclude people and/or withhold or decrease services.

The impact of repeated encounters with racism or discrimination are associated with multiple indicators of poorer physical and mental health. The effects of discrimination can accumulate over a lifetime and even spill over into subsequent generations.

¹² National [Demographic Variation in Health Insurance Coverage: United States, 2020](#) Statistics Report (February 2022).

Black and Hispanic/Latino Medicare beneficiaries report worse experiences than white counterparts on a large portion of clinical care measures (e.g., breast cancer screening, diabetes care and medical management) (Martino et al. 2021).

Structural racism in the health care industry has led to and continues to lead to poorer care and higher mortality (and morbidity) rates for Black women in particular (Taylor et al. 2019). Low infant birthweight is a key factor in mothers who reported discrimination. As already mentioned, Black infants are more than twice as likely as white infants to die in their first year of life (Cha and Cohen 2022).¹³ Although Native American women also experience an elevated risk of poor outcomes, the racial disparities between Black and non-Hispanic/Latino white mothers are the starkest. Furthermore, statistics still show a difference in infant birthweight between Black and white mothers of equal or similar socioeconomic status.

Discrimination is mentioned in 13 papers (Hummer and Chinn 2011; Beydoun et al. 2016; Anderson et al. 2020; Cohen 2004; Taylor et al. 2019; William, Lawrence and Davis 2019; Martino et al. 2021; Kian 2020; Harlan et al. 2007; Kaiser Family Foundation 2022; Tong and Artiga 2021; Wrigley-Field 2020; National Institutes of Health 2022).

2.1.3.3 Bias

One study (Kian 2020) describes that “Implicit bias, or the ‘unconscious attribution of particular qualities to a member of a certain social group’, affects the relationship African American women have with their healthcare providers.” The study also explains that in a collection of NPR stories of over 200 Black mothers, “the feeling of being devalued and disrespected by medical providers was a constant theme.”

Examples of bias in medical education and training include but are not limited to (Tong and Artiga 2021):

1. Teachings about different races presenting with different ailments.
2. Visual representations of diseases on bodies of different races, e.g., can create difficulty in diagnosing Black patients’ diseases like skin cancer typically presented on white bodies or more commonly using Black skin to represent sexually transmitted diseases or lesions.
3. Skepticism about pain that Black patients report.
4. Race-based guidelines for diagnosis, care and prescribing medication.
5. Use of race or geography to describe diseases, e.g., Mongolian flu and China virus.

In addition, some medical training approaches and material use of imprecise labels, portray diseases through racial stereotypes, and misuse race as a proxy for ancestry or differences in socioeconomic status or health behaviors. In fact, the study indicates that lecture materials commonly present racial differences in disease burden without historical or social context, which may contribute to students connecting diseases with certain racial groups and ascribing differences to genetic predisposition. For example, some lecturers teach students to have higher clinical suspicion of diagnosis of certain diseases in Black patients.

In an April 2021 Medicare Advantage study (Martino et al. 2021), racial and ethnic minority groups (except one) reported experiences with care that were either worse than or similar to the experience that white beneficiaries reported. Worse experiences included not getting appointments quickly, prescription drugs and care, and customer service, doctor communication and care coordination.

¹³ National [Demographic Variation in Health Insurance Coverage: United States, 2020](#) Statistics Report (February 2022).

As reported by one study (Jones 2022) “Clinicians’ racial biases have been associated with disparities related to premature death, pain management, coronary artery disease, kidney dialysis, contraception and prenatal care, as well as patient-provider communication, satisfaction, and adherence to treatment.”

Bias is mentioned in six papers (Saluja and Bryant 2021; Martino et al. 2021; Kian 2020; Jones 2022; Kaiser Family Foundation 2022; Tong and Artiga 2021).

2.1.4 MIGRATION

As previously noted, many studies reported the Hispanic Paradox, or “epidemiological paradox,” in which Hispanic/Latino mortality is similar to or in some cases better than white mortality. At least eight studies drew similar conclusions.

One paper (Population Reference Bureau 2002) offered the “immigrant advantage” as a possible partial explanation for the Hispanic Paradox. The immigrant advantage refers to the considerably lower levels of mortality of immigrants compared to their U.S.-born counterparts. The immigrant advantage has been observed in both the Hispanic/Latino and Asian populations in the United States, which contain a higher percentage of first- and second-generation immigrants than white non-Hispanic/Latino or the Black non-Hispanic/Latino populations. While the difference wears off with time since immigration, “several studies have shown that international migrants tend to be particularly healthy and optimistic individuals, with better diets and more positive health-related behaviors than nonimmigrants.” One paper (Fenelon 2017) took it a step further and examined in-migration to new destinations within the United States, such as Georgia, North Carolina and Ohio, versus traditional gateways in the Southeast. Immigrants living in the former experience nearly a 30% lower mortality risk than the those living in the latter. They also tend to be slightly younger and more socioeconomically advantaged.

Similarly, another paper (Turra and Elo 2008) offered the “Salmon Bias” as another partial driver. The Salmon Bias describes immigrants’ return to their native country when they are older and likely unhealthier. The paper states, “... this type of selective emigration results in mortality for the remaining migrant population in the U.S. ... population that is lower than if the mortality experience of the return migrants has not been omitted.”

Still, multiple papers showed that even when controlling for the immigrant advantage and Salmon Bias, the Hispanic Paradox still exists at some level.

The Hispanic Paradox, the Salmon Bias and the epidemiological paradox (or these effects under any name) are mentioned in 12 papers (Hummer and Chinn 2011; Population Reference Bureau 2002; Torrats-Espinosa 2021; Osel 2008; Arias, Johnson and Betzaida Tejada 2020; Turra and Elo 2008; Abrafdo-Lanza et al. 1999; Markides and Eschbach 2005; Borrell and Lancet; Crimmins et al. 2007; Bond, Hummer and Rogers 2002; Fenelon 2017).

2.2 GENETICS/GENOMICS

The genetics factor differs from underlying health characteristics in that the former is hereditary while the latter can result from the former, from behavioral or environmental factors or from many other causes.

Do genetics play a role in mortality? “Genetic differences in disease among racial and ethnic groups are particularly relevant for simple genetic disorders caused by a single gene mutation ...” in very small populations (Cohen 2004). “An example, the prevalence of Tay-Sachs disease among Ashkenazi Jews” (Cohen 2004).

According to the National Human Genome Research Institute (National Human Genome Research Institute 2018):

“Genetics is a term that refers to the study of genes and their roles in inheritance—in other words, the way that certain traits or conditions are passed down from one generation to another. Genetics involves scientific studies of genes and their effects. ... [It] helps individuals and families learn about how conditions such as sickle cell anemia and cystic fibrosis are inherited in families ...

“Genomics is a more recent term that describes the study of all of a person’s genes (the genome), including interactions of those genes with each other and with the person’s environment. Genomics includes the scientific study of complex diseases such as heart disease, asthma, diabetes, and cancer because these diseases are typically caused more by a combination of genetic and environmental factors than by individual genes.

“Apart from accidents (such as falls, motor vehicle accidents or poisoning), genomic factors play a role in nine of the ten leading causes of death in the United States (for example, heart disease, cancer and diabetes).”

Genetic factors are mentioned in three papers (National Human Genome Research Institute 2018; Beydoun et al. 2016; Cohen 2004).

2.3 CONTEXTUAL RISKS

One paper (Bond, Hummer and Rogers 2002) explored both individual- and contextual-level factors that smaller geographical areas represent rather than those utilized in the U.S. Census. Those areas were used as the contextual unit of analysis, based on the belief that that is more meaningful sociologically and is a more accurate estimation of a neighborhood. The hypothesis was that racial and ethnic mortality differences are affected not only by socioeconomic characteristics but also by neighborhood characteristics, especially for Hispanic/Latino subgroups.

Neighborhood contextual-level mortality was linked to:

1. Low socioeconomic factors, residential isolation and high levels of violence are associated with higher all-cause mortality for both Black and white populations but disproportionately so for Blacks.
2. Even after controlling for socioeconomic factors, residential segregation is associated with higher levels of mortality.
3. Lower levels of neighborhood quality, e.g., a federally designated poverty area, are associated with higher levels of mortality, even after controlling for individual-level risk factors such as smoking.
4. Although individual income has a stronger effect on mortality disparities, neighborhood income has an effect as well.

Another paper (Lopez III et al. 2021) touched on neighborhood and residential contexts. Multilevel studies consistently show that poor neighborhoods with concentrated poverty are associated with significant risks of poor health and mortality, even after controlling for individual differences in household income.

Contextual risks are mentioned in 10 papers (Cohen 2004; Torrats-Espinosa 2021; Williams, Lawrence, and Davis 2019; Elo and Drevenstedt 2004; Lopez III et al. 2021; Rodriguez-Lonebear et al. 2020; Bond, Hummer and Rogers 2002; Fenelon 2017; Samuel et al. 2021; Yehia et al. 2020).

2.4 COVID-19 MORTALITY

Mortality related to COVID-19 was found to follow a pattern somewhat similar to pre-pandemic rates. The Hispanic/Latino population mortality was close to or slightly higher than the white population, followed by the Black population, for which death rates were almost five times higher. Several reasons were reported for that:

1. Lack of trust in the government or health system regarding vaccines and trials (non-whites have been used for medical experiments in the past).

2. Poor access to health care — in general, but it was even more difficult to find medical care during the pandemic.
3. Avoidance of care — immigrant fear of using public health systems.
4. Public health information dissemination — e.g., language proficiency, health literacy. (Lopez III et al. 2021)

Native Americans on reservations were particularly susceptible to COVID-19 due to other factors such as isolation from other populations and population concentration, inadequate public health infrastructure, limited medical resources, high rates of poverty and lack of household plumbing (Rodriguez-Lonebear et al. 2020).

One 2021 study (Torrats-Espinosa 2021) writes, “COVID-19 has caused more than 400,000 deaths in the U.S. and exposed stark racial disparities in disease risk and fatality rates. In Chicago and Milwaukee, 70% and 73% of COVID-19 deaths have been among African Americans during the first months of the pandemic. In the states of Louisiana and Michigan, 70% and 40% of deaths were among Black residents. These rates are more than twice the percentage of Black individuals that make up the population in those areas.”

In a study (Yehia et al. 2020) of hospital patients only, the findings suggest that, if access to care were equal, there may be decreased or no racial and ethnic differences due to COVID-19. “After adjustment for age, sex, insurance, comorbidities, neighborhood deprivation, and site of care, there was no statistically significant difference in risk of mortality between Black and white patients.”

Racial segregation as a contextual factor is described in the Section 2.3. However, this factor is also mentioned as making Black and Hispanic/Latino residents particularly vulnerable to COVID-19 because (Torrats-Espinosa 2021):

1. They are overrepresented in jobs classified as essential.
2. They are more likely to live in multigenerational households with more people who could become afflicted by and spread the infection.
3. They are less likely to have health insurance coverage or access to health care.
4. They live in neighborhoods where essential establishments such as pharmacies are scarcer.

COVID-19 is mentioned in eight papers (Torrats-Espinosa 2021; Miller 2020; Lopez III et al. 2021; Rodriguez-Lonebear et al. 2020; Reyes et al. 2020; Samuel et al. 2021; Wrigley-Field 2020; Yehia et al. 2020).

A summary of factors by research paper is listed in Appendix B: Table of Factors by Research Paper.

Section 3: Future Research

While several research papers discussed neighborhood factors, only one (Bond Huie et al. 2002) specifically examined contextual risks. That risk includes not only neighborhood risks, but it encapsulates (or attempts to encapsulate) the unique context in which a specific racial and ethnic group lives and exists, relative to a baseline white population. This is a suggested topic of future research (or review).

Until more recently, research studies of population data have historically not included credible data for all racial and ethnic groups — e.g., the aforementioned data limitations and data gaps. In particular, premature death studies of causes such as suicide, drug overdose and alcoholism tend to partially exclude minority racial and ethnic groups. Future research of this topic including credible data for more racial and ethnic groups is suggested.

Persons with disabilities often suffer health care inequities, despite race or ethnicity. More studies of mortality for this subset of the population would be helpful. The effect of diet is another topic rarely studied by race and ethnicity — this is another suggested topic.



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Section 4: Acknowledgments

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Appendix A: Table of Purpose, Data, Methodology and Bias

This appendix presents a summary of each of the 43 papers used in the research. The table summarizing the papers can be found on the SOA website, [Mortality and Race and Ethnicity in the United States - Appendices](#).

Appendix B: Table of Factors by Research Paper

This appendix identifies the factors of mortality disparities discussed in each paper and used in Section 2. The table can be found on the SOA website, [Mortality and Race and Ethnicity in the United States - Appendices](#).

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