



Measuring Structural Racism

Tongtan (Bert) Chantarat, PhD, MPH

Research Scientist

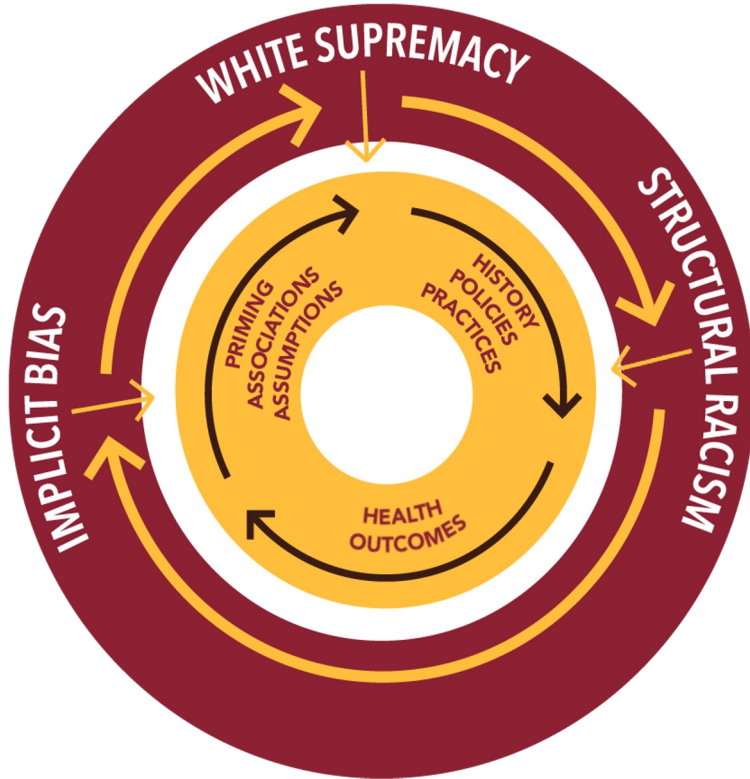
Center for Antiracism Research for Health Equity

 @bertchantarat



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Structural racism is “the **totality** of ways in which societies foster racial discrimination, through mutually reinforcing inequitable systems (in housing, education, employment, earnings, benefits, credit, media, health care, criminal justice, and so on) that in turn reinforce discriminatory beliefs, values, and the distribution of resources, which together affect the risk of adverse health outcomes.”

Source: Bailey ZD, Krieger N, Agénor M, Graves J, Linos N, Bassett MT. Structural racism and health inequities in the USA: evidence and interventions. *The Lancet*. 2017. 389(10077), 1453-1463.

By Rachel R. Hardeman, Patricia A. Homan, Tongtan Chantararat, Brigette A. Davis, and Tyson H. Brown

OVERVIEW

Improving The Measurement Of Structural Racism To Achieve Antiracist Health Policy

ABSTRACT Antiracist health policy research requires methodological innovation that creates equity-centered and antiracist solutions to health inequities by centering the complexities and insidiousness of structural racism. The development of effective health policy and health equity interventions requires sound empirical characterization of the nature of structural racism and its impact on public health. However, there is a disconnect between the conceptualization and measurement of structural racism in the public health literature. Given that structural racism is a system of interconnected institutions that operates with a set of racialized rules that maintain White supremacy, how can anyone accurately measure its insidiousness? This article highlights methodological approaches that will move the field forward in its ability to validly measure structural racism for the purposes of achieving health equity. We identify three key areas that require scholarly attention to advance antiracist health policy research: historical context, geographical context, and theory-based novel quantitative and qualitative methods that capture the multifaceted and systemic properties of structural racism as well as other systems of oppression.

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Rachel R. Hardeman
(hard0222@umn.edu),
University of Minnesota,
Minneapolis, Minnesota.

Patricia A. Homan, Florida
State University, Tallahassee,
Florida.

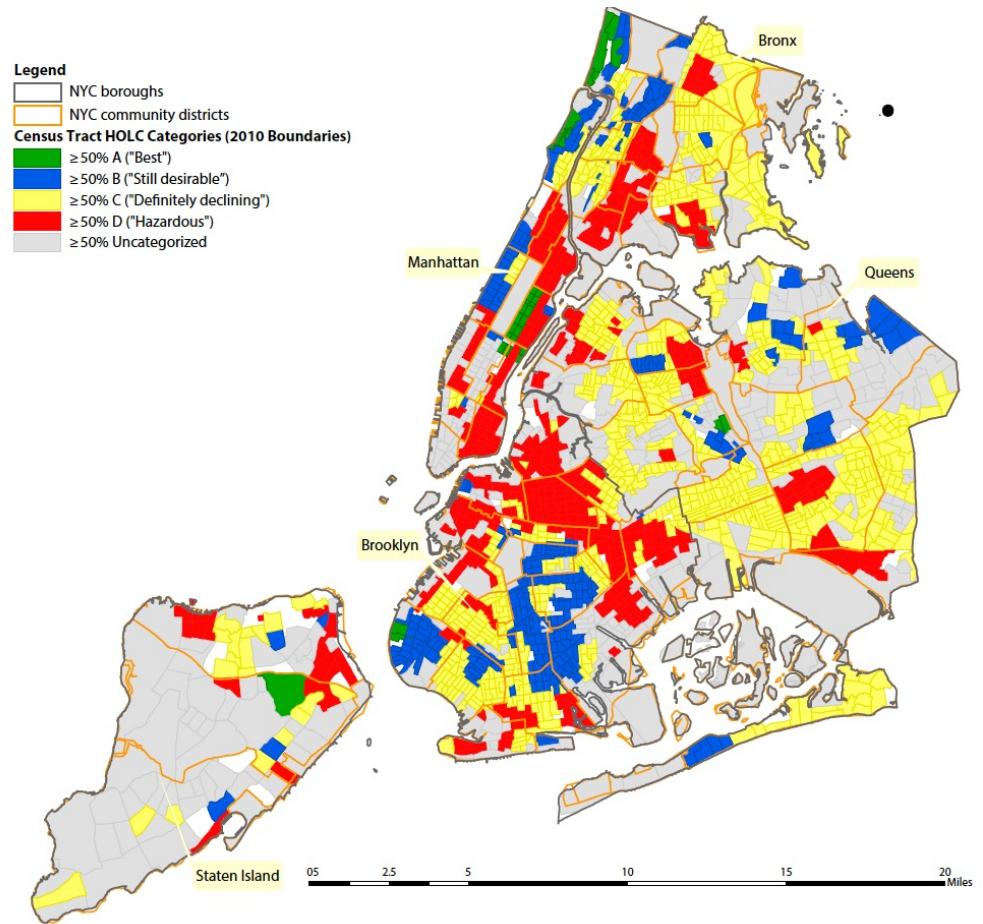
Tongtan Chantararat, University
of Minnesota.

Brigette A. Davis, University
of California San Francisco,
San Francisco, California.

Tyson H. Brown, Duke
University, Durham, North
Carolina.

“We cannot
change what we
cannot measure.”

Residential Segregation



Source: Krieger et al. Structural Racism, Historical Redlining, and the Risk of Preterm Birth in New York City, 2013-2017. *Am J Public Health.* 2020. 110(7): 1046-1053.

From Residential Segregation...

*“Totality of ways in which societies foster racial discrimination through mutually reinforcing systems of **housing, education, employment, earnings, benefits, credit, media, health care, and criminal justice**. These patterns and practices in turn reinforce discriminatory beliefs, values, and the distribution of resources.”* (Bailey et al. 2017)

- Going beyond neighborhoods
- Environmental/Area-based exposures to structural racism
 - Weathering hypothesis (Geronimus 1992)
 - Ecosocial theory (Krieger 1994)



Where are the labor markets?: Examining the association between structural racism in labor markets and infant birth weight

Tongtan Chantararat, PhD, MPH ^{a,b,c,*}, Kari M. Mentzer, PhD, MA ^{a,c}, David C. Van Riper, MA ^c, Rachel R. Hardeman, PhD, MPH ^{a,b,c}

^a Division of Health Policy and Management, University of Minnesota School of Public Health, 420 Delaware Street Southeast, MMC 729 Mayo, Minneapolis, MN, 55455, USA

^b Center for Antiracism Research for Health Equity, University of Minnesota School of Public Health, 420 Delaware Street Southeast, MMC 729 Mayo, Minneapolis, MN, 55455, USA

^c Minnesota Population Center, Institute for Social Research and Data Innovation, 50 Wiley Hall, 225 19th Avenue South, Minneapolis, MN, 55455, USA

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ABSTRACT

Racist policies and practices that restrict Black, as compared to white workers, from employment may drive racial inequities in birth outcomes among workers. This study examined the association between structural racism in labor markets, measured at a commuting zone where workers live and commute to work, and low-birthweight birth. We found the deleterious effect of structural racism in labor markets among US-born Southern Black pregnant people of working age, but not among African- or Caribbean-born counterparts in any US region. Our analysis highlights the intersections of structural racism, culture, migration, and history of racial oppression that vary across regions and birth outcomes of Black workers.

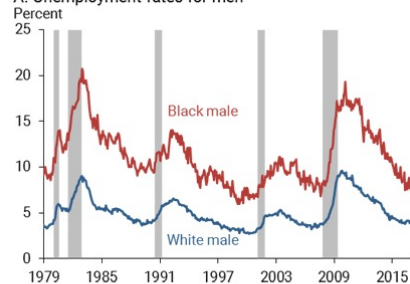
1. Introduction

Infants born with a birthweight of under 2,500 g (low birthweight; LBW) face increased risks of adverse health outcomes, such as jaundice, necrotizing enterocolitis, breastfeeding problems, and death before their first birthday (Martin et al., 2017). LBW infants are also more vulnerable to having chronic diseases later in life, incurring excess healthcare expenses and creating economic burdens to their family and the society (Almond et al., 2005). For centuries, an inequity in birthweight between infants born to Black versus white pregnant people in the United States (US) has persisted despite improvements in access to prenatal care and initiatives aimed at reducing the exposure to risk factors of poor pregnancy (e.g., tobacco and substance use, short time between pregnancies) (Martin et al., 2017). LBW inequity also exists among infants born to Black pregnant people of different nationalities. For example, in the Minneapolis-Saint Paul area, home to one of the largest Somali communities outside Somalia (United Nations Development Program, 2009), the incidence of LBW was 12.2% and 5.9% for infants born to US-born and African-born Black pregnant people, respectively (Minnesota Compass, 2020). A similar trend is observed in New York City, the

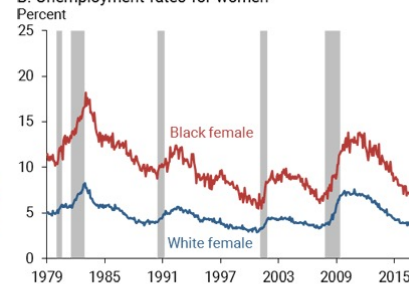
largest settlement in the US for Black people from the Caribbean Islands (Hamilton, 2019); the incidence of LBW was 11.9% and 9.9% for infants born to US-born and Caribbean-born Black pregnant people, respectively (Mason et al., 2010).

Black people from all socioeconomic backgrounds weather the exposure to various stressors due to the lived experience of racism that elicits the same response as chronic stress (Geronimus, 1992; Berger and Sanjay, 2015). Over time, the accumulation of physiological wear and tear (weathering) caused by racism and the embodiment of oppression renders Black people more susceptible to poor health (Geronimus et al., 2006; Hicken et al., 2013; Doamekpor and Dinwiddie, 2015). In a society like the US, where there are over 400 years of history of structuring advantage based on race, genocide, and colonialism, structural racism – the interconnected system of ideologies, policies, and practices in our social and economic institutions that produce racialized outcomes, even in the absence of racist intent (Bailey et al., 2017) – has been linked to several poor pregnancy outcomes, including stress during pregnancy (Mendez et al., 2013), severe maternal morbidity among Black pregnant people (Liu et al., 2019), small-for-gestational-age infants (Wallace et al., 2015), and infant mortality (Wallace et al., 2017; Pabayo et al.,

A. Unemployment rates for men



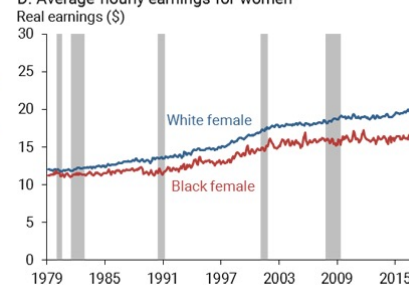
B. Unemployment rates for women



C. Average hourly earnings for men



D. Average hourly earnings for women



Source: Federal Reserve Bank of Minneapolis



Original Investigation | Public Health

Association of Residence in High-Police Contact Neighborhoods With Preterm Birth Among Black and White Individuals in Minneapolis

Rachel R. Hardeman, PhD, MPH; Tongtan Chantararat, PhD, MPH; Morrison Luke Smith, MPH; J'Mag Karbeah, MPH; David C. Van Riper, MA; Dara D. Mendez, PhD, MPH

Abstract

IMPORTANCE Police contact may have negative psychological effects on pregnant people, and psychological stress has been linked to preterm birth (ie, birth at <37 weeks' gestation). Existing knowledge of racial disparities in policing patterns and their associations with health suggest redesigning public safety policies could contribute to racial health equity.

OBJECTIVE To examine the association between community-level police contact and the risk of preterm birth among White pregnant people, US-born Black pregnant people, and Black pregnant people who were born outside the US.

DESIGN, SETTING, AND PARTICIPANTS This cross-sectional study used medical record data of 745 White individuals, 121 US-born Black individuals, and 193 Black individuals born outside the US who were Minneapolis residents and gave birth to a live singleton at a large health system between January 1 and December 31, 2016. Data were analyzed from March 2019 to October 2020.

EXPOSURES Police contact was measured at the level of the census tract where the pregnant people lived. Police incidents per capita (ie, the number of police incidents divided by the census tract population estimate) were dichotomized into high if the value was in the fourth quartile and low for the remaining three quartiles.

MAIN OUTCOMES AND MEASURES Preterm birth status was based on the *International Statistical Classification of Diseases and Related Health Problems, 10th revision, Clinical Modification (ICD-10-CM)* code. Preterm infants were those with ICD-10-CM codes P07.2 and P07.3 documented in their charts.

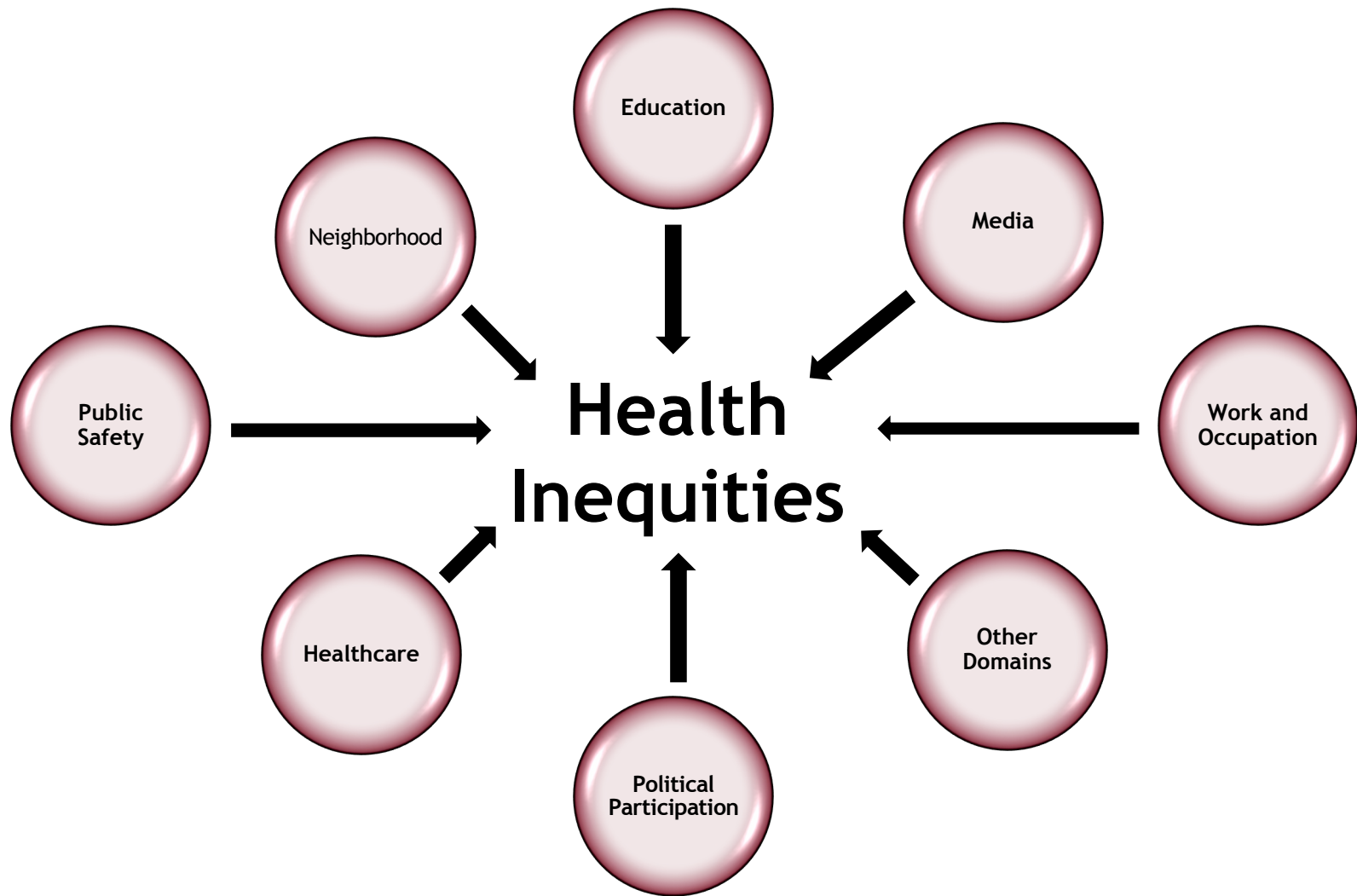
Key Points

Question Is living in a neighborhood with high police presence associated with increased risk of preterm birth?

Findings In this cross-sectional study of 1059 Minneapolis residents who gave birth to a live singleton in 2016, the odds of preterm birth for pregnant people living in a neighborhood with high police presence was significantly higher compared with the odds of their racial counterparts in a low-presence neighborhood (90% increase for White individuals, 100% increase for US-born Black individuals, and 10% for Black individuals born outside of the US). The higher the proportion of Black residents in the neighborhood, the greater the number of police incident reports.

Meaning These findings suggest that greater police presence in Black vs White neighborhoods may contribute to the persistent Black-White preterm birth disparity in Minneapolis.





RETHINKING RACISM: TOWARD A STRUCTURAL INTERPRETATION*

Eduardo Bonilla-Silva
The University of Michigan

The study of race and ethnic conflict historically has been hampered by inadequate and simplistic theories. I contend that the central problem of the various approaches to the study of racial phenomena is their lack of a structural theory of racism. I review traditional approaches and alternative approaches to the study of racism, and discuss their limitations. Following the leads suggested by some of the alternative frameworks, I advance a structural theory of racism based on the notion of racialized social systems.



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The Race Discrimination System

Barbara Reskin

Department of Sociology, University of Washington, Seattle, Washington 98195;
email: reskin@u.washington.edu

“Racism is a system of structuring opportunity and assigning value based on the social interpretation of how one looks (which is what we call “race”), that unfairly disadvantage some individuals and communities, unfairly advantages other individuals and communities, and saps the strength of the whole society through the waste of human resources”.

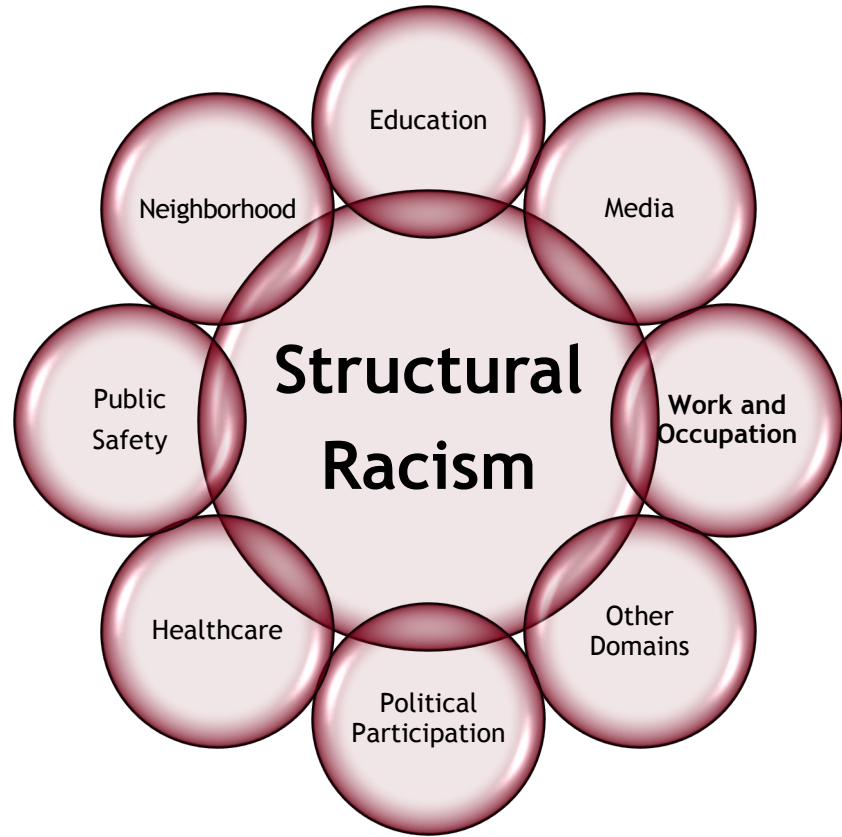
Camara Phyllis Jones (2002)

Annu. Rev. Sociol. 2012.38:17–35

First published online as a Review in Advance on
May 1, 2012

Keywords

cumulative advantage/disadvantage, racial disparities, racial inequality, systems perspective



**Health
Inequities**

The hurdle

$SR_1 = \text{residential segregation}$

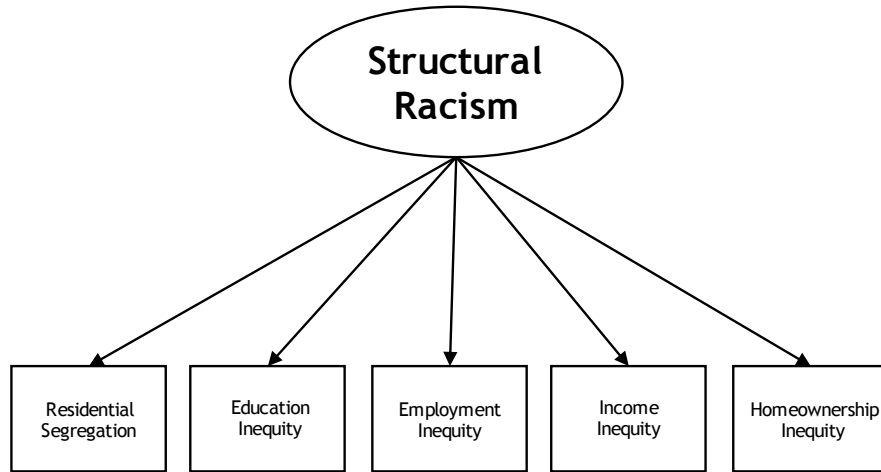
$SR_2 = \text{Black – white employment inequity}$

$SR_3 = \text{racialized policing}$

$$Y = \alpha + \beta_1 SR_1 + \beta_2 SR_2 + \beta_3 SR_3 + \beta_4 SR_1 * SR_2 + \beta_5 SR_2 * SR_3 + \beta_6 SR_1 * SR_3 + \beta_7 SR_1 * SR_2 * SR_3$$

- Higher order of interaction term is difficult to interpret
- Estimating multiple regression with highly correlated variables produce biased estimates
 - Similar effect direction, wrong effect size
 - Wrong effect direction
 - Null effect

Structural Racism = Latent Construct



- Latent measures assume the shared variance between dimensions represents the construct of structural racism
- **Latent class analysis (LCA)** identifies qualitative multidimensional typologies
- Common application of LCA: personality types



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Research paper

The intricacy of structural racism measurement: A pilot development of a latent-class multidimensional measure

Tongtan Chantarat^{a,b,*}, David C. Van Riper^c, Rachel R. Hardeman^{a,b}

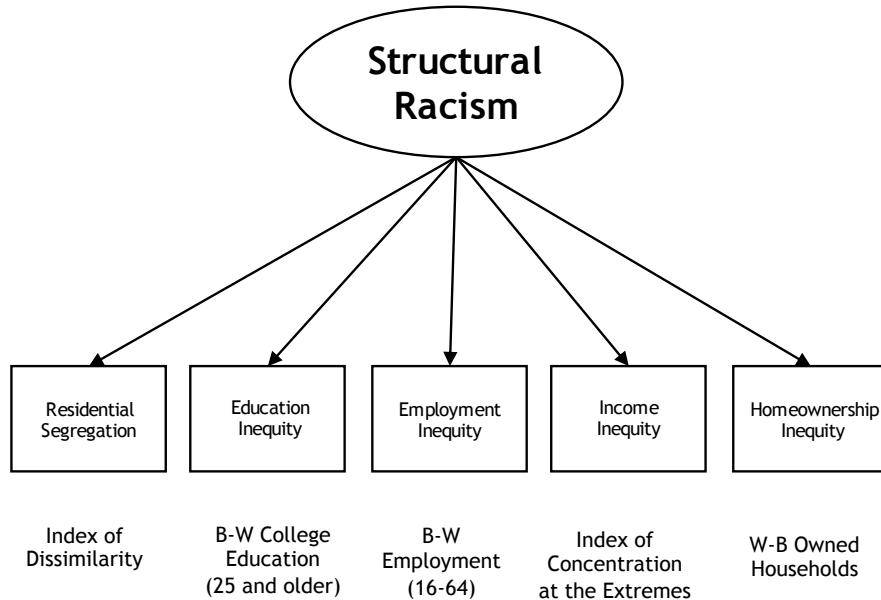
^a Division of Health Policy and Management, University of Minnesota School of Public Health, 420 Delaware Street Southeast, MMC 729 Mayo, Minneapolis, MN, 55455 USA

^b Center for Antiracism Research for Health Equity, University of Minnesota School of Public Health, 420 Delaware Street Southeast, MMC 729 Mayo, Minneapolis, MN, 55455 USA

^c Minnesota Population Center, Institute for Social Research and Data Innovation, 225 19th Avenue South, Minneapolis, MN 55455 USA

Multidimensional Measure of Structural Racism

Chantarat T, Van Riper DC, Hardeman RR. The intricacy of structural racism measurement: A pilot development of a latent-class multidimensional measure. *EClinicalMedicine*. 2021; 101092.



$$Y = \alpha + \beta_1 MMSR$$

- The “MMSR”
- Evaluated single-dimension structural racism at the Public Use Microdata Area (PUMA) level
- Multidimensional structural racism “typologies”
 - Best fitting based on parsimony (BIC), clustering (standardized entropy), and relative class size

Multidimensional structural racism predicts birth outcomes for Black and White Minnesotans

Tongtan Chantarat PhD, MPH^{1,2,3} | David C. Van Riper MA³ |

Rachel R. Hardeman PhD, MPH^{1,2,3}

¹Division of Health Policy and Management, University of Minnesota School of Public Health, Minneapolis, Minnesota, USA

²Center for Antiracism Research for Health Equity, University of Minnesota School of Public Health, Minneapolis, Minnesota, USA

³Minnesota Population Center, Institute for Social Research and Data Innovation, Minneapolis, Minnesota, USA

Correspondence

Tongtan Chantarat, Center for Antiracism Research for Health Equity, University of Minnesota School of Public Health, 420 Delaware Street Southeast, MMC 729 Mayo, Minneapolis, MN 55455, USA. Email: chant083@umn.edu

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Abstract

Objective: The objective of this study is to determine the linkage between multidimensional structural racism typologies and preterm birth (PTB), low birthweight (LBW), and small-for-gestational-age (SGA) birth among infants of White, US-born Black, and foreign-born Black pregnant people in Minnesota.

Data Sources: The measures of structural racism were based on the 2017 American Community Survey 5-year estimates and the 2017 jail incarceration data from the Vera Institute of Justice. Birth outcomes of infants born in 2018 were based on birth records from the Minnesota Department of Health.

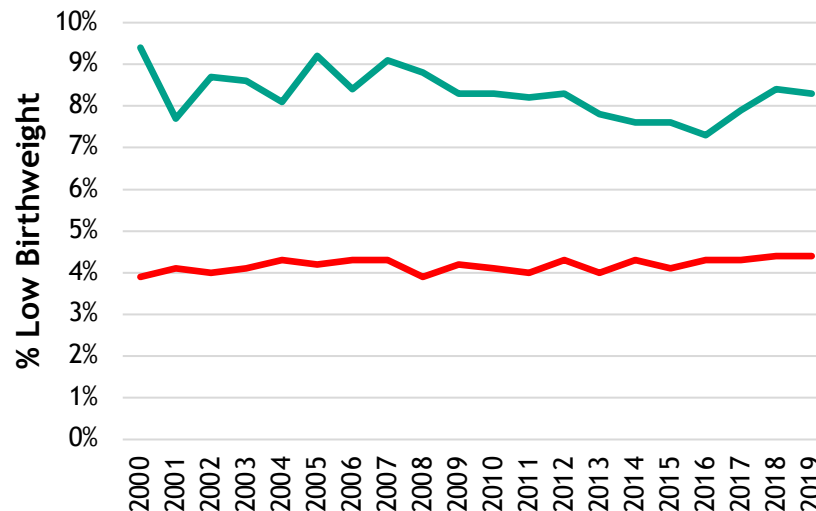
Study Design: We conducted a latent class analysis to identify multidimensional structural racism typologies in 2017 and related these typologies to birth outcomes of pregnant people who gave birth in Minnesota in 2018 using Vemunt's 3-step approach. Racial group-specific age-adjusted risks of PTB, LBW, and SGA by structural racism typologies were estimated.

Data Collection: Study data were from public sources.

Principal Findings: Our analysis identified three multidimensional structural racism typologies in Minnesota in 2017. These typologies can have high structural racism in some dimensions but low in others. The interactive patterns among various dimensions cannot simply be classified as "high" (i.e., high structural racism in all dimensions), "medium," or "low." The risks of PTB, LBW, and SGA for US-born Black pregnant Minnesotans were always higher than for their White counterparts regardless of the typologies in which they lived during pregnancy. Furthermore, these excess risks among US-born Black pregnant people did not vary significantly across the typologies. We did not find clear patterns when comparing the predicted risks for infants of US- and foreign-born Black pregnant people.

Conclusion: Multidimensional structural racism increases the risks of adverse birth outcomes for US-born Black Minnesotans. Policy interventions to dismantle structural racism and eliminate birth inequities must be multi-sectoral as changes in one or a few dimensions, but not all, will unlikely reduce birth inequities.

Birth Inequities in Minnesota



Source: Minnesota Department of Health, Minnesota Center for Health Statistics. <http://www.health.state.mn.us/divs/chs/>

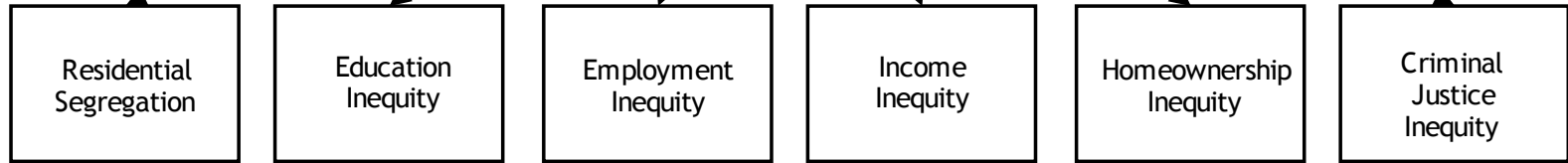
Research Questions

1. Do the risks of preterm birth (PTB), low birthweight (LBW), and small-for-gestational-age birth (SGA) for white, U.S.-born Black, and foreign-born Black people exposed to the same structural racism typology (i.e., residence in an area with the same pattern of structural racism) differ?
2. Do the risks of PTB, LBW, and SGA differ for people of the same racial background in different structural racism typologies?

Analysis

- Birth records of singletons of white (n=20,875), US-born Black (n=2,782), and foreign-born Black (n=4,648) pregnant people giving birth in 2018
 - Merged with unidimensional structural racism measures
- Vermunt's 3-step approach
 1. Latent class model fitting
 2. Modal assignment of pregnant people to structural racism typologies
 3. Relating structural racism typologies to PTB, LBW, and SGA

Structural Racism



Index of
Dissimilarity

B-W College
Education
(25 and older)

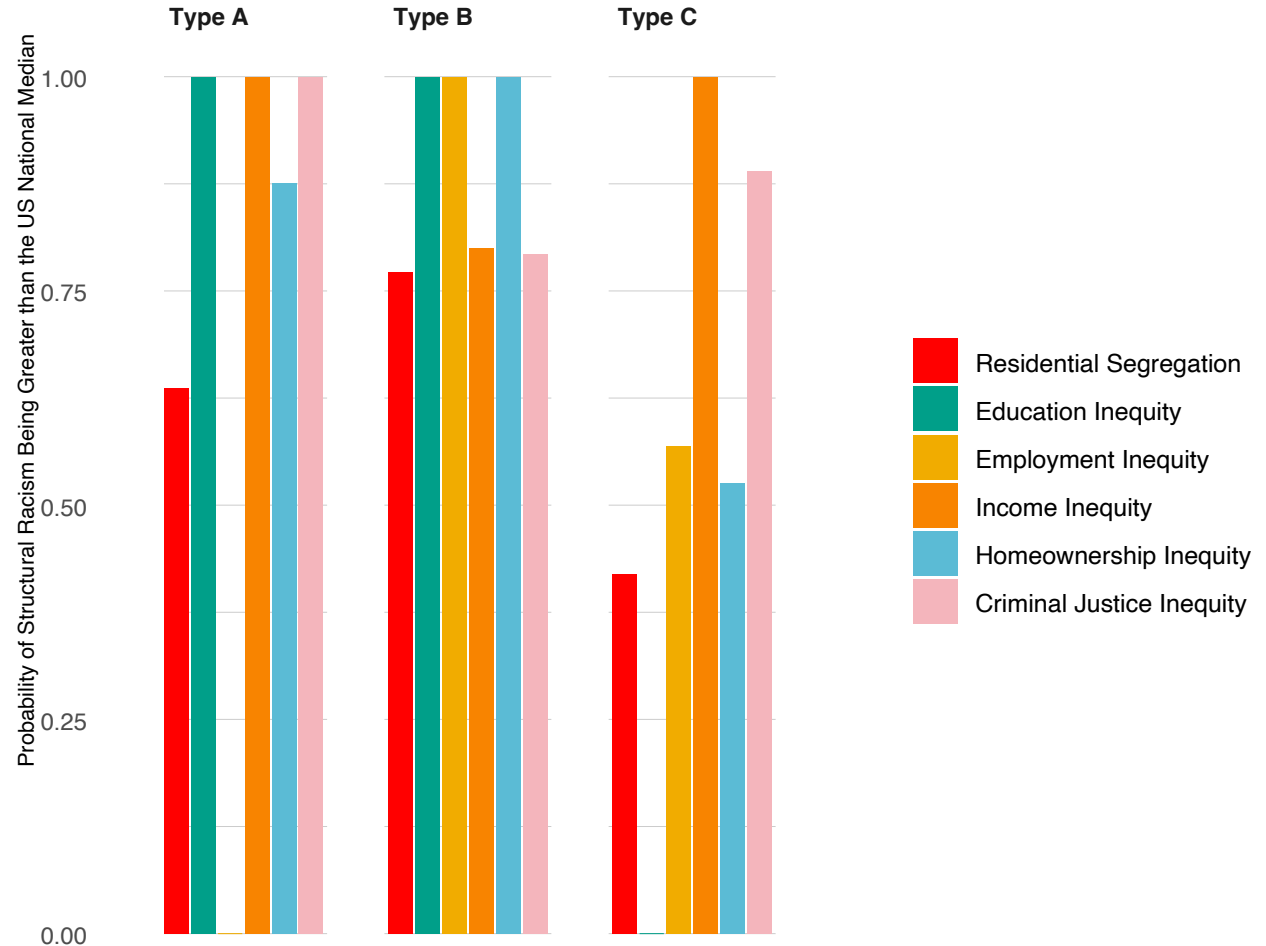
B-W
Employment
(16-64)

Index of
Concentration at
the Extremes

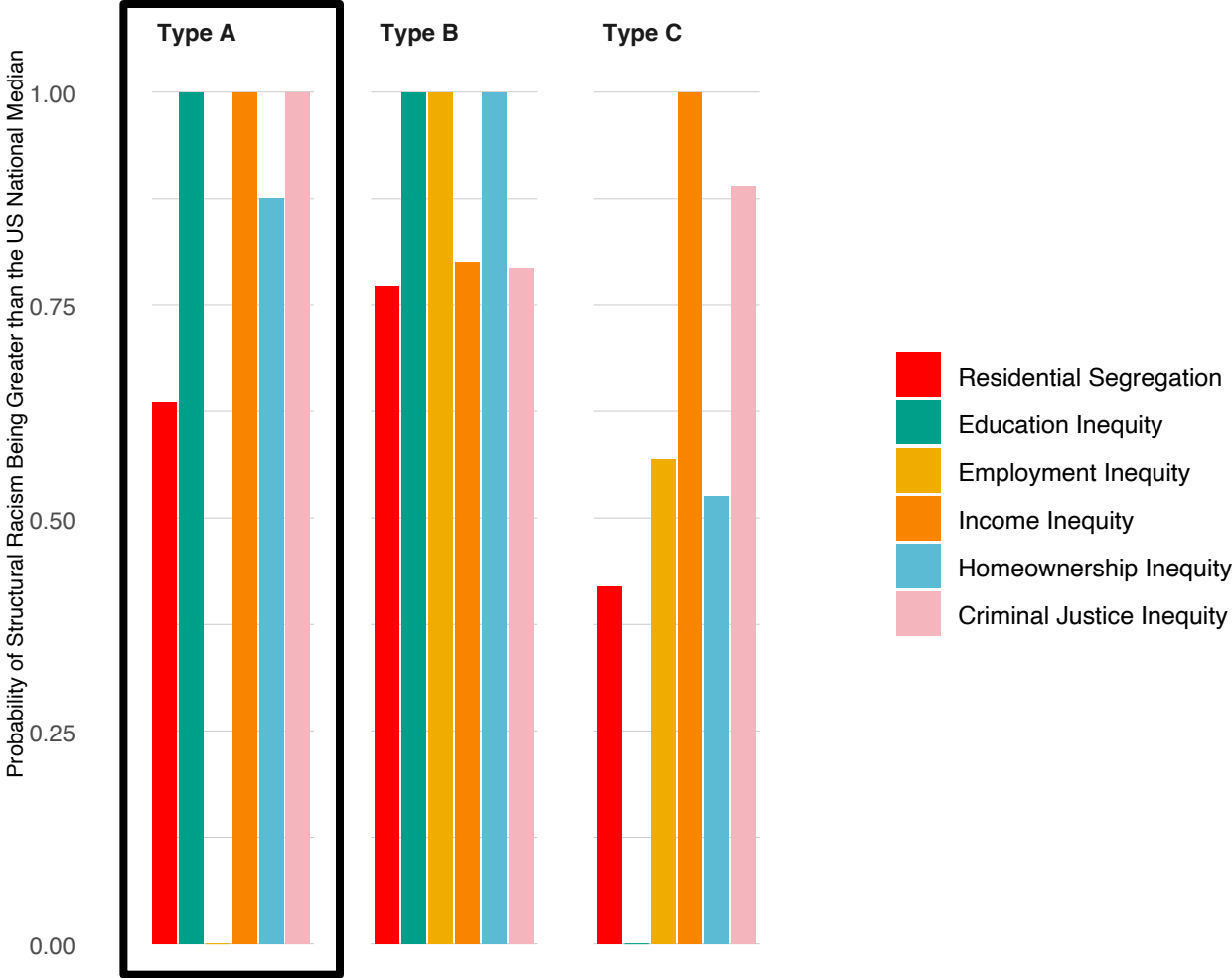
W-B Owned
Households

B-W Jail
Incarceration
(15-64)

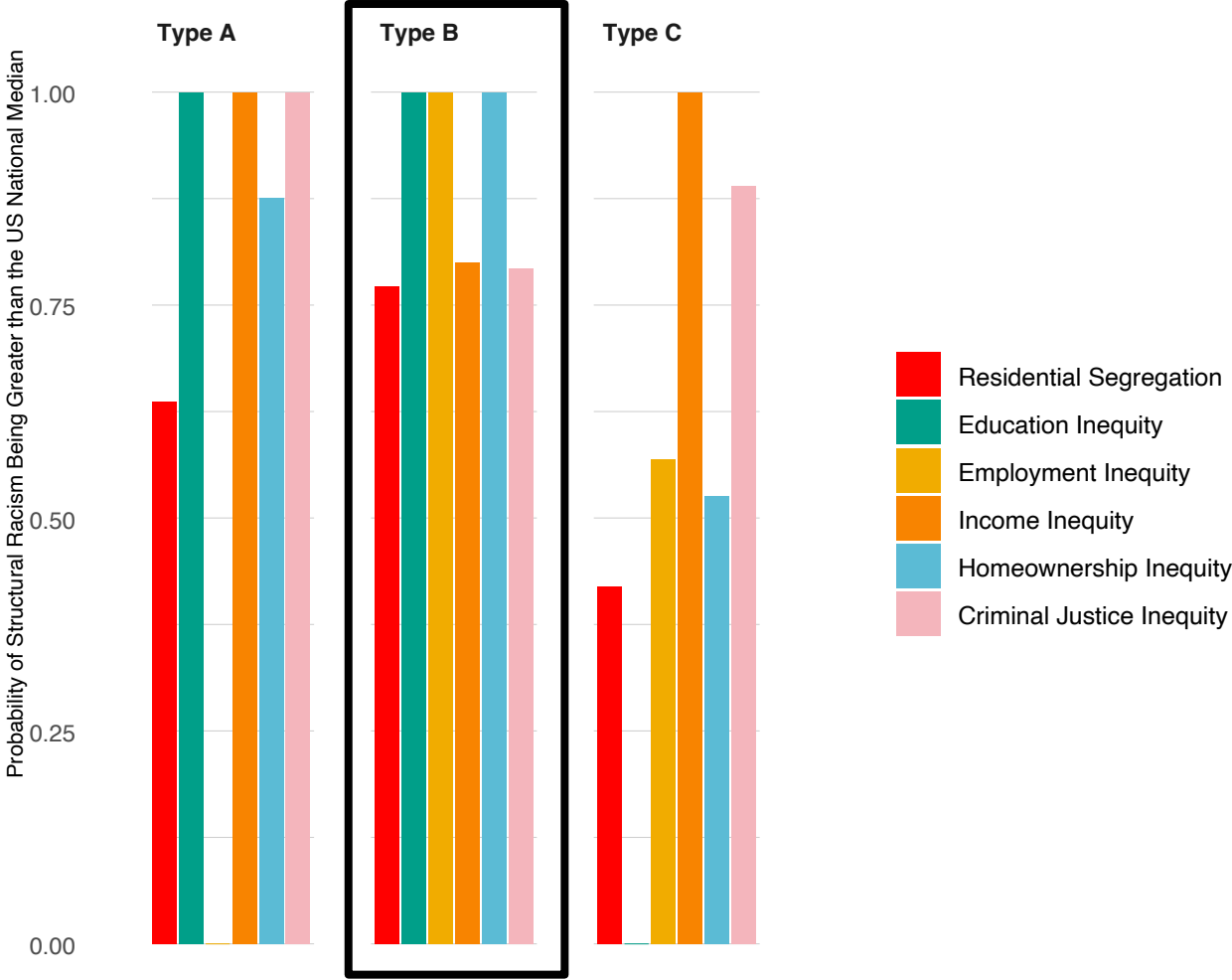
Structural Racism Typologies



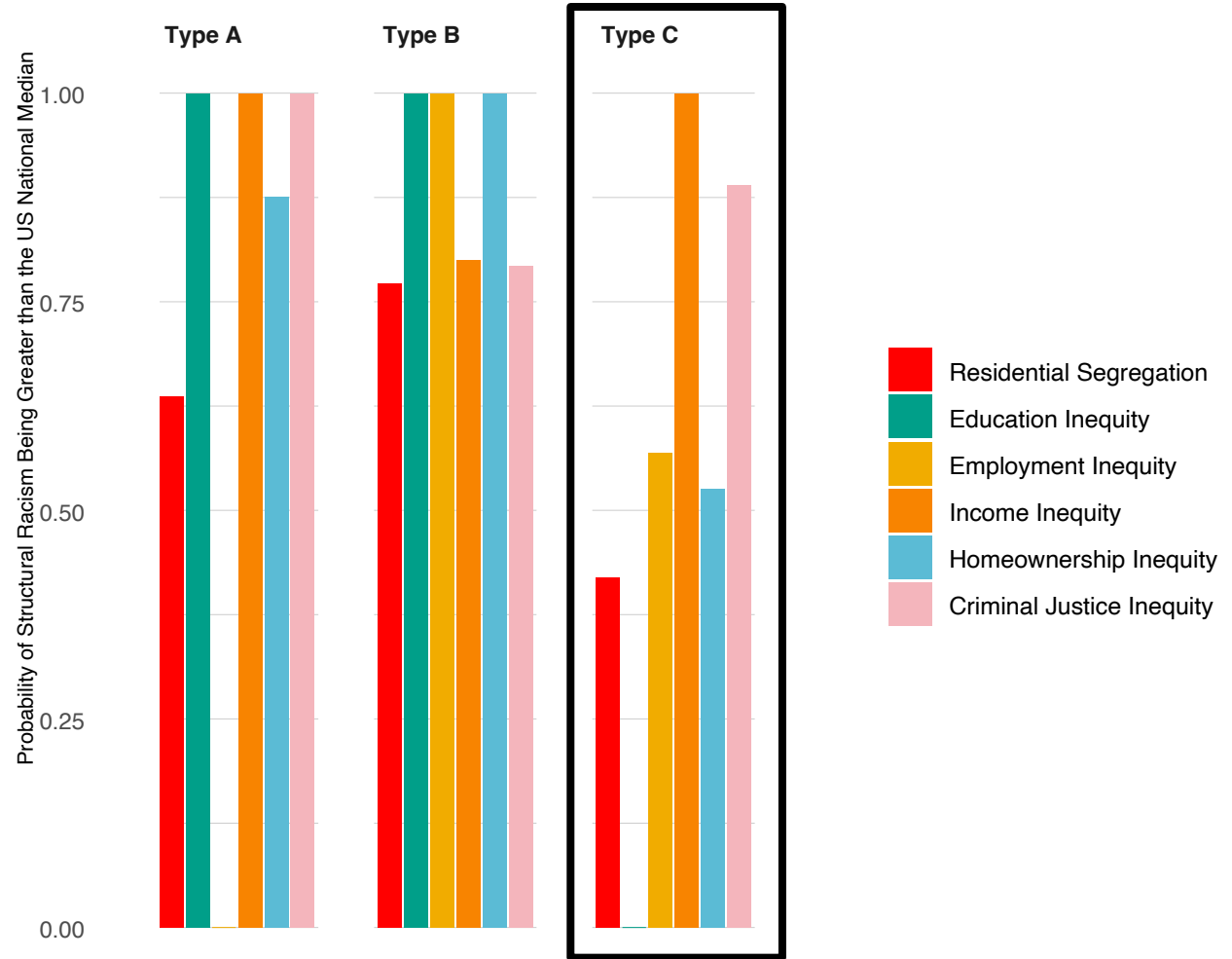
Structural Racism Typologies



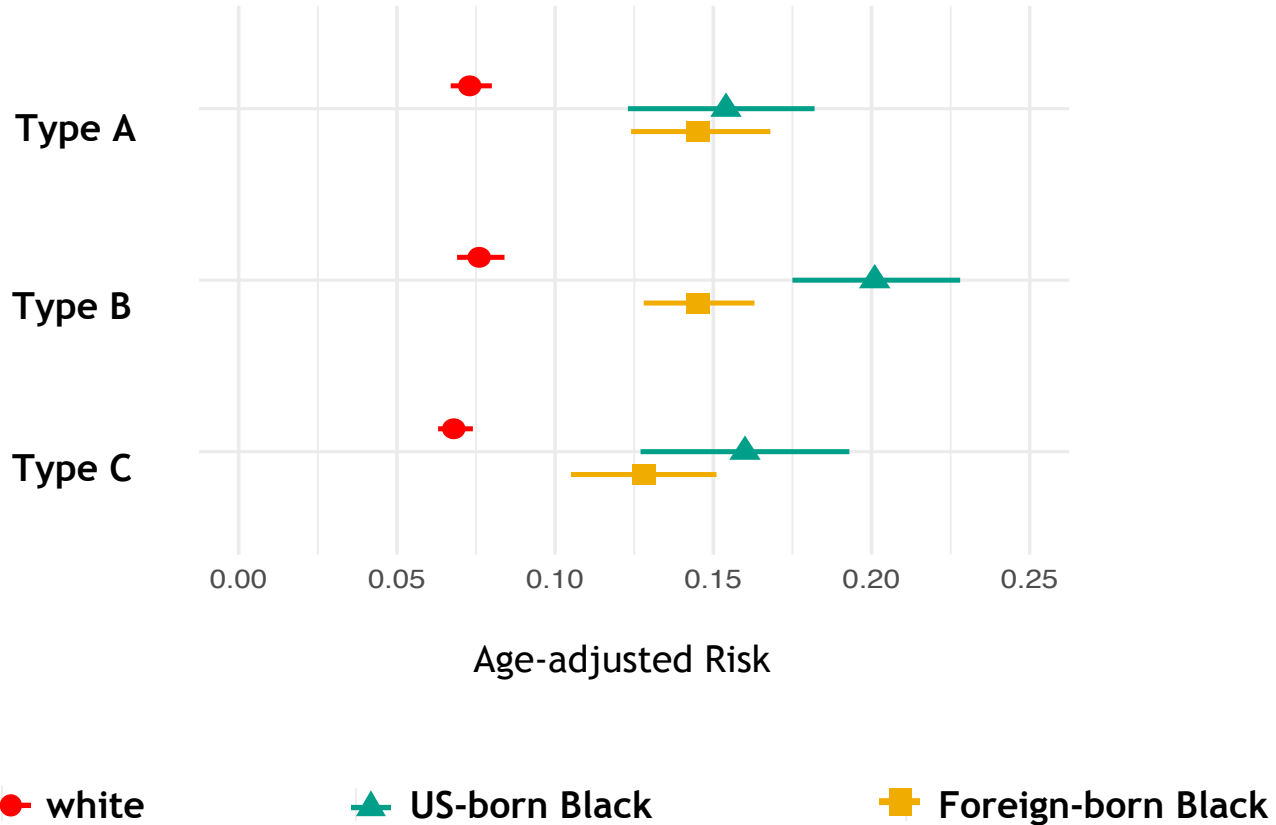
Structural Racism Typologies



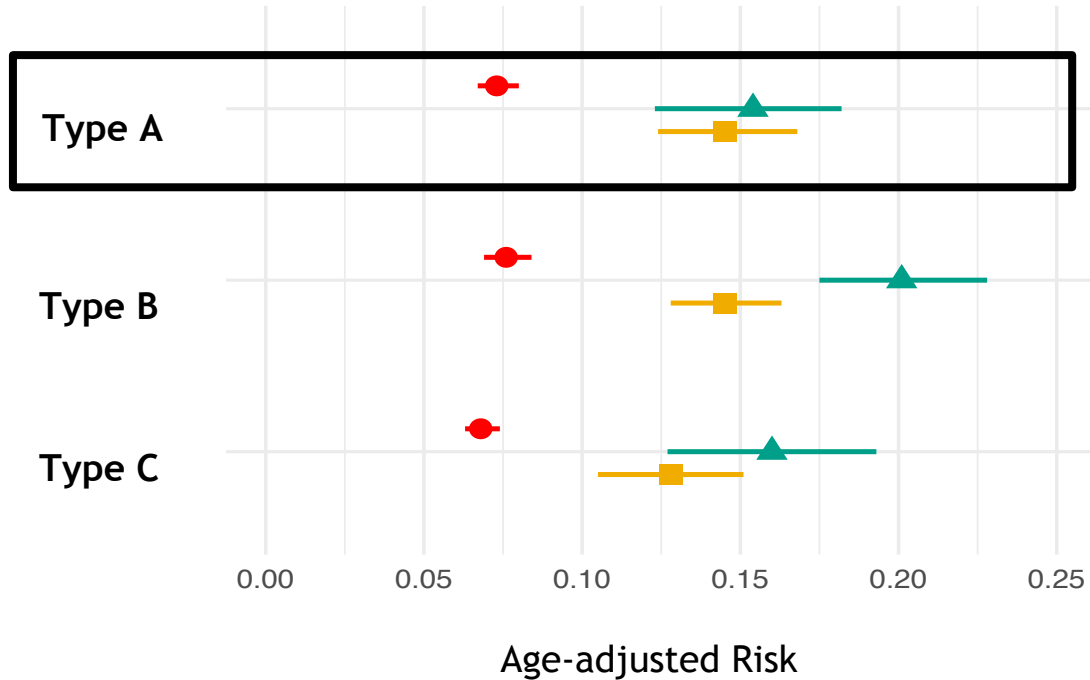
Structural Racism Typologies



Small for Gestational Age



Small for Gestational Age

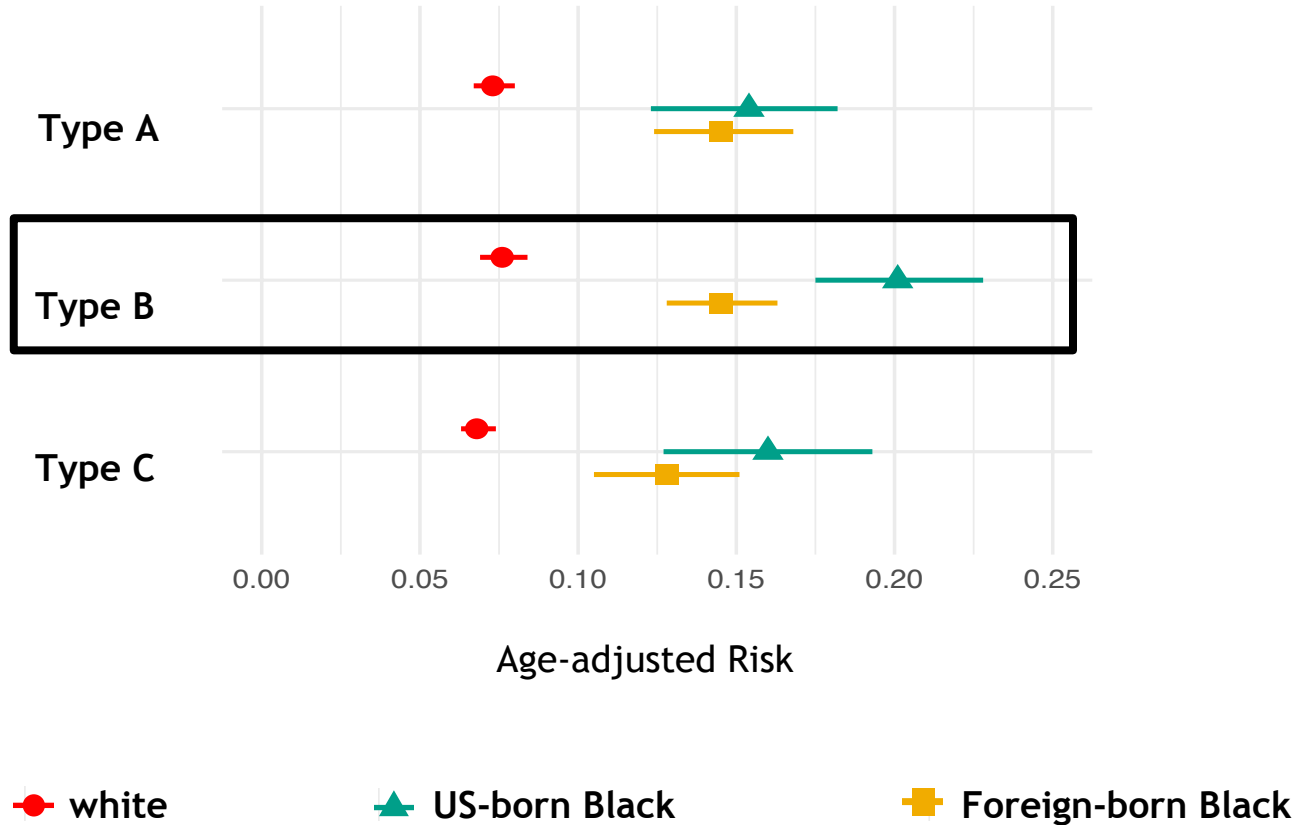


● white

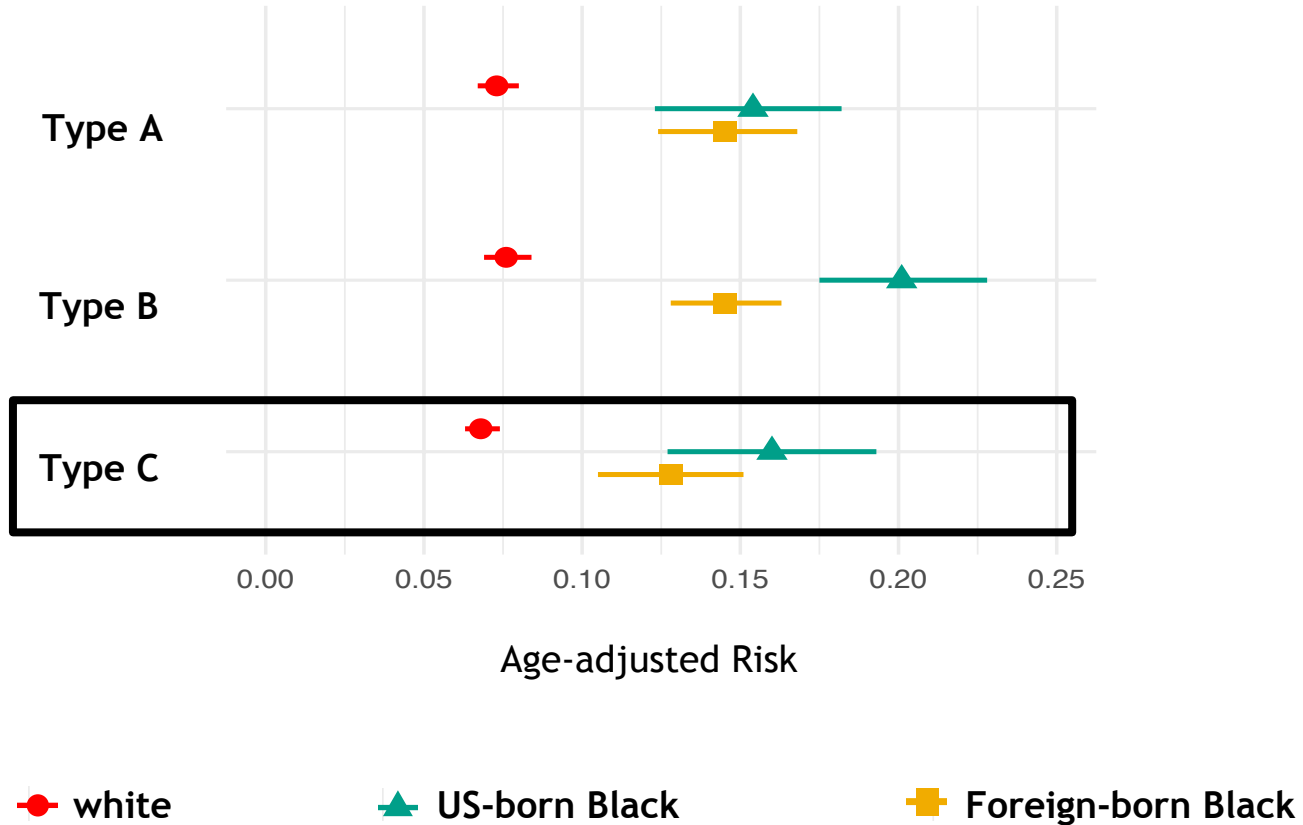
▲ US-born Black

■ Foreign-born Black

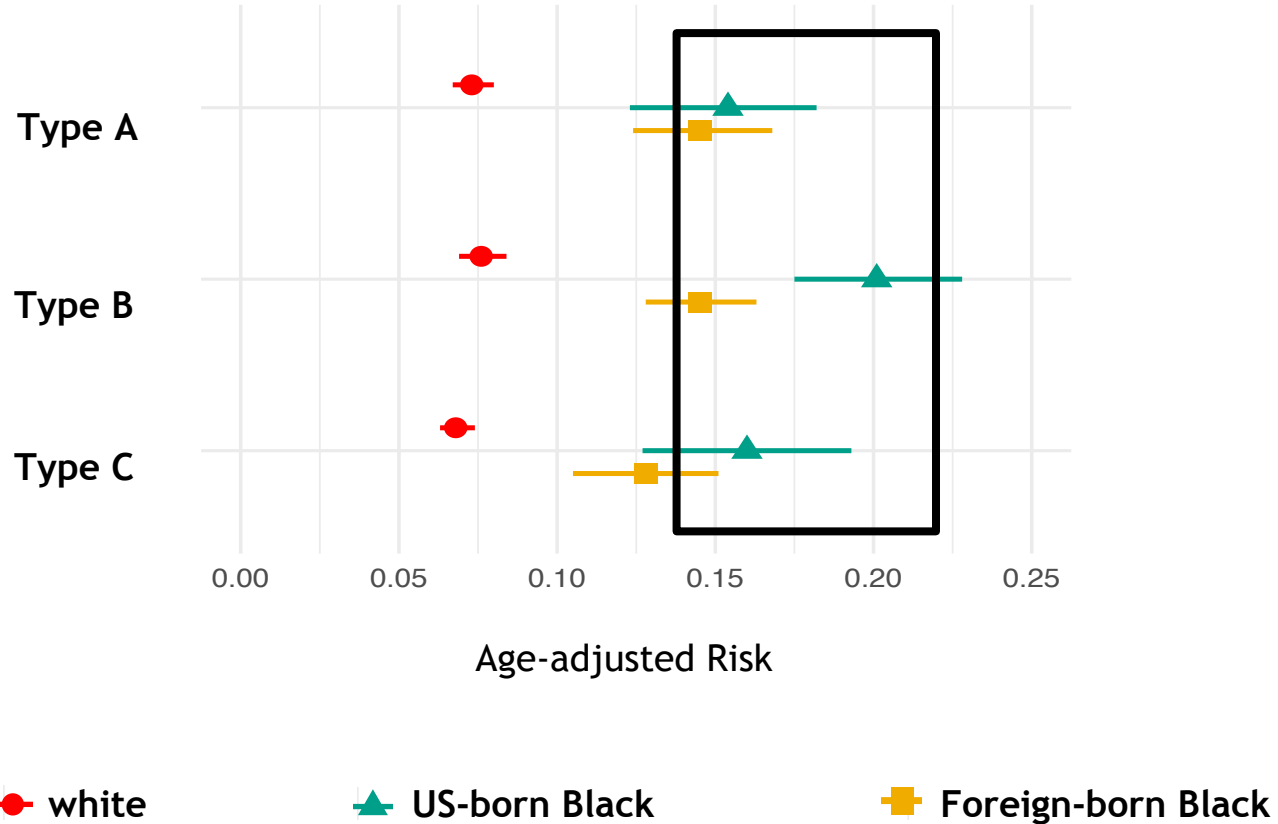
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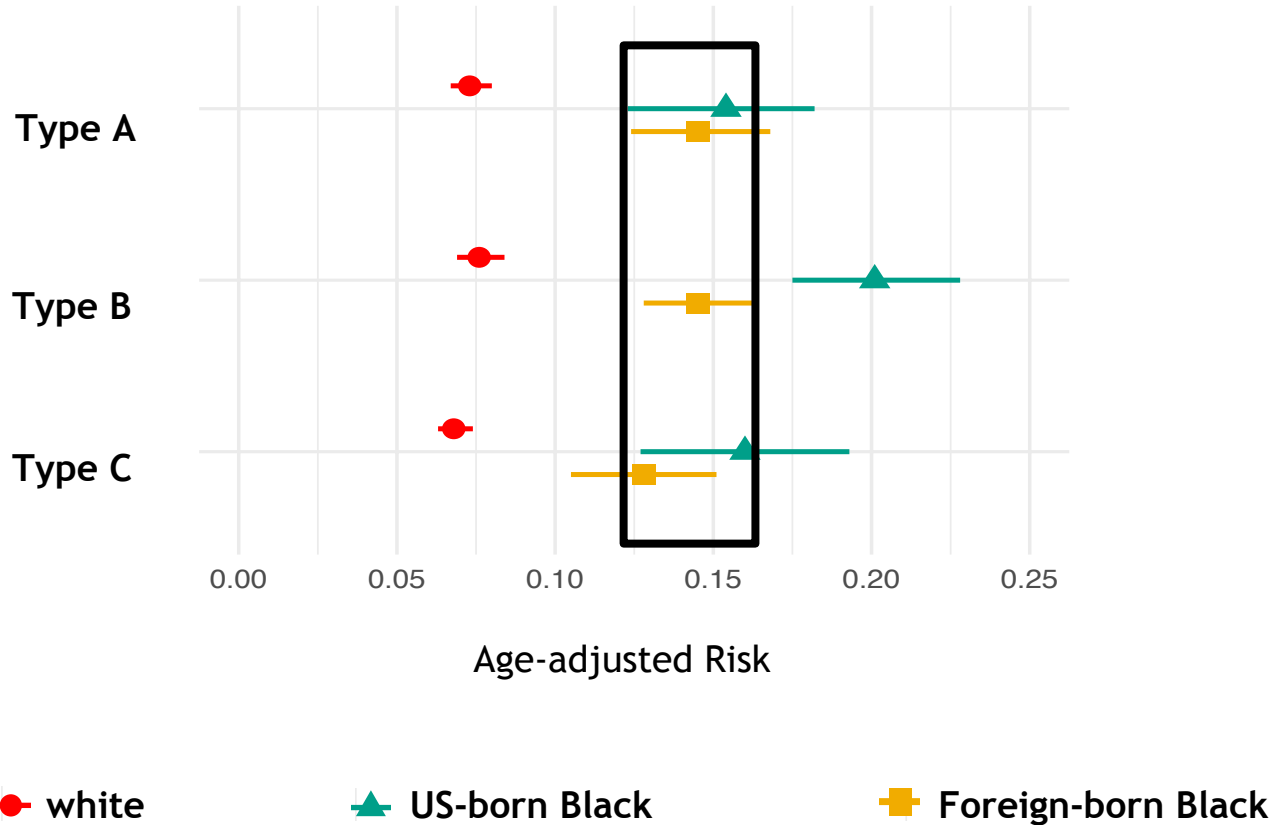
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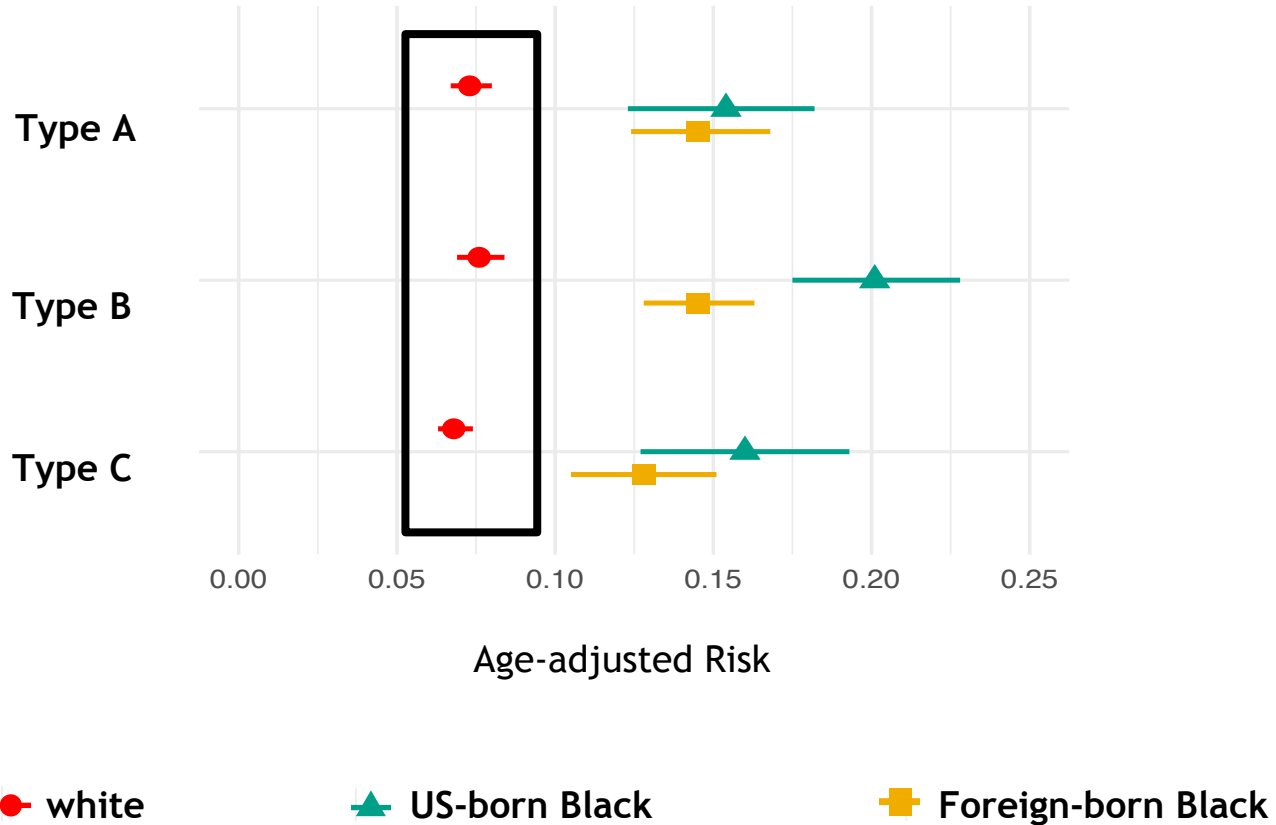
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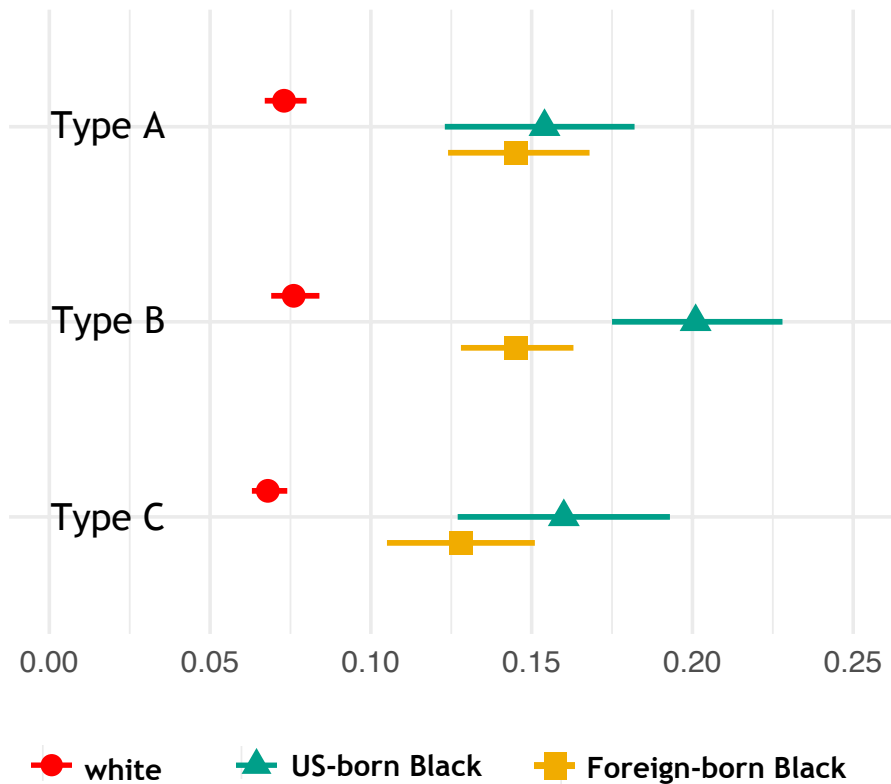
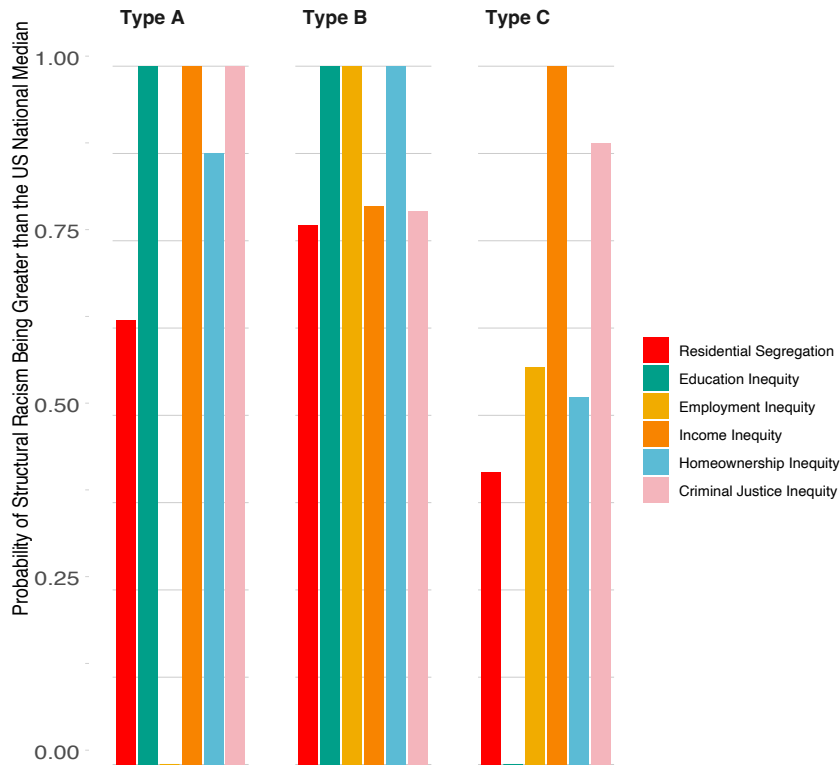


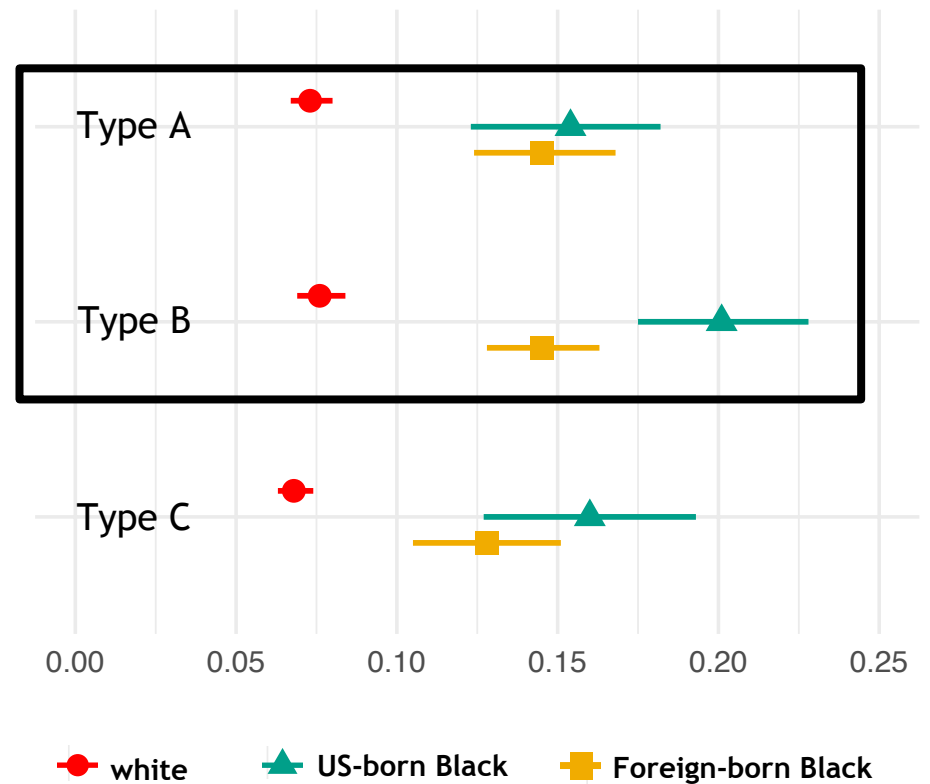
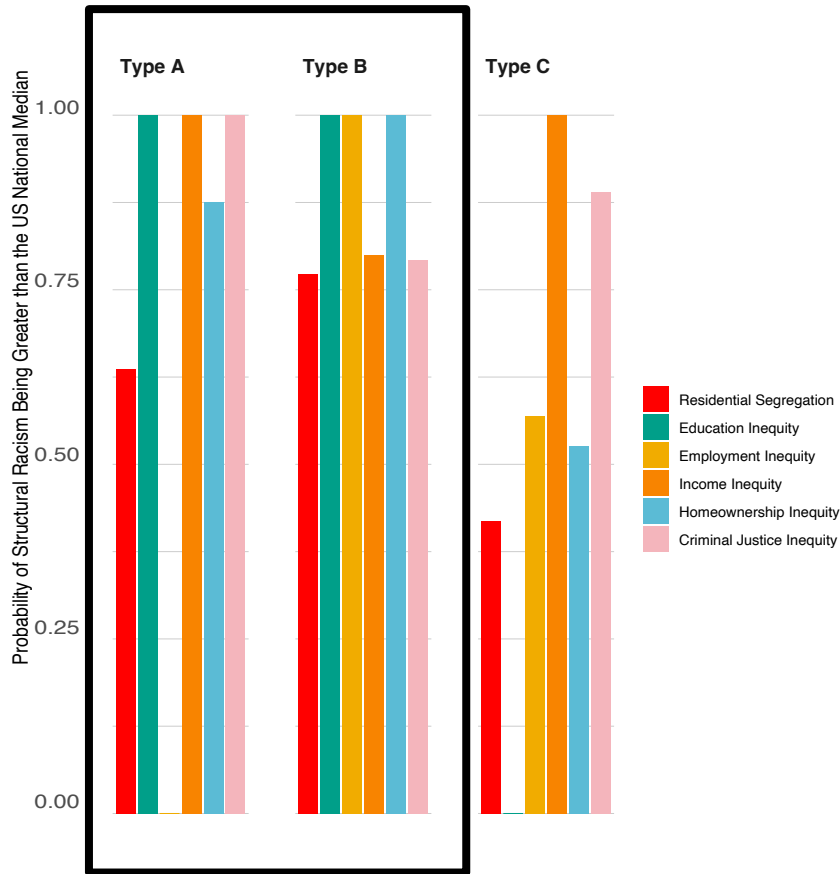
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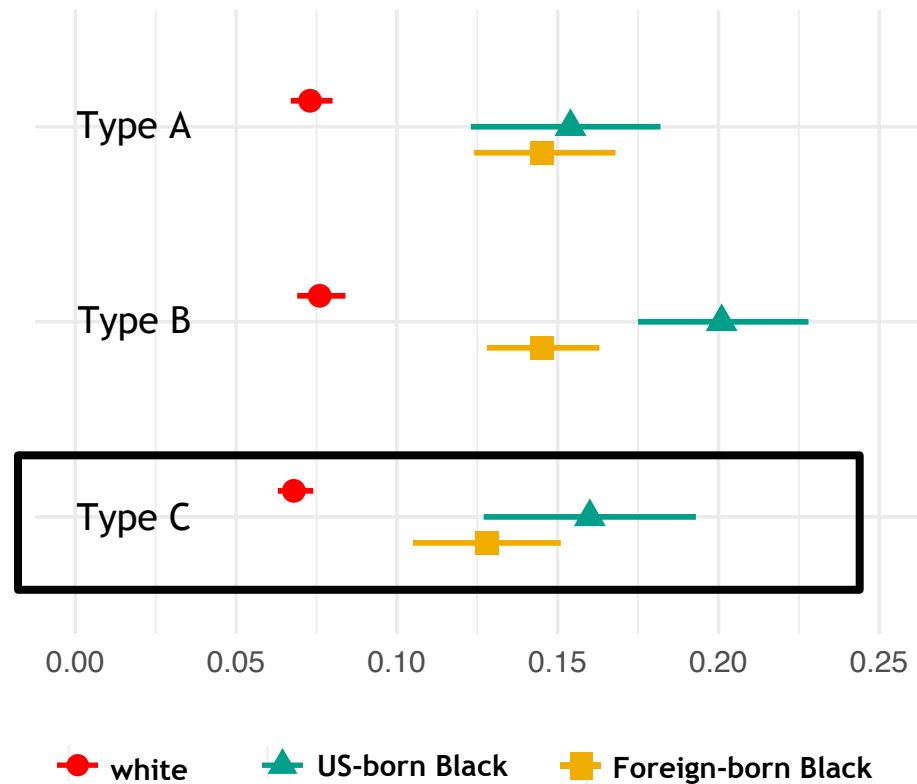
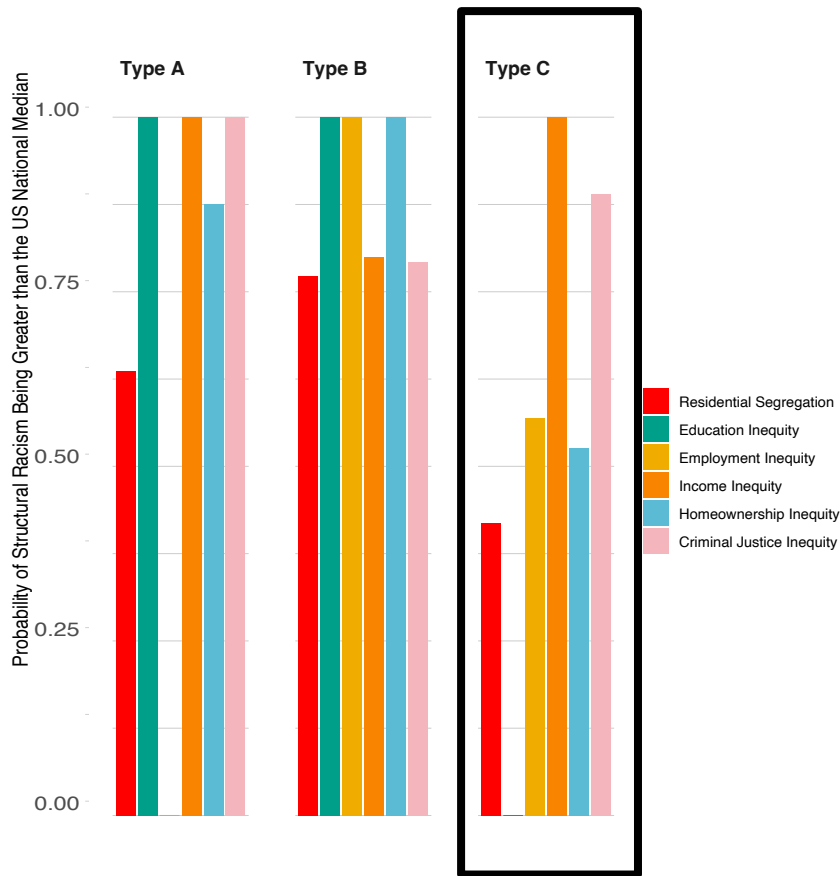


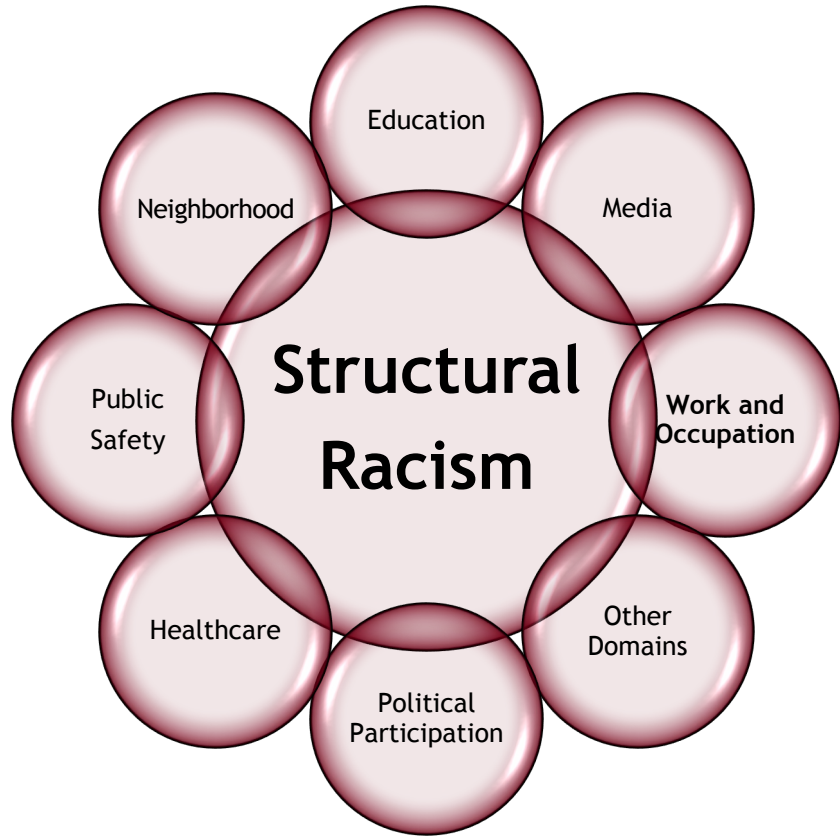
Recap

1. Dimensions of structural racism interact intricately to create a multidimensional system
2. US-born Black pregnant people face higher risks of adverse birth outcomes than their white counterparts who residing in the same structural racism typology
3. The risks of adverse birth outcomes for US-born Black pregnant people are statistically the same across structural racism typologies









Key Takeaways

- Intricate interactions across structural racism dimensions
- Address all dimensions of structural racism to effectively eliminate racial inequities
- Multi-sectoral policy interventions are needed

Acknowledgement


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Tongtan (Bert)
Chantarat, PhD, MPH
chant083@umn.edu
 @bertchantarat