The Strange Fruit Cultivated by Structural Racism: Impact of Racial Violence on Cognitive Health

Muriel Taks Calle
Quantitative Methods in the Social Sciences
Columbia University

Master of Arts Thesis
May, 2024

Southern trees bear a strange fruit
Blood on the leaves and blood at the root
Black bodies swingin' in the Southern breeze
Strange fruit hangin' from the poplar trees

“Strange Fruit”
Abel Meeropol, 1937

I am deeply grateful to my family, for supporting me in what seemed to be an unattainable dream.

To my peers and professors, who taught me how to use data for good and to maintain a critical perspective towards our methods.

And to AJ, for not only opening doors for me but also opening my eyes to the power we hold to make this world a better place.

Table of Contents

Abstract

This research examines the relationship between racial disparities within the criminal justice system and law enforcement practices, with cognitive impairment among Black adults. Prior investigations have revealed that the violent police encounters experienced by Black individuals in the United States, coupled with the disproportionate rates of mass incarceration correlate with adverse cognitive effects in Black adults aged over 51. This study intends to analyze not only institutionalized, State-perpetuated racist practices but also the racialized terror perpetrated by civilians as an explanatory factor. It is suggested that even indirect exposure to violent situations of this nature, such as being born or having lived in a county where lynchings occurred, can have a detrimental impact on the cognitive health of Black individuals.

Disproportionate incarceration rates (estimated as the ratio between incarcerated Black individuals / total Jail population from 1985-1994 per county), disproportionate violent police encounters (ratio between Non-Hispanic Black deaths / Non-Hispanic White deaths due to police violence from 1985-1994 per county), and racial terror through lynchings (sum of the total lynchings per county from 1877-1950) are incorporated as predictor variables. While the latter aims to focus on lifelong lynching effects endured by the Black population, the first two cover the period from 1985 to 1994, preceding the passage of the Crime Bill of 1994. This historical delineation intends to capture the trend toward mass incarceration and the increasing police violence, which had already been gaining momentum prior to the financing of correctional facilities and law enforcement agencies by the aforementioned Act.

The dependent variable, cognitive health, is measured by a 27-item global cognitive score from the modified Telephone Interview for Cognitive Status, from the Health and Retirement Study (HRS). A county-level matching is conducted to align the extent of structural racism in each county with the geographic data of HRS participants between 2006 and 2020. Through binomial logistic regressions, the historically-transferred effect of the factors on cognitive impairment among Black adults is examined. Higher levels of overall cognitive impairment among Black adults living in regions with higher levels of structural racism are evidenced, in contrast to the White individuals participating in the study.

Keywords: Structural Racism, Cognitive Health, Incarceration, Policing

1. Introduction

According to the National Institute on Aging, cognitive health is defined as “the ability to clearly think, learn, and remember”, constituting an essential aspect of the individual’s capacity to carry on everyday activities autonomously (National Institute on Aging, 2020, para 1). Cognitive impairment can manifest through diverse kinds of dementia, Alzheimer’s disease being the most common type. Cognitive disparities due to race in the United States have been documented by various investigators and organizations, including the Alzheimer’s Association when affirming that “...older Black Americans are twice as likely as older Whites to have Alzheimer's or another dementia” (n.d.). What is more, the number of older adults (>65 years old) suffering from Alzheimer’s disease in the United States is projected to reach 13 million by 2060, the non-Hispanic Black, African American, and Hispanic or Latino adults being the most impacted groups, expected to evidence the largest increase (Wooten et al., 2023, para 1).

The reasons that account for these disparities are due to different spheres of social and economic life, although few studies have focused on prolonged exposure to traumatic events as explanatory variables. This study centers on the lifelong exposure of individuals racialized as Black to State and civilian racial violence, manifested through incarceration, violent police encounters, and lynchings as explanatory variables that are expected to contribute to cognitive impairment. The following research question portrays the main purpose of this study: What is the impact of State and civilian-perpetrated racial violence, as dimensions of structural racism, on the development of cognitive impairment among adults racialized as Black?

Prior investigations have revealed that the violent police encounters experienced by Black individuals in the United States, coupled with the disproportionate rates of mass incarceration correlate with adverse cognitive effects in Black adults aged over 50. Adkins-Jackson and colleagues observed the cognitive implications of the Black-White disparities in incarceration, in the paper *The place where danger waits: Ten years of incarceration after the 1994 Crime Bill and Cognitive Function among older adults* (to be published). Through a mixed effects model, the team concluded that “cumulative stress from anticipatory and recurrent police encounters” has a detrimental and destabilizing effect on Black adults' cognitive health (Adkins-Jackson et al., p. 1).

This study intends to follow that research’s theoretical foundations, modifying the timeframe for the analysis and including new variables as explanatory dimensions. One of the suggestions included in the abovementioned study is that not only police encounters ending in incarceration, but also violent police encounters that do not have this outcome, should be included as factors that influence the individuals’ cognitive health, for a more comprehensive understanding of the consequences of law enforcement violence (Adkins-Jackson et al., p. 7). Following these suggestions, this analysis aims to draw attention to other responsible parts for racial violence. It seeks to highlight not only the role of governmental and institutional bodies in perpetrating such violence but also the contributions of non-institutionalized, civilian actors to racial terror.

As a result, the focus is set on the impact of high incarceration rates, violent police encounters resulting in death, and lynchings on the level of cognitive health among adults (age 51+) racialized as Black. This study compares adults (age 51+) racialized as Black living in areas with high racial violence to adults (age 51+) racialized as Black living in areas with low racial violence. It qualitatively observes differences in impact among individuals belonging to the same age group racialized as White. All the variables are analyzed on a county level, a novel approach that has not been frequently explored. The Health and Retirement Study data on Cognitive Health is employed to examine the outcome variable, focusing on the individual cognitive status, derived from the categorization of the respondent's overall scores for cognitive health.

The search for answers that help account for racial disparities in cognitive health is usually framed too close to the present, when in fact, a broader historical scope can help understand the historical trajectory of racial inequalities. For this reason, the time frame in which the independent variables are set is between 1985 and 1994, analyzing the nearly decade-long period following the declaration of the War on Drugs and preceding the passing of the Crime Bill of 1994. This historical delineation intends to capture the trend toward mass incarceration and the increasing levels of police violence, which had already been gaining momentum prior to the financing of correctional facilities and law enforcement agencies by the aforementioned Bill.

It is assumed that whether individuals directly or indirectly experienced an attempted lynching, a police-involved shooting, or incarceration, the heightened presence of policing forces (law enforcement or individuals protected from consequences by the criminal justice system) and the fear of death or injury from these forces occurred at the community-level. This means that an individual living in the same county likely shares the same fears, heightened vigilance, and likely cognitive impact as someone who directly experienced adverse policing. Subsequently, it is hypothesized that mid-late life adults racialized as Black living in a county with greater lynchings and a higher proportion of people racialized as Black killed by the police and incarcerated in jails are associated with increased risk for mild cognitive impairment or dementia. Since there is not always a 1-to-1 cost-benefit to structural racism across racialized groups, it is not expected to be a significant association for adults racialized as White.

As a whole, this study examines the relationship between life course policing through law enforcement practices and the criminal justice system, along with civilian-perpetrated racial terror with cognitive status among adults racialized as Black (age 51+). By establishing the impact of these factors on the development of cognitive impairment it is intended not only to contribute to the advancement of targeted treatments and preventive strategies but also to illuminate the broader historical roots of these phenomena. There is an urgent need in the United States society and worldwide for trauma not to be transferred but transformed, and it is expected that this study contributes to this mission.

2. Literature Review

Structural Racism and Racial Violence

The examination of the adverse effects of structural racism, particularly racial violence, on cognitive health demands for a clear conceptualization of what constitutes structural racism and its manifestations in acts of racial violence.

Lorraine T. Dean and Roland J. Thorpe, Jr (2022) provide an overview of the evolution of the term and the way it has been employed in the fields of Public Health and Medical research. They highlight the necessity of clearly delineating this concept, in order to conduct "high-quality research on it and dismantling it [structural racism]" (p. 1521). They present Drs. Gee and Ford's study on *Structural Racism and Health Inequities* (2011), in which the authors introduce Powell's definition of the term;

"Structural racism is defined as the macrolevel systems, social forces, institutions, ideologies, and processes that interact with one another to generate and reinforce inequities among racial and ethnic groups" (Gee and Ford in Dean and Thorpe, 2022, p. 1522).

Dean and Thorpe present the above definition as one example of a conceptualization that acknowledges the "totality of forms of racism operating across intersecting institutions" (2022, p. 1525).

Lawrence and Keleher in their research *Chronic Disparity: Strong and Pervasive Evidence of Racial Inequalities,* presented at the Race and Public Policy Conference in 2004, introduce the ideas of "normalization" and "legitimization" to their own conceptualization. As a result, they define structural racism as the "normalization and legitimization of an array of dynamics – historical, cultural, institutional and interpersonal – that routinely advantage whites while producing cumulative and chronic adverse outcomes for people of color." (Lawrence and Keleher, 2004, p. 1). This incorporation underscores the notion that the interaction between institutions that help perpetuate underlying racist dynamics is naturalized and validated by the system as a whole. It implies that structural racism exists and persists not only due to the coordination and engagement between different actors in our societies but also because of the validation of the practices that oppress people belonging to certain racial groups. What is more, as stated by Michelle Alexander (2010), "racism is highly adaptable"; the rules employed by the political system to perpetuate it have historically adjusted to "new rethoric, new language, and a new social consensus" in each period of the United States' history (p. 26).

Bailey et al. in *Structural racism and health inequities in the USA: evidence and interventions* are aligned with these definitions by affirming that the interactions between forces, organisms and processes "foster racial discrimination through mutually reinforcing systems" (2017, p. 1453), highlighting the feedback dynamics between the parts that make these inequalities persistent. As a result of these interactions, "discriminatory beliefs, values, and distribution of resources" are reinforced, "which together affect the risk of adverse health

outcomes" (Bailey et al. 2017, p. 1454). Because of this, and similar to Dean and Thorpe, the authors emphasize the need to carry out medical and health research that is focused on structural racism, allowing for a "concrete, feasible, and promising approach towards advancing health equity and improving population health" (Bailey et al., 2017, p. 1453).

As a whole, structural racism can be understood as the result of the interconnected racist dynamics that consistently privilege specific racial groups above others, cumulatively affecting and producing adverse outcomes for the disadvantaged communities at a diverse range of levels. The normalization and legitimization of these interactions are essential conditions for their perpetration and perpetuation.

One of the main challenges that this conceptualization presents is its difficulty in measurement. Its multidimensionality, almost omnipresent dynamic, along with its deeply intertwined and mutually reinforcing connections make it extremely difficult to operationalize. Many researchers have tackled this challenge by creating indicators that crystalize the level of this phenomenon by focusing on specific interactions. Others have compiled indexes from different spheres to calculate an overall measurement of structural racism.

In the final section of their paper, Dean and Thorpe suggest that, being structural racism understood as an exposure, its analysis at the geographic level is relevant (either on a county, city, or State level). They also promote the practice of "embracing a life course approach, since the ways in which racism operates in society is dynamic over the course of a person's life" (Dean and Thorpe, 2022, p. 1524). Hand in hand with this, they propose using index measures to capture the ways in which it operates, as well as developing "measures with indicators that are specially targeted to how structural racism presents itself in other racial/ethnic groups" (Dean and Thorpe, 2022, p. 1524). In other words, they recommend measuring this phenomenon by capturing its presence on a geographic level and developing indicators that also help account for the disparities in its impact between racial and ethnic groups. The present research aims to follow these guidelines by examining the level of structural racism on a county level through various indexes and using them as exposure variables on cognitive health, revealing the underlying life course effect that this issue has on an individual level. What is more, it intends to compare the impact for different racial groups, as suggested by the authors, by acknowledging the routine advantages for the White population that structural racism produces in the United States.

For this specific analysis, the multidimensionality of this issue was addressed by focusing on its manifestations in law enforcement practices, the criminal justice system, and civilian-perpetrated racial terror. These forms of racial violence have deep historical roots and are severely present in every dimension of U.S. society, not only intersected but built upon the dynamics of structural racism. As a result, imprisonment, police-civilian encounters, and racial terror are strongly permeated by racist and white supremacist ideas that perpetuate adverse, lifelong health outcomes for people racialized as Black. As explained by Sharif et al., structural racial violence is "propagated by structural racism"; the "symbiotic relationship" between them has "created, sustained, and exacerbated social, economic, and health inequities" (2022, p. 2). In this study, the term "racial violence" is used to describe the issue that the independent variables aim

to measure. Even though Sharif et al. use “structural violence” to define the violent manifestations structural racism exhibits in our societies, I opted to utilize “racial violence” to precisely address the type of violence that is based on race.

Racism and Cognitive Health

Cognitive health is defined as “the ability to clearly think, learn, and remember”, constituting an essential aspect of the individual’s capacity to carry on everyday activities autonomously (National Institute on Aging, 2020, para 1). Cognitive health is ingrained in every task (simple or complex) of an individual’s life, from cooking to learning abstract concepts in an academic setting. Being cognitively healthy implies a great level of autonomy in everyday life. As a consequence, when cognitive impairment starts manifesting, the person’s autonomy is likely to be reduced, becoming more reliant on others' (cognitively healthy) assistance. Cognitive impairment can manifest through diverse kinds of dementia, Alzheimer’s disease being the most common type of them.

The link between cognitive health and structural racism has been addressed by many investigators and organisms before, like Zuelsdorff, Forde, Adkins-Jackson and their team of collaborators. The Alzheimer's Association, for example, suggests that “...older Black Americans are twice as likely as older Whites to have Alzheimer's or another dementia” (n.d.). PhD Adkins-Jackson and her colleagues have carried out various studies examining this relationship; studying the impact of structural racism on cognitive health on a State level, analyzing the relationship between incarceration and cognitive health for old adults racialized as Black, and assessing the impact of neighborhood-level factors on brain health and aging.

In the paper *The place where danger waits: Ten years of incarceration after the 1994 Crime Bill and Cognitive Function among older adults* (to be published) the team examines the impact of Black-White disparities in incarceration on cognitive health, embracing a life course approach. Through a mixed effects model, the authors concluded that “cumulative stress from anticipatory and recurrent police encounters” has a detrimental and destabilizing effect on Black adults' cognitive health (Adkins-Jackson et al., p. 1). These racial disparities “may be explained by structural racism, the combined process of racialization and discrimination that multiple US institutions engage in mutually reinforcing ways” (Adkins-Jackson et al., p. 2).

Furthermore, Zuelsdorff, et al. in *Stressful Life Events and Racial Disparities in Cognition Among Middle-Aged and Older Adults*, suggest that “there is substantial evidence that when compared with age-matched Whites, they [African Americans] are at increased risk for dementia” (Zuelsdorff, et al. 2020, p. 672).

Even when focusing on forecasting research, it is estimated that the number of older adults (>65 years old) suffering from Alzheimer’s disease in the United States will reach 13 million by 2060, the non-Hispanic Black, African American, and Hispanic or Latino adults being the most impacted groups, expected to evidence the largest increase (Wooten et al., 2023, para 1).

Forde et al. summarize several studies that analyze the impact of structural racism on health by reviewing the literature that relies upon and confirms the "weathering hypothesis" (2019). This postulation proposes that "chronic exposure to social and economic disadvantage leads to accelerated decline in physical health outcomes and could partially explain racial disparities in a wide array of health conditions" (Forde et al., 2019, p. 1). This hypothesis is aligned with the life course approach, by acknowledging that cumulative stressful and fear-related experiences (derived from social and economic inequalities) have a detrimental impact on the individual's health.

Because of this, authors like Zuelsdorff et al. have emphasized the need for analyses that focus on prolonged exposure to traumatic events as explanatory variables. They suggest that "socioenvironmental contexts across the life course are likely to clarify disproportionate risk for dementia and age-related cognitive impairment" among African Americans (2020, p. 672). As a result, the authors propose that placing attention on the stress and fear-related events experienced by individuals as contributing factors to their level of cognitive health is necessary to account for racial disparities on this matter (Zuelsdorff, et al. 2020, p. 672).

The present study aims to examine the impact of racial violence (both State and civilian-perpetrated forms of it) as a lifelong traumatic experience endured by the Black population in the United States. It is assumed that whether individuals directly or indirectly experienced an act of racial violence, the fear and anxiety of death/injury as a consequence of these forms of violence occurred at the community level. This means that an individual living in the same county likely shares the same fears, heightened vigilance, and likely cognitive impact as someone who directly experienced State and/or civilian-perpetrated racial violence.

State and civilian-perpetrated Racial Violence

Racial violence's multifaceted nature is addressed in this investigation by focusing on both State and civilian-perpetrated racial violence. The measurement and inclusion as independent variables of lynchings, violent police encounters, and disproportionate incarceration rates intend to broaden the scope of the diverse ways brutality against individuals racialized as Black can be exhibited.

James Forman Jr., Professor at Yale Law School, Law scholar, and author of *Locking Up Our Own* (2017) describes the violent and abusive nature of police encounters experienced by individuals racialized as Black throughout the history of the United States. However, he states that because coordination between various actors and differentiated organisms is needed for the persistence of these acts, "nobody has to take responsibility for the outcome, because nobody is responsible - at least not fully" (Forman Jr, 2017, p. 14). This analysis aims to draw attention to at least some of the responsible parts for racial violence, by highlighting not only the role of governmental and institutional bodies in perpetrating such violence but also the contributions of non-institutionalized, civilian actors of racial terror.

Firstly, referring to the State-perpetrated racial violence in one of its most studied forms, the disproportionate incarceration rate of individuals racialized as Black is included as a factor. Many scholars have dived into the historical journey of this inequality, analyzing it hand in hand with the growth of the Carceral State in the United States and the unprecedented levels of mass incarceration starting in the 1970s. Naomi Murakawa (2014) presents data from the Bureau of Justice Statistics, evidencing an increase in incarceration rates and racial inequality in prisons since the 1970s (p. 6). In the words of the author, after 1976 "the black admission rate broke from its historic norm, and by 1977 the black-to-white admission rate hit a six-to-one ratio" (Murakawa, 2014, p. 6). The rising crime rates around the 1960s are frequently used to account for this phenomenon, however, as Murakawa explains, "the United States did not face a crime problem that was racialized; it faced a race problem that was criminalized" (2014, p. 3), contributing to the settlement of a massive, racially unequal, carceral system.

Moreover, Loïc Wacquant in *Deadly Symbiosis: When Ghetto and Prison Meet and Mesh* describes how towards the first years of the 2000s, "on any given day, upwards of one-third of African-American men in their twenties find themselves behind bars, on probation or on parole" (2001, p. 96). As a result, rising racial disproportionality between Blacks and Whites was evidenced from the 1980s to the 2000s, going from a ratio of one for 5 to one for 8.5 (Wacquant, 2001, p. 96). This can be partly attributed, according to the author's view, to the declaration of the War on Drugs, first established by Nixon in 1971 and expanded in Reagan's administration towards the 1980s (2001, p. 96), which increased police presence and law enforcement violence in Black communities, contributing to high levels of imprisonment of individuals from this group. Michelle Alexander presents a compelling and highly pertinent depiction of this; the War on Drugs, being a racially defined War, "offered whites opposed to racial reform a unique opportunity to express their hostility…without being exposed to the charge of racism" (Alexander, 2010, p. 69).

By the beginning of this millennium, Wacquant affirms that "African Americans make up a majority of those walking through prison", and that, from the mid-century points until that date (2001), the US inmate population had gone "from 70 percent white at the mid-century point to nearly 70 percent black and Latino" (2001, p. 96).

Although a historical trend starting near the 1960s-1970s, the increase of this inequality is usually linked to much more recent events, such as the passing of the Crime Bill in 1994. This Bill carried out the financing of correctional facilities and law enforcement agencies, encouraging "mass incarceration to grow even further" (Ofer, 2019, para 3-4). As explained by Alexander, the economic boosting of correctional institutions made "the construction of prisons the nation's main housing program for the poor" (2010, p. 72).

The fact that the search for answers that help account for racial disparities in incarceration is usually framed too close to the present overlooks the broader historical scope can help understand the trajectory of these disparities. For this, this analysis is focused on disproportionate incarceration trends between 1985 and 1994, examining the nearly decade-long period following the declaration of the War on Drugs and preceding the passing of the Crime Bill in 1994.

This delineation intends to capture the rising incarceration rates and the disproportions based on race in a time frame that is not usually employed for analysis. While many focus on the incarceration-related consequences of the Crime Bill after 1994, others concentrate on the immediate period after the declaration of the War on Drugs, a War that Michelle Alexander accurately defines as "racially defined", operating "almost exclusively in poor communities of color" (2010, p.122). However, there is little examination of the in-between period, when the War on Drugs was already established and the increasingly discriminatory law enforcement methods were already operating, but the Crime Bill had not passed yet.

In the context of this analysis, it is understood that the mass incarceration of individuals racialized as Black in the United States is one of the consequences of the racially targeted law enforcement practices that have been historically endured by this group. Therefore, unequal incarceration rates can not be examined without considering violent police encounters and other forms of racial violence such as lynchings, being the first symptomatic of the latter.

As a second explanatory variable, violent police encounters resulting in death are included, constituting another manifestation of racial violence. This incorporation acknowledges that racial violence through law enforcement is not only reflected in the unequal incarceration rates of people racialized as Black but also in the disproportionate use of police violence towards different racial groups. In the already mentioned study carried out by Adkins-Jackson et al., the authors suggest that not only police encounters ending in incarceration should be included as factors that influence the individuals' cognitive health (Adkins-Jackson et al., p. 7). Therefore, incorporating violent police encounters not necessarily ending in the arrest of the individual to account for other forms of law enforcement violence is pertinent.

Knight, in his research *Carceral Passages: Coming of Age in Prison America* (to be published), proposes the concepts of "carceral passages" as the experiences that Black and economically vulnerable populations experience throughout every stage of their lives, in constant contact with crime, violence, and racism (2024, p. 4). These experiences shape every phase of the individual's life, permeated by a "persistent presence of forces that harm and confine" (Knight, 2024, p. 4). As a result, "constrained childhoods", "criminalized adolescences" and eventually "incarcerated adulthoods" become common stages of social confinement for these populations, intimately intersected by violent interactions with the police and law enforcement forces (Knight, 2024, p. 4).

This conceptualization implies that a feeling of enclosure and confinement precede the official entry to the penal system due to the abusive and violent surveillance Black populations are exposed to in the United States. For this reason, the most extreme cases of police violence (those encounters resulting in death) are included in this analysis as a severe manifestation of racial violence perpetrated by the State and individuals protected from consequences by the criminal justice system.

Lastly, civilian-perpetrated racial violence is also incorporated as a contributor to the transferred trauma and cumulative stress that leads to cognitive impairment. Individuals racialized

as Black have endured racial terror perpetuated by White Americans for decades. One form of racial terror, mainly from the late 19th century to the mid-20th century, was lynchings. Allegations of having broken the law or any kind of "social norms" were enough (and in some cases not even needed) to torture and hang individuals in front of a crowd, constituting a public manifestation of White supremacist violence. As explained by the National Association for the Advancement of Colored People (NAACP), lynchings were public events that ceremonialized white supremacy, "used to terrorize and control Black" (n.d, para 2). Lynchings were therefore conceived as a form of punishment, even though inflicted upon individuals who bore no culpability, serving as a means to publicly reinforce White supremacist ideologies.

Durkheim's proposal on the way social punishment serves to reinforce and reaffirm moral and collective consciousness can be incorporated in relation to this form of racial violence. From his perspective, when an act that has been criminalized by the collective (but not necessarily criminal) occurs, a reaffirmation of the harm that this offense has caused to the collective consciousness takes place and demands a response that helps reaffirm these collective feelings (Lukes and Scull, 2013, p. 63). If lynchings are understood as a way White civilians perpetuated racist violence based on allegations of what was considered the transgression of social and legal rules, then a Durkheimian reaffirmation of their collective feeling, linked to racist and White supremacist ideas, can be identified. Moreover, as Wacquant explains, mob lynchings in the South could be interpreted as the result of the tension between labor extraction and social ostracization, which "invites the blurring or transgression of the boundary separating 'us' from 'them'" (2001, p. 99). Therefore, racial terror in the hands of civilians (and accompanied by police and State forces) during the 19th and 20th centuries reflects the intent of the perpetrators to maintain the social, economic, and political boundaries that separated and privileged them. The lifelong endurance of this kind of violence, experienced by living in a region where lynchings took place is assumed to increase distress, anxiety, and fear-related behaviors and therefore, have an impact on cognitive health.

3. Data and Methods

The analysis for this study was carried out in the coding languages Python, R, and the statistical software SPSS. As described in previous sections, the independent variables were computed on a county level, while each respondent's cognitive score, which represents the level of cognitive health based on the Langa-Weir Classification of Cognitive Function, was computed on an individual level. To match these dimensions and allow for analysis, the county in which each respondent lived in the baseline year of the interview (2006) is taken as reference. Following the hypothesis, it is expected that living in a county (at least temporarily) that historically experienced high levels of racial violence will contribute to a higher probability of developing cognitive impairment within individuals racialized as Black, in contrast to respondents racialized as White.

A multistage probability design with oversampling of underrepresented groups (adults racialized as Black and LatinX) is carried out by the HRS to ensure a representative sample of

the demographic composition of the US (Adkins-Jackson et al., p. 3). The HRS core interviews have been conducted twice a year, starting in 1992. From 1998 onwards, new groups aged 51 to 56 have been included every six years. For this study, individuals aged 51 or older who identified as Black or White and completed HRS core interviews on their own between the years 2006 and 2020, belonging to a cohort enrolled in or before 2006 and not presenting dementia at the baseline, were included in the sample. This follows the same criteria set by Adkins-Jackson et al. in their study, with the intention of maintaining similar methodological parameters yet adding new dimensions to the analysis, as well as modifying the time frame for the factors. As a result, the sample for this analysis was constituted by a total of 16680 respondents, from which 2395 are racialized as Black and 14285 as White.

Independent variables accounting for the disparities in incarceration, deaths due to police violence, and lynchings were calculated aiming to identify whether a county surpassed a level of disproportion that can be considered “severe” concerning racial violence. However, it is essential to acknowledge that every county presents a certain level of racial violence and structural racism. As the conceptualization of structural racism indicates, the fact that this is such a deeply rooted, ingrained issue in the history of the United States, leads it to permeate every region of the country. Therefore, the variables were calculated in an attempt to capture the most severe levels of racial violence. The following descriptions depict the processes dedicated to determining these boundaries, based on the structure of the datasets, the nature of the variables, and their distributions across the population of the country.

Firstly, to identify the occurrence of lynchings and racial terror through lynchings per county, the County Data Supplement of Lynchings in the United States from 1877-1950 data from the Equal Justice Initiative (EJI) was used. This dataset accounts for the number of total *reported* and confirmed victims of racialized terror who self-identified as Black, on a county level. The word “reported” is highlighted in this context to emphasize that this dataset provides information on the lynchings to which any kind of register was found. The Equal Justice Initiative “reviewed local newspapers, historical archives, and court records; conducted interviews with local historians, survivors, and victims’ descendants; and exhaustively examined contemporaneously published reports in African American newspapers" to create this database (Staff of the Equal Justice Initiative, 2017, p. 4). Even so, lynchings might have taken place and not be registered, responding to the same racial logic that led to their occurrence. Different from the other two factors, this independent variable does not portray a disproportion between racial groups but rather identifies with a value of 1 those counties with a known lynching of a person racialized as Black between 1877-1950 and 0 for a county without a known lynching in that same period. Missing values of this variable are assigned to the counties that were not yet in existence until 1950 or beyond.

To represent the disproportionate violent police encounters resulting in death, the estimates calculated by the Global Burden of Disease Study, contained in the *United States Fatal Police Violence by Race and State 1980-2019* database were employed. These estimations are considered the most accurate approximation to this phenomenon, due to the lack of a centralized database documenting fatal police encounters in the United States since the 1980s. This comes

as no surprise when considering that police brutality is a widespread yet concealed issue in the country. Researchers of the Global Burden of Disease (GBD) affirm that “Recent high-profile killings by police in the USA have prompted calls for more extensive and public data reporting on police violence” (GBD 2019 Police Violence US Subnational Collaborators, 2021, p. 1239). Responding to this demand, the team built a dataset compiling information from three non-governmental, open-source databases; Fatal Encounters, Mapping Police Violence, and The Counted, creating estimates by States, ages, sexes, and racial and ethnic groups, from 1980 to 2019. They compared these estimates to the official data from the USA National Vital Statistics System and conducted “a network meta-regression to quantify the rate of under-reporting within the NVSS'' (GBD 2019 Police Violence US Subnational Collaborators, 2021, p. 1239). Based on these rates, final adjusted mortality estimates were calculated by the researchers.

These estimations, originally computed on a State level, were re-coded for this specific study into a county format to reflect the estimates of deaths due to police violence on a county level. For this variable, the two compared groups were those individuals racialized as Non-Hispanic Black and Non-Hispanic White. This ethnic and racial categorization was proposed so as to avoid an overlap between categories, considering in this dataset individuals could be identified with many races and ethnicities, but not as Non-Hispanic Black, and Non-Hispanic White simultaneously. Moreover, the Hispanic population is one of the most affected by police violence as explained by the team of collaborators of the GBD when analyzing the dataset; “Systemic and direct racism, manifested in laws and policies as well as personal implicit biases, result in Black, Indigenous, and Hispanic Americans being the targets of police violence” (GBD 2019 Police Violence US Subnational Collaborators, 2021, p. 1239). Therefore, the proposed comparison excluded those deceased identified as Hispanic, who also represent a disadvantaged and historically oppressed community, focusing only on the individuals racialized as Non-Hispanic and on their distinction of being racialized as either Black or White. As a result, a value of 1 on this variable signifies a county where the mean of estimated deaths of people racialized as Non-Hispanic Black due to police violence is greater than the mean of estimated deaths of people racialized as Non-Hispanic White due to police violence at any time between 1985 and 1994. A value of 0 signifies a county where the first mean is equal to or lower than the second one at any time between 1985 and 1994. Missing values for this variable represent those counties for which there is no available data (Puerto Rico and Alaska Territory are not registered in this dataset).

For the calculation of disparities in incarceration rates between people racialized as Black and non-Black*,* data from the Annual Survey of Jails on Jurisdiction-level from the Bureau of Justice Statistics (BJS) was used. According to this agency, the survey “provides national estimates on the number of inmates confined in jails, demographic characteristics and criminal justice status of the jail population”, among other dimensions (BJS, 2009, para 1). A variable was created to illustrate each county’s level of disproportion between racial groups, combining the categories “Black-non-Hispanic” and “Black-Hispanic'' to identify all the imprisoned individuals racialized as Black and comparing that number to the total jail/unit population. Following the determined time frame for the analysis, the surveys from 1985 to 1994 (both included) were examined and the variable was created based on the following criteria; a value of 1 signifies a county where the proportion of people imprisoned racialized as Black is above 50% of the total

jail/unit population, at any time between 1985-1994. A value of 0 signifies a county where this proportion is equal to or below 50% of the total jail/unit population, at any time between 1985-1994. Missing values signify a county for which there is no available data (the Annual Survey of Jails is carried out on a sample of public and private jails, around approximately 877-950 selected jail jurisdictions, varying depending on the year).

The dependent variable, cognitive status, was measured using data from the modified Telephone Interview for Cognitive Status (TICS), of the Health and Retirement Study (HRS). Access to this restricted data was granted by HRS following a permission request submitted with the support of my mentor and colleagues. The TICS aims to capture multiple domains of cognitive function through three main exercises; an immediate and delayed 10-item word recall test (scores ranging from 0 to 10), a serial 7 subtraction test starting with the number 100 (scores ranging from 0 to 5), and a backward count test starting from 20. For the backward counting, participants are asked to count backward from 20 for 10 consecutive numbers and they are given two trials to effectively complete the exercise. A score of 0 indicates that the respondent is incorrect/unable to complete the task, a score of 1 indicates that the respondent was incorrect on the first trial, but correct on the second, and 2 indicates the respondent is correct on the first trial. The overall TICS score summarizes the total number of correct responses to all items. The Langa-Weir Classification is employed to categorize the overall TICS score of each individual, assigning one value out of a 27-item global cognitive score. This classification categorizes cognition on a 27-point scale with cut points that identify respondents as Normal (12-27), Cognitively Impaired but not Demented (CIND) (7-11), and Demented (0-6). For this specific analysis, the Langa-Weir classification was re-coded into two possible outcome categories; Normal and Cognitively Impaired/Demented. An individual presenting any level of cognitive impairment at any point in time between 2006 and 2020 in the HRS study is categorized as “Cognitively Impaired/Demented”. The purpose of this was to differentiate between respondents exhibiting entirely normal cognitive status and those displaying some degree of impairment. Additionally, due to the relatively low number of adults living with dementia in the sample, merging the two categories (CIND and Demented) led to an increased number of cases within the two potential outcomes. Dealing with a binary dependent variable allowed for a more robust statistical analysis, while also being able to conduct binomial logistic regressions and calculate odds ratios based on the results.

To examine the impact of racial violence on cognitive impairment an alignment between the county level variables and the HRS data on the individual level was needed. For this, a county-level matching through FIPS codes was conducted to make correspondences between the extent of racial violence in each county and the geographic data of HRS participants between 2006 and 2020. The participant's county of residence at the study's baseline (2006) was taken as reference for this matching process.

Having determined the level of racial violence of each respondent’s county of residence, three sets of binomial logistic regressions were conducted, each of them including only the cases that presented complete data for each independent variable.

For the first set, models including the three variables independently are carried out for each group. Secondly, models including the variable concerning disproportionate incarceration rates as independent variable are conducted for both groups to examine the effect that this particular case of racial violence has on the cognitive status of those individuals already living in regions with high levels of racial violence for the two other variables (that is, where lynchings occurred and disproportionate deaths due to police violence were present). This intends to capture the effect of incarceration in cognitive health, interacting with the accumulative effect of residing in a county with high levels of structural racism. A final set of regression models is performed on this subset population, one for each group, including control variables (age, cisgender category, educational level, living arrangement, birth location, cohort, region of residence, urbanicity, interview mode, and county population density). This approach helps account for demographic differences and individual characteristics.

The main advantage of conducting binomial logistic regressions in this context is the possibility of predicting the likelihood of an observation belonging to either one of two categories of the binary outcome variable (Normal cognition or Cognitively Impaired/Demented) relying on one or more factors. It allows for the calculation of the odds ratio which indicates the chances of the event occurring for each individual. The following equation depicts the logic behind this type of regression:

$$\log(p/(1-p)) = \beta_0 + \beta_1 x_i + e$$

- p represents the probability of the event happening (being categorized as Cognitively Impaired/Demented).
- 1-p represents the probability of the event not happening (presenting Normal cognition).
- log(p/(1-p)) represents the log-odds of the event occurring, given the predictors included in the model.
- The first term of the equation, β_0 , represents the intercept term; the value of the outcome variable when the independent variables are equal to zero.
- β_1 represents the regression coefficient associated with every one-unit change of each independent variable included in the model (x_i).
- e represents the error term of the regression model.

For each of the stages described above, two different regressions were conducted; one only included the cases of individuals racialized as Black and another included only individuals racialized as White. This enabled the comparison between the explanatory capacity of the independent variables for each racial group.

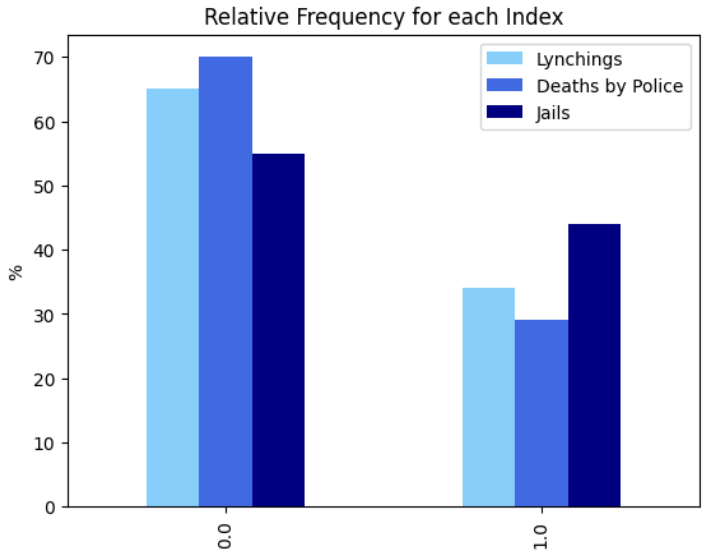
4. Results

Table 1 shows the simple and relative frequencies for each variable on a county level, as part of the factors' descriptive analysis. These percentages were computed based on the total number of counties that presented complete data for each independent variable. As observed in the first row, around 35% of the counties present at least one lynching from 1877 to 1950, 29% of them show disproportionate estimated deaths between people racialized as Non-Hispanic Black and Non-Hispanic White due to police violence, and 45% of the counties, the proportion of people imprisoned racialized as Black is above 50% of the total jail/unit population (these last two variables observed between 1985-1994).

Table 1.

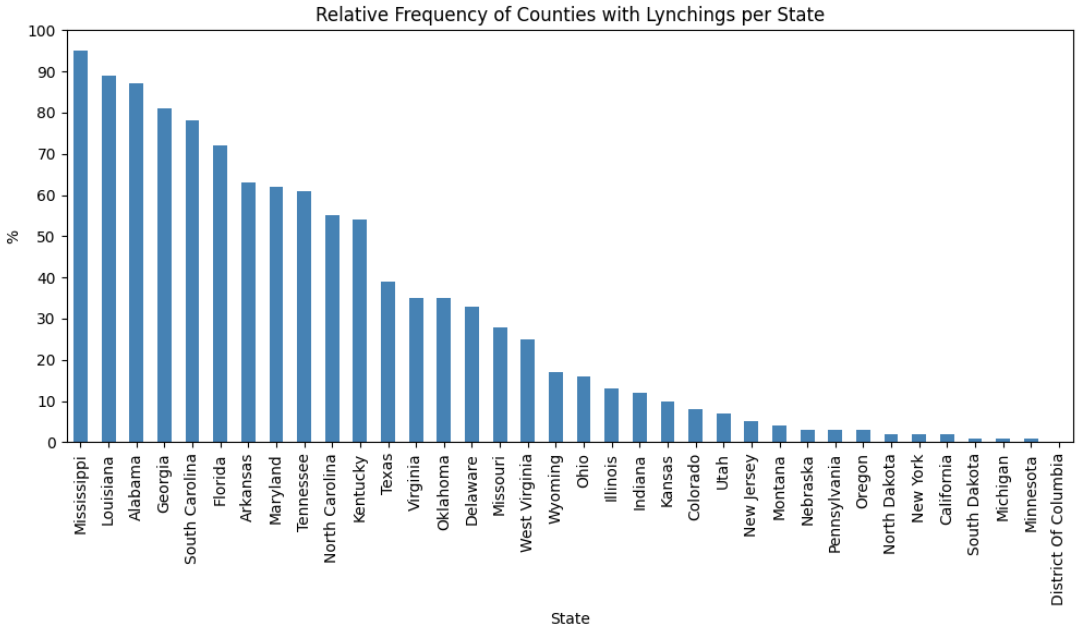
	Lynchings	Lynchings (%)	DeathsPolice	DeathsPolice (%)	Jails	Jails (%)
1	942	34.46	924	29.16	338	44.53
0	1792	65.54	2245	70.84	421	55.47

Figure 1.



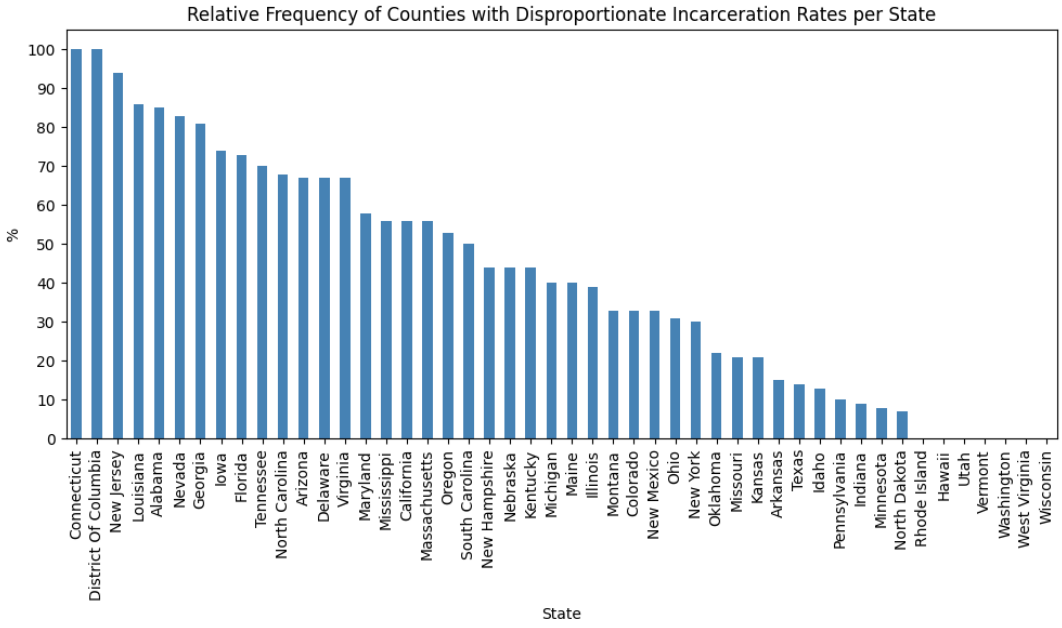
Following this, an examination of the prevalence of each factor grouping by State was conducted. While the primary analysis of this study is centered on a county level, this aggregation was performed as part of the exploratory stage to discern common patterns in the levels of racial violence across regions.

Figure 2.



Mississippi, Louisiana, Alabama, Georgia, South Carolina, Florida, and Arkansas (in that order) are the States with the highest proportion of Counties where at least one lynching occurred between 1877-1950. Most of them being Southern States where lynchings were more commonly experienced than in the rest of the country.

Figure 3.



As observed in Figure 3, Connecticut, the District of Columbia, New Jersey, Louisiana, and Alabama (in that order) are the States with the higher proportion of Counties showing unequal incarceration rates for the period 1985-1994. This means, for example, that out of the total number of counties in Connecticut for which there is available information, all of them present a disproportionate incarceration rate based on race.

Overall, most of the States at the top of the distribution for lynchings also appear at the top of the distribution for Disproportionate Incarceration Rates. The graph depicting deaths due to police violence is omitted because this variable was initially calculated at a State level and subsequently converted into a county format for analysis. Including a graph illustrating the percentage of counties with racial violence per state would therefore be redundant, as all counties within the same state were labeled identically.

From the theoretical framework of structural racism and racial violence, a certain level of correlation among the factors was expected. The fact that these correlations are very similar, positive but not too accentuated is aligned with the idea that, although related dimensions of racial violence, lynchings, violent police encounters and incarceration rates do not follow the same trajectory or exhibit identical patterns, suggesting diverse dynamics at play within each dimension. Table 2 shows the Spearman correlation coefficient values for each set of variables to portray this, given the dichotomous nature of the variables.

Table 2.

	Lynchings	DeathsPolice	Jails
Lynchings	1	0.18	0.19
DeathsPolice	0.18	1	0.18
Jails	0.19	0.18	1

These results encouraged the methodological choice to execute the third series of regression models specifically investigating the impact of disproportionate incarceration rates among respondents residing in counties characterized by high racial violence across the other two dimensions. The decision was influenced by the understanding that these three factors have a cumulative and interrelated effect that cannot be fully captured by merely incorporating all three into a single model.

Table 3 depicts the distribution of the variables within the study population (HRS respondents), after matching the county-level information with the geographic data on an individual level. It is noted that the individuals that lived in counties where incomplete data was found for the variable were excluded from the descriptive analysis.

Table 3.

	Lynchings				DeathsPolice				Jails			
	1		0		1		0		1		0	
	N	%	N	%	N	%	N	%	N	%	N	%
Black Population	1151	50.97	1107	49.03	943	39.92	1419	60.08	561	72.67	211	27.33
White Population	4396	36.23	7738	63.77	2897	20.28	11109	79.32	2960	59.71	1997	40.29

Among the respondents with complete information on the variables, 38% of them lived in a county where lynchings occurred, with this proportion rising to 51% among those identified as Black. Twenty-four percent of the total HRS respondents lived in counties with disproportionate deaths due to police violence between 1985-1994 (40% among individuals racialized as Black) and 61% in counties with disproportionate incarceration rates between the same time period (73% among individuals racialized as Black).

The average age of respondents in the baseline year (2006) is 68 for individuals racialized as White and 65 for individuals racialized as Black. Regarding the dependent variable, cognitive status, 70% of the total respondents (both racial groups) were categorized as CIND/Demented, and 30% as with Normal cognition level. Any degree of cognitive impairment observed at any point during the study was sufficient to place a respondent in the former category. The White group follows the general proportions for cognitive status, while individuals racialized as Black show a higher proportion of Cognitive Impairment/Dementia. Table 4 summarizes the distribution of this variable by race, as well as other demographic characteristics of the HRS respondents included in the sample.

Table 4. Sociodemographic characterization of individuals racialized as White and Black, respectively

	Frequency	Percent
Cognitive Status		
Normal	4442	31.10
CIND/Demented	9843	68.90
Gender		
Male	5990	41.93
Female	8295	58.07
Education in Baseline (2006)		
Below high school	2405	16.84
High school	7940	55.58
College	2572	18.00
Above college	1368	9.58
Region		
Midwest	3811	27.38
Northeast	2136	15.35
South	5212	37.45
West	2759	19.82
Place of Birth		
Born in the US	13124	91.87
Born in foreign country	1151	8.06

	Frequency	Percent
Cognitive Status		
Normal	440	18.37
CIND/Demented	1955	81.63
Gender		
Male	854	35.66
Female	1541	64.34
Education in Baseline (2006)		
Below high school	748	31.23
High school	1220	50.94
College	296	12.36
Above college	131	5.47
Region		
Midwest	494	22.05
Northeast	265	11.83
South	1321	58.97
West	160	7.14
Place of Birth		
Born in the US	2220	92.69
Born in foreign country	170	7.10

As explained, for the first set of regression models each variable was included separately. The results are presented below in summarized tables for an easier interpretation.

Table 5. Binomial Logistic Regression - Individuals racialized as White

	Estimate	Std. Error	z value	Pr(>|z|)	Odds ratio
Lynchings	0.03	0.04	0.71	0.48	1.03
DeathsPolice	0.01	0.05	0.17	0.87	1.01
Jails	-0.05	0.06	-0.84	0.40	0.95

N for Lynchings regression: 12134
N for DeathsPolice regression: 14006
N for Jails regression: 4957

Table 6. Binomial Logistic Regression - Individuals racialized as Black

	Estimate	Std. Error	z value	Pr(>|z|)	Odds ratio
Lynchings	0.02	0.11	0.22	0.83	1.02
DeathsPolice	-0.08	0.11	-0.71	0.48	0.93
Jails	-0.01	0.20	-0.06	0.96	0.99

N for Lynchings regression: 2258
N for DeathsPolice regression: 2362
N for Jails regression: 772

As observed, living in a county where lynchings occurred, increases the odds of being categorized as Cognitively Impaired/Demented by a factor of 1.03 for the White group and by 1.02 for the Black group. Having been exposed to disproportionate deaths due to police violence on a county level has an increase in the odds of cognitive impairment within the White group, as opposed to the Black group. As for the incarceration variable, living in a county with disproportionate incarceration rates decreases the odds of Cognitive impairment/Dementia by 5% (odds ratio = 0.95) within individuals racialized as White, in contrast to a decrease of 1% (odds ratio = 0.99) for individuals racialized as Black.

After this first set of regressions, a reconsideration of how models had been specified was contemplated. The assumption that the three factors have a cumulative and interrelated effect that cannot be fully captured by merely incorporating all three into a single model encouraged this decision. As a result, another set of regression models was conducted for both groups, subsetting the initial datasets to those respondents with a value of 1 both in the lynchings and the deaths due to police violence variables. This decision was based on the intention of examining solely individuals who lived in a region with high levels of State and civilian-perpetrated violence in relation to lynchings and violent police encounters, before analyzing the effect of disproportionate incarceration rates on their cognitive status. This was sustained on the hypothesis already outlined in the theoretical framework; unequal incarceration rates based on race should be examined as symptoms of a long-term culture of violent police encounters towards the Black population, as well as other forms of racial terror.

Table 7. Binomial Logistic Regression including Jails as factor - Individuals racialized as White

	Estimate	Std. Error	z value	Pr(>|z|)	Odds ratio
(Intercept)	0.88	0.15	5.70	0.00	
Jails	0.06	0.20	0.32	0.75	1.06

N: 538

Table 8. Binomial Logistic Regression including Jails as factor - Individuals racialized as Black

	Estimate	Std. Error	z value	Pr(>|z|)	Odds ratio
(Intercept)	0.99	0.32	3.05	0.00	
Jails	0.75	0.40	1.89	0.06	2.13

N: 196

The estimate for individuals racialized as White (0.06) indicates that there is a 6% increase in the odds of the outcome occurring for those respondents living in counties with high levels of racial violence for the three variable. This estimate presents a value of 0.75 for individuals racialized as Black and an odds ratio of 2.13, indicating that these participants are 113% more likely to be diagnosed as demented if having lived in a county with high levels of racial violence. Furthermore, this coefficient is the nearest to statistical significance of all the factors' estimates previously examined.

Finally, a last set of regression models was carried out including control variables to account for demographic differences and individual characteristics.

Table 9. Binomial Logistic Regression including control variables - Individuals racialized as White

	Estimate	Std. Error	z value	Pr(>|z|)	Odds ratio
(Intercept)	-1.01	0.69	-1.48	0.14	0.36
Jails	0.54	0.25	2.17	0.03	1.72
age_51	0.18	0.05	3.58	0.00	1.19
age_51r2	0.00	0.00	-1.34	0.18	1.00
gender	-0.19	0.24	-0.81	0.42	0.83
edu06 High School	-0.84	0.41	-2.02	0.04	0.43
edu06 College	-1.22	0.45	-2.72	0.01	0.29
edu06 Above College	-1.62	0.48	-3.38	0.00	0.20
livarr06_2	0.89	1.00	0.88	0.38	2.43
livarr06_3	-0.07	0.99	-0.07	0.94	0.93
livarr06_4	0.46	0.49	0.93	0.35	1.58
livarr06_6	0.57	0.33	1.72	0.09	1.77
USBORN	0.36	0.94	0.39	0.70	1.44
studyr	-0.01	0.01	-0.70	0.48	0.99
metro2003_b	-0.27	0.38	-0.72	0.47	0.76
popden	0.00	0.00	1.14	0.25	1.00
iwmoder	0.24	0.24	0.99	0.32	1.27

N: 538

Table 10. Binomial Logistic Regression including control variables - Individuals racialized as Black

	Estimate	Std. Error	z value	Pr(>|z|)	Odds ratio
(Intercept)	0.33	1.46	0.23	0.82	1.40
Jails	1.00	0.60	1.66	0.10	2.73
age_51	0.02	0.13	0.17	0.86	1.02
age_51r2	0.01	0.01	1.09	0.27	1.01
gender	0.13	0.58	0.22	0.82	1.14
edu06 High School	-0.99	0.75	-1.33	0.18	0.37
edu06 College	-2.89	0.97	-2.99	0.00	0.06
edu06 Above College	-4.06	1.10	-3.69	0.00	0.02
livarr06_2	-0.09	0.96	-0.09	0.93	0.92
livarr06_3	-0.49	0.73	-0.67	0.51	0.61
livarr06_6	-0.12	0.73	-0.17	0.87	0.88
USBORN	-1.27	2.26	-0.56	0.57	0.28
studyr	0.00	0.02	-0.05	0.96	1.00
metro2003_b	-2.12	2.26	-0.94	0.35	0.12
popden	0.00	0.00	0.77	0.44	1.00
iwmoder	0.45	0.54	0.85	0.40	1.57

N: 196

When controlling for demographic and individual characteristics, the Jails variable coefficient is 0.54 (odds ratio = 1.72) for individuals racialized as White, and 1.00 (2.73) for individuals racialized as Black. This can be interpreted by stating that an individual racialized as Black living in a region with at least one registered lynching, disproportionate violent police encounters and racially unequal incarceration rates, is 173% more likely to be categorized as cognitively impaired/demented in contrast to a person (also racialized as Black) who lives in a county without those conditions. This value decreases to 72% for individuals racialized as White.

Given that the traditional R squared measure from linear regression does not apply to binomial logistic regression, an alternative metric, the Nagelkerke R squared, is used instead to offer a comparable sense of how well the model explains the observed outcomes. This statistic ranges from 0 to 1, with values closer to 1 indicating a stronger model fit. For the initial model, which includes individuals racialized as White and control variables, the Nagelkerke pseudo R squared is 0.31. For the subsequent model, concerning individuals racialized as Black with control variables, it is 0.46, suggesting that 46% of the variance of the dependent variable is explained by this model.

As a result, it can be stated that when focusing on the individuals who lived in counties with high levels of disproportionate deaths due to police violence before the passing of the Crime Bill of 1994 and at least one registered lynching, the impact of disproportionate incarceration rates on cognitive health is much severe for those racialized as Black. The likelihood of being classified

as cognitively impaired or demented is twice as high for this group compared to individuals racialized as White. Therefore, not only a substantial difference is observed between individuals belonging to the same racial group but living in counties with different historic levels of racial violence, but also between individuals racialized as Black and White, even if exposed to the same contextual conditions.

5. Discussion

This study examined the impact of State and civilian-perpetrated racial violence on cognitive status for 2006-2020 HRS participants racialized as Black and White. Black-White disparities in incarceration rates on a county level were associated with higher probabilities of developing cognitive impairment among individuals racialized as Black exposed to racist police violence and lynchings, but not among individuals racialized as White in the same conditions. This indicates that having lived in a region where high levels of racial violence were experienced (either directly or indirectly) during the decade preceding the passing of the Crime Bill (and for the occurrence of lynchings until 1950) impacts negatively, and to a greater extent, on the cognitive status of individuals racialized as Black. There is an increased risk for mild cognitive impairment or dementia due to the endorsement of historical racial violence for this group. The life course approach and weathering hypothesis are confirmed, at least partially, with these results.

HRS participants' cognitive status was analyzed in relationship to historical racial inequalities highlighting that having been exposed to traumatic experiences on a county-level contributes to feelings of anxiety, distress, and fear. This is why, despite the initial divergence in measurement units between the independent variables and the outcome, aligning the geographical and individual levels was appropriate to account for individual health disparities deriving from historical traumas experienced on a regional level.

Having framed incarceration rates and violent police encounters in the period prior to the passing of the Crime Bill but posterior to the declaration of the War on Drugs allowed to capture one very specific momentum of the United States penal system. This period marked a significant acceleration of mass incarceration, building upon a trend that emerged in the 1970s. Additionally, it witnessed a rise in racially disproportionate police violence that contributed to the establishment of a Carceral State. For all of this, it was relevant to examine the influence of racially disparate incarceration rates on cognitive health in conjunction with the existing effects of violent police encounters and lynchings on a regional level.

Some limitations can be identified in this study. One of them is the TICS assessment of cognitive health and the consequential Langa-Weir classification of the overall cognitive performance of individuals participating in the study. I am aware that the methods and exercises employed in the HRS to assess cognitive health can be questioned. Cognitive health is surely under-represented by measuring it through exercises of word recall or backward counting. However, the HRS methodology aims to examine only some of the domains of cognitive function,

providing only an approximation of the person's cognitive status. Future studies might consider incorporating a broader array of cognitive measures to construct a more comprehensive indicator. Having said that, both the design of the HRS and the Langa-Weir Classification were carried out by an interdisciplinary team of professionals with great knowledge of the field. As such, this approximation was considered the most suitable for the purposes of this research.

Moreover, the use of the county of residence at the baseline of the HRS interview as the reference for matching factors and outcome might also be questioned. While I understand that a U.S. resident may relocate multiple times between different regions, and therefore experience different levels of racial violence across his/her lifetime, there is evidence that local migration has reduced significantly in the last decades. This evidence shows that the local migration rate in the United States decreased from 13% in the early 2000s to 11%-12% after the 2007-09 Great Recession (Frey, 2023, para 7). These rates continued to decline towards the 2010s and got to 8.4% in 2020-21 (Frey, 2023, para 7). Matching to the county of residence in 2006 was therefore considered the most appropriate criterion, acknowledging that only a portion of the respondent's life course contact with racial violence is captured by it. However, as it was observed, living in a county with high levels of racial violence, even if only for some limited period of the person's life, would impact fear-related behaviors, heightened vigilance, and overall distress and anxiety, potentially leading to cognitive impairment.

Lastly, as the Annual Survey of Jails is conducted on a subset of counties, there exists a considerable amount of missing data when compared to the entirety of counties across the United States. What is more, the inconsistency in data collection on racialized groups in certain jail jurisdictions can introduce measurement errors that lead to the underrepresentation of specific regions of the country in this study. To address this limitation in future research, aggregating data from various sources to fill in the gaps in incarceration rates for jail counties not covered in the sample could be advantageous. By doing so, a larger number of cases from HRS respondents could be incorporated into the analysis, increasing the robustness of the findings.

This analysis serves the purpose of contributing to a broader historical understanding of racial violence and its impact on health. Future researchers following this path should consider embracing a life course approach, as well as taking into consideration the regional impact of structural racism. This way, we will be able to reject the reductionist ideas that limit the examination of trauma to direct exposure (both in place and in time).

6. Conclusion

Enduring State racial violence reflected by incarceration rates in the nearly decade-long period preceding the passing of the 1994 Crime Bill, proved to increase the chances of experiencing cognitive impairment among individuals racialized as Black who were already exposed to civilian-perpetrated racial violence and violent police encounters on a county level. The odds of this occurring are lower for individuals racialized as White, aligned with the idea that

structural racism “routinely advantage whites while producing cumulative and chronic adverse outcomes for people of color.” (Lawrence and Keleher, 2004, pg1).

Incorporating civilian-perpetrated racial violence through lynchings as an explanatory variable, that helps characterize the level of structural racism in the respondents’ region, recognizes that the examination of inherited trauma from a historical perspective can deepen our comprehension of the influence of underlying racial dynamics on an individual's health outcomes.

Finally, this quantitative approach is used to partly address the consequences of such a broad, deeply rooted, and complex issue as structural racism. It aims to illustrate the health repercussions of racial disparities as well as motivate further research driven by "critical hope"; being able “to realistically assess one’s environment through a lens of equity and justice while also envisioning the possibility of a better future” (Dugan and Duncan-Andrade in Bishundat, et al., 2018, p. 91). I consider it crucial to cultivate scientific knowledge finding a balance between a pragmatic perspective, which grounds the analysis of the social phenomena and acknowledges its complexities, and an idealistic perspective grounded in the conviction that a better future is attainable, where the possibility of “strange fruits” taking root is eradicated.

Sources

Adkins-Jackson, P.B., Gobaud, A.N., Kim, B., Ford, T.N., Hill-Jarrett, T.G., Tejera, C.H., Ko, M., Bailey, Z.D., Hardeman, R.R., Tsai, A.C., Gee, G., Thorpe, Jr., R.J., Uzzi, M., Matz, M-A.B., Solomon, G., Avila-Rieger, J.F., Belsky, D.W., Babulal, G.M., Barnes, L., Manly, J.J., Szanton, S.L., Alang, S. et al. (n.d.). The place where danger waits: Ten years of incarceration after the 1994 Crime Bill and cognitive function among older adults. [Unpublished manuscript].

Alexander, M. 2010. *The New Jim Crow: Mass Incarceration in the Age of Colorblindness*. The New Press.

Alzheimer's Association. (n.d). *Black Americans and Alzheimer's*. Alzheimer's Association. https://www.alz.org/help-support/resources/black-americans-and-alzheimers

Bailey, Z. D., Krieger, N., Agénor, M., Graves, J., Linos, N., & Bassett, M. T. (2017). Structural racism and health inequities in the USA: evidence and interventions. *Lancet. 389*(10077), 1453–1463. https://doi.org/10.1016/S0140-6736(17)30569-X

Bishundat, D., Phillip, D.V. & Gore, W. (2018). Cultivating Critical Hope: The Too Often Forgotten Dimension of Critical Leadership Development. *New Directions for Student Leadership*, 2018: 91-102. https://doi.org/10.1002/yd.20300

Bureau of Justice Statistics. (2009, May 26). Annual Survey of Jails (ASJ). Bureau of Justice Statistics. https://bjs.ojp.gov/data-collection/annual-survey-jails-asj

Dean, L. T., & Thorpe, R. J. (2022). What Structural Racism Is (or Is Not) and How to Measure It: Clarity for Public Health and Medical Researchers. *American journal of epidemiology*, *191*(9), 1521–1526. https://doi.org/10.1093/aje/kwac112

Equal Justice Initiative. (2017). Lynching in America: Confronting the Legacy of Racial Terror (3d Ed.). Equal Justice Initiative.

Equal Justice Initiative. (2022). Lynching in America: Confronting the Legacy of Racial Terror. County Data Supplement. [Data set]. https://eji.org/wp-content/uploads/2005/11/lynching-research-county-supplement-jan-2022.pdf

Forde, A. T., Crookes, D. M., Suglia, S. F., & Demmer, R. T. (2019). The weathering hypothesis as an explanation for racial disparities in health: a systematic review. *Annals of epidemiology*, *33*, 1–18.e3. https://doi.org/10.1016/j.annepidem.2019.02.011

Forman, James, Jr. (2017). *Locking Up Our Own: Crime and Punishment in Black America.* Farrar, Straus and Giroux.

Frey, W.H. (2023, February 2). Americans' local migration reached a historic low in 2022, but long-distance moves picked up. *Brookings Research.* Retrieved April 14, 2024, from: https://www.brookings.edu/articles/americans-local-migration-reached-a-historic-low-in-2022-but-long-distance-moves-picked-up/#:~:text=In%202021%2D22%2C%20the%20overall,20%25%20of%20Americans%20moved%20annually.

GBD 2019 Police Violence US Subnational Collaborators. (2021). Fatal police violence by race and state in the USA, 1990–2019: a network meta-regression. *Lancet*, 398, 1239-1255. https://doi.org/10.1016/S0140-6736(21)01609-3

Global Burden of Disease Collaborative Network. (2021). Global Burden of Disease Study 2019 (GBD 2019) United States Fatal Police Violence by Race and State 1980-2019 [Data set]. https://doi.org/10.6069/8APS-TV56

Health and Retirement Study. (2006-2020). Data Products [Data sets]. https://hrs.isr.umich.edu/data-products/cognition-data

Knight, D. J. (2024). Carceral Passages: Coming of Age in Prison America. *American Journal of Sociology*. https://doi.org/10.1086/729769. [Unpublished manuscript].

Lawrence, K & Keleher, T. (2004, November 12-13). *Chronic Disparity: Strong and Pervasive Evidence of Racial Inequalities. Poverty Outcomes.* [Conference presentation]. Race and Public Policy Conference, University of California, Berkeley. https://static1.squarespace.com/static/585a5248579fb3abe813c2c4/t/5ed478acdf699b54f8d25430/1590982828921/Definitions-of+Racism.pdf

Lukes, P. S., & Scull, A. (2013). *Durkheim and the Law* (2nd edition). Red Globe Press.

Murakawa, Naomi. (2014). *The First Civil Right: How Liberals Built Prison America*. Oxford University Press.

NAACP. (n.d). *History of Lynching in America.* National Association for the Advancement of Colored People. https://naacp.org/find-resources/history-explained/history-lynching-america

National Institute on Aging. (n.d.). *Cognitive Health and Older Adults.* https://www.nia.nih.gov/health/brain-health/cognitive-health-and-older-adults

Ofer, U. (2019, June 4). *How the 1994 Crime Bill Fed the Mass Incarceration Crisis.* American Civil Liberties Union. https://www.aclu.org/news/smart-justice/how-1994-crime-bill-fed-mass-incarceration-crisis

Sharif MZ, García JJ, Mitchell U, Dellor ED, Bradford NJ and Truong M (2022) Racism and Structural Violence: Interconnected Threats to Health Equity. *Front. Public Health.* 9:676783. https://doi.org/10.3389/fpubh.2021.676783

United States Department of Justice. Office of Justice Programs. Bureau of Justice Statistics. (1985-1994) Annual Survey of Jails: Jurisdiction-Level Data, 1985-1994. [Data sets]. https://www.icpsr.umich.edu/web/NACJD/series/7/studies

Wacquant, Loïc. (2001). Deadly Symbiosis: When Ghetto and Prison Meet and Mesh. *Punishment & Society*, 3, 95-133. https://doi.org/10.1177/14624740122228276

Wooten, K.G., McGuire, L.C., Olivari, B.S., Jackson, E.M., & Croft, J.B. (2023). Racial and Ethnic Differences in Subjective Cognitive Decline — United States, 2015–2020. *MMWR Morb Mortal Wkly Rep*, 72, 249–255. https://doi.org/10.15585/mmwr.mm7210a1

Zuelsdorff, M., Okonkwo, O. C., Norton, D., Barnes, L. L., Graham, K. L., Clark, L. R., Wyman, M. F., Benton, S. F., Gee, A., Lambrou, N., Johnson, S. C., & Gleason, C. E. (2020). Stressful Life Events and Racial Disparities in Cognition Among Middle-Aged and Older Adults. *Journal of Alzheimer's disease : JAD*, *73*(2), 671–682. https://doi.org/10.3233/JAD-190439