Distribution Agreement

In presenting this thesis or dissertation as partial fulfillment of the requirements for an advanced degree from Emory University, I hereby grant Emory University and its agents the non-exclusive license to archive, make accessible, and display my thesis or dissertation in whole or in part in all forms of media, now or hereafter known, including display on the world wide web. I understand that I may select some access restrictions as part of the online submission of this thesis or dissertation. I retain all ownership rights to the copyright of the thesis or dissertation. I also retain the right to use in future works (such as articles or books) all or part of this thesis or dissertation.

Signature:

_____ _____

Emily Dore Date

A Structural Approach to Understanding the Long-Term Health Effects of Childhood Poverty

By

Emily Dore

Doctor of Philosophy

Sociology

_____

Ellen Idler, Ph.D.
Advisor

_____

Irene Brown, Ph.D.
Committee Member

_____

Janeria Easley, Ph.D.
Committee Member

_____

Melvin Livingston, Ph.D.
Committee Member

Accepted:

_____

Kimberly Jacob Arriola, Ph.D, M.P.H, Dean of the James T. Laney School of Graduate Studies

_____

Date

A Structural Approach to Understanding the Long-Term Health Effects of Childhood Poverty

By

Emily C. Dore
B.A., Boston University College of Arts & Sciences, 2006
M.S.W., Boston University School of Social Work, 2015
M.P.H., Boston University School of Public Health, 2017

Advisor: Ellen Idler, PhD

An abstract of
A dissertation submitted to the Faculty of the
James T. Laney School of Graduate Studies of Emory University
in partial fulfillment of the requirements for the degree of
Doctor of Philosophy
In Sociology
2024

Abstract

A Structural Approach to Understanding the Long-Term Health Effects of Childhood Poverty

By

Emily C. Dore

Research has repeatedly shown that individual-level measures of childhood socioeconomic status (SES), such as parental income, education, occupation, or wealth, are positively associated with adult health. This is a powerful finding that points to the importance of early intervention to improve long-term health, especially for children who grew up in poverty. Less explored is the role of structural and political context in shaping childhood SES and its relationship to adult health. An understanding of structural and political conditions places individual-level behaviors, choices, and outcomes into a social context that impacts access and opportunities differently for people based on demographic characteristics, including place of residence. Illuminating structural and political determinants of health along the life span could improve interventions by broadening their reach to the population level, complimenting interventions that concentrate on individual behavioral changes.

This dissertation highlights the importance of a structural approach to understanding life course health by illuminating the work that has already been done and making new theoretical and empirical contributions to the literature. The first chapter is a scoping review of an emerging field that examines the impact of childhood exposure to social and economic policies on adult health. In general, findings from the 18 articles identified suggest that more equity-centered and generous policies have positive effects on long-term health. The second chapter is a descriptive study of state-variation in the relationship between childhood SES and self-rated health. This study identifies important differences in the size of health disparities by childhood SES across states and examines potential reasons for these findings. The final chapter examines the long-term health impact of welfare reform exposure in childhood, as one example of a policy exposure that has not yet been analyzed in this way. This study found little evidence of welfare reform on long-term health but elaborates on future avenues of research. Taken together, the chapters of this dissertation suggest that childhood social, economic, and political context plays a role in shaping long-term health and should be considered more often by researchers and policymakers as a way to improve population health.

A Structural Approach to Understanding the Long-Term Health Effects of Childhood Poverty

By

Emily C. Dore
B.A., Boston University College of Arts & Sciences, 2006
M.S.W., Boston University School of Social Work, 2015
M.P.H., Boston University School of Public Health, 2017

Advisor: Ellen Idler, PhD

A dissertation submitted to the Faculty of the
James T. Laney School of Graduate Studies of Emory University
in partial fulfillment of the requirements for the degree of
Doctor of Philosophy
In Sociology
2024

Acknowledgements

I started out in this program saying that I wanted to study social policies and health, without really knowing what that meant or how to do it. Now I've written thousands of words and pages of code trying to answer questions about this topic. I couldn't have gotten here without help from my community.

First, thank you to my dissertation committee. Thank you especially to Ellen Idler, my chair and advisor. You have made me feel supported, challenged, and proud of myself these last six years and I've grown so much under your guidance. Thank you to Doug Livingston, for showing me how to do the exact type of research I've been wanting to do, especially since I came out of nowhere asking to work with you! Thank you to Irene Browne for being a constant throughout graduate school, teaching two of my favorite classes, and always being available to help. Thank you to Janeria Easley for introducing me to the field of intergenerational mobility, and improving my Stata skills and PSID knowledge in ways I could not have done on my own. You have all played an integral role in why I've loved my time at Emory, and I'm so grateful for all your time and effort.

Thank you to all the other faculty and staff who have also supported me in these early phases of my career. Thank you to Trish Homan for being so receptive to my reaching out and becoming one of my most supportive mentors ever since. Thank you to other Emory faculty, including Kelli Komro, Rachel Hall-Clifford, Monique Hennink, and Regine Haardörfer for your support and collaborations over the years, and to Drs. Martin Levin and Wanda Rushing for funding the quantitative analysis workshop that I attended at ICPSR. Thank you to Rob O'Reilly for your patience and brilliance while helping me with Stata and the PSID. I'm so grateful to the Sociology Department staff that helped me navigate logistics, submit expense reports, and ensure I was always on the right track, especially Pat Hamilton, Aaqila Richardson, and Marita McKee.

Thank you to my other cohort members Jenny, Clark, and Mickey. I feel so lucky that we all decided to apply at the same time! Thank you to all the other sociology students who've listened to me vent, brainstormed with me, or supported me in other ways.

I have overwhelming appreciation and love for my parents who have always trusted my life choices, even though these decisions have led me on a very windy path. Their support is why I have been able to spend so much time figuring out what to do with my life and ultimately landing on a career that I love. Thank you to the rest of my family and all my friends who have been cheering me on from afar by watching my presentations virtually, reading my work, and listening to me go on and on about sociology. Your support means so much.

Finally, thank you to Míša and Louisa. Míša, thank you doesn't even cover it. You have encouraged me at every step even when it means making your own sacrifices. Thank you for answering all my millions of questions, being my sounding board, my editor, and my cheerleader. I was able to take risks because you believed in me. Louisa, I hope I make you proud. Thank you for giving me such a fulfilling life outside of work and reminding me about the important things in life, like Paw Patrol plots, not number of citations. I love you both so much.

Funding Acknowledgement

Research reported in this dissertation was supported by the National Institute on Minority Health and Health Disparities of the National Institutes of Health under Award Number F31MD017935. The content is solely the responsibility of the author and does not necessarily represent the official views of the National Institutes of Health.

Table of Contents

Introduction…… 1
Chapter 1: The Long-Term Health Effects of Childhood Exposure to Social and Economic Policies: A Scoping Review…..…… 17
Figure 1: Flowchart of the Search Process…….…..... 44
Table 1: Summary of Studies……... 45
Chapter 2: Geographical Variation in the Long Arm of Childhood…….…… 51
Table 1: Weighted Descriptive Statistics of Study Sample…….. 82
Table 2: Association Between Childhood SES and Poor Health……. 82
Figure 1: Probability of Reporting Poor Health by Parental Education and State….. 83
Figure 2: Difference in the Probability of Reporting Poor Health by Parental Education and State, Unadjusted and Adjusted for Own Education, State Gini Coefficient, State TANF-to-Poverty Ratio…….. 84
Figure 1: Probability of Reporting Poor Health by Parental Education and State—Only States with Significant Differences in Childhood SES Predictiveness for Poor Adult Health…… 86
Figure 2A. Difference in the Probability of Reporting Poor Health by Parental Education and State, Unadjusted and Adjusted for Own Education, State Gini Coefficient, State TANF-to-Poverty Ratio—Only States with Significant Differences in Childhood SES Predictiveness for Poor Adult Health……. 87
Figure 3A. Probability of Reporting Poor Health by Parental Education and State—Only Stayers…… 88
Figure 4A. Probability of Reporting Poor Health by Parental Education and State—Only Individuals 25 Years and Older……... 90
Figure 5A. Difference in Probability of Reporting Poor Health by Parental Education and State, Unadjusted and Adjusted for Own Education, State Gini Coefficient, State TANF-to-Poverty Ratio—Only Individuals 25 Years and Older… 92
Figure 6A. Probability of Reporting Poor Health by Parental Education and State—Without Survey Weights…….. 94
Figure 7A. Probability of Reporting Poor Health by Parental Education and State—Controlling for Current State…….. 96
Chapter 3: The Long-Term Health Effects of Welfare Reform……. 98
Table 1: Weighted Descriptive Statistics of Study Sample…….. 138
Table 2: Estimated Effects of Welfare Reform in Childhood on Adult Health……... 139
Table 3: Estimated Effects of Welfare Reform in Childhood on Adult Health by Race/Ethnicity-Welfare Participation Groups……. 140
Table 4: Difference in Health with a One-Year Increase in Welfare Reform Exposure by Race/Ethnicity-Welfare Participation Groups…… 141
Figure 1. Timeline of Economic Policies Relevant to Health……. 142
Figure 2. Conceptual Framework…… 143
Figure 3. Predicted Levels of Psychological Distress by Welfare Reform Exposure and Race/Ethnicity……... 144
Conclusion……... 145

Introduction

The U.S. has one of the highest child poverty rates among high-income countries. In 2022, the official child poverty rate was 15.0 percent, representing almost 11 million children (OECD 2023; Shrider and Creamer 2023). These rates vary by race and ethnicity, so that some children are more likely to experience poverty than others. In 2022, more than 20 percent of black and Hispanic children were living in poverty compared to less than 10 percent of non-Hispanic white and Asian children (Shrider and Creamer 2023). In addition, child poverty varies by state, suggesting state context plays an important role in the prevalence and persistence of the problem. In 2022, New Hampshire had the lowest official child poverty rate at 6.9 percent while Mississippi had the highest at 26.4 percent (Benson 2023). Numerous studies have found that experiencing poverty in childhood has negative health consequences that appear even decades later, including poorer self-rated health, lower life expectancy, and higher rates of chronic conditions (Luo and Waite 2005; Singh and Siahpush 2006). Addressing the high rates of child poverty in the U.S. and the variation across people and place may provide insight and opportunity for intervention to decrease health disparities and improve population health.

The Life Course Perspective

The life course perspective, a popular sociological theoretical framework, guides the understanding of how events throughout the life impact individual outcomes, including health (Elder, Johnson, and Crosnoe 2003). Instead of seeing outcomes as direct results of only proximate experiences, the life course perspective comes from a "desire to understand social pathways, their developmental effects, and their relation to personal and social-historical conditions" (Elder et al., 2003, p. 7). The concept of social pathways encompasses the life trajectories of individuals, including education, work, and health trajectories. While a life course

perspective can be applied to understand processes and events at many different life stages, this dissertation uses the life course perspective to specifically examine the impact of early life experiences on later life health outcomes (Alwin 2012).

Epidemiologists have expanded the understanding of this perspective by providing schematics that show how social pathways, beginning in utero or childhood, impact later life health. In their highly influential work, social epidemiologists Ben-Shlomo and Kuh (2002) propose two conceptual life course models for understanding how early life events affect later life health outcomes: critical or sensitive period (or latency models) and accumulation of risk (or path dependency models) (Dannefer, Kelley-Moore, and Huang 2016). A critical period model is one time point during which an exposure has long-term consequences, usually due to biological programming caused by the exposure. Crucially, the long-term effects are not modifiable by later events. A sensitive period is also a time point during which exposure would be particularly harmful or beneficial, but unlike the critical period model, an exposure during a sensitive period is modifiable outside of that particular time period. Barker (1990, 1995) popularized the fetal origins hypothesis, an example of the critical period model, which argues that harmful conditions experienced in utero, such as malnutrition, negatively programs biological processes in ways that lead to disease later in life.

The accumulation of risk model posits that life events, both positive and negative, add on to each other and result in increasing advantages or disadvantages to health across cohorts. These events can be unrelated to each other, or they can be associated with each other. When they are associated with each other, they are thought of as "chains of risk," with one event or experience leading to the next (Ben-Shlomo and Kuh 2002). Worth noting, this additive version of the chains of risk theory is similar to the cumulative disadvantage or advantage theory which is also

often used in life course literature (Dannefer 2003; DiPrete and Eirich 2006). Kuh and colleagues (2003) have further expanded the accumulation of risk model to include four separate pathways through which a multitude of events can impact health outcomes, including: 1) all exposures are independent from each other and they each impact health independently, 2) all exposures result from the same exposure, but they each impact health independently, 3) a series of exposures that affect each other, with only the last exposure directly affecting health, and 4) a series of exposures that affect each other, and each also directly affect health. An example of the latter is experiencing poverty in childhood, which impacts quality of schooling, which impacts job opportunities in adulthood, which impacts income in adulthood, and all of these exposures also directly impact adult health. Research has also provided evidence for both critical/sensitive period models (Almond and Currie 2011; Angelini, Howdon, and Mierau 2019; Blackwell, Hayward, and Crimmins 2001) and accumulation of risk models, with adult SES the most common mediator between childhood circumstances and adult health (Hayward and Gorman 2004; Luo and Waite 2005; Montez and Hayward 2014).

Another important paradigm of the life course perspective is linked lives, which is especially relevant to this dissertation topic. This concept captures the inherent social aspect of our lives and the effect individuals have on each other. The family stress model is based on the concept of linked lives but captures specifically the effect of parental stress on child outcomes (Elder 1998). Linked lives and the family stress model are important for this dissertation since some of the state context and policies discussed more directly affect parents. I argue that the exposures affect parents, which then affects the children's short-term and long-term outcomes. Examples of the linked lives concept include evidence of parents of lower SES being more likely to experience financial distress, which can result in increased stress for the children (Chen,

Cohen, and Miller 2010), and more conflict in the family (Conger et al. 2002; Masarik and Conger 2017), both of which have negative long-term health impacts (Lupien et al. 2009). Parents who are busy with commitments outside the family, such as working multiple jobs, spend less time with their children, which can negatively affect child development (Lareau 2011; Votruba-Drzal 2006). Thus, parent circumstances, especially their levels of financial distress and the time they have for their children, are important considerations when examining childhood circumstances as well as these children's long-term outcomes.

Thus far, life course health research has mostly focused on the relationship between individual-level measures of childhood SES (such as parental income or education) and adult health. Recently, there has been a call to go beyond centering an individuals' attributes by considering contextual factors that shape access to opportunities and resources (Ferraro 2016; Herd 2016). Highlighting the context in which individuals behave or make decisions helps clarify an individual's ability to improve their economic, social, and health conditions since behaviors and decisions are enacted under constraints of society. This focus also allows researchers to provide policy recommendations that can reshape current and future social, political, and economic contexts to provide better access to health promoting opportunities. For example, if lower childhood SES is less predictive of poor adult health in one state context compared to another, researchers can identify the key factors in shaping this relationship across and within states, such as welfare policies, the quality of education, or access to quality health care throughout the life span.

This dissertation responds to the call to focus on context and solutions by examining the relationship between social, economic, and political context in childhood and health in adulthood. Although the life course perspective emphasizes the role of historical, social, and

political context as a theoretical orientation, life course empirical research has rarely incorporated the impact of these contextual factors on health trajectories by instead focusing on individual-level measures such as parental income, education, and wealth. More research has recently aimed to measure and quantify these types of structural impacts on health in general, with researchers examining factors such as structural racism and sexism on health outcomes (e.g., Bailey et al. 2017; Homan 2019; Montez, Hayward, and Zajacova 2019). So far, this research has focused mostly on outcomes soon after the exposure, not childhood exposure and long-term health outcomes. There have been a few studies examining the long-term health effects of structural impacts in childhood, mostly by analyzing the long-term health effects of childhood exposure to particular policies and programs (e.g., Hoynes, Schanzenbach, and Almond 2016). However, this literature is small and there is a need to study more policies and programs.

This dissertation builds off of three areas of research: life course, structural determinants of health, and the effect of social policies on health. I examine how state context and policy affects the relationship between childhood SES and health, with the goal of identifying contexts and policies that result in better health for all individuals, regardless of childhood SES. The next two sections provide a brief overview of the structural determinants and social policy and health literatures that inform the dissertation, though each chapter also includes a short discussion to place the research questions into context.

Contextual factors as predictors of health disparities

Studies led by Jennifer Karas Montez have identified states as important actors in shaping both economic opportunities and health by examining state variation in the relationship between education and health. This research has made important contributions to understanding macro

level forces that shape health, and why health outcomes vary by state. The studies have found significant variation in the size of disparities for both mortality and morbidity (Montez, Zajacova, et al. 2019; Montez, Hayward, et al. 2019). The variation is mostly determined by different outcomes between low-education groups across states as the high-education groups have similar health outcomes. The authors argue that this finding is likely due to the low-education group's greater dependency on government policies and services, which vary by state. Based on Fundamental Cause Theory, high-education groups have more resources, so they are less dependent on the government to pursue their optimal health (Link and Phelan 1995).

Several scholars have provided reasons for why social, political, and economic state-context shapes health throughout the life span. First, as Brady, Finnigan, and Hübgen (2017) argue with the prevalence-penalty framework, different geographical contexts produce different outcomes because of 1) different prevalences of at-risk groups and 2) different levels of penalties for these groups. Although this framework is meant to explain state-level variation in poverty rates, the prevalence-penalty framework is also applicable for health outcomes. The authors argue that poverty is a function of whether one lives in a high-risk household ("prevalence"), based on factors such as education and employment status, and also how the environment interacts with these risk factors ("penalty"). For example, if a person is unemployed, and thus high-risk, but lives in a state with more unemployment support, a lesser penalty, their chances of being considered poor are lower than if they live in a state with weak support for the unemployed. This is true for children too, where the negative impact of experiencing poverty in childhood can be lessened with more generous economic policies aimed toward children and their caregivers (i.e., a lesser penalty for being poor).

Second, cultural and institutional norms and histories vary by location and shape the distribution of resources and opportunities, and thus inequality. Homan (2019) writes that exposure to the well-known health-promoting factors such as material and psychosocial resources, as well as to health-risk factors such as stress and unsafe working and living conditions, are shaped by institutional norms and policies at the state level. One example of different state contexts is a measure of state-level gender inequality, or what Homan (2019) labels macro level structural sexism. Homan (2017) uses a measure of state level gender inequality, the proportion of women to men state legislators, to assess the impact of this type of state context on health. She finds evidence for a relationship between higher proportions of women state legislatures and lower infant mortality rates, arguing that a higher proportion of women in political power translates into greater psychosocial resources for women (e.g., from the experience of higher social status) as well as better opportunities for policies that promote women's health (because women tend to pass laws aimed at improving population health more so than men). Relatedly, Baker (2021) argues that historical racial regimes, represented by state-level measures of slavery, sharecropping, disenfranchisement, and segregation, operate through current racial ideologies established in state institutions that shape modern day inequality. These macro-level factors then determine distribution of resources and opportunities, and ultimately, health. Although these studies do not include explicit mentions of the effects on children, one can imagine that growing up in more sexist and racist states can affect access to opportunities as well as psychosocial wellbeing in childhood, and that these experiences have lasting effects.

Another way to understand the role of the state in the relationship between childhood SES and adult health is by examining state policy contexts. Montez and Grumbach (2023) note states' increasing involvement in policymaking due to both filling a vacuum left by federal

lawmakers and passing preemption laws to limit the power of local lawmakers. At the same time, politics are becoming more polarized so that states are enacting policy "bundles" that are either more left-leaning or right-leaning. The combination of more state lawmaking power and hyperpolarization leads to ever diverging state policies and ultimately, larger differences in outcomes at the state level. Just as child poverty rates vary by state (Benson 2023), health outcomes vary by state including a difference in life expectancy at birth by 6.5 years between the states with the highest (Hawaii) and lowest (Mississippi) life expectancies (NCHS 2022). These state level approaches argue that these differences are not simply results of different types of individuals in these states but that the state itself has a large role in determining these outcomes.

Finally, a quickly growing body of research examines specific state-level social and economic policies, as opposed to state policy bundles mentioned above, and their effects on health. Social and economic policies have been shown to affect health due to their impact on material resources and psychosocial stressors (Komro, Burris, and Wagenaar 2014; Link and Phelan 1995). As mentioned before, child poverty in the U.S. is high compared to peer countries (OECD 2023). However, when federal and state governments took action during the COVID-19 pandemic, they showed that there is a solution to these high rates of poverty and as many people have commented, "poverty is a policy choice" (Matthews 2021). After implementing several income support policies at the federal and state levels, childhood poverty (as measured by the supplemental poverty measure which takes into account cash and noncash assistance from the government) had a record one-year decline between 2020 and 2021 (Burns, Fox, and Wilson 2022; Trisi 2023). Yet once these policies expired, child poverty rates rebounded by more than doubling between 2021 and 2022 (Parolin 2023). Income support and poverty alleviation policies can make a difference.

Since these poverty alleviation policies have positively impacted poverty rates, scholars have begun to ask whether these policies also positively impact health. The overwhelming majority of studies have shown that they do positively impact health, at least in the short-term (Hamad et al. 2019; Hamad and Rehkopf 2015; Hoynes, Miller, and Simon 2015; Markowitz et al. 2017; Spencer et al. 2020). While there is still a paucity of studies examining social and economic policies' effects on health across the life span, this is the largest field of study that takes into account the long-term health effects of state context in childhood. The bulk of studies that examine these types of long-term effects of policies on health examine the health effects of education policies and Medicaid. However, more recently scholars have also examined the long-term health effects of childhood exposure to poverty alleviation policies including the Earned Income Tax Credit (EITC), Supplemental Nutrition Assistance Program (SNAP), and cash transfer programs (Aizer et al. 2016; Barrington and James 2017; Braga, Blavin, and Gangopadhyaya 2020; Hoynes et al. 2015; Insolera, Cohen, and Wolfson 2022; Vartanian and Houser 2012). Yet, this field of study is still small and growing and there are many more policies and health outcomes to be explored.

The Dissertation Chapters

This dissertation consists of three chapters: one scoping review and two empirical. The scoping review summarizes the literature that so far exists on the long-term health effects of childhood exposure to social and economic policies. My goal with this paper is to present the current state of evidence on this topic and highlight the importance of the findings for making policies that aim to improve population health. This is a new field, with 16 of the 18 studies included in the review published in the last nine years.

In line with the studies described earlier (Montez, Zajacova, et al. 2019; Montez, Hayward, et al. 2019; Montez, Zajacova, and Hayward 2017), the first empirical paper examines state-variation in the relationship between childhood poverty and self-rated health. I hypothesize that state context and policy affect individual's social pathways, resulting in state variation in the relationship between childhood SES and adult health. For example, a state that provides more opportunities for children from disadvantaged backgrounds to receive a quality education, a high paying job, access to health care, and other health-promoting experiences will have smaller adult health differences by childhood SES because of the greater opportunities provided to low-SES children.

The second empirical paper examines the long-term effect of welfare reform on adult self-rated health and psychological distress, to understand how an economic policy impacts health across the life span. This paper builds off the work included in the scoping review by examining a policy not yet analyzed in this way. The Personal Responsibility and Work Opportunity Act (PRWORA), commonly referred to as "welfare reform," was passed in 1996. Enough time has passed so that data are available for scholars to now study long-term outcomes. Importantly, welfare reform signaled a shift from a more generous welfare policy (Aid to Families with Dependent Children, AFDC) to a less generous welfare policy (Temporary Assistance for Needy Families, TANF). This dissertation exploits this shift and states' differing timelines in implementing TANF to understand if the childhood exposure to different types of welfare programs shapes long-term health outcomes, and especially health disparities by SES and race/ethnicity. Racism has always existed in the welfare system, but the policy dimensions of TANF suggest that the long-term impacts may be particularly detrimental to people of color as

compared to white people. Thus, this dissertation examines the overall effect of welfare reform on long-term health, as well as the particular implications for communities of color.

My dissertation is guided by the following research questions:

1. What literature exists across disciplines that examines the long-term effects of childhood exposure to social and economic policies on adult health?
2. To what extent is there state-level variation in the relationship between childhood poverty and adult self-rated health?
3. What are the long-term health effects of childhood exposure to welfare reform?
    a. Do the long-term health effects of welfare reform differ by race or ethnicity?

The dissertation chapters proceed in the following order:

1. **Paper One:** The Long-Term Health Effects of Childhood Exposure to Social and Economic Policies: A Scoping Review
2. **Paper Two:** Geographical Variation in the Long Arm of Childhood
3. **Paper Three:** The Long-Term Health Effects of Welfare Reform

References

Aizer, Anna, Shari Eli, Joseph Ferrie, and Adriana Lleras-Muney. 2016. "The Long-Run Impact of Cash Transfers to Poor Families." *The American Economic Review* 106(4):935–71. doi: 10.1257/aer.20140529.

Almond, Douglas, and Janet Currie. 2011. "Killing Me Softly: The Fetal Origins Hypothesis." *Journal of Economic Perspectives* 25(3):153–72. doi: 10.1257/jep.25.3.153.

Alwin, Duane F. 2012. "Integrating Life Course Concepts." *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences* 67B(2):206-220. doi: 10.1093/geronb/gbr146

Angelini, Viola, Daniel D. H. Howdon, and Jochen O. Mierau. 2019. "Childhood Socioeconomic Status and Late-Adulthood Mental Health: Results From the Survey on Health, Ageing and Retirement in Europe." *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences* 74(1):95–104. doi: 10.1093/geronb/gby028.

Bailey, Zinzi D., Nancy Krieger, Madina Agénor, Jasmine Graves, Natalia Linos, and Mary T. Bassett. 2017. "Structural Racism and Health Inequities in the USA: Evidence and Interventions." *The Lancet* 389(10077):1453–63. doi: 10.1016/S0140-6736(17)30569-X.

Barker, D. J. 1990. "The Fetal and Infant Origins of Adult Disease." *BMJ : British Medical Journal* 301(6761):1111.

Barker, D. J. 1995. "Fetal Origins of Coronary Heart Disease." *BMJ : British Medical Journal* 311(6998):171–74.

Barrington, Debbie S., and Sherman A. James. 2017. "Receipt of Public Assistance during Childhood and Hypertension Risk in Adulthood." *Annals of Epidemiology* 27(2):108-114.e2. doi: 10.1016/j.annepidem.2016.11.012.

Ben-Shlomo, Yoav, and Diana Kuh. 2002. "A Life Course Approach to Chronic Disease Epidemiology: Conceptual Models, Empirical Challenges and Interdisciplinary Perspectives." *International Journal of Epidemiology* 31(2):285–93. doi: 10.1093/ije/31.2.285.

Benson, Craig. 2023. "Child Poverty Rate Still Higher Than For Older Populations But Declining." *Census.Gov*. Retrieved January 2, 2024 (https://www.census.gov/library/stories/2023/12/poverty-rate-varies-by-age-groups.html).

Blackwell, Debra L., Mark D. Hayward, and Eileen M. Crimmins. 2001. "Does Childhood Health Affect Chronic Morbidity in Later Life?" *Social Science & Medicine* 52(8):1269–84. doi: 10.1016/S0277-9536(00)00230-6.

Brady, David, Ryan M. Finnigan, and Sabine Hübgen. 2017. "Rethinking the Risks of Poverty: A Framework for Analyzing Prevalences and Penalties." *American Journal of Sociology* 123(3):740–86. doi: 10.1086/693678.

Braga, B., F. Blavin, and A. Gangopadhyaya. 2020. “The Long-Term Effects of Childhood Exposure to the Earned Income Tax Credit on Health Outcomes.” *Journal of Public Economics* 190. doi: 10.1016/j.jpubeco.2020.104249.

Burns, Kalee, Liana Fox, and Danielle Wilson. 2022. “Expansions to Child Tax Credit Contributed to 46% Decline in Child Poverty Since 2020.” *Census.Gov*. Retrieved January 4, 2024 (https://www.census.gov/library/stories/2022/09/record-drop-in-child-poverty.html).

Chen, Edith, Sheldon Cohen, and Gregory E. Miller. 2010. “How Low Socioeconomic Status Affects 2-Year Hormonal Trajectories in Children.” *Psychological Science* 21(1):31–37. doi: 10.1177/0956797609355566.

Cohen, Sheldon, Denise Janicki-Deverts, Edith Chen, and Karen A. Matthews. 2010. “Childhood Socioeconomic Status and Adult Health.” *Annals of the New York Academy of Sciences* 1186:37–55. doi: 10.1111/j.1749-6632.2009.05334.x.

Conger, Rand D., Lora Ebert Wallace, Yumei Sun, Ronald L. Simons, Vonnie C. McLoyd, and Gene H. Brody. 2002. “Economic Pressure in African American Families: A Replication and Extension of the Family Stress Model.” *Developmental Psychology* 38(2):179–93.

Dannefer, Dale. 2003. “Cumulative Advantage/Disadvantage and the Life Course: Cross-Fertilizing Age and Social Science Theory.” *The Journals of Gerontology: Series B* 58(6):S327–37. doi: 10.1093/geronb/58.6.S327.

Dannefer, Dale, Jessica Kelley-Moore, and Wenxuan Huang. 2016. “Opening the Social: Sociological Imagination in Life Course Studies.” Pp. 87–110 in *Handbook of the Life Course: Volume II*, *Handbooks of Sociology and Social Research*, edited by M. J. Shanahan, J. T. Mortimer, and M. Kirkpatrick Johnson. Cham: Springer International Publishing.

Elder, Glen H. 1998. *Children of the Great Depression, 25th Anniversary Edition*. 25th Anniversary, Updated edition. Boulder, Colo: Routledge.

Elder, Glen H., Monica Kirkpatrick Johnson, and Robert Crosnoe. 2003. “The Emergence and Development of Life Course Theory.” Pp. 3–19 in *Handbook of the Life Course*, *Handbooks of Sociology and Social Research*, edited by J. T. Mortimer and M. J. Shanahan. Boston, MA: Springer US.

Ferraro, Kenneth F. 2016. “Life Course Lens on Aging and Health.” Pp. 389–406 in *Handbook of the Life Course: Volume II*, *Handbooks of Sociology and Social Research*, edited by M. J. Shanahan, J. T. Mortimer, and M. Kirkpatrick Johnson. Cham: Springer International Publishing.

Hamad, Rita, Daniel F. Collin, Rebecca J. Baer, and Laura L. Jelliffe-Pawlowski. 2019. “Association of Revised WIC Food Package With Perinatal and Birth Outcomes: A Quasi-Experimental Study.” *JAMA Pediatrics* 173(9):845–52. doi: 10.1001/jamapediatrics.2019.1706.

Hamad, Rita, and David H. Rehkopf. 2015. “Poverty, Pregnancy, and Birth Outcomes: A Study of the Earned Income Tax Credit.” *Paediatric and Perinatal Epidemiology* 29(5):444–52. doi: 10.1111/ppe.12211.

Hayward, Mark D., and Bridget K. Gorman. 2004. “The Long Arm of Childhood: The Influence of Early-Life Social Conditions on Men’s Mortality.” *Demography* 41(1):87–107. doi: 10.1353/dem.2004.0005.

Herd, Pamela. 2016. “The Influence of Social Welfare Policies on Health Disparities Across the Life Course.” Pp. 661–75 in *Handbook of the Life Course: Volume II*, *Handbooks of Sociology and Social Research*, edited by M. J. Shanahan, J. T. Mortimer, and M. K. Johnson. Springer International Publishing.

Homan, Patricia. 2017. “Political Gender Inequality and Infant Mortality in the United States, 1990-2012.” *Social Science & Medicine (1982)* 182:127–35. doi: 10.1016/j.socscimed.2017.04.024.

Homan, Patricia. 2019. “Structural Sexism and Health in the United States: A New Perspective on Health Inequality and the Gender System.” *American Sociological Review* 84(3):486–516. doi: 10.1177/0003122419848723.

Hoynes, H., DW Schanzenbach, and D. Almond. 2016. “Long-Run Impacts of Childhood Access to the Safety Net.” *AMERICAN ECONOMIC REVIEW* 106(4):903–34. doi: 10.1257/aer.20130375.

Hoynes, Hilary, Doug Miller, and David Simon. 2015. “Income, the Earned Income Tax Credit, and Infant Health.” *American Economic Journal: Economic Policy* 7(1):172–211. doi: 10.1257/pol.20120179.

Insolera, Noura, Alicia Cohen, and Julia A. Wolfson. 2022. “SNAP and WIC Participation During Childhood and Food Security in Adulthood, 1984-2019.” *American Journal of Public Health* 112(10):1498–1506. doi: 10.2105/AJPH.2022.306967.

Komro, Kelli, Scott Burris, and Alexander Wagenaar. 2014. “Social Determinants of Child Health: Concepts and Measures for Future Research.” *Health Behavior & Policy Review* 1:432–45. doi: 10.14485/HBPR.1.6.1.

Kuh, Diana, Yoav Ben-Shlomo, John Lynch, Johan Hallqvist, and Chris Power. “Life Course Epidemiology.” *Journal of Epidemiology and Community Health* 57(10):778–83. doi: 10.1136/jech.57.10.778.

Lareau, Annette. 2011. *Unequal Childhoods: Class, Race, and Family Life, With an Update a Decade Later*. 2nd ed.

Link, Bruce G., and Jo Phelan. 1995. “Social Conditions As Fundamental Causes of Disease.” *Journal of Health and Social Behavior* 80–94. doi: 10.2307/2626958.

Luo, Ye, and Linda J. Waite. 2005. "The Impact of Childhood and Adult SES on Physical, Mental, and Cognitive Well-Being in Later Life." *The Journals of Gerontology: Series B* 60(2):S93–101. doi: 10.1093/geronb/60.2.S93.

Lupien, Sonia J., Bruce S. McEwen, Megan R. Gunnar, and Christine Heim. 2009. "Effects of Stress throughout the Lifespan on the Brain, Behaviour and Cognition." *Nature Reviews Neuroscience* 10(6):434–45. doi: 10.1038/nrn2639.

Markowitz, Sara, Kelli A. Komro, Melvin D. Livingston, Otto Lenhart, and Alexander C. Wagenaar. 2017. "Effects of State-Level Earned Income Tax Credit Laws in the U.S. on Maternal Health Behaviors and Infant Health Outcomes." *Social Science & Medicine* 194:67–75. doi: 10.1016/j.socscimed.2017.10.016.

Masarik, April S., and Rand D. Conger. 2017. "Stress and Child Development: A Review of the Family Stress Model." *Current Opinion in Psychology* 13:85–90. doi: 10.1016/j.copsyc.2016.05.008.

Matthews, Dylan. 2021. "The Big Drop in American Poverty during the Pandemic, Explained." *Vox*. Retrieved January 5, 2024 (https://www.vox.com/22600143/poverty-us-covid-19-pandemic-stimulus-checks).

Montez, Jennifer Karas, and Jacob M. Grumbach. 2023. "US State Policy Contexts and Population Health." *The Milbank Quarterly* 101(S1):196–223. doi: 10.1111/1468-0009.12617.

Montez, Jennifer Karas, and Mark D. Hayward. 2014. "Cumulative Childhood Adversity, Educational Attainment, and Active Life Expectancy Among U.S. Adults." *Demography* 51(2):413–35. doi: 10.1007/s13524-013-0261-x.

Montez, Jennifer Karas, Mark D. Hayward, and Anna Zajacova. 2019. "Educational Disparities in Adult Health: U.S. States as Institutional Actors on the Association." *Socius* 5:2378023119835345. doi: 10.1177/2378023119835345.

Montez, Jennifer Karas, Anna Zajacova, and Mark D. Hayward. 2017. "Disparities in Disability by Educational Attainment Across US States." *American Journal of Public Health* 107(7):1101–8. doi: 10.2105/AJPH.2017.303768.

Montez, Jennifer Karas, Anna Zajacova, Mark D. Hayward, Steven H. Woolf, Derek Chapman, and Jason Beckfield. 2019. "Educational Disparities in Adult Mortality Across U.S. States: How Do They Differ, and Have They Changed Since the Mid-1980s?" *Demography*. doi: 10.1007/s13524-018-0750-z.

NCHS. 2022. "Life Expectancy at Birth by State."

OECD. 2023. "Poverty Rate (Indicator)." *Organization for Economic Cooperation and Development*. Retrieved October 19, 2021 (http://data.oecd.org/inequality/poverty-rate.htm).

Parolin, Zachary. 2023. “How the U.S. Can Return to Its Record-Low Child Poverty Rates.” *Newsweek*. Retrieved January 5, 2024 (https://www.newsweek.com/how-us-can-return-its-record-low-child-poverty-rates-opinion-1828996).

Pudrovska, Tetyana, and Andriy Anishkin. 2013. “Early-Life Socioeconomic Status and Physical Activity in Later Life: Evidence from Structural Equation Models.” *Journal of Aging and Health* 25(3):383–404. doi: 10.1177/0898264312468601.

Shrider, Emily A., and John Creamer. 2023. *Poverty in the United States: 2022*. P60-280. Washington, D.C.: Census Bureau.

Singh, Gopal K., and Mohammad Siahpush. 2006. “Widening Socioeconomic Inequalities in US Life Expectancy, 1980–2000.” *International Journal of Epidemiology* 35(4):969–79. doi: 10.1093/ije/dyl083.

Spencer, Rachael A., Melvin D. Livingston, Briana Woods-Jaeger, Shelby T. Rentmeester, Nolan Sroczynski, and Kelli A. Komro. 2020. “The Impact of Temporary Assistance for Needy Families, Minimum Wage, and Earned Income Tax Credit on Women’s Well-Being and Intimate Partner Violence Victimization.” *Social Science & Medicine (1982)* 266:113355. doi: 10.1016/j.socscimed.2020.113355.

Trisi, Danilo. 2023. “Government’s Pandemic Response Turned a Would-Be Poverty Surge Into a Record Poverty Decline.” *Center on Budget and Policy Priorities*. Retrieved January 5, 2024 (https://www.cbpp.org/research/poverty-and-inequality/governments-pandemic-response-turned-a-would-be-poverty-surge-into).

Vartanian, Thomas P., and Linda Houser. 2012. “The Effects of Childhood SNAP Use and Neighborhood Conditions on Adult Body Mass Index.” *Demography* 49(3):1127–54. doi: 10.1007/s13524-012-0115-y.

Votruba-Drzal, Elizabeth. 2006. “Economic Disparities in Middle Childhood Development: Does Income Matter?” *Developmental Psychology* 42(6):1154–67. doi: 10.1037/0012-1649.42.6.1154.

Chapter 1: The Long-Term Health Effects of Childhood Exposure to Social and Economic Policies: A Scoping Review

Abstract

Purpose: This review identifies the existing literature on the long-term effects of childhood exposure to social and economic policies on adult health. It is the first scoping review on this topic and summarizes the findings from this new body of literature, the methods employed, and indicates areas for future research.

Methods: The review process followed the Joanna Briggs Institute scoping review protocol and included a search in three electronic databases (Web of Science, Pub Med, and SCOPUS). The main inclusion criteria were a focus on the effects of policy exposures during childhood on health in adulthood.

Results: A total of 3,471 articles were collected from the databases, and 18 were identified as meeting the eligibility criteria. The most commonly studied policies were safety-net policies (N=6), followed by education policies (N=5), civil rights policies (N=3), government investments (N=3), and child labor laws (N=1). The health outcomes varied and included chronic conditions, mental health, mortality, and self-rated health. The studies also overwhelmingly employed causal inference techniques (N=13), including difference-in-differences study designs and instrumental variable analysis.

Conclusion: Most studies found long-term positive effects of policies that provided extra resources to historically under-resourced populations, or policies that aimed to increase equality of opportunity. However, there were some null and mixed findings, especially when examining the long-term health effects of education reform. More literature is needed on this important topic, and now is the time to capitalize on longer follow-up periods in currently available data.

Introduction

Research on the immediate health impact of social and economic policies has increased dramatically over the last several years, but the study of the long-term impacts of these policies comprises a smaller body of literature. The social determinants of health field has revealed the important impacts of social conditions on health, including income, education, neighborhood environments, and discrimination. However, political and structural frameworks have blossomed as approaches to understanding the causes of the causes, or in other words, the factors that cause inequality in these social conditions in the first place (Bailey et al., 2017; Homan, 2019; Kemp & Karas Montez, 2020; Torche & Rauf, 2021). Another reason for understanding social determinants and social policies is due to an international perspective showing that in comparison to peer countries, the U.S. spends more on health care, less on social services, and has worse health outcomes, suggesting that social services are important contributors to health (Beckfield & Bambra, 2016).

A proliferation of studies has shown significant short-term health effects of social and economic policies (e.g., Cheng, 2007; Hamad & Rehkopf, 2015; Markowitz et al., 2017; Shafer et al., 2022). The greater number of studies on short-term compared to long-term effects is likely due to greater data availability as well as a more straight-forward study design due to fewer opportunities for confounding given the shorter follow-up period. This was especially true during the first two years of the COVID-19 pandemic when numerous policies were enacted to soften the blow of the pandemic on social, economic, and health conditions. Researchers and policymakers responded relatively quickly to the pandemic by building data collection infrastructures and pushing through policy responses to the numerous crises. Though even before the COVID-19 pandemic, many studies explored the effect of policy exposure in childhood on

outcomes in childhood, including economic and health outcomes (Cannon et al., 2017). The next step is to examine the long-term effect of these same policies to understand lasting impacts.

Research on the long-term effects of social and economic policies, especially long-term health effects, is sparse. In this review, "long-term" represents exposures during childhood and outcomes measured in adulthood. Thus, the actual length of follow-up can differ, but exposure measured in childhood and outcomes measured in adult are the focus. This field is growing as more data becomes available through big data projects and natural time progression since the beginning of longitudinal datasets in the United States, such as the Panel Study of Income Dynamics which first started in 1968. Many disciplines, and sociology in particular, theorize about structural and systemic impacts but operationalizing these constructs is a more recent phenomenon.

Scholars are now considering structural and political life course effects to complement the life course literature that has repeatedly found the importance of childhood SES for health in adulthood (Almond & Currie, 2011; Ferraro et al., 2016; Hayward & Gorman, 2004). This is an important development because policies help shape childhood SES and resource availability based on SES, including access to cash and food, quality education, and employment opportunities, especially during economic downturns. It is important to understand how social and economic policies impact exposures in childhood and if the policies are enough to buffer long-term damages.

Scoping reviews are intended to answer broad questions about what is known about a certain concept (Tricco et al., 2018). A scoping review, compared to a systematic review or meta-analysis, is an applicable review when the topic is newer and more limited but has signs of becoming an emerging and important body of literature. Since there are relatively few studies on

this topic of the long-term health effects of childhood exposure to economic and social policies, this scoping review presents the available evidence and identifies future research opportunities. The objective of this scoping review is to encourage more research in this area by providing a summary of the findings across outcomes and exposures, as well as a summary of the methodological approaches. Specifically, this scoping review asks: what literature exists across disciplines that examines the long-term health effects of childhood exposure to social and economic policies in high-income countries? The review protocol was designed in accordance with the JBI Manual for Evidence Synthesis guidelines (Peters et al., 2020) and published before the beginning of the search (Dore, 2022).

Study Data and Methods

Search Strategy

A research assistant and I conducted the initial search and coding of studies based on the study titles and abstracts. I first searched for articles using keywords relevant to the research question on three databases: PubMed, Scopus, and Thomson Reuters ISI Web of Knowledge. The keywords included phrases that captured four important components of the literature sought: the long-term aspect of the policy effects, health outcomes, policies or laws, and the social and economic features of the policies and laws. Many of these search terms were pulled from articles previously identified as relevant to the scoping review. In addition, the types of policies included in the search were drawn from sources that had identified social and economic policies relevant to health (Bradley et al., 2016; Komro et al., 2014; Schoeni et al., 2010). As an example, the search terms for Web of Science appeared as:

((TS="long term" OR TS="long run" OR TS="life course" OR TS=longitudinal OR TS=cohort* OR TS=lasting NOT TS="long-term care") AND (TS=health OR TS=mortality OR TS=death OR TS=illness) AND (TS=polic* OR TS=legislation OR TS=law* OR TS=investment* OR TS=program* OR TS=federal) AND (TS="cash assistance" OR TS="cash transfer*" OR

TS="social welfare" OR TS="income support" OR TS="public assistance" OR TS=schooling OR TS="compulsory education" OR TS="child care" OR TS="civil rights" OR TS="safety net" OR TS="social insurance" OR TS=housing OR TS="work relief"))

The search was limited to articles published between 1/1/2005 and 12/31/2022. An earlier search I had conducted found no articles published before 2005, thus this was a reasonable cut off point. The final search was conducted in January 2023 and the review of articles was completed in November 2023. In addition to the search terms, other inclusion criteria were articles that examined policies in only OECD countries, articles that were peer-reviewed and published (i.e., not working papers), articles in English, and articles that explored policy exposure in childhood and health outcomes measured in adulthood.

Figure 1 provides a flow chart of the search process. The three search engines produced a total of 6,533 articles based on the search terms above. I imported the citations into a citation management software and used the Duplicate Detection feature to identify duplicates based on title and author. After duplicates were removed, there was a total of 3,471 articles. The research assistant and I reviewed titles and abstracts and kept articles based on the inclusion/exclusion criteria. We first reviewed the same 100 articles to ensure we made the same choices regarding coding of the articles. When there was a discrepancy, we discussed our reasoning and came to a consensus. Then we divided the remaining articles in half, and each reviewed our assigned titles and abstracts.

Throughout this process, we held weekly meetings to discuss any articles we were unsure about keeping. If the title and abstract did not have enough information to make a decision on inclusion, such as missing the age of policy exposure or age of outcome, we scanned the methods sections at this stage. Based on titles and abstracts, and a more detailed scan of the methods section when needed, we then decided on 47 articles for a full review. Throughout the process,

two additional exclusion criteria were added: no review articles (keep only articles that had original data analysis) and no articles on the effects of policies that increased the years of mandatory schooling. Many articles on this type of school reform would be relevant to this search, but there was a recent review of these articles, and therefore, we did not duplicate this work (see Hamad et al., 2018). However, we kept articles that examined other types of school reforms, which mostly included comprehensive school reform, which is discussed more below. After narrowing the papers down to 47, I then added one paper that was cited in an included article but had not been picked up in the search despite meeting the inclusion criteria. I completed the final review of all articles, leading to a sample of 18 papers included in this review.

[Figure 1 about here]

Data Charting

I extracted relevant data from the final 18 papers based on guidance from the JBI template data extraction instrument (Peters et al., 2020). The captured elements included: authors, year of publication, country studied, study population, methodology, policy category, health outcomes, and key findings (Table 1). Some studies explored other outcomes in addition to health, such as socioeconomic outcomes. Only findings relevant to the scoping review research question were included in the summary, and for studies that reported multiple outcomes or multiple groups, the outcomes either most relevant to the review and/or the finding most highlighted by the study authors (the findings listed in the manuscript's abstract, for example) were included. The results are summarized below on themes most helpful for investigators interested in conducting similar research, including providing a general summary of results, as well as more specifics about how studies operationalized exposure variables and the types of

study designs used. This was an iterative process as I continued to read the articles and uncovered where the articles differed and where they shared similarities, and which aspects were most important to report on. Thus, each article was read multiple times, revisited, and double-checked to ensure the accuracy of the findings included in Table 1.

[Table 1 about here]

Results

Eighteen studies met the criteria for inclusion in the scoping review (Table 1). Studies differed in the policies and health outcomes explored, the geographical context, length of follow-up, time period, and methodological approach. Despite these variations, the studies found overall positive effects of equity-oriented policies, even several decades after the exposure.

Policies and How They Are Operationalized

The studies explored civil rights (N=3), education reform (N=5), government investments (N=3), child labor policies (N=1), and safety-net policies (N=6). All papers that assessed civil rights policies' effects on health examined how racial segregation impacted the health effect of education because schools for black children were lower quality than schools for white children during legal segregation. Liu et al. (2015) used racial differences in school term lengths during legal racial segregation as an indicator for school quality to estimate gender and race stratified models. Kim et al. (2022) examined the health effects of school segregation more holistically (i.e., not only its effects on the length of school year but also segregation's effects on stress, socioeconomic status, and health behaviors) by using the dates of local-court-ordered desegregation to determine a measure of exposure to school segregation. Similarly, Walsemann et al. (2022) compared race-stratified cohorts before and after the Supreme Court *Brown v. Board of Education* decision and the enactment of the Civil Rights Act in 1964.

All five of the studies on education policy assessed the impact of comprehensive education reform in Europe. Comprehensive education reform is a change from tracking (i.e., placing them in different classes or schools based on achievement or ability) to not tracking students and allowing students with mixed abilities to attend school together. These reforms were intended to promote access to equal education. The exposure in these studies were policy changes in the mid-20th century that occurred in certain European countries. Four of these studies examine the policy change in the United Kingdom (Basu et al., 2018; Butler et al., 2020; Jones et al., 2011; Popham & Iannelli, 2021), while one study examines comprehensive policy changes in 21 European countries (Delaruelle et al., 2019). The studies focused on the UK used data that included types of schooling an individual attended, either explicitly or inferred from provided test scores since students with higher test scores attended more selective schools during tracking. The study on multiple different countries used country-level data on tracking age changes and individual level data that included birth cohort to estimate cohorts affected by tracking compared to those not affected.

The three studies on the impact of targeted government investment policies studied the health impacts of important events in US history, and the New Deal policies aimed at buffering the harm. Arthi (2018) studied the long-term health effects of the Dust Bowl and subsequent New Deal public spending in 1930s U.S. First, the author found negative health and economic effects of Dust Bowl exposure, and then included an interaction between state-level per capita public spending during the period with a measure of exposure to the Dust Bowl. The per capita public expenditures included Works Progress Administration, Federal Emergency Relief Administration, and Public Assistance grants, loans, and New Deal spending on the construction of roads and buildings. Modrek et al. (2022) examined the role of New Deal Emergency

Employment work relief programs in buffering the negative long-term impact of the Great Depression. The authors measured exposure to this New Deal relief by calculating the proportion of the labor force in enumeration districts based on responses to 1940 census questions asking about work, including a specific question about public Emergency Work. Similarly, Noghanibehambari and Engelman (2022) also explored the health effects of New Deal policy during the Great Depression using a dataset that captured disaggregated spending for various New Deal welfare programs for 115 major cities. The policy exposure was the amount of relief in an area per capita to compare outcomes of individuals exposed to more and less relief.

Six studies measured the long-term health effects of poverty-alleviation programs that targeted low-income families in the U.S. Aizer et al. (2016) analyzed the long-run effects of the first government-sponsored welfare program in the U.S., the Mothers' Pension program. They measured the mother's exposure to the program using administrative data on applicants to the program, and whether the application was rejected (placebo) or accepted (treatment). Barrington and James (2017) examined the long-run health effects of the receipt of anti-poverty federal assistance during childhood for a cohort of African American individuals. Their measure for public assistance comes from a survey question administered in 2001 that asks retrospectively whether the respondent received public assistance during their childhood. Braga and colleagues (2020) analyzed the most recently implemented policy across included studies, the Earned Income Tax Credit (EITC). Their measure of EITC exposure captured the maximum potential federal and state credit a child's family was eligible to receive based on state of residence, family size, and tax year.

The other three studies focusing on safety-net policies analyzed the effect of food assistance programs. Hoynes et al. (2016) study the long-term health effects of the Food Stamp

Program, the precursor to today's Supplemental Nutrition Assistance Program (SNAP), which provided vouchers to low-income families to be used for food. They exploited the county-level rollout of the program from 1961–1975 and created a continuous exposure variable based on when a person was born, the county in which they grew up, and when the program was implemented in their county. Vartanian and Houser (2012) and Insolera et al. (2022) used the same dataset, Panel Study of Income Dynamics (PSID), a prospective longitudinal survey that asks whether participants received assistance from a variety of governmental programs, including while the current adult respondents were children. Both studies included measures of SNAP receipt, Vartanian and Houser (2021) also included a measure of TANF receipt and Insolera et al. (2022) also included a measure of receipt from the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC).

Finally, one study examined the impact of labor policies on the age of work on long-term health in Spain. Bellés-Obrero et al. (2022) studied the health impact of raising the minimum working age from 14 to 16 in Spain in the 1980s. They identified treated and control groups based on when they were born and when the reform went into effect.

Timing

The studies were all published between 2011 and 2022, and all had long follow-up periods due to the nature of the inclusion criteria. All papers clearly stated that exposure to the policy or program was in childhood or in utero, and the health outcome was measured in adulthood. Five studies examined specific years within childhood to identify particularly sensitive periods. For example, Hoynes et al. (2016) focused on exposure in utero and early childhood (years 0-5), Vartanian and Houser (2012) examined ages 0–4, 5–8, 9–13, and 14–18, and Braga et al. (2020) grouped exposure from birth to age 5, 6–12, and 13–18. The education

studies were inherently testing exposure during schooling years, most commonly 11 years and older since this was when students in the UK took the exam to determine which type of schooling they would receive. Otherwise, most studies considered childhood to be from birth to 18 years old.

A few studies examined outcomes at different ages of adulthood, specifically to understand whether the observed health effects were persistent. For example, Braga et al. (2020) focused their main analysis on outcomes at ages 22–27 but also examined outcomes through 51 years old. One of Basu et al.'s (2018) main research questions were about the effects over time, measured at ages 23, 33, and 42.

The year of exposure varied depending on the policy, with most exposures occurring in the mid-20th century. Aizer et al. (2016) examined the earliest policy, the Mother's Pension program which existed from 1911 to 1935. The education studies focused on changes to comprehensive schooling in the 1960s in the UK and beginning in the 1930s across other European countries, the New Deal programs from 1929 to 1941, Civil Rights legislation in 1965 and subsequent court rulings through 1991, the Food Stamp Program from 1961 to 1975, EITC began in 1975, and the labor laws in Spain were implemented in 1980. The type of exposure varied based on the study design, such as whether the exposure variable was an indicator of a policy "turning on" or a measure of the length of exposure to a policy. For difference-in-differences designs, the policy date, year of birth, and place of residence were important to determine these exposures. Other studies used exposures based on survey responses about whether they had received the benefits, and thus the policy and birth date details were less important to the study design.

Health Outcomes and Data Sources

The health outcomes studied varied greatly. They included health behaviors (smoking, drinking alcohol, diet), mental health (malaise, emotional problems, depression), chronic risk factors or conditions (long-standing illness, disability and functional limitations, blood pressure and hypertension, obesity, cognition, body mass index, metabolic syndrome), mortality (premature, infant, general), food security, and self-rated health and wellbeing. Infant mortality is included as a measure of the adult mothers' health, due to the impact of maternal conditions on infant health.

These individual level outcomes came from several different sources, including survey and administrative datasets. Most datasets were longitudinal survey data: PSID, which was the most commonly used dataset (i.e., Braga et al., 2020; Hoynes et al., 2016; Insolera et al., 2022; Kim et al., 2022; Vartanian & Houser, 2012), and the second most common, The National Child Development Study (Basu et al., 2018; Jones et al., 2011; Popham & Iannelli, 2021). The largest samples came from administrative resources including mortality data from the Social Security Administration (Aizer et al., 2016; Noghanibehambari & Engelman, 2022), health data from the Census (Arthi, 2018), and self-rated health from the European Social Survey (Delaruelle et al., 2019). Two datasets were state-specific: the Wisconsin Longitudinal Study (Modrek et al., 2022) and the Pitt County Study in North Carolina (Barrington & James, 2017).

Study Designs and Populations

Given that this group of studies was assessing the impact of policies on health, most took advantage of a natural experiment study design and implemented causal inference techniques (N=13). Of those using causal inference methods, eight studies used a difference-in-differences (and/or triple difference) study design and included two-way fixed effects, two used a matching or weighting approach, two used instrumental variables, and one implemented a regression

discontinuity design. The remaining studies, generally the studies that used survey responses about whether the individual had been exposed to the policy or program, described the relationship between the exposure and outcomes.

The populations studied varied and depended on data availability and the research question. Most studies took place in either the United States (N=12) or the United Kingdom (N=4). Most studies did not stratify their samples by demographics, but for those that did, the most common way to stratify was by gender (N=7) and race (N=3). Based on the research question or data availability, some states limited the dataset to only one race (N=3) or one gender (N=1).

Broad Conclusions

Most studies found positive effects of policies as expected since these policies for the most part were intended to buffer financial harm and/or increase equality. Although some studies explored a wide range of outcomes, including economic outcomes, this scoping review focused only on health outcomes. Studies that examined civil rights policies found that decreased exposure to racial school segregation was associated with better health and health equity. Walsemann et al. (2022) found that racial school desegregation led to decreased black-white racial disparities in the association between education and cognitive outcomes, Kim et al. (2022) found that less exposure to school racial segregation led to increased probability of good health and a decrease in the probability of binge drinking for black adults, and Liu et al. (2015) found that that shorter schooling length under Jim Crow laws led to higher blood pressure for black women (but not white men or women or black men).

Exposure to New Deal spending was also associated with mostly positive health outcomes. These outcomes included lower risk of disability (Arthi, 2018) and increased

longevity (Noghanibehambari & Engelman, 2022), and for women, lower smoking rates and fewer drinking problems (Modrek et al., 2022). However, New Deal spending was associated with worse health behavior outcomes for men (Modrek et al., 2022).

Studies on safety-net programs had overwhelmingly positive effects. Aizer et al. (2016) found that participation in the Mother's Pension program as a child led to increased longevity, Barrington & James (2017) found that receiving public assistance in childhood was associated with reduced likelihood of hypertension for African American women (no association for African American men), and Braga et al. (2020) found that EITC benefits in childhood led to higher probability of positive self-rated health and a lower likelihood of being obese. Hoynes et al. (2016) found that the introduction of the Food Stamp Program led to improved metabolic outcomes in adulthood for children of likely participants and Insolera et al. (2022) found a decrease in food insecurity for SNAP and WIC participants. Vartanian & Houser (2012) is the one study among the safety-net studies that presented mixed findings. They found that the effect of SNAP participation on BMI depended on neighborhood advantage level. SNAP participation increased predicted adult BMI for individuals who grew up in more advantaged neighborhoods compared to individuals who participated in SNAP and grew up in less advantaged neighborhoods.

The education studies were the most likely to have null or mixed findings, which may be due to the different health outcomes examined and whether and how samples were stratified. Going from selective tracking to comprehensive schooling (not tracked by ability or test scores), authors generally expected improved health outcomes because of equalizing school quality among mixed-ability students. However, they often saw null or mixed results. Butler et al. (2020) found null results for whether selective schooling affected long-term health, including measures

of self-reported health and mental health, as well as chronic disease burden and premature mortality. Similarly, Popham & Iannelli (2021) did not find reduced health disparities for cohorts exposed to comprehensive schooling compared to cohorts exposed to selective schooling for any of their measures of physical and mental health, health behaviors, or life satisfaction.

Two other education studies stratified their samples, providing clues for why these studies found little evidence to support the theory in their general sample. For example, Basu et al. (2018) found little evidence that these educational reforms impact health in a general sample but did find heterogeneous effects based on factors including a score of social adjustment at age 11 (which includes measures of hostility, anxiety, and depression which the authors refer to as "non-cognitive skills"). Similarly, in a different sample, Delaruelle et al. (2019) found that increasing the age of exposure to tracking was associated with better self-rated health for individuals who had higher levels of education, but worse self-rated health for individuals with lower levels of education. Jones et al. (2011) found that attending a more selective school compared to a comprehensive school was associated with better health behaviors, though this was true for both types of selective schools: grammar schools which were attended by children with higher exam scores and secondary modern schools which were attended by children with lower exam scores. Belles-Obrero et al. (2022) did not explicitly examine education reform, but the exposure in this study was inherently tied to education due to the age group. They found that increasing the age of child labor, which also increased exposure to schooling, led to reduced mortality for men and women aged 14–29, but increased mortality for women aged 30–45 and worsened health behaviors (including smoking and drinking alcohol) for women in general.

Discussion

This scoping review identified 18 articles that assessed the effect of a social or economic policy exposure in childhood on health in adulthood. The policies, health outcomes, and study designs varied, but the research generally showed a positive effect of increased generosity and greater access to financial and educational resources on health in the long-term. The goal of the scoping review was to gather the available evidence and summarize the findings and methodological approaches to provide researchers with a baseline of information to encourage more research in this area.

Many sources have identified the importance of this type of research as well as the challenges researchers face (Herd, 2016; Schwartz & Glymour, 2023). Despite the challenges, the research captured in this scoping review provides examples of rigorous, policy-relevant work that should be emulated. While these studies cover a wide range of policies, there are still many more policies and other questions to explore. These studies focused on safety-net programs, educational reform, civil rights, government investment, and child labor reform and were heavily focused on the US and the UK. This leaves several opportunities to build on this research.

Areas for Future Research

The review identified several articles documenting the long-run health effects of social and economic policies. In doing so, the review identified gaps in this literature worth pursuing in the future. This review purposefully did not include work on compulsory schooling because there was a recent review of this literature (Hamad et al., 2018). However, some of the policies that did not appear in the review but have a long enough follow-up period are related to housing policies, immigration, and minimum wage laws, among others. Many studies analyze the causal effects of the Moving to Opportunity experiment in the 1990s on short-term outcomes or long-term economic outcomes (Chetty et al., 2016; Kim et al., 2022; Leventhal & Dupéré, 2011), but

none that I found examined the long-term health effects of exposure during childhood. Short-term effects of immigration policies have shown the harm of restricting immigration (Hatzenbuehler et al., 2017; Samari et al., 2021; Torche & Sirois, 2019), suggesting long-term effects of the many changes made to immigration policies in the second half of the 20th century are worth exploring. Similarly, minimum wage laws that increased generosity were linked to short-term health outcomes (Spencer & Komro, 2017). Estimating the long-term health effects of exposure in childhood, either through the individual's own exposure when working as a teenager or through their parents' wages, is the next step.

Other opportunities include building on the current methods and using new datasets. The studies included in this review represent innovative ways to examine a complicated question that involves measuring outcomes years and often decades after exposure. Researchers interested in this type of work can apply similar methods to different questions or take different approaches to the same questions. For example, Braga et al. (2020) operationalized EITC exposure as federal and state maximum amount a family would qualify for, whereas Hoynes et al. (2016) measured exposure to the Food Stamp Program as length of exposure to the program based on their age and where they grew up. To further build this literature, researchers could look at amount of Food Stamp Program benefits as the exposure, and length of exposure to the EITC because states varied in their implementation of state-level EITC programs. More studies that explore similar questions with different approaches will provide a greater base of evidence for these important questions.

Importantly, as several of the studies in the review did, researchers should examine heterogeneous effects when possible. Many of these studies found that effects varied by characteristics such as race/ethnicity, gender, and neighborhood, findings that would be hidden if

all individuals were grouped together. Relatedly, one type of analysis can examine the effects of a policy based on whether the policy is implemented or not (which this review focused on). Another approach would be to interact the policy with state context, to understand the heterogeneous effects in that way. For example, McFarland et al. (2023) recently examined how state-level policy liberalism moderated the relationship between life expectancy and income inequality, showing that more generous policy contexts decreased the negative health effects of income inequality. This is likely an important consideration when examining policy exposure in childhood as well as adulthood.

New data will also make this research easier to execute and possibly provide more nuance. All studies in this review used quantitative methodologies, perhaps due to the search criteria. Applying qualitative methods could entail retrospective interviews with adults who participated in the safety-net programs or experienced the education or labor reforms as children. Researchers could ask about these experiences, the individuals' health trajectories and the participants' thoughts on if/how their health was affected by these policies. Finally, new datasets are emerging or have recently emerged that allow for more policy analysis. A recent dataset that documents state-level public spending on children from 1997 through 2016 (Isaacs et al., 2020) will be a valuable resource for this type of research, especially as these cohorts age. In the more distant future, datasets that capture policy changes during the COVID-19 pandemic will be crucial to capture long-term effects of the increased governmental response to the cooccurring unemployment and public health crises (*CUSP*, n.d.; Dore et al., 2023; Hamad et al., 2022).

Due to the inclusion and exclusion criteria, this scoping review does not cover many studies that may appear relevant to the review but fail to fit at least one of the criteria. For example, Almond et al. (2006) provided an important look at the long-term health effects of

hospital racial segregation, but it was a working paper and was thus excluded from the review. Also, several studies did not limit exposure to only childhood or to measuring health outcomes only in adulthood. Because of this limitation, the review did not include any of the universal child care papers that would have otherwise fit the criteria (Baker et al., 2019; Haeck et al., 2018), a paper that assessed health outcomes of living in Jim Crow polities (Krieger et al., 2013), or work on Mexico's conditional cash transfer program, Oportunidades (e.g. Fernald et al., 2009). There were also several papers from non-OECD countries which were not included in the review because of inclusion criteria, as well as studies that do fit the criteria, except were published after the search (e.g. Bailey et al., 2023; Lee et al., 2023; Noghanibehambari & Fletcher, 2023; Noghanibehambari & Noghani, 2023). Although I did not include all of these, the breadth and depth of this research, even if not fitting in the limited scope of this review, bolsters the argument of its importance and researchers' growing focus on this topic.

Limitations

In setting criteria narrow enough to make a review feasible, it is possible relevant studies may have been missed. For example, if a study did not have all the relevant terms in the title or abstract then it would not be included in the review. This was a particular concern with the section regarding policy/law/legislation since the abstract may only include the specific policy name, especially if it is a well-known policy or program. However, it was not feasible to name all programs as search terms, and even if I had tried, it is possible some would still be missed.

Relatedly, this review could not pick up on other social or economic policies that others may find important but did not quite fit the inclusion criteria. For example, one study evaluated a program that fit all criteria, except that the policy was providing actual food to participants in the form of the National School Lunch Program and not cash for food like SNAP (Peterson, 2014). I

decided not to include this paper because the review was not originally conceptualized to include food programs. There is also a chance of human error. Although we took their time reviewing titles and abstracts, it is possible that I or the research assistant misclassified a study in the process. However, I reread all 3,471 original titles after the final 18 articles were selected to triple check that all relevant articles were included. Another limitation is that newer studies that have been published in 2023 and beyond were not included. The review process takes time and there can be a lag, especially when the literature is as fast-growing as the literature covered in this review. However, this review should provide a solid foundation that researchers can continue to build on.

Conclusion

This scoping review summarizes the research conducted through December 2022 on the effects of childhood exposure to social and economic policies on health in adulthood. It identified 18 articles that fit the inclusion/exclusion criteria and covered a range of policies and health outcomes. This is a promising new field of research that analyzes long-term effects of policies, effects that are difficult to estimate given data constraints and difficulty in isolating effects of policies decades later. The goal of the review was to encourage more research in this area by providing information on the literature so far and suggestions for future research.

References

Aizer, A., Eli, S., Ferrie, J., & Lleras-Muney, A. (2016). The Long-Run Impact of Cash Transfers to Poor Families. *The American Economic Review*, *106*(4), 935–971. https://doi.org/10.1257/aer.20140529

Almond, D., Chay, K. Y., & Greenstone, M. (2006). *Civil Rights, the War on Poverty, and Black-White Convergence in Infant Mortality in the Rural South and Mississippi* (SSRN Scholarly Paper ID 961021). Social Science Research Network. https://doi.org/10.2139/ssrn.961021

Almond, D., & Currie, J. (2011). Killing Me Softly: The Fetal Origins Hypothesis. *Journal of Economic Perspectives*, *25*(3), 153–172. https://doi.org/10.1257/jep.25.3.153

Arthi, V. (2018). "The Dust Was Long in Settling": Human Capital and the Lasting Impact of the American Dust Bowl. *JOURNAL OF ECONOMIC HISTORY*, *78*(1), 196–230. https://doi.org/10.1017/S0022050718000074

Bailey, M. J., Hoynes, H., Rossin-Slater, M., & Walker, R. (2023). Is the Social Safety Net a Long-Term Investment? Large-Scale Evidence from the Food Stamps Program. *The Review of Economic Studies*, rdad063. https://doi.org/10.1093/restud/rdad063

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. *The Lancet*, *389*(10077), 1453–1463. https://doi.org/10.1016/S0140-6736(17)30569-X

Baker, M., Gruber, J., & Milligan, K. (2019). The Long-Run Impacts of a Universal Child Care Program. *AMERICAN ECONOMIC JOURNAL-ECONOMIC POLICY*, *11*(3), 1–26. https://doi.org/10.1257/pol.20170603

Barrington, D. S., & James, S. A. (2017). Receipt of public assistance during childhood and hypertension risk in adulthood. *Annals of Epidemiology*, *27*(2), 108-114.e2. https://doi.org/10.1016/j.annepidem.2016.11.012

Basu, A., Jones, A., & Dias, P. (2018). Heterogeneity in the impact of type of schooling on adult health and lifestyle. *JOURNAL OF HEALTH ECONOMICS*, *57*, 1–14. https://doi.org/10.1016/j.jhealeco.2017.10.007

Beckfield, J., & Bambra, C. (2016). Shorter lives in stingier states: Social policy shortcomings help explain the US mortality disadvantage. *Social Science & Medicine (1982)*, *171*, 30–38. https://doi.org/10.1016/j.socscimed.2016.10.017

Belles-Obrero, C., Jimenez-Martin, S., & Castello, J. (2022). Minimum working age and the gender mortality gap. *JOURNAL OF POPULATION ECONOMICS*, *35*(4), 1897–1938. https://doi.org/10.1007/s00148-021-00858-x

Bradley, E. H., Canavan, M., Rogan, E., Talbert-Slagle, K., Ndumele, C., Taylor, L., & Curry, L. A. (2016). Variation In Health Outcomes: The Role Of Spending On Social Services,

Public Health, And Health Care, 2000-09. *Health Affairs*, *35*(5), 760-768C. https://doi.org/10.1377/hlthaff.2015.0814

Braga, B., Blavin, F., & Gangopadhyaya, A. (2020). The long-term effects of childhood exposure to the earned income tax credit on health outcomes. *JOURNAL OF PUBLIC ECONOMICS*, *190*. https://doi.org/10.1016/j.jpubeco.2020.104249

Butler, J., Black, C., Craig, P., Dibben, C., Dundas, R., Hilton Boon, M., Johnston, M., & Popham, F. (2020). The long-term health effects of attending a selective school: A natural experiment. *BMC Medicine*, *18*(1), 77. https://doi.org/10.1186/s12916-020-01536-7

Cannon, J. S., Kilburn, M. R., Karoly, L. A., Mattox, T., Muchow, A. N., & Buenaventura, M. (2017). *Decades of Evidence Demonstrate That Early Childhood Programs Can Benefit Children and Provide Economic Returns*. RAND Corporation. https://www.rand.org/pubs/research_briefs/RB9993.html

Cheng, T. C. (2007). Impact of work requirements on the psychological well-being of TANF recipients. *Health & Social Work*, *32*(1), 41–48. https://doi.org/10.1093/hsw/32.1.41

Chetty, R., Hendren, N., & Katz, L. F. (2016). The Effects of Exposure to Better Neighborhoods on Children: New Evidence from the Moving to Opportunity Experiment. *American Economic Review*, *106*(4), 855–902. https://doi.org/10.1257/aer.20150572

CUSP. (n.d.). Retrieved September 1, 2022, from https://statepolicies.com/

Delaruelle, K., van de Werfhorst, H., & Bracke, P. (2019). Do comprehensive school reforms impact the health of early school leavers? Results of a comparative difference-in-difference design. *Social Science & Medicine (1982)*, *239*, 112542. https://doi.org/10.1016/j.socscimed.2019.112542

Dore, E. C. (2022). *Long-Term Health Effects of Social and Economic Policies: A Scoping Review Protocol*. https://doi.org/10.17605/OSF.IO/WZUFX

Dore, E. C., Shafer, P. R., & Livingston, M. D. (2023). State-level data on TANF policy changes during the COVID-19 pandemic. *BMC Research Notes*, *16*(1), 97. https://doi.org/10.1186/s13104-023-06351-w

Fernald, L. C. H., Gertler, P. J., & Neufeld, L. M. (2009). 10-year effect of Oportunidades, Mexico's conditional cash transfer programme, on child growth, cognition, language, and behaviour: A longitudinal follow-up study. *Lancet (London, England)*, *374*(9706), 1997–2005. https://doi.org/10.1016/S0140-6736(09)61676-7

Ferraro, K. F., Schafer, M. H., & Wilkinson, L. R. (2016). Childhood Disadvantage and Health Problems in Middle and Later Life: Early Imprints on Physical Health? *American Sociological Review*, *81*(1), 107–133. https://doi.org/10.1177/0003122415619617

Haeck, C., Lebihan, L., & Merrigan, P. (2018). Universal Child Care and Long-Term Effects on Child Well-Being: Evidence from Canada. *JOURNAL OF HUMAN CAPITAL*, *12*(1), 38–98. https://doi.org/10.1086/696702

Hamad, R., Elser, H., Tran, D. C., Rehkopf, D. H., & Goodman, S. N. (2018). How and why studies disagree about the effects of education on health: A systematic review and meta-analysis of studies of compulsory schooling laws. *Social Science & Medicine (1982)*, *212*, 168–178. https://doi.org/10.1016/j.socscimed.2018.07.016

Hamad, R., Lyman, K. A., Lin, F., Modrow, M. F., Ozluk, P., Azar, K. M. J., Goodin, A., Isasi, C. R., Kitzman, H. E., Knight, S. J., Marcus, G. M., McMahill-Walraven, C. N., Meissner, P., Nair, V., O'Brien, E. C., Olgin, J. E., Peyser, N. D., Sylwestrzak, G., Williams, N., … Carton, T. (2022). The U.S. COVID-19 County Policy Database: A novel resource to support pandemic-related research. *BMC Public Health*, *22*(1), 1882. https://doi.org/10.1186/s12889-022-14132-6

Hamad, R., & Rehkopf, D. H. (2015). Poverty, Pregnancy, and Birth Outcomes: A Study of the Earned Income Tax Credit. *Paediatric and Perinatal Epidemiology*, *29*(5), 444–452. https://doi.org/10.1111/ppe.12211

Hatzenbuehler, M. L., Prins, S. J., Flake, M., Philbin, M., Frazer, M. S., Hagen, D., & Hirsch, J. (2017). Immigration policies and mental health morbidity among Latinos: A state-level analysis. *Social Science & Medicine (1982)*, *174*, 169–178. https://doi.org/10.1016/j.socscimed.2016.11.040

Hayward, M. D., & Gorman, B. K. (2004). The long arm of childhood: The influence of early-life social conditions on men's mortality. *Demography*, *41*(1), 87–107. https://doi.org/10.1353/dem.2004.0005

Herd, P. (2016). *The Influence of Social Welfare Policies on Health Disparities Across the Life Course* (p. 675). Scopus. https://doi.org/10.1007/978-3-319-20880-0_29

Homan, P. (2019). Structural Sexism and Health in the United States: A New Perspective on Health Inequality and the Gender System. *American Sociological Review*, *84*(3), 486–516. https://doi.org/10.1177/0003122419848723

Hoynes, H., Schanzenbach, D., & Almond, D. (2016). Long-Run Impacts of Childhood Access to the Safety Net. *AMERICAN ECONOMIC REVIEW*, *106*(4), 903–934. https://doi.org/10.1257/aer.20130375

Insolera, N., Cohen, A., & Wolfson, J. A. (2022). SNAP and WIC Participation During Childhood and Food Security in Adulthood, 1984-2019. *American Journal of Public Health*, *112*(10), 1498–1506. https://doi.org/10.2105/AJPH.2022.306967

Isaacs, J., Lauderback, E., & Greenberg, E. (2020). *State-by-State Spending on Kids Dataset* [dataset]. https://datacatalog.urban.org/dataset/state-state-spending-kids-dataset

Jones, A. M., Rice, N., & Rosa Dias, P. (2011). Long-Term Effects of School Quality on Health and Lifestyle: Evidence from Comprehensive Schooling Reforms in England. *Journal of Human Capital*, *5*(3), 342–376. https://doi.org/10.1086/662441

Kemp, B., & Karas Montez, J. (2020). Why does the importance of education for health differ across the United States? *Socius : Sociological Research for a Dynamic World*, *6*. https://doi.org/10.1177/2378023119899545

Kim, H., Schmidt, N., Osypuk, T., Thyden, N., & Rehkopf, D. (2022). Effects of housing vouchers on the long-term exposure to neighbourhood opportunity among low-income families: The moving to opportunity experiment. *HOUSING STUDIES*, *38*(1), 128–151. https://doi.org/10.1080/02673037.2022.2112154

Kim, M. H., Schwartz, G. L., White, J. S., Glymour, M. M., Reardon, S. F., Kershaw, K. N., Gomez, S. L., Collin, D. F., Inamdar, P. P., Wang, G., & Hamad, R. (2022). School racial segregation and long-term cardiovascular health among Black adults in the US: A quasi-experimental study. *PLoS Medicine*, *19*(6), e1004031. https://doi.org/10.1371/journal.pmed.1004031

Komro, K., Burris, S., & Wagenaar, A. (2014). Social Determinants of Child Health: Concepts and Measures for Future Research. *Health Behavior & Policy Review*, *1*, 432–445. https://doi.org/10.14485/HBPR.1.6.1

Krieger, N., Chen, J. T., Coull, B., Waterman, P. D., & Beckfield, J. (2013). The unique impact of abolition of Jim Crow laws on reducing inequities in infant death rates and implications for choice of comparison groups in analyzing societal determinants of health. *American Journal of Public Health*, *103*(12), 2234–2244. https://doi.org/10.2105/AJPH.2013.301350

Lee, M., Harrati, A., Rehkopf, D. H., & Modrek, S. (2023). Associations of local area level new deal employment in childhood with late life cognition: Evidence from the census-linked health and retirement study. *J Epidemiol Community Health*, *77*(2), 81–88. https://doi.org/10.1136/jech-2022-219259

Leventhal, T., & Dupéré, V. (2011). Moving to Opportunity: Does long-term exposure to "low-poverty" neighborhoods make a difference for adolescents? *Social Science & Medicine (1982)*, *73*(5), 737–743. https://doi.org/10.1016/j.socscimed.2011.06.042

Liu, S. Y., Manly, J. J., Capistrant, B. D., & Glymour, M. M. (2015). Historical Differences in School Term Length and Measured Blood Pressure: Contributions to Persistent Racial Disparities among US-Born Adults. *PloS One*, *10*(6), e0129673. https://doi.org/10.1371/journal.pone.0129673

Markowitz, S., Komro, K. A., Livingston, M. D., Lenhart, O., & Wagenaar, A. C. (2017). Effects of state-level Earned Income Tax Credit laws in the U.S. on maternal health behaviors and infant health outcomes. *Social Science & Medicine*, *194*, 67–75. https://doi.org/10.1016/j.socscimed.2017.10.016

McFarland, M. J., Hill, T. D., & Montez, J. K. (2023). Income Inequality and Population Health: Examining the Role of Social Policy. *Journal of Health and Social Behavior*, *64*(1), 2–20. https://doi.org/10.1177/00221465221109202

Modrek, S., Roberts, E., Warren, J. R., & Rehkopf, D. (2022). Long-Term Effects of Local-Area New Deal Work Relief in Childhood on Educational, Economic, and Health Outcomes Over the Life Course: Evidence From the Wisconsin Longitudinal Study. *Demography*, *59*(4), 1489–1516. https://doi.org/10.1215/00703370-10111856

Noghanibehambari, H., & Engelman, M. (2022). Social insurance programs and later-life mortality: Evidence from new deal relief spending. *Journal of Health Economics*, *86*, 102690. https://doi.org/10.1016/j.jhealeco.2022.102690

Noghanibehambari, H., & Fletcher, J. (2023). Childhood exposure to birth registration laws and old-age mortality. *Health Economics*, *32*(3), 735–743. https://doi.org/10.1002/hec.4643

Noghanibehambari, H., & Noghani, F. (2023). Long-run intergenerational health benefits of women empowerment: Evidence from suffrage movements in the US. *Health Economics*, *32*(11), 2583–2631. https://doi.org/10.1002/hec.4744

Peters, M., Godfrey, C., McInerney, P., Munn, Z., Tricco, A., & Khalil, H. (2020). Chapter 11: Scoping Reviews (2020 version). In *JBI Manual for Evidence Synthesis*. JBI. https://jbi-global-wiki.refined.site/space/MANUAL/4687342/Chapter+11%3A+Scoping+reviews

Peterson, C. (2014). Investigating the historic long-term population health impact of the US National School Lunch Program. *Public Health Nutrition*, *17*(12), 2783–2789. https://doi.org/10.1017/S1368980013003200

Popham, F., & Iannelli, C. (2021). Does comprehensive education reduce health inequalities? *SSM - Population Health*, *15*, 100834. https://doi.org/10.1016/j.ssmph.2021.100834

Samari, G., Nagle, A., & Coleman-Minahan, K. (2021). Measuring structural xenophobia: US State immigration policy climates over ten years. *SSM - Population Health*, *16*, 100938. https://doi.org/10.1016/j.ssmph.2021.100938

Schoeni, R. F., House, J. S., Kaplan, G. A., & Pollack, H. A. (Eds.). (2010). *Making Americans Healthier: Social and Economic Policy as Health Policy* (Illustrated edition). Russell Sage Foundation.

Schwartz, G. L., & Glymour, M. M. (2023). Bridging the Divide: Tackling Tensions Between Life-Course Epidemiology and Causal Inference. *Annual Review of Developmental Psychology*, *5*, 14.1-14.20. https://doi.org/Annual Review of Developmental Psychology

Shafer, P. R., Gutiérrez, K. M., Ettinger de Cuba, S., Bovell-Ammon, A., & Raifman, J. (2022). Association of the Implementation of Child Tax Credit Advance Payments With Food Insufficiency in US Households. *JAMA Network Open*, *5*(1), e2143296. https://doi.org/10.1001/jamanetworkopen.2021.43296

Spencer, R. A., & Komro, K. A. (2017). Family Economic Security Policies and Child and Family Health. *Clinical Child and Family Psychology Review*, *20*(1), 45–63. https://doi.org/10.1007/s10567-017-0225-6

Torche, F., & Rauf, T. (2021). The Political Context and Infant Health in the United States. *American Sociological Review*, 00031224211000710. https://doi.org/10.1177/00031224211000710

Torche, F., & Sirois, C. (2019). Restrictive Immigration Law and Birth Outcomes of Immigrant Women. *American Journal of Epidemiology*, *188*(1), 24–33. https://doi.org/10.1093/aje/kwy218

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., … Straus, S. E. (2018). PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Annals of Internal Medicine*, *169*(7), 467–473. https://doi.org/10.7326/M18-0850

Vartanian, T. P., & Houser, L. (2012). The effects of childhood SNAP use and neighborhood conditions on adult body mass index. *Demography*, *49*(3), 1127–1154. https://doi.org/10.1007/s13524-012-0115-y

Walsemann, K. M., Kerr, E. M., Ailshire, J. A., & Herd, P. (2022). Black-White variation in the relationship between early educational experiences and trajectories of cognitive function among US-born older adults. *SSM - Population Health*, *19*, 101184. https://doi.org/10.1016/j.ssmph.2022.101184

Figure 1. Flowchart of the search process

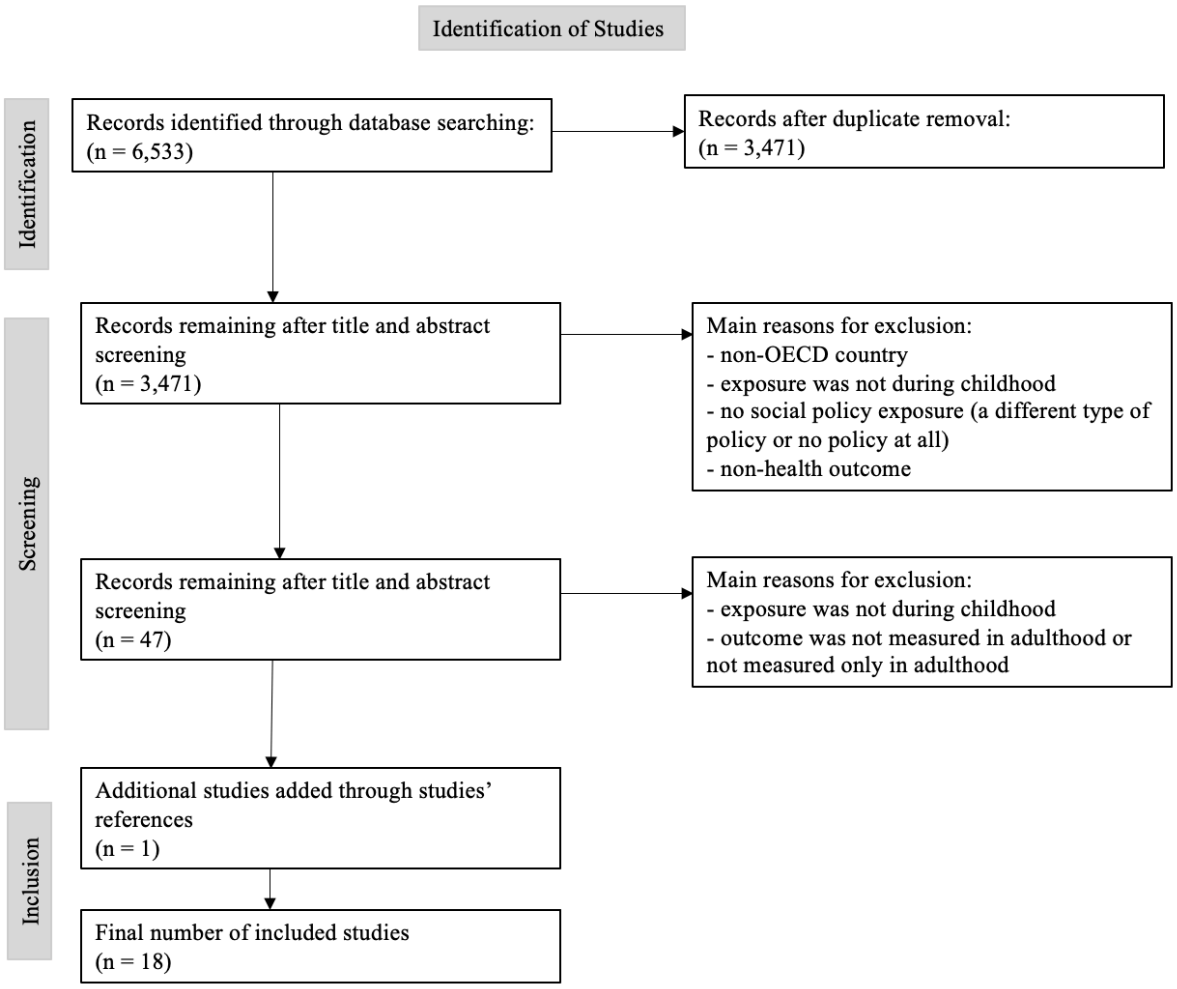


Table 1. Summary of Studies

Authors	Country	Population	Method/Study Design	Policy Category	Health Outcome	Summary of Results
Belles-Obrero et al. (2021)	Spain	Birth cohorts born between 1961-1971; N=4,680	Difference-in-differences	Child labor	Mortality	The reform decreased mortality at ages 14–29 among men by 6.4% and women by 8.9%, but increased mortality for women ages 30–45 by 7%. Women's health habits deteriorated as a consequence of the reform, while this was not the case for men.
Walsemann et al. (2022)	United States	Non-Hispanic black and White US-born adults, N=9,340	Cohort study with random effects	Civil rights and education	Episodic memory, working memory, cognitive function	The educational gradient in level of cognitive function was larger for black compared to white older adults in older cohorts not benefiting from the Brown v Board of Education decision (bwhite=0.30 vs. bblack=0.53, $p<0.05$) but was similar for black and white older adults attending school in the post-Brown era (bwhite=0.35 vs. bblack=0.40, $p>0.05$).
Liu et al. (2015)	United States	Black and white individuals born in the US between 1911 and 1945; N=13,954	Cohort study with two-way fixed effects	Civil rights and education	Blood pressure and hypertension	Among black women, 10% longer school term was associated with lower SBP, DBP and hypertension prevalence (2.1 mmHg, 1.0 mmHg, and 5.0 percentage points respectively).
Kim et al. (2021)	United States	Black individuals who resided in school	Instrumental variable analysis	Civil rights and education	Cardiovascular disease risk factors	A 1 standard deviation increase in the

		districts under a court desegregation order in 1991, N=1,053				segregation index (about 0.2) was associated with a 9 percentage point decrease in the probability of having good health (about an 11% relative change) and a 17 percentage point increase in the probability of binge drinking (about an 87% relative change).
Delaruelle et al. (2019)	21 European countries	Adults born between 1927 and 1985, N=222,006	Difference-in-differences	Education	Self-rated health	Increasing the age of exposure to tracking was associated with slightly better health for individuals with more years of education (increased by about 1 percentage point of the SRH scale), but worse health for individuals with fewer years of education (decreased by 1 percentage point of the SRH scale).
Popham and Iannelli (2021)	United Kingdom	Birth cohorts born in 1958 and 1970; N=31,414	Inverse probability weighting	Education	Body mass index, smoking, self-rated health, wellbeing, and life satisfaction (past and future)	Did not find consistent evidence that health inequalities were smaller under the comprehensive compared to the selective system and the results were robust under different model specifications.
Butler et al. (2020)	United Kingdom	Aberdeen children in the 1950s birth cohort study, N=5,039	Regression discontinuity	Education	Self-reports of health, mental health, and life limitation due to health, chronic disease burden,	No evidence of an influence of selective secondary schooling on health.

					and likelihood of dying prematurely	
Jones et al. (2011)	United Kingdom	Individuals born the week of March 3, 1958; N=118-1,087	Matching methods	Education	Adult lifestyle (smoking, drinking, vegetables, fried food, smoking during pregnancy); Adult health (long-standing illness or disability, malaise)	Attending selective schools (both grammar and secondary modern) compared to comprehensive schools was associated with better health behaviors (e.g., higher attainment at grammar schools was associated with lower rates of adult smoking, b=-.012, p<.10, and higher rates of vegetable consumption, b=.033, p<.10). There were few statistically significant differences in the relationship between type of schooling and long-standing illness or malaise.
Basu et al. (2018)	United Kingdom	Individuals born the week of March 3, 1958, N=3,428	Instrumental variable approach; person-centered treatment effects	Education	Depression, long-standing illnesses, self-assessed health, and current smoking.	The transition from a selective early-tracking system to a non-selective schooling system did not produce different average treatment effects, though there was evidence of increased depression and cigarette smoking for a fraction of individuals based on observed characteristics, e.g., non-cognitive ability at age 11 was associated with increased probability in having depression in

						adulthood for those attending the non-selective school, OR=1.1, SE=0.01.
Arthi (2018)	United States	Individuals born between 1900 and 1959 in 15 Great Plains and adjacent states who were enumerated as adults in the 1980–2000 US Censuses; 5 percent samples from 1980, 1990, and 2000 censuses (which included over 4 million individuals)	Difference-in-differences	Government investment	Cognitive disability, physical disability, vision and hearing disability, self-care and independent mobility disability	A one standard deviation increase in per capita relief spending lowered the probability of work disability, vision and hearing disability, and self-care and independent living disability by 0.89, 4.49, and 2.05 percentage points, respectively. A one standard deviation increase in per capita loans was associated with 0.52 percentage point lower rates of work disability amongst exposed women.
Noghanibehambari and Engelman (2022)	United States	Individuals born between 1929 and 1940 in 115 major cities; N=442,929	Cohort study with fixed effects	Government investment	Old-age longevity	100 percent rise in municipal spending in the year of birth was associated with roughly 3.5 months higher longevity.
Modrek et al. (2022)	United States	White individuals attending high school in Wisconsin in 1957; N=5,303	Regressions with county fixed effects	Government investment	Body mass index, smoking, problematic drinking, later life cognition, mortality	Living in neighborhoods with more work relief activity was associated with mixed health outcomes. In general, individuals reported higher WAIS scores (b=0.120–0.745, p<.01-.10). Men smoked more (OR=1.61–1.77, p<0.01–0.05) and

						reported more drinking problems (52% more likely, p<0.05), women smoked less (OR=0.55–0.57, p<0.05) reported fewer drinking problems (50% less likely, p<0.01). Women in neighborhoods with higher work relief activity also had marginally significant elevated mortality (b=1.26, p<.10).
Barrington and James (2017)	United States	African American adults enrolled in the Pitt County (North Carolina) Study between 1988 and 2001, N=1,142	Cohort study	Safety-net	Hypertension	Among economically disadvantage women, those who received public assistance in childhood had 65% lower odds of hypertension as adults: OR=.35; 95% CI (.14, .86).
Vartanian and Houser (2012)	United States	Adults aged 52 years and younger, N=4,658	Cohort study; sibling fixed-effects models as sensitivity analysis	Safety-net	Body mass index	For each $1,000 increase in SNAP income, BMI was predicted to increase by 1.07 points. This relationship was moderated by neighborhood level of advantage, as predicted BMI levels increased to 33.54 in above-average childhood neighborhoods, and 30.63 in below-average childhood neighborhoods with increased exposure to SNAP.

Hoynes et al. (2016)	United States	Adults born between 1956-1981; N=8,246-25,738	Difference-in-differences	Safety-net	Weight, height, stunting, general health status, disability, the incidence of several conditions and diseases (e.g., high blood pressure, diabetes, heart disease), health behaviors (smoking, drinking)	Within the high participation sample, full exposure to food stamps from in utero to age five compared to no exposure to food stamps from in utero to age five reduced the risk of metabolic syndrome by 0.3 standard deviations ($p<0.01$).
Insolera et al. (2022)	United States	Adults aged 20 to 36 years; N=1406	Cohort study	Safety-net	Food security	Those who participated in SNAP and WIC during childhood had 4.16-fold higher odds (95% CI = 1.91, 9.03) of being more food secure than those who were eligible for but did not receive SNAP or WIC.
Braga et al. (2020)	United States	Adults aged 22–27, N=2,393	Difference-in-differences	Safety-net	Self-reported health status, obesity, emotional problems, functional limitations, and high blood pressure	A $100 or 3% increase in the average annual EITC exposure during childhood increased the probability of reporting excellent or very good health by 1.7 percentage points (2.6%; $p<.01$) and reduced the likelihood of being obese by 0.8 percentage points (4.1%; $p<.05$).
Aizer et al. (2016)	United States	Males born between 1900 and 1925 in 11 states; N=16,069	Accelerated failure time hazard model with fixed effects	Safety-net	Age at death	Male children of accepted applicants lived 1.2 years ($p<0.05$) longer than those of rejected mothers.

Chapter 2: Geographical Variation in the Long Arm of Childhood

Abstract

Scholars have identified important variation in health disparities across states, but these studies have so far examined disparities in the relationship between an individual's own education and health. The focus on state variation shifts research away from individual explanations of poor health to contextual reasons, such as the availability of needed resources, which vary by location. The current project expands this literature by incorporating the life course perspective and examining state variation in the relationship between socioeconomic status (SES) in childhood and adult health using data from the Panel Study of Income Dynamics (N=18,029). Of the 37 states included in the analysis, there was a significant difference in reporting poor health between low and high-SES groups in 14 states. This difference is driven by greater variation in reporting poor health by the low-SES groups across states, ranging from 29.8% of the low-SES individuals in Utah reporting poor health to 1.2% in Connecticut. An individual's own education explains a large portion of the relationship in most states, while state-level measures of income inequality and welfare generosity do not appear to play a large explanatory role. This study poses important policy questions as to why the relationship between childhood SES and health is larger in some states than others, and ultimately how decision-makers can best support children's long-term health.

Introduction

The life course perspective recognizes the important impact of events throughout one's life on an individual's developmental, social, economic, and health trajectories (Barker 1990; Elder 1998; Kuh and Ben-Shlomo 2004). One particularly well documented area of the life course literature is the evidence showing that having fewer economic resources in childhood leads to worse health outcomes in adulthood, including higher mortality, poorer self-rated health, more chronic conditions, and higher rates of depression (Gilman et al. 2002; Hayward and Gorman 2004; Luo and Waite 2005). This literature is important for developing health interventions since it points to targeting childhood to disrupt long-term negative health impacts of familial economic strain. Traditionally, this research examines individual socioeconomic status (SES), such as parental income or education, and less so the contextual factors that may exacerbate or alleviate some of the negative effects of low SES on health.

Meanwhile, in the social determinants of health literature more broadly, there is a shift to analyzing structural or contextual factors that shape health disparities by examining geographical differences in outcomes. Montez and colleagues have repeatedly shown that disparities are smaller in some states and larger in others, arguing states' policy contexts shape health disparities, especially through an outsized impact on low-SES populations (Montez, Zajacova, et al. 2019; Montez, Hayward, and Zajacova 2019; Montez, Zajacova, and Hayward 2017). By focusing the analysis on state variation, research can then identify states where disparities are smaller and investigate the state policies and/or contexts that contribute to the smaller disparities.

While much of this literature controls for state of birth, the focus of the analysis has so far remained on the variation in education-health disparities by state of residence in adulthood. Yet, studies have found that the state of birth has an important impact on long-term health outcomes.

For example, Fletcher et al. (2023) found higher rates of inequality in mortality based on state of birth than contemporaneously measured state of residence, suggesting migration patterns hide these disparities of early life residence when research focuses on adult state of residence. Relatedly, Hargrove et al. (2022) examined early life county-level moderating effects on the relationship between education and health, again finding the importance of early life geographical contexts on later health, especially for understanding racial disparities. However, no study has so far examined the role of the state in shaping health trajectories differently for individuals based on their childhood SES.

This paper draws from studies on the relationship between childhood SES and adult health at the individual level, as well as the literature on state variation in health outcomes, to understand state variation in the relationship between childhood SES and adult health. As the structural determinants of health literature argues, the negative health trajectories of lower-SES groups are not due to inherent individual flaws, just like the more positive health trajectories of higher-SES individuals are not due to inherent individual strengths (Hayward, Hummer, and Sasson 2015). Instead, state variation in the relationship between childhood SES and adult health would show that context matters in how these trajectories play out across the life span. In some states, children who grew up in lower SES households may have much worse health in adulthood compared to children who grew up in higher SES households. Alternatively, there may be states where the difference in adult health is smaller between individuals who experienced lower and higher childhood SES.

Typically, higher-SES families have more access to high quality housing, schooling, and health care because of their financial resources, which positively impacts their health (Link and Phelan 1995). However, states shape access to these resources through policies or other

contextual factors that provide more economic resources to low-SES populations, ensure high-quality education, maintain high public health standards, and ensure access to health care. As a result, growing up in poverty in a state with more equity-centered and health-promoting policies may have a drastically different long-term impact compared to growing up in poverty in a state without these policies. Thus, the difference in adult health based on childhood SES would be smaller in states that "level the field" compared to states that provide no extra resources to low-SES families. To understand state variation in these relationships, this study asks *to what extent is there state-level variation in the relationship between childhood SES and adult self-rated health?* And *what factors contribute to differences in the relationship across states?*

Background

Life Course Perspective

The life course perspective argues that individual outcomes are shaped by different experiences, exposures, and behaviors throughout one's life, and that the impact can vary based on the timing of these factors. For example, an event that occurs during childhood likely has a different impact on outcomes then an event that occurs during adulthood, in both the short and long-term (Elder 1998). In addition, events that happen during one life stage can, and likely do, impact events in a different life stage (Kuh and Ben-Shlomo 2004). The early origins hypothesis within the life course perspective argues that events that occur in utero and in childhood help to explain outcomes in older adulthood. For example, several studies across disciplines have found a lasting impact of early life SES on health in adulthood (Almond and Currie 2011; Brady et al. 2021; Hayward and Gorman 2004; Power, Kuh, and Morton 2013).

Many studies find support for a chains-of-risk or cumulative dis/advantage explanation, meaning that childhood SES impacts adult SES which then impacts adult health (Luo and Waite

2005; Montez and Hayward 2014). Others find that childhood SES has a direct influence on adult health, through pathways such as nutritional deficiency (Barker 1990). Childhood SES in these studies is often operationalized as parental SES, including parental education, income, or wealth. While parental SES is an important factor for shaping health, examining social structures and policies that shape SES is often overlooked in the life course literature. However, the literature on the more immediate health effects of social policies has grown quickly in the last several years (Herd 2016; Komro, Burris, and Wagenaar 2014; Spencer and Komro 2017). This literature goes beyond looking at the impact of a parent's financial situation on their child's long-term health, by asking how this relationship is shaped by policies and contexts that enable access to social mobility and/or health-promoting resources.

Geographical Contexts of Poverty and Health

Literature on the geographical variation in health outcomes seeks to better understand structural determinants of health, as opposed to individual-level causes since geographical boundaries represent different social, political, and economic contexts (Fletcher et al. 2023; Kemp, Grumbach, and Montez 2022; McFarland, Hill, and Montez 2023; Montez 2017). Structural determinants of health represent the macro-level forces that determine the distribution of resources and opportunities among groups, often maintaining a hierarchy rooted in historical patterns of power (Edin, Shaefer, and Nelson 2023; Reynolds 2021). Most researchers in this area have examined state-variation in adult health outcomes based on contemporary conditions (Montez, Zajacova, et al. 2019; Montez, Hayward, et al. 2019).

There are a few reasons to believe that geographical contexts shape health through the distribution of resources and opportunities across the life span. Brady (2023) recently described structural and political approaches as the two main approaches to understanding contextual

forces. A structural explanation analyzes demographic or labor market contexts, such as income inequality and the proportion of the population that is poor or unemployed. This approach is represented by literature on structural sexism, racism, xenophobia, intersectionality, and other state-level contexts that capture cultural and institutional norms and histories (Baker 2022; Hardeman et al. 2022; Homan 2019; Homan and Brown 2022; Homan, Brown, and King 2021; Krieger 2020).

The second approach is related but focuses more on policies, power, and institutions. This approach argues that individual-level outcomes like poverty are the purposeful action or inaction of people in power (Brady 2023). Literature on the health effects of social policy (Beckfield and Bambra 2016), and in particular, the increasing importance and divergence of *state-level* policy and policy context (Kemp et al. 2022; Montez, Hayward, and Zajacova 2021) represent the political approach to understanding the effects of geographical context on population health. Montez and colleagues argue that the growing popularity of deregulation and preemption laws contribute to growing state disparities in health (Montez 2017), and that researchers should use macro-level frameworks that examine commercial, political-economic, and legal factors that shape health outcomes (Montez et al. 2021).

Geographic Contexts Across the Life Span

This study includes one structural factor (income inequality) and one policy factor (welfare programming) in the analyses as potential state-level explanations for differences in the relationship between childhood SES and adult health across states. Income inequality is negatively linked to health in the US, often through social capital pathways, and the degree of inequality varies by state (Frank 2023; Kawachi et al. 1997; Pickett and Wilkinson 2015; Wilkinson 2005). Zheng et al. (2022) found that experiencing higher income inequality in

childhood is associated with a higher risk of physiological dysregulation and chronic disease in adulthood. The authors argue that this connection is likely due to smaller social investments for lower-SES groups, higher levels of relative deprivation, and lower levels of social capital in high-income inequality contexts. These three factors experienced in childhood can have lasting impacts on health by decreasing resources and increasing stress in early life. For example, lower levels of social capital in childhood may mean that parents had fewer connections on which to rely for job opportunities or for help with childcare. Parental economic circumstances and stress directly affect their children's long-term health, which can be especially harmful for individuals with low-SES backgrounds (Elder, Johnson, and Crosnoe 2003; Ferraro, Schafer, and Wilkinson 2016). The current study examines whether these long-term health effects vary by childhood SES.

This study also considers a policy context by examining whether the welfare program at the time, AFDC (until the mid-1990s) or TANF (from the mid-1990s onward), explains variation across states. Policies and programs often focus on children as a vulnerable group and tend to vary across states, suggesting important state differences in the long-term effects of these policies. Similar to income inequality, state-level welfare programming in childhood likely impacts long-term health through material and psychological pathways. For example, states with more generous AFDC/TANF programs provide higher cash benefits to the low-income participants, expanding access to health-promoting resources and decreasing parental stress caused by financial responsibilities. Having greater access to healthy food and higher quality housing in childhood has long-term health effects because of increased access to essential nutrients and decreased exposure to toxins (Gaitens et al. 2009; Hoynes, Schanzenbach, and Almond 2016). Several recent studies show generous safety-net policies have long-term health

impacts on outcomes ranging from self-rated health, metabolic syndrome, food insecurity, and mortality (Aizer et al. 2016; Braga, Blavin, and Gangopadhyaya 2020; Hoynes et al. 2016; Insolera, Cohen, and Wolfson 2022). Since these policies target low-income populations, states with more generous AFDC/TANF policies should see improved health among low-SES populations and therefore, smaller adult health disparities based on childhood SES.

Finally, this study considers the role of an individual's own education in the relationship between childhood SES and adult health, and how that role varies by state. Education is often considered a mediator in the early origins of health literature, such that childhood SES affects educational attainment and education attainment affects adult health, an example of the chains-of-risk or cumulative (dis)advantage models for life course outcomes (e.g. Dannefer 2003; Kuh and Ben-Shlomo 2004; Luo and Waite 2005; Montez and Hayward 2014). For example, an individual who attains higher levels of education but comes from a lower-SES background is expected to have better health than an individual who has low-childhood *and* low educational attainment. Since this is a study on contextual factors along the life course, the measure of education is conceptualized as representing structural factors that include education policies that vary across states and impact quality and access. If education does not appear to serve as a mediator in some states, this may imply that the quality of education is low and higher educational attainment does not translate into improved health outcomes for low-SES children. Alternatively, the state may offer enough health-promoting resources throughout the life span that educational attainment is less salient than other state contexts and programs. If education does appear to be a mediator, it may suggest high quality education that disproportionately and positively affects low-SES groups.

Hypotheses

Based on life course theories and evidence, as well as the geographical health disparity literature, I hypothesize:

H1: Lower childhood SES is associated with greater odds of reporting poor self-rated health in adulthood.

H2: The childhood SES-health disparity differs across states, such that the difference in reporting poor health between adults from low-childhood SES and high-childhood SES is smaller in some states and larger in others.

H3: Individual-level measures of adult education and state-level measures of welfare spending and income inequality accounts for some of the variation in the relationship across states.

Data and Methods

Dataset and Sample

Data for this study came from the Panel Study on Income Dynamics (PSID). PSID is a nationally representative, intergenerational, longitudinal dataset (Institute for Social Research 2021). The original sample, first interviewed in 1968, consisted of about 5,000 households. Sample members are interviewed each round, and the sample is replenished by their descendants. Interviews were conducted every year from 1968 to 1996, and then every other year since 1997. The study was first created to study poverty-related issues, and measures of health were added in subsequent years. The household head and spouse/partner contribute the most comprehensive information, but questions are asked about all family members.

The study sample included heads of household and spouse/partner because the key variables in the model were asked of these two family members. Childhood state has been asked of both the head and spouse/partner since 2009, and 2021 data was the most recent wave available. Thus, I analyzed the PSID waves 2009–2021 to create a person-year data structure.

Individuals born between 1980 and 2003 are included in the analysis to capture a younger adult population, and to limit the timeframe of the study. If the timeframe was too large, exploring potential explanations would be too difficult given changing contexts. Limiting the timeframe to individuals born between 1980 and 2003 maintained feasibility while also aligning with literature documenting the vast changes happening across states since the 1980s (Montez and Grumbach 2023). The analytic sample size was N=18,029 person-year observations.

Measures

Self-rated health was the dependent variable in the study as a measure of general health commonly used in social science literature because of its predictiveness of mortality and other more objective conditions (Idler and Benyamini 1997). In the PSID, it asked "Would you say your health in general is excellent, very good, good, fair, or poor?" I dichotomized it so that fair and poor represented poor health and excellent, very good, and good represented good health.

Parental education and childhood state were the main independent variables in the models. Parental education represented the measure of childhood SES and was retrospectively reported by the respondent at the time of the survey as the number of years of education for both mother and father. Importantly, the measure of parental education in the PSID asked only about education in the U.S., and thus this sample excluded individuals whose parents received education outside the U.S. However, it captured all individuals whose parents had no education, even if born in another country. I retained the highest level of school if both parents' years of education are reported. "Low-parental education" captured individuals who reported their parents having twelve years of school or less, and "high-parental education" captured individuals who reported their parents having more than 12 years of education. Childhood state was captured in the PSID as the state where the survey participant "grew up." I included all 50 states in the

sample, though due to low sample size, some states were omitted in the analysis, which I describe below.

To understand what may contribute to differences in the relationship between childhood SES and state, I examined three variables, one on the individual level and two on the state level. This was a descriptive analysis, so any relationship between these variables and the outcome was only an association and would warrant more research to claim causality. Nonetheless, I included the variables here to explore potential reasoning for observed variation across states. First, I included years of education for the survey respondent. Although it is common to limit samples to only those aged 25 years and older when examining education, I kept all ages in the sample since a large sample size was important for a state-by-state analysis.

The other variables I examined to understand the relationship between childhood SES and adult health were the TANF-to-poverty ratio (TPR) and the state-level Gini coefficient (Frank 2023). The TPR was the number of people receiving TANF benefits divided by the number of people experiencing poverty calculated by the Center on Budget and Policy Priorities (2022) and based on caseload data from the Department of Health and Human Services and state welfare agencies, and population data from the Current Population Survey. This number varied by state and year and represented the generosity of the state's welfare programming in this analysis. The Gini coefficient measured income inequality as an indicator of state context. Values ranged from 0 to 1, with higher values indicating more inequality. I used the TPR and Gini coefficient values for the year of birth for each individual in their childhood state.

All models controlled for age, race/ethnicity, gender, and whether the respondent was living in a state different from the state where they grew up (referred to as "moved" from now on). This last variable was an important consideration when determining the effect of childhood

state on health in adulthood because the findings may be biased if not controlling for current state context. Fletcher et al. (2023) found greater variation in mortality rates when examined by birth state compared to the current state, arguing this difference was due to migration. Although the authors did not find a clear explanation for the ways in or out-migration drove these differences (i.e., people did not appear to move to maximize life expectancy but more likely because of family and job opportunities), they concluded that geographical considerations of health outcomes must consider the effects of early-life and adult state of residence as well as migration patterns. For example, the health of an adult who currently lives in a state with more health promoting resources, but who grew up in a state with fewer resources, may differ compared to a person who never moved and was continuously exposed to a state with either fewer or greater resources.

Analytic Strategy

To examine state variation in the relationship between childhood SES and childhood state, I estimated a series of logistic regressions. First, I estimated the association between childhood SES and self-rated health to establish the baseline relationship for hypothesis 1 (Model 1). Then, I estimated the association between an interaction of childhood SES and childhood state with self-rated health, only controlling for age, race, gender, and whether the participant moved (Model 2). I calculated predicted probabilities of reporting poor health by childhood SES for each state to compare the health gap between childhood SES by state. To understand factors that may explain the relationship between childhood SES and adult health across states, I added a measure of the individual's own education (Model 3), state-level TPR (Model 4), and state-level Gini coefficient (Model 5) to subsequent models, one at a time. Finally, I calculated differences in predicted probabilities based on childhood SES in each state

to understand how a person's own education, TPR, and the Gini coefficient may or may not explain some of the relationship between childhood SES and adult health. I graphed the results for ease of interpretation.

Several states were omitted from the analysis due to a small sample size, including Alaska, Delaware, Hawaii, Idaho, Maine, Montana, Nebraska, New Hampshire, New Mexico, North Dakota, Rhode Island, South Dakota, and Vermont, leaving a sample of 37 states. These omitted states included 216 observations, leaving 18,029 in the analytic sample. In weighted descriptive statistics, the observations omitted are slightly less likely to have parents in the lower-SES group (an average of 27.7% compared to 31.2% of those in states not omitted). They were also less likely to report poor health (an average of 3.3% compared to 10.2%).

Sensitivity Analyses

I estimated a series of sensitivity analyses to evaluate the robustness of the results. The first few analyses were to examine the role of migration in understanding state variation in the relationship between childhood SES and adult health. The first sensitivity analysis was the same as the main analysis but for only people who did not move (i.e., their birth state is the same as their current state of residence). This reduced the sample size, so there were more states omitted from the analysis (16 states omitted compared to 13 states omitted in the main analysis) and I was unable to determine statistical significance in the difference between SES groups based on state. However, the pattern of SES-health differences provided more information about the role of migration beyond controlling for whether the individual moved states. Another sensitivity analysis was conducted without controlling for the person having moved, again to understand the role of migration in the analysis. To understand migration, the next sensitivity analysis controlled for the individual's current state instead of an indicator for whether the participant moved. By

examining the results this way, the current state context played more of a role in understanding the results instead of only whether the individual moved.

The next sensitivity analysis limited the sample to individuals 25 years and older. Most individuals will have completed their education by age 25, which is an important consideration given the role of education in mediating the relationship between childhood SES and adult SRH. I did not limit the sample in this way in the main analysis because it again limited the sample size and omitted 18 states from the sample. The final sensitivity analysis was to estimate the results without the survey weights. Only participants who were original sample members or descendants of original sample members were assigned weights by the PSID, so any other survey participants were omitted from the analysis when weights were applied. Since a large sample was needed to include as many states as possible in the analysis, I estimated one model without weights to understand if the pattern observed in the main analysis holds. This analysis only omitted eight states.

Results

Table 1 shows weighted descriptive statistics of the variables included in the models by childhood SES. The individuals with less-educated parents were more likely to report poor health (14.4% compared to 7.9%, $p<0.001$), had fewer years of education (13.0 years compared to 14.8 years, $p<0.001$), were more likely to be black and Hispanic (26.1% and 14.3% compared to 13.2% and 6.4% respectively, $p<0.001$), more likely to be women (57.6% compared to 51.9%, $p=0.035$) and were younger (29.1 years old compared to 29.5 years old, $p=0.008$).

[Table 1 about here]

Table 2 shows the relationship between childhood SES and poor health in the expected direction. Individuals with parents with lower levels of education had 1.80 higher odds of

reporting poor health than individuals with parents with higher levels of education (95% CI 1.47, 2.20). In other words, the probability of reporting poor health was 13.6% for individuals with lower-educated parents and 8.1% for individuals with higher-educated parents.

[Table 2 about here]

Presenting the results from the main models would be cumbersome with all states, so I present a graph of the predicted probabilities here instead. Wald tests for all four models showed significant interactions at $p<0.001$ of childhood SES and childhood state, meaning that the association between childhood SES and adult health differed significantly across states. Predicted probabilities for Model 2, adjusted for age, race/ethnicity, gender, and whether the participant moved, are shown in Figure 1. The results were ordered by state, according to the magnitude of difference between the predicted probability of reporting poor health by the two levels of childhood SES.

[Figure 1 about here]

There were 14 out of 37 states that showed a statistically significant difference in reporting poor health by childhood SES. In general, the results showed larger gaps between the two SES groups in some states and smaller gaps in other states. In most states, individuals with lower childhood SES were more likely to report poor health as expected. Utah and Tennessee had the highest predicted probabilities of reporting poor health for the lower-SES groups at 29.8% and 28.0% respectively. There were also several states in which these individuals were less likely to report poor health compared to individuals from higher-SES backgrounds, which was unexpected. However, these results were driven by the particularly low probabilities of the low-SES group reporting poor health. Of all states in the analysis, the average probability of

reporting poor health for the low-SES was 12.5%, but in states where lower-SES groups were more likely to report poor health, the average probability of reporting poor health was only 4.8%.

Relatedly, there was more variation in the predicted probability of reporting poor health in the low-SES group compared to the high-SES group. With the exception of West Virginia, which appeared to be an outlier given the likelihood of reporting poor health for the high-SES group was twice as high as the next highest state, the predicted probabilities of reporting poor health for the high-SES groups were all between 2.0% and 18.7%. The predicted probabilities of reporting poor health for the low-SES groups ranged between 1.2% and 29.8%.

Another way to look at these results was to calculate the difference between lower and higher-SES predicted probabilities of reporting poor health. A positive difference indicated the lower-SES group was more likely to report poor health, and the farther away the point estimate was from 0, the bigger the difference between groups. Utah and Kentucky had the highest positive differences between the childhood SES groups at 24.3 percentage points for Utah and 21.3 percentage points for Kentucky. West Virginia and Oregon had the biggest negative difference, at 36.3 percentage points and 15.7 percentage points, respectively.

Figure 2 graphed the differences in the probability of reporting poor health by childhood SES for each of the four state-level models. Again, the results were ordered by state, according to the magnitude of difference between the predicted probability of reporting poor health by childhood SES, which aligned with Figure 1. If own education, TPR, or Gini coefficient were important explanations of the relationship between childhood SES and adult health, the differences in predicted probability would not overlap for those models with predicted probabilities for Model 2. For example, since a higher TPR indicated a more generous welfare program, I would expect that states with higher TPR would have a smaller difference between

high and low childhood SES compared to Model 2, and the line representing the differences in that model would be closer to 0 than the line representing data points from Model 2. Yet, the line representing Model 2 was almost the same as the line representing the model also adjusted for TPR, and the line representing the model adjusted for the Gini coefficient, suggesting that overall AFDC/TANF spending and income inequality did not explain the relationship between childhood SES and adult health across states.

[Figure 2 about here]

One of the few states where TPR did explain some of the relationship between childhood SES and adult health is Maryland. The difference between the probability of reporting poor health by childhood SES was 14.8 percentage points in Model 2, but 13.8 percentage points in Model 4, which adjusts for TPR. Texas shows the opposite association, with a difference of 11.9 percentage points in Model 2 and 12.8 percentage points in Model 4. Controlling for income inequality also explained a small portion of the relationship in Texas, since the difference in reporting poor health by childhood SES is 11.3 percentage points in Model 5. Nonetheless, these differences were small and only apparent in a very small group of states.

On the other hand, controlling for own education explains the largest portion of the relationship across states. The line representing the model that controlled for own education was almost always closer to 0 on the graph than the line representing results from Model 2, suggesting that own education was related to the relationship between childhood SES and adult health in a way that decreased inequality across the life span. For example, in Model 2 for Ohio, the difference in reporting poor health by parental SES was 8.7 percentage points, but only 4.5 percentage points in Model 3, suggesting educational attainment explained at least part of the relationship between childhood SES on adult health in Ohio. For the states where lower-SES

groups were less likely to report poor health as adults, controlling for education often reinforced this relationship, showing the positive health relationship between education and health for the lower-SES groups. For example, in Model 2, 2.9% of the low-SES group reported poor health, but once controlling for education, 2.5% of the low-SES group reported poor health. These results were suggestive of chains-of-risk or cumulative (dis)advantage theories.

Sensitivity Analyses

The results of the sensitivity analyses can be found in the Appendix. Overall, these analyses did not change the results meaningfully for most states. In all models, there was still significant variation in the relationship between childhood SES and adult self-rated health across states. In some analyses, the differences for a subsample of states changed, either making the differences smaller, larger, and/or changing the significance. Each model responded to slightly different questions, so researchers can use these findings to inform future studies depending on their respective questions, but for the sake of space, I only elaborated on these findings in the Appendix.

Discussion

This study examined state variation in the relationship between childhood SES and adult health. Although many studies have contributed to the understanding of the connection between individual-level measures of childhood SES and adult health, state-level variation in this relationship has been left unexplored. This is a glaring omission given the importance of the relationship between childhood SES and health (Ferraro et al. 2016; Hayward and Gorman 2004; Luo and Waite 2005). Context and policy matter for understanding access to health-promoting resources and opportunities and their effects across the life span.

These findings support four conclusions. First is that the relationship between childhood SES and adult self-rated health varied across states. This is an important contribution because the findings suggest that where someone grows up plays an important role in determining access to opportunities to improve health across the life span. If poor health in adulthood was a given for individuals from low-SES backgrounds, there would not be such variation. These findings suggest that state differences in public health measures, economic conditions, safety-net policies, or education policies may play a role in shaping long-term health in ways that can advantage or disadvantage individuals depending on where they grew up. Studies have found that the states with liberal policies and democratic leadership tend to have better health outcomes, and even help to explain why health in the U.S. is worse than its peer countries (Beckfield and Bambra 2016; Montez et al. 2020; Torche and Rauf 2021). Montez and colleagues have repeatedly found that not only does health differ across states, but the size of health disparities based on education also vary, with some states having larger disparities than others (Montez, Zajacova, et al. 2019; Montez, Hayward, et al. 2019; Montez et al. 2017).

This study built off these findings and similarly found variation in the relationship between parental education, as an indicator of childhood SES, and adult self-rated health. Most states showed the expected type of disparity, that the lower-SES group was more likely to report poor health than the higher-SES group. However, some states showed the opposite relationship with higher-SES groups being more likely to report poor health, while a few other states have a difference close to zero.

When examining all states in the analytic sample, there was no clear regional distinction or bipartisanship distinction in these patterns. However, when only considering the fourteen states with a significant difference in self-rated health by childhood SES, a clearer picture

emerged based on state political leaning and geography that is supported by other research. The three states that have the inverse of the expected relationship (the higher-SES group was more likely to report poor health) were also the most liberal states of the group, Oregon, New Jersey, and Massachusetts, having voted for Democratic presidents most consistently during the study period. These findings suggest that more liberal states likely provided more resources that promote upward mobility and better health for low-SES populations across the life span, so much so that they were less likely to report poor health compared to their higher-SES counterparts.

Utah, South Carolina, Alabama, Oklahoma, Kentucky, Indiana, and Ohio were the more conservative states based on presidential elections in this period and all had significant differences in the expected direction: individuals from the lower-SES group were more likely to report worse health. Nevada, Iowa, Pennsylvania, and Michigan have more mixed voting records however and have similar patterns to the Republican states. Taken together, these findings parallel other studies that have found state-level health patterns vary by political party (Beckfield and Bambra 2016; Montez et al. 2020; Torche and Rauf 2021). Similarly, most of the states with significant differences in the expected direction are in the South or the Midwest (South Carolina, Indiana, Alabama, Ohio, Michigan, Oklahoma, Iowa, and Kentucky), with the exception of Nevada, Pennsylvania, and Utah. These findings echo Montez and Cheng (2022), who found stronger associations between education and self-rated health in the Midwest and the South.

The second conclusion is that the variation in reporting poor health by childhood SES is driven largely by greater variation in poor health for the low-SES group across states. These findings were similar to the findings of Montez and colleagues, suggesting again the greater dependence of the low-SES group on state context (Montez, Zajacova, et al. 2019; Montez,

Hayward, et al. 2019). In one test of this hypothesis, Montez et al. (2019) found that state-level taxes on cigarettes had a larger impact on smoking prevalence of the low-educated adults compared to adults with more education, showing the stronger effect of state political context among the lower-SES group. As the authors wrote, "[the finding] suggests that higher education is a personal resource across contexts but that low education is a personal risk primarily in certain contexts" (p. 10). Thus, education is an important individual determinant of health, but state context can shape the strength of its impact.

The third conclusion is that TPR, as an indicator of welfare generosity, and the Gini coefficient, as an indicator of income inequality, did not appear to explain much state variation in the relationship between childhood SES and adult self-rated health. While I found little evidence that either measure was related to the association between childhood SES and adult health, this does not discount the impact of state-level factors, especially as this finding ran counter to several other studies. While examining the long-term effect of SNAP, EITC, and the Mother's Pension Program, scholars have found positive effects of childhood exposure to greater welfare generosity on adult health, suggesting that state variations in these programs can play a role (Aizer et al. 2016; Braga et al. 2020; Hoynes et al. 2016).

TPR may not be the best measure of welfare generosity because even if the number of people participating is high, the actual amount of cash distributed may be too low to make a difference for health. Thus examining the impact of the amount of cash distributed to each welfare participant or participation in a different government program such as SNAP, may be more important for long-term health, and thus explain more of the relationship between childhood SES and adult self-rated health. Alternatively, other state-level measures such as poverty rate, low education prevalence, or social cohesion may explain the relationship better as

they helped to explain some state variation in the relationship between a person's own education and health (Montez, Zajacova, and Hayward 2016; Montez et al. 2017).

The fourth and final conclusion is that a person's own education did explain variation in the relationship across states. The addition of own education into the model altered the relationship between childhood SES and adult self-rated health so that the disparity in reporting poor health decreased in most states. This finding is important and although I did not conduct a formal mediation analysis, I conceptualized education as a mediator in the analysis, as is commonly done in the early origins of health literature.

Although this finding was not surprising given the breadth of literature that has describes the importance of education on health (Hummer and Lariscy 2011; Ross and Mirowsky 2010), this study showed that the degree to which education affects the relationship between childhood SES and adult health differed across states. Based on these results, for most states, a large part of why childhood SES was associated with adult health was the impact childhood SES had on educational attainment, and the impact education then had on adult health (evidence of a chains-of-risk or cumulative (dis)advantage model (Dannefer 2003; Kuh and Ben-Shlomo 2004)). This finding was particularly true again for the low-SES group. For the states where education made less of an impact on the association between childhood SES and adult health, it is important to understand why education was not a tool for social mobility and health promotion. Most of these states were where the lower-SES groups were less likely to report poor health (the states on the left side of Figure 2), which may play a role in these findings. Education may not be as needed in these states because there are other contextual reasons for improving low-SES health along the life span.

However, since the individual's own education did appear to play a role for almost all states, future analyses need to examine exactly how and the state contexts under which education is most and least helpful. For example, in Ohio, the difference between high and low-childhood SES predicted probabilities of reporting poor health was almost 10 percentage points in the model only adjusted for race, age, and gender. Once own education was added to the model, the difference comes much closer to zero, suggesting more education in the Ohio context provided much greater health benefits to the lower-childhood SES groups. Montez and Cheng (2022) found that employment and income explained more variation in the relationship between education and self-rated health in states where that relationship was stronger. The authors argued that disparities in self-rated health by education level were worsened in states where there were fewer opportunities for employment and higher incomes, leaving the lower educated with worse health than in states with greater access to socioeconomic resources. Exploring the role of adult income and employment may provide more explanation for the differences seen in the current study.

In addition, in states where own education did not attenuate the relationship between childhood SES and adult self-rated health, is this because those states had lower access to quality schools for lower-SES children? So that even if these children received more education, the quality was worse, making the benefits of education on health, such as health literacy, less likely to translate to good health? Or did these states have less generous safety-nets, so that education had a smaller role in affecting health because income-related stressors were more prominent? In states where own education attenuated the relationship between childhood SES and adult health considerably, is this because there were more opportunities for social mobility, allowing for low-

SES children to receive a quality education and therefore better health? These questions lead to important next steps in this research.

Limitations

This study had a few limitations worth mentioning. First, it was a descriptive study and was not meant to claim causality. This study had described state variation in the relationship between childhood SES and adult health, but the next step is to investigate possible structural and political explanations, ideally using causal inference techniques and mediation analysis. Relatedly, many states were omitted from the analysis due to a small sample size, limiting the generalizability of the findings. Larger datasets that include state-level identifiers and individual-level health outcomes such as the Behavioral Risk Factor Surveillance System do not commonly ask questions about early life SES, limiting the data availability for these questions when stratifying by childhood SES is necessary. The PSID only included the education level of parents educated in the U.S., again limiting the generalizability since for the most part, this analysis did not include outcomes for first-generation Americans.

Conclusion

This study was the first to examine state variation in the relationship between childhood SES and adult self-rated health. Scholars have found evidence for the long-arm of childhood on adult health but have so far focused on individual-level measures of childhood SES (Brady et al. 2021; Ferraro 2016; Hayward and Gorman 2004). Structural and political determinants of health research however focus on the processes that shape these individual factors and the decisions by policymakers about who has access to resources and opportunities. This study examined state-variation of health disparities as other studies have done (Montez, Zajacova, et al. 2019; Montez, Hayward, et al. 2019; Montez et al. 2017), to identify states as actors that increased or decreased

health disparities across the life span. This study had identified state variation in disparities in adult self-rated health by childhood SES, with some evidence that state political party and/or region may have contributed to existing patterns. The next step in this line of research is to focus on the mechanisms and dynamics across states and individuals' life spans, why some states had a stronger association between childhood and adulthood, why this relationship was opposite in some states compared to others, why the role of education varied across states, and what were the most important state-level drivers for the observed differences.

References

Aizer, Anna, Shari Eli, Joseph Ferrie, and Adriana Lleras-Muney. 2016. "The Long-Run Impact of Cash Transfers to Poor Families." *The American Economic Review* 106(4):935–71. doi: 10.1257/aer.20140529.

Almond, Douglas, and Janet Currie. 2011. "Killing Me Softly: The Fetal Origins Hypothesis." *Journal of Economic Perspectives* 25(3):153–72. doi: 10.1257/jep.25.3.153.

Baker, Regina. 2022. "The Historical Racial Regime & Racial Inequality in Poverty in the American South." *American Journal of Sociology*.

Barker, D. J. 1990. "The Fetal and Infant Origins of Adult Disease." *BMJ : British Medical Journal* 301(6761):1111.

Beckfield, Jason, and Clare Bambra. 2016. "Shorter Lives in Stingier States: Social Policy Shortcomings Help Explain the US Mortality Disadvantage." *Social Science & Medicine (1982)* 171:30–38. doi: 10.1016/j.socscimed.2016.10.017.

Brady, David. 2023. "Poverty, Not the Poor." *Science Advances* 9:eadg1469. doi: 10.1126/sciadv.adg1469.

Brady, David, Christian Guerra, Ulrich Kohler, and Bruce Link. 2021. "The Long Arm of Prospective Childhood Income for Mature Adult Health in the U.S."

Braga, B., F. Blavin, and A. Gangopadhyaya. 2020. "The Long-Term Effects of Childhood Exposure to the Earned Income Tax Credit on Health Outcomes." *Journal of Public Economics* 190. doi: 10.1016/j.jpubeco.2020.104249.

Center on Budget and Policy Priorities. 2022. "State Fact Sheets: Trends in State TANF-to-Poverty Ratios." Retrieved September 7, 2023 (https://www.cbpp.org/research/income-security/state-fact-sheets-trends-in-state-tanf-to-poverty-ratios).

Dannefer, Dale. 2003. "Cumulative Advantage/Disadvantage and the Life Course: Cross-Fertilizing Age and Social Science Theory." *The Journals of Gerontology: Series B* 58(6):S327–37. doi: 10.1093/geronb/58.6.S327.

Edin, Kathryn J., H. Luke Shaefer, and Timothy J. Nelson. 2023. *The Injustice of Place: Uncovering the Legacy of Poverty in America*. Mariner Books.

Elder, Glen H. 1998. "The Life Course as Developmental Theory." *Child Development* 69(1):1–12. doi: 10.1111/j.1467-8624.1998.tb06128.x.

Elder, Glen H., Monica Kirkpatrick Johnson, and Robert Crosnoe. 2003. "The Emergence and Development of Life Course Theory." Pp. 3–19 in *Handbook of the Life Course*, *Handbooks of Sociology and Social Research*, edited by J. T. Mortimer and M. J. Shanahan. Boston, MA: Springer US.

Ferraro, Kenneth F. 2016. “Life Course Lens on Aging and Health.” Pp. 389–406 in *Handbook of the Life Course: Volume II*, *Handbooks of Sociology and Social Research*, edited by M. J. Shanahan, J. T. Mortimer, and M. Kirkpatrick Johnson. Cham: Springer International Publishing.

Ferraro, Kenneth F., Markus H. Schafer, and Lindsay R. Wilkinson. 2016. “Childhood Disadvantage and Health Problems in Middle and Later Life: Early Imprints on Physical Health?” *American Sociological Review* 81(1):107–33. doi: 10.1177/0003122415619617.

Fletcher, Jason M., Michal Engelman, Norman J. Johnson, Jahn Hakes, and Alberto Palloni. 2023. “Understanding Geographic Disparities in Mortality.” *Demography* 60(2):351–77. doi: 10.1215/00703370-10609710.

Frank, Mark W. 2023. “The U.S. State-Level Income Inequality Data.”

Gaitens, J. M., S. L. Dixon, D. E. Jacobs, J. Nagaraja, W. Strauss, J. W. Wilson, and P. J. Ashley. 2009. “Exposure of U.S. Children to Residential Dust Lead, 1999-2004: I. Housing and Demographic Factors.” *Environmental Health Perspectives* 117(3):461–67. doi: 10.1289/ehp.11917.

Gilman, Stephen E., Ichiro Kawachi, Garrett M. Fitzmaurice, and Stephen L. Buka. 2002. “Socioeconomic Status in Childhood and the Lifetime Risk of Major Depression.” *International Journal of Epidemiology* 31(2):359–67. doi: 10.1093/ije/31.2.359.

Hardeman, Rachel R., Patricia A. Homan, Tongtan Chantarat, Brigette A. Davis, and Tyson H. Brown. 2022. “Improving The Measurement Of Structural Racism To Achieve Antiracist Health Policy.” *Health Affairs* 41(2):179–86. doi: 10.1377/hlthaff.2021.01489.

Hargrove, Taylor W., Lauren Gaydosh, and Alexis C. Dennis. 2022. “Contextualizing Educational Disparities in Health: Variations by Race/Ethnicity, Nativity, and County-Level Characteristics.” *Demography* 59(1):267–92. doi: 10.1215/00703370-9664206.

Hayward, Mark D., and Bridget K. Gorman. 2004. “The Long Arm of Childhood: The Influence of Early-Life Social Conditions on Men’s Mortality.” *Demography* 41(1):87–107. doi: 10.1353/dem.2004.0005.

Hayward, Mark D., Robert A. Hummer, and Isaac Sasson. 2015. “Trends and Group Differences in the Association between Educational Attainment and U.S. Adult Mortality: Implications for Understanding Education’s Causal Influence.” *Social Science & Medicine* 127:8–18. doi: 10.1016/j.socscimed.2014.11.024.

Herd, P. 2016. *The Influence of Social Welfare Policies on Health Disparities Across the Life Course*.

Homan, Patricia. 2019. “Structural Sexism and Health in the United States: A New Perspective on Health Inequality and the Gender System.” *American Sociological Review* 84(3):486–516. doi: 10.1177/0003122419848723.

Homan, Patricia A., and Tyson H. Brown. 2022. “Sick And Tired Of Being Excluded: Structural Racism In Disenfranchisement As A Threat To Population Health Equity.” *Health Affairs* 41(2):219–27. doi: 10.1377/hlthaff.2021.01414.

Homan, Patricia, Tyson H. Brown, and Brittany King. 2021. “Structural Intersectionality as a New Direction for Health Disparities Research.” *Journal of Health and Social Behavior* 62(3):350–70. doi: 10.1177/00221465211032947.

Hoynes, H., DW Schanzenbach, and D. Almond. 2016. “Long-Run Impacts of Childhood Access to the Safety Net.” *AMERICAN ECONOMIC REVIEW* 106(4):903–34. doi: 10.1257/aer.20130375.

Hummer, Robert A., and Joseph T. Lariscy. 2011. “Educational Attainment and Adult Mortality.” Pp. 241–61 in *International Handbook of Adult Mortality*, edited by R. G. Rogers and E. M. Crimmins. New York: Springer.

Idler, Ellen L., and Yael Benyamini. 1997. “Self-Rated Health and Mortality: A Review of Twenty-Seven Community Studies.” *Journal of Health and Social Behavior* 38(1):21–37. doi: 10.2307/2955359.

Insolera, Noura, Alicia Cohen, and Julia A. Wolfson. 2022. “SNAP and WIC Participation During Childhood and Food Security in Adulthood, 1984-2019.” *American Journal of Public Health* 112(10):1498–1506. doi: 10.2105/AJPH.2022.306967.

Institute for Social Research. 2021. *PSID Main Interview User Manual: Release 2021.* Ann Arbor: University of Michigan.

Kawachi, I., B. P. Kennedy, K. Lochner, and D. Prothrow-Stith. 1997. “Social Capital, Income Inequality, and Mortality.” *American Journal of Public Health* 87(9):1491–98. doi: 10.2105/AJPH.87.9.1491.

Kemp, Blakelee R., Jacob M. Grumbach, and Jennifer Karas Montez. 2022. “U.S. State Policy Contexts and Physical Health among Midlife Adults.” *Socius* 8:23780231221091324. doi: 10.1177/23780231221091324.

Komro, Kelli, Scott Burris, and Alexander Wagenaar. 2014. “Social Determinants of Child Health: Concepts and Measures for Future Research.” *Health Behavior & Policy Review* 1:432–45. doi: 10.14485/HBPR.1.6.1.

Krieger, Nancy. 2020. “Measures of Racism, Sexism, Heterosexism, and Gender Binarism for Health Equity Research: From Structural Injustice to Embodied Harm-An Ecosocial Analysis.” *Annual Review of Public Health* 41:37–62. doi: 10.1146/annurev-publhealth-040119-094017.

Kuh, Diana, and Yoav Ben-Shlomo. 2004. *A Life Course Approach to Chronic Disease Epidemiology*. 2nd ed. Oxford: Oxford University Press.

Link, Bruce G., and Jo Phelan. 1995. “Social Conditions As Fundamental Causes of Disease.” *Journal of Health and Social Behavior* 80–94. doi: 10.2307/2626958.

Luo, Ye, and Linda J. Waite. 2005. “The Impact of Childhood and Adult SES on Physical, Mental, and Cognitive Well-Being in Later Life.” *The Journals of Gerontology: Series B* 60(2):S93–101. doi: 10.1093/geronb/60.2.S93.

McFarland, Michael J., Terrence D. Hill, and Jennifer Karas Montez. 2023. “Income Inequality and Population Health: Examining the Role of Social Policy.” *Journal of Health and Social Behavior* 64(1):2–20. doi: 10.1177/00221465221109202.

Montez, Jennifer Karas. 2017. “Deregulation, Devolution, and State Preemption Laws’ Impact on US Mortality Trends.” *American Journal of Public Health* 107(11):1749–50. doi: 10.2105/AJPH.2017.304080.

Montez, Jennifer Karas, Jason Beckfield, Julene Kemp Cooney, Jacob M. Grumbach, Mark D. Hayward, Huseyin Zeyd Koytak, Steven H. Woolf, and Anna Zajacova. 2020. “US State Policies, Politics, and Life Expectancy.” *The Milbank Quarterly* 98(3):668–99. doi: 10.1111/1468-0009.12469.

Montez, Jennifer Karas, and Kent Jason Cheng. 2022. “Educational Disparities in Adult Health across U.S. States: Larger Disparities Reflect Economic Factors.” *Frontiers in Public Health* 10.

Montez, Jennifer Karas, and Jacob M. Grumbach. 2023. “US State Policy Contexts and Population Health.” *The Milbank Quarterly* 101(S1):196–223. doi: 10.1111/1468-0009.12617.

Montez, Jennifer Karas, and Mark D. Hayward. 2014. “Cumulative Childhood Adversity, Educational Attainment, and Active Life Expectancy Among U.S. Adults.” *Demography* 51(2):413–35. doi: 10.1007/s13524-013-0261-x.

Montez, Jennifer Karas, Mark D. Hayward, and Anna Zajacova. 2019. “Educational Disparities in Adult Health: U.S. States as Institutional Actors on the Association.” *Socius* 5:2378023119835345. doi: 10.1177/2378023119835345.

Montez, Jennifer Karas, Mark D. Hayward, and Anna Zajacova. 2021. “Trends in U.S. Population Health: The Central Role of Policies, Politics, and Profits.” *Journal of Health and Social Behavior* 62(3):286–301. doi: 10.1177/00221465211015411.

Montez, Jennifer Karas, Anna Zajacova, and Mark D. Hayward. 2016. “Explaining Inequalities in Women’s Mortality between U.S. States.” *SSM - Population Health* 2:561–71. doi: 10.1016/j.ssmph.2016.07.004.

Montez, Jennifer Karas, Anna Zajacova, and Mark D. Hayward. 2017. “Disparities in Disability by Educational Attainment Across US States.” *American Journal of Public Health* 107(7):1101–8. doi: 10.2105/AJPH.2017.303768.

Montez, Jennifer Karas, Anna Zajacova, Mark D. Hayward, Steven H. Woolf, Derek Chapman, and Jason Beckfield. 2019. "Educational Disparities in Adult Mortality Across U.S. States: How Do They Differ, and Have They Changed Since the Mid-1980s?" *Demography*. doi: 10.1007/s13524-018-0750-z.

Pickett, Kate E., and Richard G. Wilkinson. 2015. "Income Inequality and Health: A Causal Review." *Social Science & Medicine (1982)* 128:316–26. doi: 10.1016/j.socscimed.2014.12.031.

Power, Chris, Diana Kuh, and Susan Morton. 2013. "From Developmental Origins of Adult Disease to Life Course Research on Adult Disease and Aging: Insights from Birth Cohort Studies." *Annual Review of Public Health* 34:7–28. doi: 10.1146/annurev-publhealth-031912-114423.

Reynolds, Megan M. 2021. "Health Power Resources Theory: A Relational Approach to the Study of Health Inequalities." *Journal of Health and Social Behavior* 62(4):493–511. doi: 10.1177/00221465211025963.

Ross, C. E., and John Mirowsky. 2010. "Why Education Is the Key to Socioeconomic Differentials in Health." *Handbook of Medical Sociology, Sixth Edition* 33–51.

Spencer, Rachael A., and Kelli A. Komro. 2017. "Family Economic Security Policies and Child and Family Health." *Clinical Child and Family Psychology Review* 20(1):45–63. doi: 10.1007/s10567-017-0225-6.

Torche, Florencia, and Tamkinat Rauf. 2021. "The Political Context and Infant Health in the United States." *American Sociological Review* 00031224211000710. doi: 10.1177/00031224211000710.

Wilkinson, Richard G. 2005. *The Impact Of Inequality: How To Make Sick Societies Healthier*. 1st edition. New York: New Pr.

Zheng, Hui, Yoonyoung Choi, Jonathan Dirlam, and Linda George. 2022. "Rising Childhood Income Inequality and Declining Americans' Health." *Social Science & Medicine (1982)* 303:115016. doi: 10.1016/j.socscimed.2022.115016.

Table 1. Weighted Descriptive Statistics of Study Sample

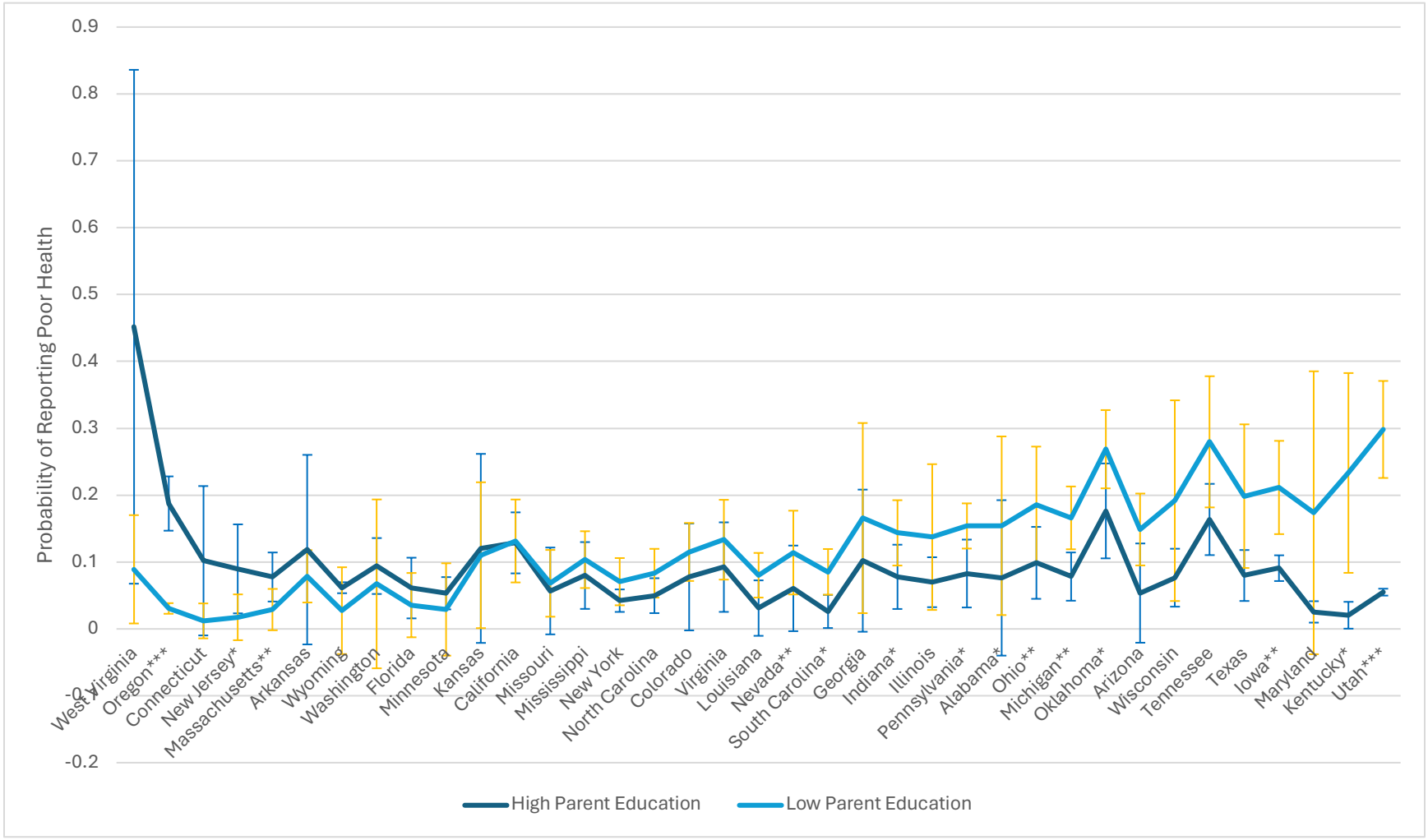
	Low-Parental Education	High-Parental Education	p-value
Poor Health	14.4%	7.9%	<0.001
TANF-to-Poverty Ratio	67.0	68.2	0.484
Gini Coefficient	0.53	0.52	0.069
Own Education (years)	13.0	14.8	<0.001
Race			<0.001
White, Non-Hispanic	57.3%	78.0%	
Black, Non-Hispanic	26.1%	13.2%	
Hispanic	14.3%	6.4%	
Other	2.3%	2.4%	
Female	57.6%	51.9%	0.035
Age (years)	29.1	29.5	0.008
Moved	17.5%	32.9%	<0.001
Sample size	6,772	11,473	

Table 2. Association Between Childhood SES and Poor Health, Odds Ratio, 95% confidence interval

Childhood SES (1=low parental education)	1.80*** (1.47, 2.20)
Age	1.02* (1.003, 1.04)
Female	1.03 (.86, 1.22)
Race (ref=Non-Hispanic white)	
Non-Hispanic black	1.87*** (1.40, 2.51)
Hispanic	1.23 (.81, 1.86)
Other	2.83*** (1.70, 4.73)
Sample size	18,245

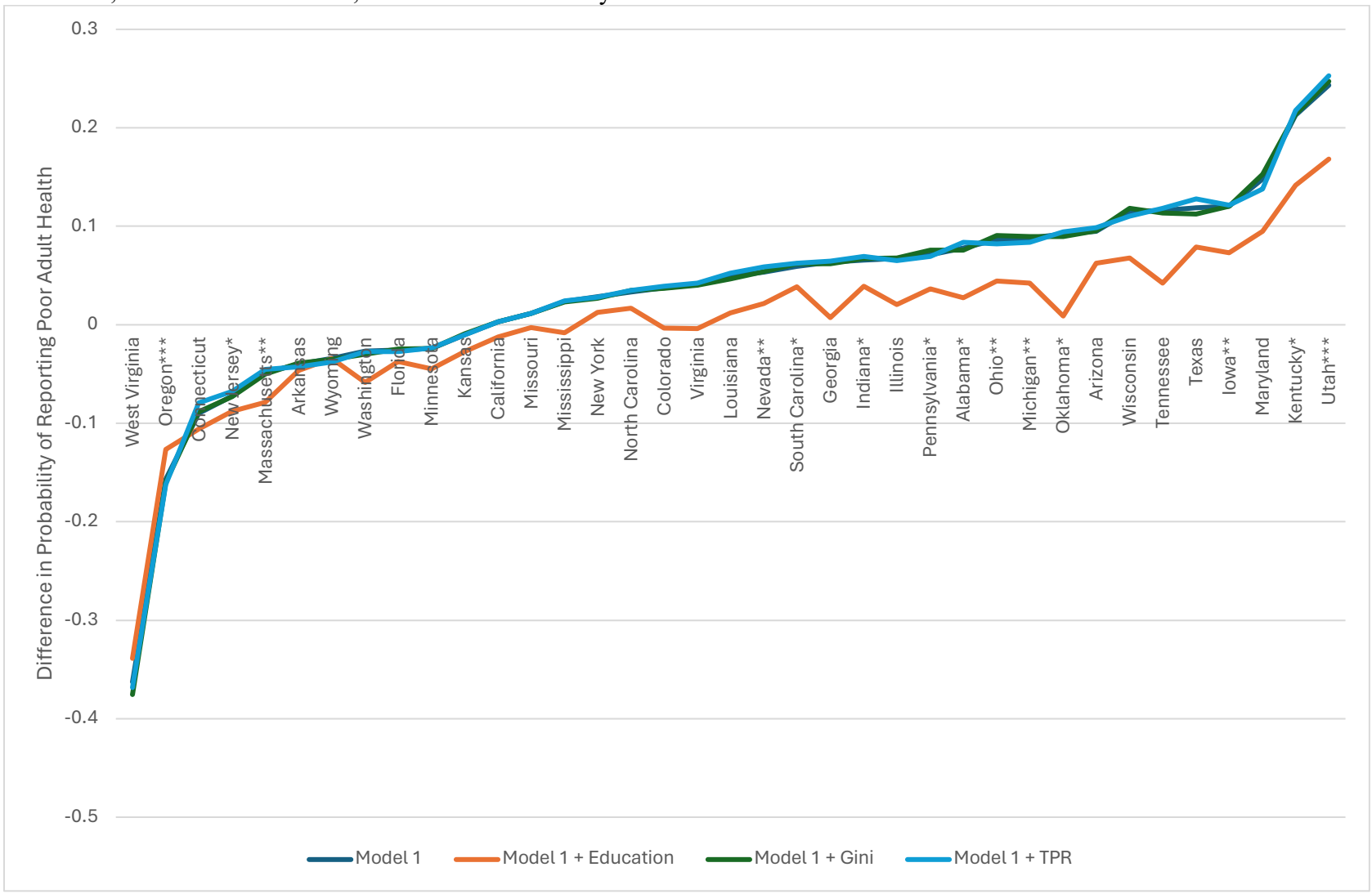
***p<.001, **p<.01, *p<.05

Figure 1. Probability of Reporting Poor Health by Parental Education and State



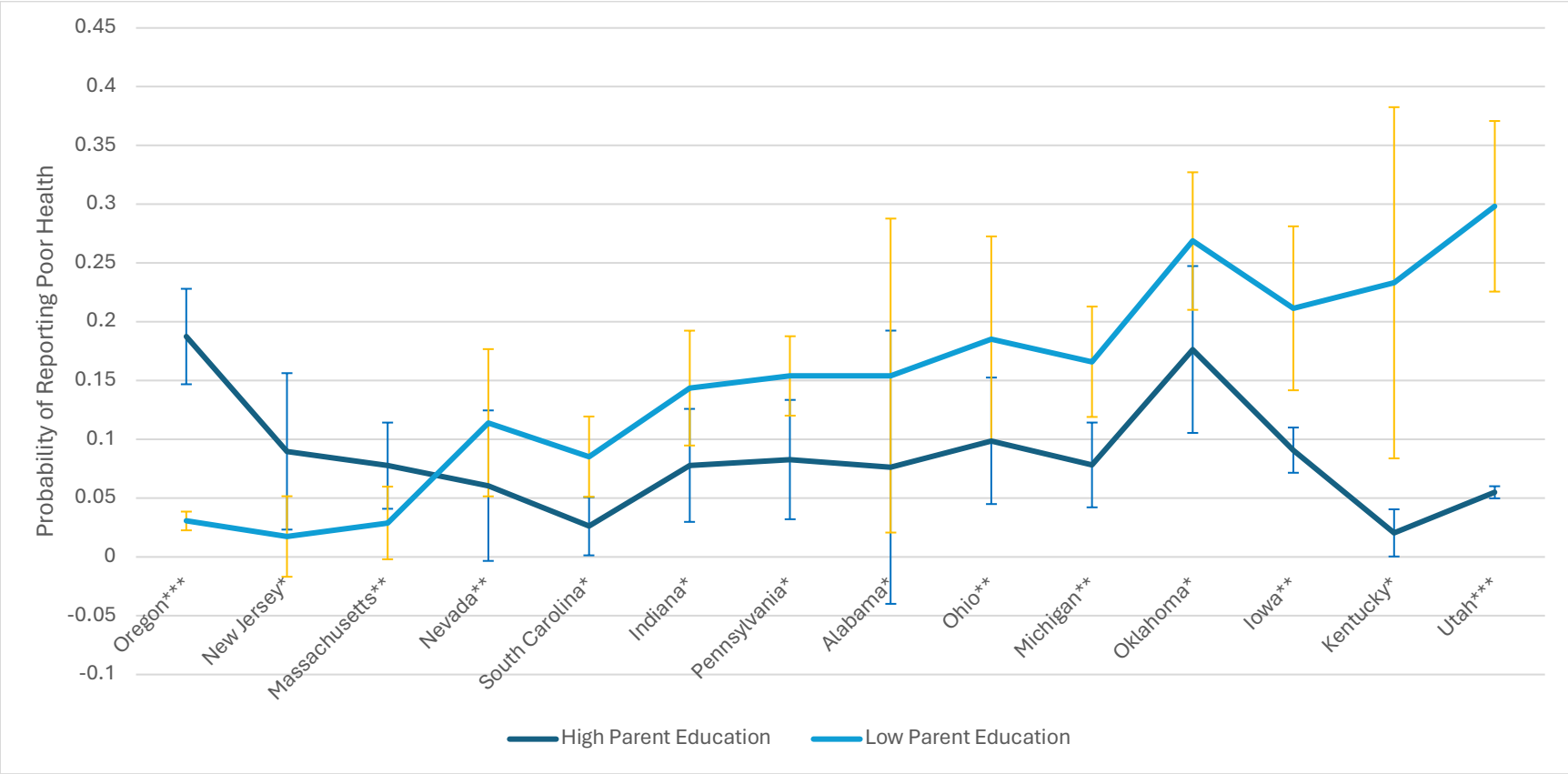
***p<0.001, **p<0.01, *p<0.05

Figure 2. Difference in the Probability of Reporting Poor Health by Parental Education and State, Unadjusted and Adjusted for Own Education, State Gini Coefficient, State TANF-to-Poverty Ratio



Appendix for Chapter 2: Sensitivity Analyses

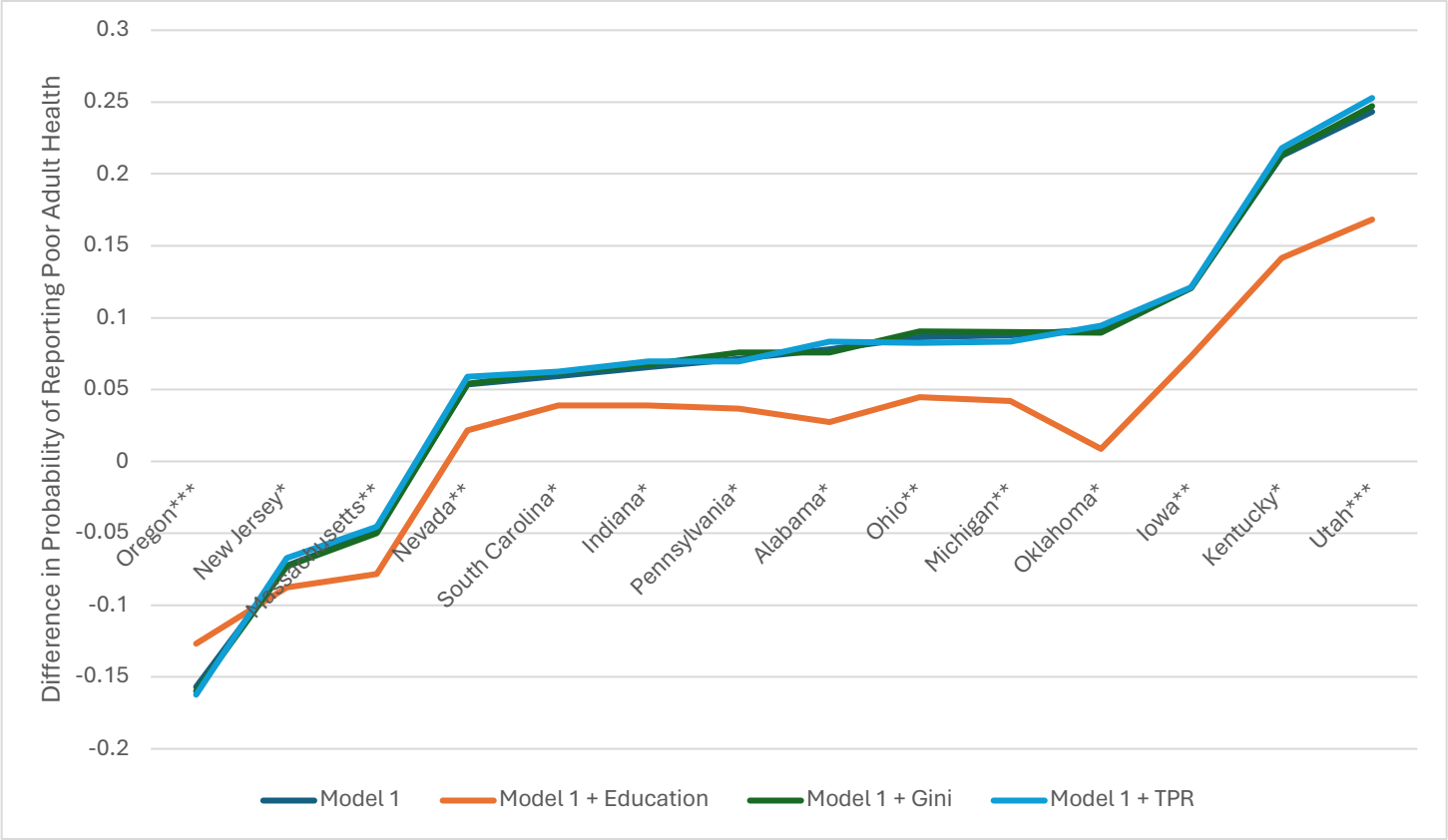
Figure 1A. Probability of Reporting Poor Health by Parental Education and State—Only States with Significant Differences in Childhood SES Predictiveness for Poor Adult Health



***p<0.001, **p<0.01, *p<0.05

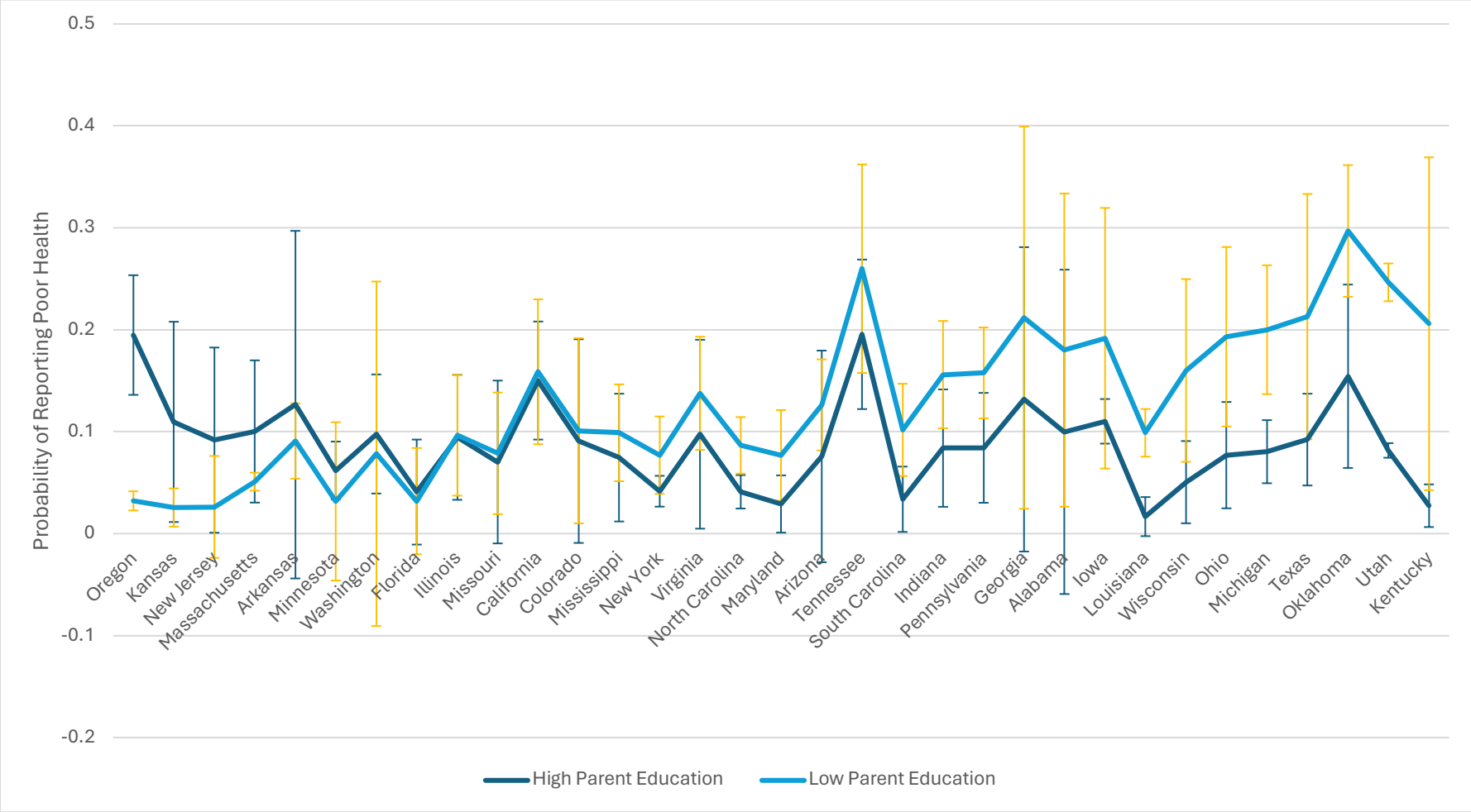
Appendix Figure 1A presents the results of a replication of Figure 1 from the main manuscript but only includes the states with significant differences at p<0.05 for an easier visualization.

Figure 2A. Difference in the Probability of Reporting Poor Health by Parental Education and State, Unadjusted and Adjusted for Own Education, State Gini Coefficient, State TANF-to-Poverty Ratio—Only States with Significant Differences in Childhood SES Predictiveness for Poor Adult Health



Appendix Figure 2A presents the results of a replication of Figure 2 from the main manuscript but only includes the states with significant differences at $p<0.05$ for an easier visualization.

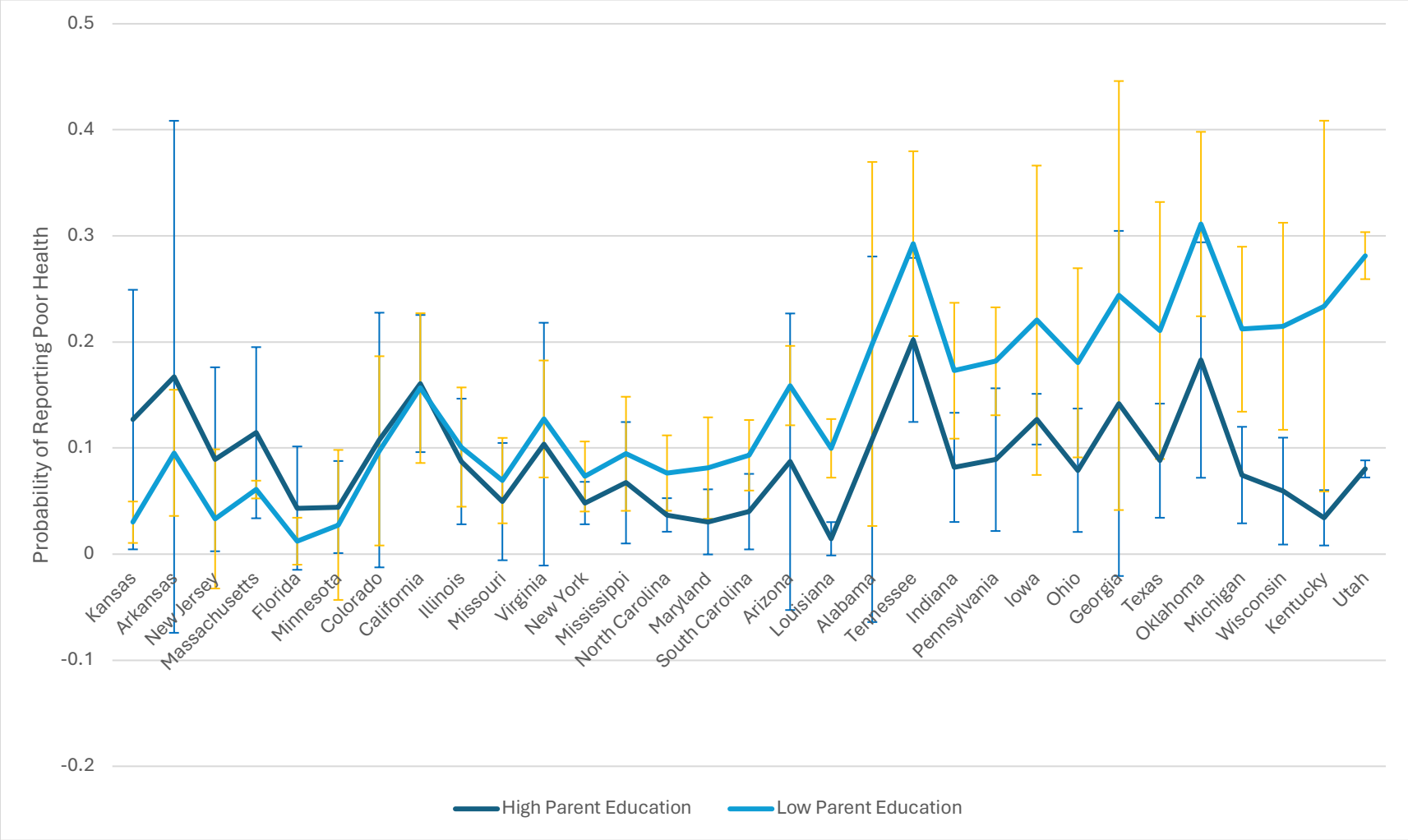
Figure 3A. Probability of Reporting Poor Health by Parental Education and State—Only Stayers



Appendix Figure 2A presents the results of a replication of Figure 1 from the main manuscript but only includes stayers in the sample (people whose birth state is the same as current state of residence). Fletcher et al. (2023) found that differences in mortality by state of residence were smaller across states than differences by state of birth largely because of migration patterns. In general, migrants have lower mortality than stayers in southern states, but migrants in the Midwest and Northeast have similar mortality compared to stayers. For this study, the results for stayers follow a similar pattern as the main results, though there are some states where there seems to be

a meaningful difference, including KS, IL, MD, and UT. However, the states vary in the size of the difference in SES among stayers. For example, in KS the low-SES group is even less likely to report poor health among the stayers (2.6% of stayers low SES compared to 11.0% for the low-SES group in the main analysis) which increases the difference between SES among stayers compared to the main analysis. On the other hand, in MD, the difference in SES is smaller among the stayers, again because low-SES stayers are less likely to report poor health (7.7% of low-SES group among stayers and 17.4% of low-SES group in the main analysis). Illinois also was different in the two analyses, but the change was driven by both low and high-SES changes. For example, in the non-moving sample, 9.6% of the low-SES group reported poor health and 9.4% of high-SES; whereas in main analysis, a greater share of the low-SES group reported poor health (13.7%) and a smaller share of the high-SES reported poor health (7.0%).

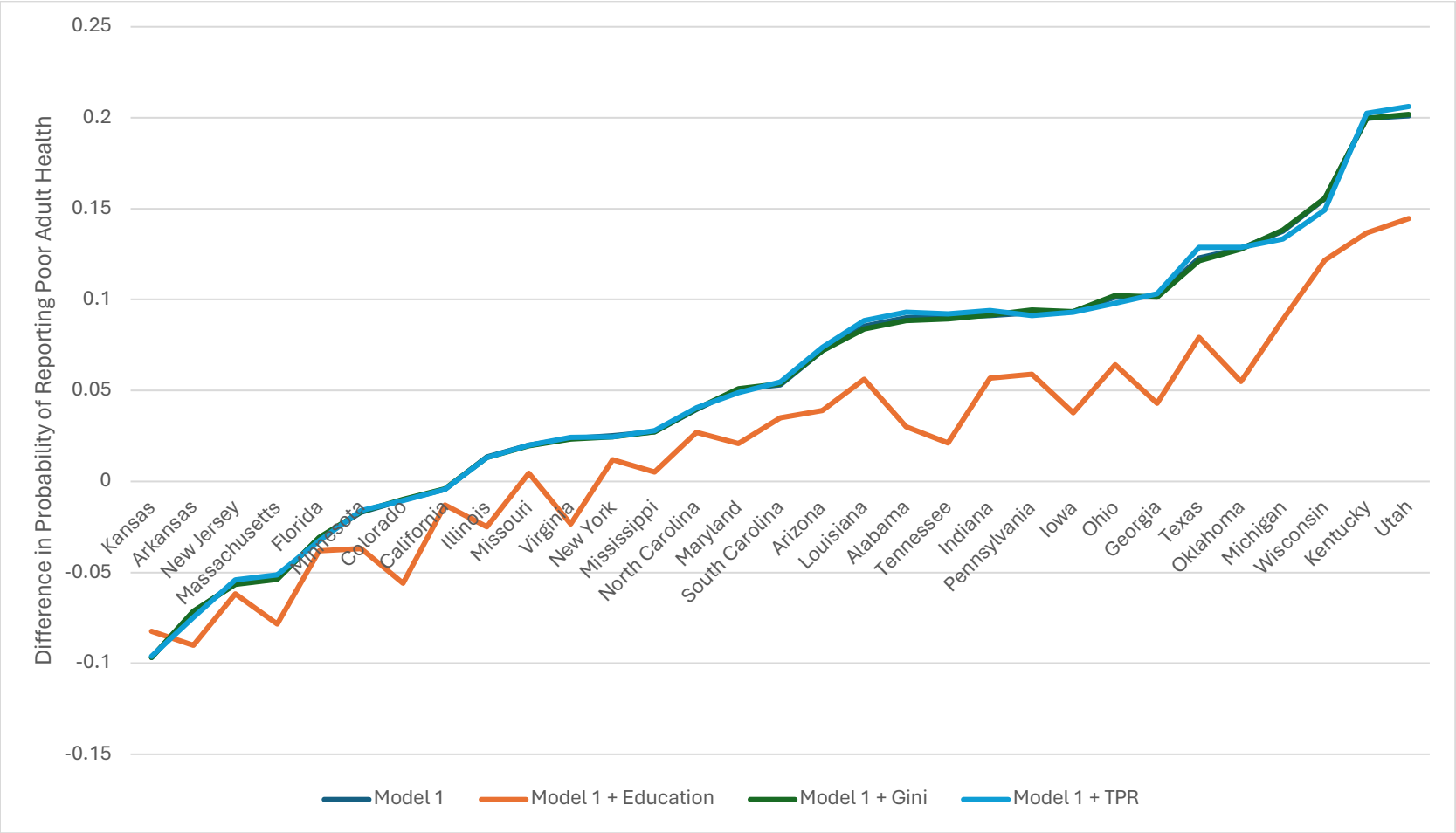
Figure 4A. Probability of Reporting Poor Health by Parental Education and State—Only Individuals 25 Years and Older



Appendix Figure 4A presents the results of a replication of Figure 1 from the main manuscript but only includes people who are 25 years and older. There is no meaningful difference from Figure 1. The sample is smaller, and thus more states are excluded (18 compared to 13 states in the main analysis), and I am unable to determine significant differences between low and high-SES groups

within states. However, the states follow similar patterns. KS, AR, NK, MA, FL, and MN have the opposite relationship as expected in both graphs (that the low-SES group is less likely to report poor health than the high-SES group). CO and IL have a smaller difference in this figure than in the main analysis, but even with the full sample, the differences were statistically non-significant.

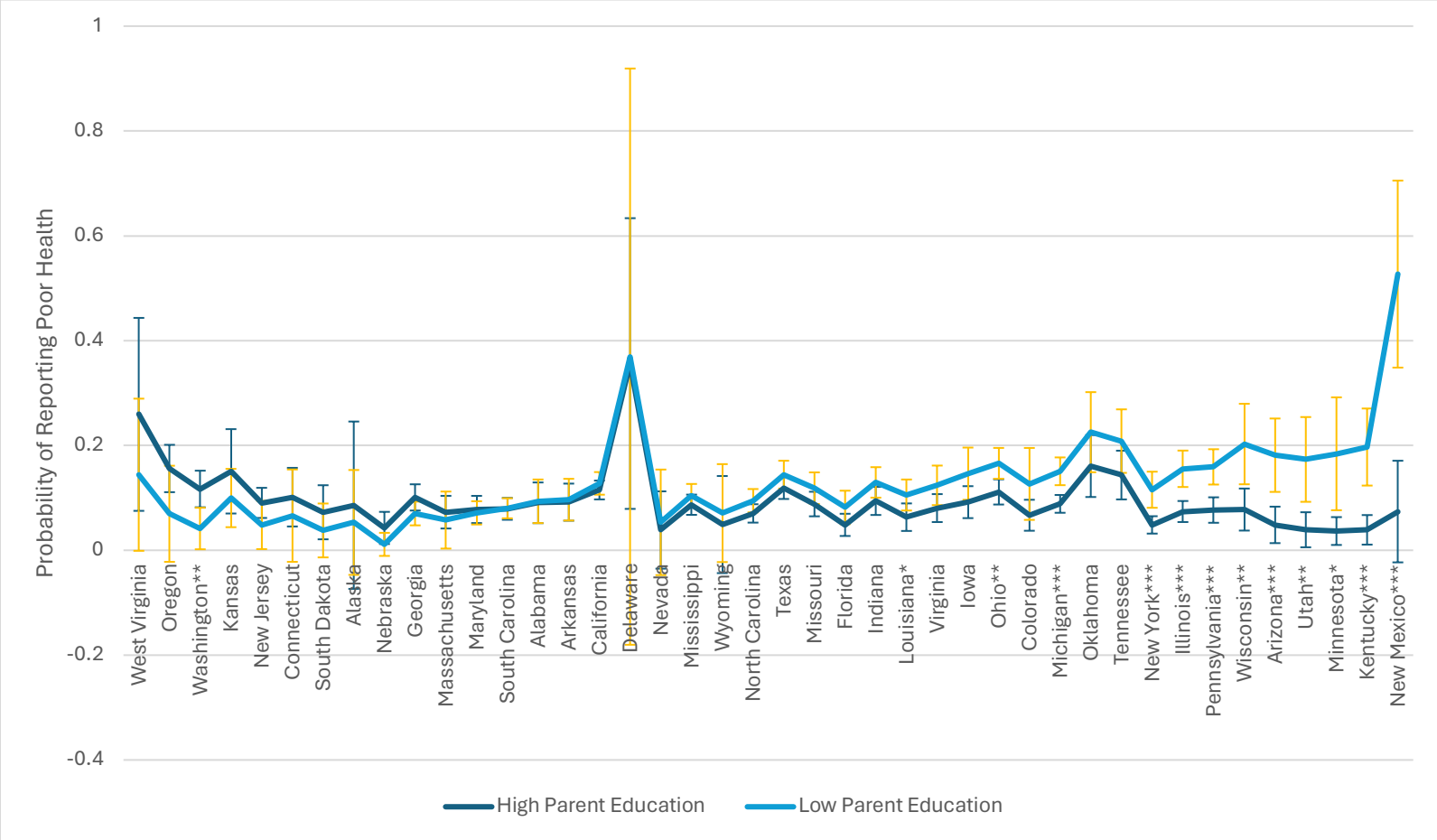
Figure 5A. Difference in Probability of Reporting Poor Health by Parental Education and State, Unadjusted and Adjusted for Own Education, State Gini Coefficient, State TANF-to-Poverty Ratio—Only Individuals 25 Years and Older



Appendix Figure 5A presents the results of a replication of Figure 2 from the main manuscript but only includes people who are 25 years and older. There is not a meaningful difference from Figure 2 despite including only people who have likely completed their education. For example, in the main analysis, the difference in probability of reporting poor health in adulthood by childhood SES in Utah is 0.24, and 0.17 when controlling for own education. In this analysis, including only those 25 years and older, the difference in

the probability of reporting poor health between low and high childhood SES in Utah is 20 percentage points and 14 percentage points when controlling for own education.

Figure 6A. Probability of Reporting Poor Health by Parental Education and State—Without Survey Weights

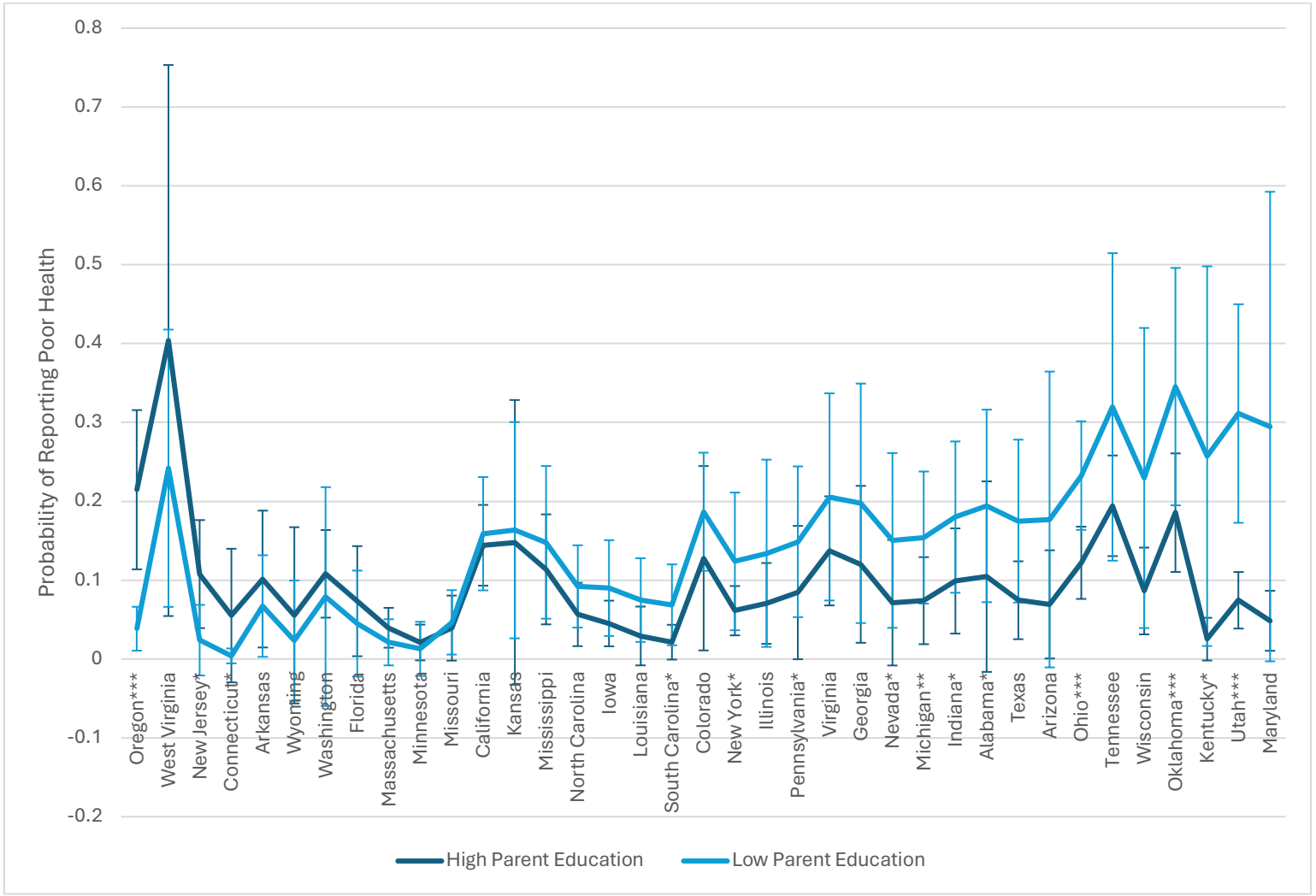


***p<0.001, **p<0.01, *p<0.05

Appendix Figure 6A presents the results of a replication of Figure 2 from the main manuscript but does not include survey weights so as to include as many people in the sample as possible. PSID survey weights are only assigned to original sample members and their descendants (not people who married into families of sample members for example). Although without the weights, the results are not

nationally representative, this analysis reinforces the results by showing similar patterns across even more states (42 states, N=26,668 observations).

Figure 7A. Probability of Reporting Poor Health by Parental Education and State—Controlling for Current State



***p<0.001, **p<0.01, *p<0.05

Figure 7A presents the results of a replication of Figure 2 from the main manuscript but controls for current state and birth state, instead of controlling for an indicator for the concordance of birth state and current state (i.e., whether the person moved or not). There are meaningful differences in some states. In MA, NY, IA, and CT, the differences between reporting poor health by childhood SES switch statistical significance. In MA and IA, the groups are not significantly different in this model. In CT and NY, the SES groups likelihood of reporting poor health become significantly different in this model. However, the overall pattern remains, and even the states that change significance do not change in their relative position on the chart. That is, MA and CT still show the opposite relationship as expected (lower-SES groups are less likely to report poor health), and IA and NY still show the expected relationship (lower-SES groups are more likely to report poor health). Thus, as Fletcher et al. (2023) concluded, birth state, current state, and migration patterns are all relevant when examining health effects by place.

Chapter 3: The Long-Term Health Effects of Welfare Reform

Abstract

Given the well-documented and negative relationship between childhood poverty and adult health, it is important to understand the potential of economic policies in reducing poverty's long-term threats to health. Poverty alleviating policies may buffer poverty's harmful effects by providing cash and in-kind resources to families in need, thereby reducing stress and enabling opportunities to prioritize health. Welfare reform in the mid-1990s in the US represented a shift from a more to less generous welfare program that emphasized the importance of work and self-sufficiency over governmental assistance. Research has documented the generally negative impact of welfare reform on short-term health outcomes, but less research has documented the impact of welfare reform on health across the life span. However, the lasting impact of childhood circumstances suggests the importance of examining policy exposure during childhood and the consequences throughout life. This study exploited time and state variation in the implementation of welfare reform to examine the impact of exposure to welfare reform as a child on self-rated health and psychological distress in adulthood using the Panel Study of Income Dynamics. This study found little evidence for a long-term effect of welfare reform on health and suggests future avenues for examining this question further.

Introduction

Research on childhood poverty's effects on health across the life span traditionally focuses on the effect of individual-level measures of childhood socioeconomic status (SES) on adult health. However, inherent in the life course framework is the role of social, economic, and political context in shaping individual opportunities and the ability to control life trajectories (Elder, Johnson, and Crosnoe 2003). While there is some movement to consider early-life contextual factors on life course health (see Hargrove, Gaydosh, and Dennis 2022), analyses of structural impacts are rare (Brown and Homan 2023).

A political approach is a more specific type of structural approach, both of which focus on contextual forces outside the individual to understand the prevalence of poverty and other social outcomes (Brady 2023). Instead of analyzing individual-level risk factors to explain poverty outcomes, a political approach argues that in a society where there are enough resources for all citizens, policies moderate the relationship between an individual's own risk factors and experiencing poverty. Therefore, a political approach views "poverty as the willfully chosen outcome of state (in)action when something could be done" (Brady 2019:168), and not an individual failure. Applying this framework to life course health outcomes, economic policies can moderate the relationship between childhood SES and adult health outcomes, by determining the distribution of resources in childhood, which are then linked to adult health (Dannefer and Han 2021).

Welfare reform is the political factor highlighted in this study, and childhood exposure to welfare reform specifically. Welfare reform represents the change in the US in the mid-1990s from Aid to Families with Dependent Children (AFDC), a relatively generous entitlement program, to Temporary Assistance for Needy Families (TANF), a welfare program that

decreased the amount of cash distributed and also strengthened the conditionality requirements for participating in the program. Income is an important determinant of health, and welfare is an economic policy that impacts millions of poor American families by providing (or not providing) cash assistance (Khullar and Chokshi 2018).

This study builds on the life course and health literature but applies a policy framework as an approach to understand political impacts on health across the life span. I investigate the long arm of childhood on adult health, by examining the effect of childhood exposure to welfare reform on adult health. I ask: 1) what are the long-term effects on adult self-rated health and psychological distress from childhood exposure to welfare reform, 2) do these effects differ by race/ethnicity?

Life Course Health

A life course approach to studying health disparities encourages the analysis of experiences throughout one's life and their effects on later life outcomes, including health (Elder 1998; Shanahan, Mortimer, and Johnson 2015). While there are many different models used in life course research, this study uses the "early origins" approach to conceptualize the long-term impact of childhood exposure to welfare reform on health outcomes in adulthood (Barker 1990; Dannefer, Kelley-Moore, and Huang 2016; Ferraro 2016). Barker (1990, 1995) popularized the early origins hypothesis by presenting evidence of the link between fetal exposure to poor nutrition in the womb and heart disease risk in adulthood.

Literature on this topic has shown the importance of parental SES for long-term health outcomes, including self-rated health, chronic conditions, and mental health (Brady et al. 2022; Ferraro, Schafer, and Wilkinson 2016; Gilman et al. 2002; Goosby 2013; Luo and Waite 2005; Power, Kuh, and Morton 2013). There are two main approaches to understanding the early

origins of adult health: the latency and path dependent frameworks (Dannefer et al. 2016). The latency framework includes the critical and sensitive period models. These models argue that childhood is a period during which rapid biological development occurs, so that an exposure during this period can have particularly harmful long-term effects (Ben-Shlomo and Kuh 2002; Wadsworth and Kuh 2016). The path dependent frameworks include chains of risk and cumulative (dis)advantage. These models view an early life exposure as a jumping off point for future exposures and can suggest increasing or sustained inequality over time (DiPrete and Eirich 2006). Dannefer (2003, 2020) proposes cumulative dis/advantage (CDA), which is similar in idea to the accumulation of risk model in that both recognize the impact of earlier events on later events. CDA also explicitly recognizes the underlying social processes that regulate opportunities and distribute resources, including policies, that affect the trajectory of outcomes. Dannefer and Han (2021) argue that social policies may disrupt the expected CDA patterns through purposeful action that influence outcomes of interest by regulating access to key resources.

While this field has contributed invaluable evidence on the long arm of childhood conditions, there are few studies that have incorporated policy effects when examining the relationship between childhood SES and adult health, and no studies on the long-term effects of welfare reform exposure in childhood. Policy effects across the life span are important to consider because policies structure societies and influence opportunities for optimal health. For example, given the relationship between income and health across the life span, policies that provide cash or in-kind benefits to those with fewer resources may produce smaller health disparities based on income and better overall population health. Identifying whether this is true

for childhood exposure is important for implementing policies that have a long-term impact on health and can potentially decrease disparities and improve population health.

Childhood Exposure to Policies and Adult Health

Children are important participants in safety-net programs. In 2020, 78% of TANF participants were children, or almost 2.1 million children in the US (Office of Family Assistance 2021). There are only a few, if any, studies on the long-term health effects of childhood exposure to AFDC or TANF. However, studies of the long-term effects of other safety net programs provide evidence that greater generosity leads to better health outcomes for likely program participants (Hoynes & Schanzenbach, 2018). Aizer et al. (2016) found that cash transfers through the Mother's Pension program in the US in the early 20th century led to increased longevity for participants' children. Similarly, Noghanibehambari and Engelman (2022) found that increased spending under the New Deal programs in early life is associated with old-age longevity, especially among the most disadvantaged. Two studies on childhood exposure to the Food Stamp Program (FSP) led to positive health outcomes in adulthood for likely participants, including a reduction in the incidence of metabolic syndrome and increased longevity (Bailey et al. 2023; Hoynes, Schanzenbach, and Almond 2016). Finally, Braga et al. (2020) found that childhood exposure to EITC led to better self-reported health and a lower likelihood of obesity in early adulthood, again for likely participants.

However, this project is different from those discussed above for a few reasons. Mainly, I examine the long-term impact of welfare reform, which has only been analyzed for short-term health consequences in the literature thus far. Second, welfare reform is an instance of *decreased* financial support, unlike the increased support of other programs like FSP and EITC. Third, TANF did not only decrease financial support, but it also shifted the target group of participants,

from poor single mothers for AFDC to people who are poor and working for TANF. This change came with increased administrative burdens and stigma through discussions about welfare dependency and the use of disparaging tropes such as Ronald Reagan's infamous "welfare queen" references (Baekgaard, Herd, and Moynihan 2022; Herd and Moynihan 2019).

Welfare Reform

Welfare in the United States became a federal government responsibility in 1935 under the Social Security Act signed by President Franklin D. Roosevelt, with a goal of supporting single unemployed mothers so they could stay at home and care for their children (Danziger 2010; Grogger and Karoly 2005). See Figure 1 for a timeline of enactment dates for welfare programs, as well as other policies relevant to this study. The earlier versions of welfare, including Aid to Dependent Children (ADC) under President Roosevelt, later renamed AFDC, provided cash benefits with relatively few restrictions. Considered an entitlement program, ADC and AFDC responded to increased need with increased provisions. However, the growth in caseloads in the 1960s and 1970s sparked a public and political backlash as states' budgets became strained and the idea of welfare dependence spread with little empirical support of the concept (Duncan, Hill, and Hoffman 1988; Ziliak 2015).

[Figure 1 about here]

President Clinton signed the Personal Responsibility and Work Opportunity Act (PRWORA) into law in 1996. This law marked a dramatic change in the United States' national welfare program by replacing AFDC with TANF, commonly referred to as "welfare reform." The goal was to decrease so-called welfare dependency by "ending welfare as we know it" (Falk and Landers 2023). As a result of this change, welfare became much less generous and involved more administrative burdens, blocking even those still eligible from receiving the meager

benefits. TANF is a block-grant program, meaning that a set amount of money is provided by the federal government for states to distribute according to their priorities, and does not respond to increased need with increased resources (Hoynes and Schanzenbach 2018; Hoynes et al. 2016; Moffitt and Ziliak 2020; Schott, Pavetti, and Floyd 2015). The three biggest programmatic changes from AFDC to TANF were requirements for work or work-related activities, increased use of sanctions for noncompliance, and time limits, or a cap on how long a person can receive benefits (Grogger and Karoly 2005). Through these changes, TANF decreased the number of families served and the amount of aid distributed, making it a much less generous welfare program compared to its predecessors. Several studies have found that measures taken to decrease welfare dependency and increase work, such as time limits, sanctions, and work requirements, have increased material hardship for low-income families (Bloom and Winstead 2002; Farrell et al. 2008; Kalil, Seefeldt, and Wang 2002; Pavetti, Derr, and Zaveri 2003; Walker et al. 2023). For example, Fang and Keane (2004) found that work requirements were effective at getting single mothers off welfare but less effective at getting them into paid employment.

In addition, cash benefits dropped to such an extent that they are now often considered to not be worth the trouble to apply for (Edin & Shaefer, 2016; Hoynes & Schanzenbach, 2018). In 1995, AFDC lifted 2.8 million children above half of the poverty line, which was similar to the Supplemental Nutrition Assistance Program (SNAP) that year. However, in 2016, that number had decreased to only 300,000 for TANF and 1.9 million for SNAP, showing TANF's decreased role in improving child poverty (Trisi and Saenz 2020). The TANF-to-poverty ratio for the entire United States was 23 in 2019, down from 68 in 1996 (Meyer and Floyd 2020), meaning that in 2019 only 23 families out of every 100 families living in poverty received TANF benefits, a dramatic drop of 2/3. Studies have found that the decrease in overall caseloads is due to

decreased welfare generosity and increased administrative burdens, and not decreased need (Danziger 2010; Falk 2023; Parolin 2021a).

In addition to TANF reducing benefits to all low-income households, racism in the welfare system likely exacerbates the negative outcomes for people of color. Although not new to the welfare system, racism under TANF is particularly harmful because of the policy's stricter eligibility criteria, greater use of sanctions, less national standardization, and more power in the hands of individual welfare caseworkers. Ray and colleagues (2023) recently articulated this unequal effect of administrative burdens in their description of racialized burdens as "a set of administrative practices, that combine agency shaping aspects of bureaucratic hierarchies and policy structures, with cultural ideas about groups to influence resource distribution." Many studies find that despite controlling for other explanatory factors, administrators sanction black individuals at a higher rate than white individuals, meaning these families are likely cut from welfare at higher rates, without having a job transition in place (Fording, Soss, and Schram 2007; Kalil et al. 2002; Kaplan et al. 2022; Keiser, Mueser, and Choi 2004; Lee and Yoon 2012; Pavetti et al. 2003; Schram et al. 2009).

At the structural level, local dynamics impact the implementation of TANF policies, which in turn shape which groups are sanctioned more, how TANF funds are allocated, who is eligible for welfare, and the ease of satisfying the work activities requirement. While caseloads on the whole declined sharply after welfare reform, states with the highest declines tended to be where more black children lived compared to white children (Trisi and Saenz 2020). States with larger proportions of a black population were more likely to distribute TANF funds to programs that discourage "lone motherhood" instead of providing direct cash assistance, as well as provide less generous welfare benefits overall (Hahn et al. 2017; Parolin 2021b). Finally, some states

deny TANF benefits to individuals who have been involved with the criminal justice system, which disproportionately affects black and Hispanic individuals (Camplain et al. 2020; Safawi 2021).

Conceptual Framework

The hypotheses for this study are driven by the application of the life course perspective to the study of economic policies' effects on health (represented visually in Figure 2). Since childhood conditions have a lasting impact on health, generous economic policies that increase resources and decrease stress in childhood should have a positive lasting impact on health in adulthood, and less generous policies should have negative lasting effects.

[Figure 2 about here]

There are two main components of welfare reform that potentially negatively affect long-term health: the lower amount of cash assistance and the increased administrative burdens (Figure 2). Racism likely exacerbates these negative outcomes for low-income individuals of color since they are less likely to have access to TANF as discussed above and are therefore more likely to be harmed by welfare reform. Welfare reform decreased both the amount of cash per person over time, as well as the number of individuals reached. The connection between material deprivation in childhood and poor adult health is well documented and operates through factors such as nutritional deficiencies, environmental exposures, health behaviors, the effects of childhood SES on adult SES, and stress (Barker 1990; Cohen et al. 2010; Miller, Sadegh-Nobari, and Lillie-Blanton 2011; Muller, Sampson, and Winter 2018).

Administrative burdens are components of governmental programs that are intended to decrease fraud and dependence but ultimately can create confusion, increased paperwork, onerous requirements, and stress. As Herd and Moynihan (2019) note, administrative burdens are

not only bureaucratic annoyances, but they inflict harm on participants through exposure to confusing rules that could result in lost benefits if not followed correctly. Administrative burdens also reinforce the stigma associated with governmental assistance by making participants prove their worth. Research has shown that decreasing TANF administrative burdens, including work requirements and recertification for benefits, can positively affect mental health (Dore, Livingston, and Shafer 2022). There is evidence that children in low-SES families already experience more stress than families in higher-SES households (Chen, Cohen, and Miller 2010), thus increased burdens likely add to this stress with long-term impacts. The linked lives concept argues that parents' and children's lives are intertwined, such that experiences that happen to parents, including material hardship and stress, can also affect children and vice versa (Elder, Johnson, and Crosnoe 2003).

Besides increasing stressors, administrative burdens place time constraints on parents as they attempt to meet program requirements, depleting time and energy they have for their children. For example, TANF requires participants complete a certain number of hours at work or work-related activities to avoid being sanctioned. However, Holl et al. (2012) found that children whose mothers were on welfare and *not* working were more likely to attend recommended preventive care visits than children whose mothers were on welfare *and* worked. In addition, Kalil et al. (2023) recently found that welfare reform did not decrease the amount of time or resources that mothers devoted to children but did decrease the amount of emotional support they provided, likely due to increased administrative burdens of TANF compared to AFDC. These findings suggest requiring participants to work, and sanctioning them when they do not, negatively impacts caretaking responsibilities, which can have negative impacts on child health. Plus, welfare-to-work participants are often placed into low-wage jobs, which are less

likely to provide benefits such as flexible schedules, paid leave, or health insurance, but TANF participants have little autonomy in choosing between a low-wage job or losing benefits (Bureau of Labor Statistics, U.S. Department of Labor 2020, 2022; Safawi and Pavetti 2020). These job components, including flexible schedules and paid leave, have been shown to be beneficial for adults and children (Andersson, Garcia, and Glass 2021; Heymann, Earle, and McNeill 2013; Moen et al. 2011). In addition, Herd and colleagues (2023) argue that administrative burdens *increase* inequality by undermining the effectiveness of a program intended to *decrease* inequality, and Parolin et al. (2023) found that administrative burdens disproportionately affect black and Hispanic families in particular.

Previous studies have found mixed results for TANF's short-term effects on child well-being so the question of long-term effects on children is especially unclear (Dunifon, Hynes, and Peters 2006; Shaefer et al. 2019; Wang 2015). It appears likely that on balance, welfare reform has had a more negative long-term effect due to TANF's greater restrictions and decreased generosity compared to AFDC (Komro, Burris, and Wagenaar 2014; Spencer and Komro 2017). Thus, I expect the adult health outcomes of children who experienced the longest exposure to AFDC to be the best, and the adult health outcomes of children who experienced the longest exposure to TANF to be the worst.

Research Questions and Hypotheses

The two research questions of this study are: 1) what are the long-term effects on self-rated health and psychological distress in adulthood from childhood exposure to welfare reform? And 2) do these effects differ by race/ethnicity? I expect longer exposure to TANF compared to AFDC to result in negative health outcomes due to TANF's decreased generosity and increased

administrative burdens. I also expect the negative effects of welfare reform to be worse for black and Hispanic individuals compared to white individuals.

Methods

This study analyzed childhood exposure to different welfare programs based on retrospective reports of parental education as proxies for welfare eligibility, and the timing of welfare reform implementation in the state where the individual grew up. I then connected this childhood exposure to health outcomes in adulthood.

Data and Sample

The Panel Study on Income Dynamics (PSID) is the longest running nationally representative household panel study, beginning in 1968 with about 5,000 households. About 3,000 of these households were nationally representative, and about 1,900 represented an oversample of low-income households. The PSID includes annual interviews from 1968 to 1997, and then biannual interviews from 1997 to the present. They interview the same respondents each round and add to the sample by recruiting the descendants of the original sample once they are of age and have started their own households. Initiated to study the effects of President Johnson's War on Poverty, the PSID includes comprehensive retrospective measures of familial SES, including parental education levels, and contemporary measures of individual health and demographics (Institute for Social Research 2021). PSID is a common dataset for studies on the effect of safety-net policies due to its rich multi-generational economic and health data (Hartley, Lamarche, and Ziliak forthcoming; Hoynes et al. 2016).

The PSID is a family-level dataset, meaning that it collects information from one family representative for the rest of the family for each wave. There is a reference person, considered the head of the household, and when applicable, a spouse/partner linked to the reference person.

The reference person is the most likely to be the survey respondent, but if that person is unavailable, another family member will respond to the survey for themselves and other family members. To include as many observations as possible, I kept observations for both the reference person and spouse/partner who are 18 years and older and have retrospective reports of parental education and state where they grew up from waves 2009–2021. The samples were slightly different depending on health outcome. Self-rated health can be answered by proxy by the survey respondent for any family member, and therefore included a larger sample. Psychological distress can only be answered by the respondents themselves, so the sample was smaller.

Due to the focus on the long-term effects of welfare reform, this analysis required data for cohorts who were children before and after the change in policy in the 1990s who were at least 18 years old at the time of the survey. The study sample consisted of cohorts born between 1980 and 2003, and the oldest participants in the sample were 41 at the time of survey. This was one of the first opportunities to explore long-term effects of welfare reform as the individuals who were children during welfare reform had now transitioned into full adulthood.

This study focused on young adulthood (ages 18–41 years) due to the availability of data, but also because of the emerging importance of examining this life stage. Young adults begin to establish independence and autonomy over important lifestyle decisions and are increasingly suffering from chronic conditions such as diabetes, hypertension, and kidney disease (Harris 2010). In addition, some studies that examine the long-term effects of social policies on SES outcomes found that the impact diminishes over time, suggesting young adulthood could be the best time to examine long-term health impacts (Currie and Thomas 1995).

In this study, I am interested in examining the effects of welfare reform on a low-income population, or people most likely to be affected by welfare reform, not only a population who

report participating in welfare programming. Based on the conceptual framework, welfare reform can have negative effects on people who participated in welfare because of limited cash benefits. Welfare reform can also have negative effects on people who *do not* participate in welfare for several reasons: if they were sanctioned and have welfare benefits terminated, if they reached their time limits and were terminated, if they faced too many administrative burdens and did not participate despite being eligible, or if they were not eligible but were still in need of financial assistance. Therefore, it was an important component of the study design to examine people of low-SES backgrounds in general, and not only people who reported participating in welfare.

I stratified the sample based on parental education and expected the group with the lowest education (high school or less) to be the most likely to be affected by welfare reform. As of 2019, 91% of the TANF population fell into this education category and income instability rates are high within low-educated families, which makes this cutoff appropriate as a proxy for welfare eligibility (U.S. Department of Health & Human Services 2021). Education as a proxy for eligibility has been used in other studies of safety net effects on health, including welfare reform (Baltagi & Yen, 2016; Morrissey et al., 2020; Spencer et al., 2020; Spencer et al., 2021). Therefore, I created two samples: the "high participation" sample, those whose parents had high school education or less and were therefore more likely to be impacted by welfare policy, and the "placebo" sample which included respondents whose parents had at least a college education.

Almost 12% of the sample, including only those who were either the head of the household or spouse/partner and who were born in the years 1980–2003, were missing retrospective reports of parental education. Of those missing retrospective reports, about 40% were respondents who were added to the PSID in 1997/1999 to refresh the sample with families

who had immigrated to the U.S. Since the parental education questions asked for the level of education obtained in the U.S., this missingness limited the generalizability of the results. The sample included one observation for each interview year that the individual satisfied the age restrictions and was a head of household or spouse for the reasons discussed above. For self-rated health, the sample size was N=13,415 person-year observations, and for distress, the sample size was N=12,723 person-year observations.

Measures

Welfare reform. The exposure of interest was a cumulative measure of exposure to "welfare reform" which I measured as exposure to either AFDC waivers or TANF, allowing me to examine the differential effects of greater exposure to AFDC compared to AFDC waivers or TANF. A continuous measure of treatment exposure has been used in similar studies examining the long-term impacts of a social policy on health (Hoynes et al. 2016; Liu et al. 2015). Since AFDC waivers generally imposed stricter policies more similar to TANF than AFDC (such as work requirements), I used these waivers as proxies for TANF as done in other studies (Baltagi and Yen 2016; Cawley, Schroeder, and Simon 2006; Hartley et al. forthcoming). Specifically, I operationalized welfare reform exposure to be the implementation date of whichever came first for each state: a major AFDC waiver or TANF, which ranged from October 1992 to November 1997. The website for the Office of the Assistant Secretary for Planning and Evaluation (ASPE) provided data on the timing of state implementation of AFDC waivers and TANF (Rosewater 1997).

As an example of the calculation, Massachusetts implemented a major AFDC waiver in November 1995, before implementing TANF. An individual born in November 1990 in Massachusetts, would have 13 years of exposure during their childhood: November 1995 (AFDC

waiver implementation)–November 2008 (when the individual turned 18). A person born in November 1998 in Massachusetts would have 18 years of exposure during their childhood since the waiver was passed before they were born (November 1998–November 2016, when they turned 18). Although waivers and TANF may not have the same effects across states and time, the policy variables can be interpreted as the average change after the implementation of welfare reform, which has been described as such by the Office of the Assistant Secretary for Planning and Evaluation and has been used in other studies (Bitler et al., 2005; Rosewater, 1997).

Therefore, the distinction between AFDC and AFDC waivers/TANF can be thought of as a comparison between a more generous and less generous welfare policy, meaning a difference between amount of cash distributed, strictness of eligibility criteria, and overall coverage of the applicable population (Brady 2023). Specifically, the measure was meant to capture the cumulative effects of AFDC or AFDC waivers/TANF over the key development period of childhood. Focusing on welfare reform in general, and not a specific component of welfare reform such as sanctions, allowed me to capture the overall political and policy context of welfare reform which is important with such a complex and large-scale change.

Health Outcomes. I chose two health outcomes that are more likely to be relevant in a young adult population, and that represented both a physical and mental state of health. Self-rated health is a commonly used measure of general health. It is a subjective measure that captures a holistic picture of health as experienced by the individual, but it is also predictive of objective measures of morbidity and mortality (Idler and Benyamini 1997). This measure of health was important to include for this sample since it was a younger adult population that may not have experienced many chronic conditions but may still report a varying level of health status (Allen, McNeely, and Orme 2016). It was measured with a question, “In general, how would you rate

your health?" The options ranged from poor, fair, good, very good, and excellent. I dichotomized this variable to be 0=excellent, very good, or good health, 1=fair or poor health, as was done in many studies (e.g., Beck et al., 2014; H. Liu & Hummer, 2008). Narain et al. (2017) found welfare reform to cause an increase in poor self-reported health in white, single mothers without a high school diploma.

Psychological distress was measured by the K6 non-specific distress scale, a 6-item short form created to screen for mental distress. The items were summed and range from 0 to 24, with higher values indicating more distress. It has been validated in an emerging adult sample similar in age to this project's sample (Bessaha 2017) and can be used to indicate the presence of severe mental illness (Kessler et al. 2003).

Analysis

To assess the long-term impact of welfare reform on self-rated health and psychological distress, I used a triple difference-in-differences study design with a continuous measure of welfare reform exposure that varies by childhood state and birth year cohort and included controls for childhood state and interview year fixed effects. The sample included one observation for each survey year during which the participant was at least 18 years old and born between 1980 and 2003 without missing data on key variables. I then interacted the variable that represented likelihood of welfare participation based on parental education with the continuous measure of welfare reform exposure to understand the differing impact based on likely welfare participation.

I estimated models of linear regression for both the poor self-rated health measure and the scale of psychological distress. I included fixed effects for childhood state and year of interview,

individual demographic controls, and time-varying childhood state controls. The equation for the first model was:

$$Y_{isb} = \beta_0 + \beta Welfare_{sb} * Participation_i + \beta Welfare_{sb} + \beta Participation_i + \beta R_s + \beta V_t + \beta X_i + \beta Z_{sb} + \varepsilon_{isb}$$

Y indicated the health outcome for the adult i based on childhood state s, year of birth b, and observed in interview year t. *Welfare* was the measure of length of exposure to AFDC waiver/TANF in childhood, and *Participation* was the welfare participation in childhood indicator for each individual (0=parents with college education or more and therefore less likely to have participated in welfare, 1=parents with high school education or less and therefore more likely to have participated in welfare). I allowed for childhood state fixed effects R_S and interview year fixed effects V_t, though I did not control for birth year fixed effects because of collinearity issues. Lastly, I controlled for individual-level (X_i) and childhood state-level (Z_{sb}) characteristics, including race/ethnicity, gender, and age, as well as the state policies (minimum wage and state EITC), state median income, and unemployment rate. I included childhood state covariates instead of state of current residence because of the possibility that migration is not random, and because of the study's main interest was in childhood conditions (Hoynes et al. 2016). I used the PSID sample weights to account for attrition and complex survey design.

The childhood state fixed effects control for characteristics that did not change over time that may be related to both welfare exposure and individual health, such as state economic resources. The year of interview fixed effects controlled for cohort experiences at the national level such as economic downturns and contemporaneous national events at the time of survey such as political turmoil. With these controls, the findings can be interpreted as the causal effect of welfare reform above and beyond these other circumstances. However, evidence of effects in

the higher parental education group (i.e., less likely to participate in welfare) may indicate residual bias not captured by the models, since their health was less likely to be affected by welfare reform.

The second group of analyses were similar to the first group, but I included a three-way interaction term between race/ethnicity, the length of exposure to AFDC waiver/TANF in childhood ($\beta Welfare_{sb}$), and the indicator for welfare participation ($\beta Participation_i$), so that the study design provided race-specific estimates from our triple difference design. This can then be decomposed into specific difference-indifferences estimates by race and participation group for ease of interpretation. I limited the samples to include only non-Hispanic white (=0), and non-Hispanic black and Hispanic individuals (=1) for theoretical clarity since evidence has documented a harsher effect of welfare reform on non-Hispanic black and Hispanic participants compared to non-Hispanic white participants. Including an interaction term allows an explicit test of the effect of racism, using race as a proxy for experiences of racism, in the welfare system on long-term health.

Sensitivity Analyses

To check the sensitivity of the results to assumptions, I ran an additional model for each health outcome that is the same as the original model but with an added control for state-specific linear time trends ($\theta_s \times t$).

Results

Weighted estimates of the health outcomes, welfare reform exposure, and covariates are shown in Table 1 for the high participation and placebo groups for each health outcome. The high participation sample was more likely to report poor health and have higher levels of psychological distress compared to the placebo sample. For both health outcomes, the placebo

group was composed of mostly non-Hispanic white individuals, and women made up a higher proportion of the high participation group. There was no difference in length of exposure to welfare reform or for any of the state-level covariates.

[Table 1 about here]

[Table 2 about here]

In the main analysis (Table 2), I found no evidence for an effect modification of welfare reform on self-rated health by the likelihood of welfare participation in the fully adjusted models (Model 1 for both outcomes). Table 3 shows the results for the interaction between race/ethnicity, welfare reform exposure, and likelihood of welfare participation. The three-way interaction term was statistically significant for psychological distress (b=-0.24, $p<0.001$) but not self-rated health. I presented changes within race/ethnicity/parental education groups based on length of exposure to welfare reform to understand the significant interaction in Table 3 (Table 4, Figure 3). For the data to support the hypotheses, I would have expected to see no difference in the placebo groups, and a positive change in the high participation groups (longer exposure to welfare reform leads to higher levels of distress). However, I saw no statistically significant differences for any of the groups in the distress models. As seen in Figure 3, the significant interaction in the main model was picking up a difference in the exposure within the black and non-Hispanic groups. However, I saw an effect for both the placebo and treated groups, suggesting this finding likely represents residual bias.

[Table 3 about here]

[Table 4 about here]

[Figure 3 about here]

When broken out by groups, I did see that the high participation black and Hispanic group has a significant change in reporting poor health based on exposure to welfare reform. For every one year of additional exposure to welfare reform, black and Hispanic likely participants decreased their probability of reporting poor health by 0.02 percentage points. While this is a significant difference, I saw no significant difference between the effects of TANF reform between the high and the low participation black and Hispanic groups indicating the likely residual bias in the high participation estimate.

The results of the sensitivity analyses are shown in Tables 2 and 3 as Model 2 for the two health outcomes. Adding state-specific linear year of birth trends did not substantively change the results.

Discussion

This study examined two questions regarding the health effects of an economic policy across the life span: 1) what are the long-term effects on adult self-rated health and psychological distress from childhood exposure to welfare reform? And 2) do these effects differ by race/ethnicity? I used a quasi-experimental study design to eliminate confounding as much as possible. There was a historic change in welfare programming in the mid-1990s when the federal government devolved authority to states over their TANF programs, while also instituting federal requirements that placed heavy burdens on program participants. The shift from AFDC to TANF resulted in 1) increased administrative burdens, 2) many families losing access to cash assistance, and 3) for those still receiving access, the amount of assistance has continued to decline over time. This study used a difference-in-differences approach with a continuous indicator of treatment, to exploit the differences in timing of welfare reform implementation across states to understand long-term health effects from exposure in childhood. Based on state

of residence in childhood, birth year, and date of welfare reform in each state, I attempted to isolate the effect of a decrease in welfare generosity and an increase in administrative burdens.

The long arm of childhood is well known, with recent studies providing evidence for childhood poverty negatively affecting health decades later (Brady et al. 2022; Dannefer et al. 2016; Ferraro et al. 2016; Hayward and Gorman 2004). Yet, less is known about the possibility of economic policies in disrupting this link. Some studies have found positive outcomes years after the exposure to a generous welfare program (Aizer et al. 2016; Braga et al. 2020; Hoynes et al. 2016). In this study, I expected to find long-term harm to self-rated health or psychological distress due to decreased generosity in a welfare program for the populations most likely to be eligible, with particularly negative effects for black and Hispanic individuals from low-SES backgrounds.

In general, I found little evidence for the hypotheses. There was some suggestive evidence that there were heterogeneous effects by race/ethnicity of welfare reform on psychological distress. When examining these differences, there was a significant interaction between welfare reform exposure, race/ethnicity, and parental education group, but the difference was due to a difference in reporting poor health within the black and Hispanic subgroup. However, I would expect to see that the effect of welfare reform on the placebo black and Hispanic group to be closer to zero, and that the difference to be driven by the high participation group. This was not what the data show, suggesting the analyses may be picking up residual bias.

Although these results were not what we expected, there is precedence for null and conflicting results in studies on the health effects of welfare reform. Though previous studies suggested I might find negative health effects overall, especially over time due to the loss of

health insurance (Bitler et al. 2005; Cawley et al. 2006), many studies on welfare reform found null effects or mixed results for health *status* in particular. In a review of the literature on the indirect health effects of welfare reform, Bitler and Hoynes (2006), found evidence for an impact on health insurance, but mixed evidence on health care use and health status. In particular, studies have rarely found evidence for negative impacts on child health (e.g., Baltagi and Yen 2016; Wang 2015).

There are at least three potential explanations for the null findings. First, it is possible that the parental education groups did not appropriately identify groups more or less likely to have participated in welfare. However, this identification strategy is commonly used in other studies on welfare reform (Spencer et al., 2020; Strully et al., 2010). This limitation may be especially pertinent for the models that examined heterogeneous effects by race. Given SES categories are not equivalent across race (Bell et al. 2020), and that higher proportions of black and Hispanic welfare participants have college degrees compared to white welfare participants (King 2021), it is possible educational categories were not the best strategy for that analysis.

Second, this study could be picking up on the other policy or structural contexts that were present at the time of welfare reform (Matthay et al. 2021), or the conflicting impacts of welfare reform itself. Although I attempted to isolate the effect of welfare reform, there were several important policy changes during the study period (see Figure 2), and I may instead have captured long-term effects of policies or the macroeconomic environment that aligned with the timing of welfare reform (Ziliak 2015). For example, the EITC, SNAP, and Medicaid programs have become more generous over time, suggesting their more positive effects outweighed the negative effects of decreased spending in cash welfare. Yet, these programs either do not provide cash benefits or only provide benefits for families above certain income levels, thus leaving many of

the most vulnerable Americans without needed resources (Hoynes & Schanzenbach, 2018; Parolin & Brady, 2019).

Some studies have also documented the conflicting health effects of welfare reform, which echo the effects on economic outcomes. Income levels for the welfare target population remained relatively stable over the welfare reform period, with welfare payments being replaced by earnings (Bollinger, Gonzalez, and Ziliak 2009). Cheng (2007) found that TANF worsened participants' psychological distress, but becoming employed improved their psychological distress. Baltagi and Yen (2016) found that TANF increased working mothers' reports of poor health, but that work requirements decreased the likelihood of non-working mothers reporting poor health. Thus, this study's results may reflect different policy effects or even the impact of the same policy that could have simultaneously conflicting effects depending on the population.

Third, the results may show that AFDC was similarly harmful to TANF. Stigma associated with welfare, the high levels of administrative burdens, and the low levels of cash benefits have likely contributed to families not even bothering to apply for benefits, and/or turning to private sources for help (Radey, McWey, and Cui 2020). Welfare, both AFDC and TANF programs, carries stigma for participants while not providing enough financial stability to outweigh the negative, and stigma is a known social determinant of health (Hatzenbuehler, Phelan, and Link 2013) that can mediate the effect of welfare participation on health via feelings of deservingness (Baekgaard et al. 2022).

The stigmatizing discourse around welfare reform started years before welfare reform was enacted, so it is likely welfare participants were harmed from participating even under AFDC. While AFDC cash benefits were higher than TANF benefits, they still may have been too low to outweigh the negative experience of participating in the welfare process. Edin and Lein

(1997) interviewed single mothers participating in AFDC and found that many preferred working to welfare despite no income gains because of the poor treatment they received from government workers and being made to "feel like dirt in the street" (p. 140). In an ethnography on EITC participants, Halpern-Meekin and colleagues (2015) show how EITC is a much less stigmatizing program for many reasons, including how it's distributed through tax credits and not through interactions with local welfare offices.

The one suggestive finding in this study showed that the effect of welfare reform on health differed by race/ethnicity. In one of the few studies on the association between childhood contextual factors and adult health, Hargrove et al. (2022) also found childhood context to have different effects on the relationship between education and adult health by race/ethnicity. In general, they found more of an effect of childhood context in the black and U.S.-born Hispanic sample compared to the white sample overall. They argued advantages afforded to white individuals due to their race mean that they more easily attained higher-SES than black individuals irrespective of the social, political, or economic context. This study's results also showed that the white sample was less affected by the context of welfare reform, though again, the black and Hispanic sample results may be only due to residual bias.

Limitations

There were some limitations to our study, which point the way to build on this research in future projects. The main limitation of this study was using parental education as a proxy for welfare eligibility as mentioned above. I aimed for an identification strategy that would capture not only welfare eligible individuals but individuals that were likely eligible for AFDC and TANF, as well as individuals who became ineligible for TANF due to its greater restrictions. Thus, I cannot use only individuals who received welfare as the study subjects. Education levels

are commonly used in the welfare literature as a proxy for eligibility (Spencer et al., 2021; Strully et al., 2010), however, other studies have used gender, marital, and parental status as ways to identify individuals most likely to be affected by welfare and welfare reform (Basu et al., 2016; Bitler et al., 2005). The measure for parental education for this study did not include children of parents educated outside the United States, suggesting this study omits an important portion of individuals experiencing poverty (Parolin and Brady 2019). In addition, I used a retrospective measure of parental education to identify treated and control groups, which may have suffered from recall bias. However, the retrospective measure of father's education in the PSID has been found to be similarly related to adult outcomes as prospective measures of childhood SES (Brady et al. 2022).

Using data from the Pitt County Study, Barrington and James (2017) compared families that were economically disadvantaged and received public assistance to families that were also economically disadvantaged but *did not* receive public assistance and found that receiving public assistance was associated with lower odds of hypertension among African American women. Identifying groups this way is a potential next step to examine the long-term health effects of welfare reform. Relatedly, there is evidence that the connection between self-rated health and more objective measures of health differs across SES and racial/ethnic groups, so it is possible the different meanings attached to self-rated health could be affecting the results (Dowd and Zajacova 2010; Zajacova and Dowd 2011).

Another limitation was the difficulty in isolating the effect of welfare reform given all the other changes occurring in the mid-1990s as described earlier. I attempted to control for these changing contexts by using the exact dates of AFDC waivers or TANF implementation for each state, as well as controlling for other relevant policy and demographic contexts. A next step

would be to follow the suggestion of Montez and Grumbach (2023) and examine policy bundles instead of specific policies to understand how a policy context affects population health.

Other limitations include the follow-up time and sample size. Although it has now been over 30 years since the beginning of welfare reform, it is possible this study population was too young to exhibit enough variation in the study's health outcomes. Perhaps other health outcomes in later ages will show an even longer-term effect of welfare reform, especially considering the accumulation or pathway frameworks. Researchers should continue to investigate these questions. Lastly, it was also possible this study was underpowered as the confidence intervals were large for predicted values in the higher levels of exposure to AFDC waiver/TANF.

Future Directions

These limitations as well as other considerations point to several next steps for future research. For example, in this study, I examined welfare reform in its totality and assigned the date of welfare reform to each state based on either the first significant waiver implementation or the date of TANF implementation. Although overall the waivers were more restrictive, that was not true for each waiver. Thus, limiting the intervention to only punitive aspects of welfare reform, or specific elements such as implementation of time limits or work requirements, may show more negative long-term health outcomes. Another way to examine welfare effects is to use the amount of welfare cash benefits as the exposure because it is plausible that higher benefit levels would make more of a difference long-term. For example, Reynolds et al. (2020) found that SNAP benefit levels were important when exploring an association between SNAP participation and body weight. In addition, there was some evidence of a more lasting effect when exposed to a policy in utero or before age 5 (Hoynes et al. 2016). This study examined

exposure for the full 18 years of childhood, but it is worth exploring exposure only earlier in one's life.

Conclusion

This study assessed the causal effect of welfare reform in childhood on health in young adulthood. I expected the groups with lower parental education to be harmed by welfare reform, especially the black and Hispanic group. These findings provided little evidence to support these hypotheses. The analysis of heterogeneous effects by race provided suggestive evidence of a long-term effect of welfare reform on health. There were different results by race, but there was a welfare reform effect on the placebo group, indicating residual bias. I proposed several explanations for these null findings, as well as many paths forward for future analyses. This study also contributed a framework to address structural determinants of health across the life span complementary to the individual-level approach to life course health. Understanding how policies shape opportunities and resources throughout the life course is crucial for determining the most effective programs for improving population health. Although I found little evidence for welfare reform in this study, I believe this to be an important research area that is backed by other theoretical and empirical studies and should continue to be explored.

References

Aizer, Anna, Shari Eli, Joseph Ferrie, and Adriana Lleras-Muney. 2016. "The Long-Run Impact of Cash Transfers to Poor Families." *The American Economic Review* 106(4):935–71. doi: 10.1257/aer.20140529.

Allen, Chenoa D., Clea A. McNeely, and John G. Orme. 2016. "Self-Rated Health Across Race, Ethnicity, and Immigration Status for US Adolescents and Young Adults." *The Journal of Adolescent Health: Official Publication of the Society for Adolescent Medicine* 58(1):47–56. doi: 10.1016/j.jadohealth.2015.09.006.

Andersson, Matthew A., Michael A. Garcia, and Jennifer Glass. 2021. "Work–Family Reconciliation and Children's Well-Being Disparities across OECD Countries." *Social Forces* 100(2):794–820. doi: 10.1093/sf/soaa132.

Baekgaard, Martin, Pamela Herd, and Donald P. Moynihan. 2022. "Of 'Welfare Queens' and 'Poor Carinas': Social Constructions, Deservingness Messaging and the Mental Health of Welfare Clients." *British Journal of Political Science* 1–19. doi: 10.1017/S000712342200031X.

Bailey, Martha J., Hilary Hoynes, Maya Rossin-Slater, and Reed Walker. 2023. "Is the Social Safety Net a Long-Term Investment? Large-Scale Evidence from the Food Stamps Program." *The Review of Economic Studies* rdad063. doi: 10.1093/restud/rdad063.

Baltagi, Badi H., and Yin-Fang Yen. 2016. "Welfare Reform and Children's Health." *Health Economics* 25(3):277–91. doi: 10.1002/hec.3139.

Barker, D. J. 1990. "The Fetal and Infant Origins of Adult Disease." *BMJ : British Medical Journal* 301(6761):1111.

Barker, D. J. 1995. "Fetal Origins of Coronary Heart Disease." *BMJ : British Medical Journal* 311(6998):171–74.

Barrington, Debbie S., and Sherman A. James. 2017. "Receipt of Public Assistance during Childhood and Hypertension Risk in Adulthood." *Annals of Epidemiology* 27(2):108-114.e2. doi: 10.1016/j.annepidem.2016.11.012.

Basu, Sanjay, David H. Rehkopf, Arjumand Siddiqi, M. Maria Glymour, and Ichiro Kawachi. 2016. "Health Behaviors, Mental Health, and Health Care Utilization Among Single Mothers After Welfare Reforms in the 1990s." *American Journal of Epidemiology* 183(6):531–38. doi: 10.1093/aje/kwv249.

Beck, Audrey N., Brian K. Finch, Shih-Fan Lin, Robert A. Hummer, and Ryan K. Masters. 2014. "Racial Disparities in Self-Rated Health: Trends, Explanatory Factors, and the Changing Role of Socio-Demographics." *Social Science & Medicine (1982)* 104:163–77. doi: 10.1016/j.socscimed.2013.11.021.

Bell, Caryn N., Tina K. Sacks, Courtney S. Thomas Tobin, and Roland J. Thorpe. 2020. "Racial Non-Equivalence of Socioeconomic Status and Self-Rated Health among African Americans and Whites." *SSM - Population Health* 10:100561. doi: 10.1016/j.ssmph.2020.100561.

Ben-Shlomo, Yoav, and Diana Kuh. 2002. "A Life Course Approach to Chronic Disease Epidemiology: Conceptual Models, Empirical Challenges and Interdisciplinary Perspectives." *International Journal of Epidemiology* 31(2):285–93. doi: 10.1093/ije/31.2.285.

Bessaha, Melissa L. 2017. "Factor Structure of the Kessler Psychological Distress Scale (K6) Among Emerging Adults." *Research on Social Work Practice* 27(5):616–24. doi: 10.1177/1049731515594425.

Bitler, Marianne, and Hilary W. Hoynes. 2006. "Welfare Reform and Indirect Impacts on Health."

Bitler, Marianne P., Jonah B. Gelbach, and Hilary W. Hoynes. 2005. "Welfare Reform and Health." *The Journal of Human Resources* 40(2):309–34.

Bloom, Dan, and Don Winstead. 2002. *Sanctions and Welfare Reform*. Washington, D.C.: The Brookings Institution.

Bollinger, Christopher, Luis Gonzalez, and James P. Ziliak. 2009. "Welfare Reform and the Level and Composition of Income." Pp. 59–103 in *Welfare Reform and its Long-Term Consequences for America's Poor*, edited by J. P. Ziliak. Cambridge: Cambridge University Press.

Brady, David. 2019. "Theories of the Causes of Poverty." *Annual Review of Sociology* 45:155–75. doi: https://doi.org/10.1146/annurev-soc-073018022550.

Brady, David. 2023. "Poverty, Not the Poor." *Science Advances* 9:eadg1469. doi: 10.1126/sciadv.adg1469.

Brady, David, Christian Guerra, Ulrich Kohler, and Bruce Link. 2022. "The Long Arm of Prospective Childhood Income for Mature Adult Health in the United States." *Journal of Health and Social Behavior* 00221465221081094. doi: 10.1177/00221465221081094.

Braga, B., F. Blavin, and A. Gangopadhyaya. 2020. "The Long-Term Effects of Childhood Exposure to the Earned Income Tax Credit on Health Outcomes." *Journal of Public Economics* 190. doi: 10.1016/j.jpubeco.2020.104249.

Brown, Tyson, and Patricia Homan. 2023. "The Future of Social Determinants of Health: Looking Upstream to Structural Drivers." *The Milbank Quarterly* 101(S1):36–60.

Bureau of Labor Statistics, U.S. Department of Labor. 2020. "Lower-Wage Workers Less Likely than Other Workers to Have Medical Care Benefits in 2019." *The Economics Daily*.

Retrieved March 24, 2023 (https://www.bls.gov/opub/ted/2020/lower-wage-workers-less-likely-than-other-workers-to-have-medical-care-benefits-in-2019.htm).

Bureau of Labor Statistics, U.S. Department of Labor. 2022. "A Look at Paid Family Leave by Wage Category in 2021." *The Economics Daily*. Retrieved March 24, 2023 (https://www.bls.gov/opub/ted/2022/a-look-at-paid-family-leave-by-wage-category-in-2021.htm).

Camplain, Ricky, Carolyn Camplain, Robert T. Trotter, George Pro, Samantha Sabo, Emery Eaves, Marie Peoples, and Julie A. Baldwin. 2020. "Racial/Ethnic Differences in Drug- and Alcohol-Related Arrest Outcomes in a Southwest County From 2009 to 2018." *American Journal of Public Health* 110(S1):S85–92. doi: 10.2105/AJPH.2019.305409.

Cawley, John, Mathis Schroeder, and Kosali I. Simon. 2006. "How Did Welfare Reform Affect the Health Insurance Coverage of Women and Children?" *Health Services Research* 41(2):486–506. doi: 10.1111/j.1475-6773.2005.00501.x.

Chen, Edith, Sheldon Cohen, and Gregory E. Miller. 2010. "How Low Socioeconomic Status Affects 2-Year Hormonal Trajectories in Children." *Psychological Science* 21(1):31–37. doi: 10.1177/0956797609355566.

Cheng, Tyrone C. 2007. "Impact of Work Requirements on the Psychological Well-Being of TANF Recipients." *Health & Social Work* 32(1):41–48. doi: 10.1093/hsw/32.1.41.

Cohen, Sheldon, Denise Janicki-Deverts, Edith Chen, and Karen A. Matthews. 2010. "Childhood Socioeconomic Status and Adult Health." *Annals of the New York Academy of Sciences* 1186:37–55. doi: 10.1111/j.1749-6632.2009.05334.x.

Currie, Janet, and Duncan Thomas. 1995. "Does Head Start Make a Difference?" *The American Economic Review* 85(3):341–64.

Dannefer, Dale. 2003. "Cumulative Advantage/Disadvantage and the Life Course: Cross-Fertilizing Age and Social Science Theory." *The Journals of Gerontology: Series B* 58(6):S327–37. doi: 10.1093/geronb/58.6.S327.

Dannefer, Dale. 2020. "Systemic and Reflexive: Foundations of Cumulative Dis/Advantage and Life-Course Processes." *The Journals of Gerontology: Series B* 75(6):1249–63. doi: 10.1093/geronb/gby118.

Dannefer, Dale, and Chengming Han. 2021. "Process, Policy, and Unintended Consequences: The Life-Course Patterning of Cumulative (Dis)Advantage." in *Life-Course Implications of US Public Policy*. Routledge.

Dannefer, Dale, Jessica Kelley-Moore, and Wenxuan Huang. 2016. "Opening the Social: Sociological Imagination in Life Course Studies." Pp. 87–110 in *Handbook of the Life Course: Volume II*, *Handbooks of Sociology and Social Research*, edited by M. J. Shanahan, J. T. Mortimer, and M. Kirkpatrick Johnson. Cham: Springer International Publishing.

Danziger, Sandra K. 2010. “The Decline of Cash Welfare and Implications for Social Policy and Poverty.” *Annual Review of Sociology* 36:523–45.

DiPrete, Thomas A., and Gregory M. Eirich. 2006. “Cumulative Advantage as a Mechanism for Inequality: A Review of Theoretical and Empirical Developments.” *Annual Review of Sociology* 32:271–97.

Dore, Emily C., Melvin D. Livingston, and Paul R. Shafer. 2022. “Easing Cash Assistance Rules During COVID-19 Was Associated With Reduced Days Of Poor Physical And Mental Health.” *Health Affairs* 41(11):1590–97. doi: 10.1377/hlthaff.2022.00740.

Dowd, Jennifer Beam, and Anna Zajacova. 2010. “Does Self-Rated Health Mean the Same Thing Across Socioeconomic Groups? Evidence From Biomarker Data.” *Annals of Epidemiology* 20(10):743–49. doi: 10.1016/j.annepidem.2010.06.007.

Duncan, G. J., M. S. Hill, and S. D. Hoffman. 1988. “Welfare Dependence within and across Generations.” *Science (New York, N.Y.)* 239(4839):467–71. doi: 10.1126/science.3277267.

Dunifon, Rachel, Kathryn Hynes, and H. Elizabeth Peters. 2006. “Welfare Reform and Child Well-Being.” *Children and Youth Services Review* 28(11):1273–92. doi: 10.1016/j.childyouth.2006.01.005.

Edin, Kathryn, and Laura Lein. 1997. *Making Ends Meet: How Single Mothers Survive Welfare and Low-Wage Work*. New York, NY: Russell Sage Foundation.

Edin, Kathryn, and H. Luke Shaefer. 2016. *$2.00 a Day: Living on Almost Nothing in America*. Reprint edition. Mariner Books.

Elder, Glen H. 1998. “The Life Course as Developmental Theory.” *Child Development* 69(1):1–12. doi: 10.1111/j.1467-8624.1998.tb06128.x.

Elder, Glen H., Monica Kirkpatrick Johnson, and Robert Crosnoe. 2003. “The Emergence and Development of Life Course Theory.” Pp. 3–19 in *Handbook of the Life Course*, *Handbooks of Sociology and Social Research*, edited by J. T. Mortimer and M. J. Shanahan. Boston, MA: Springer US.

Falk, Gene, and Patrick A. Landers. 2023. *The Temporary Assistance for Needy Families (TANF) Block Grant: Responses to Frequently Asked Quesionts*. *CRS Report*. RL32760. Congressional Research Service.

Falk, Justin. 2023. “The Effects of Work Requirements on the Employment and Income of TANF Participants: Working Paper 2023-03.” *Working Papers*.

Fang, Hanming, and Michael Keane. 2004. “Assessing the Impact of Welfare Reform on Single Mothers.” *Brookings Papers on Economic Activity* 35(1):1–116.

Farrell, Mary, Sarah Rich, Lesley Turner, David Seith, and Dan Bloom. 2008. *An Update on State Welfare Time-Limit Policies and Their Effects on Families*. mdrc.

Ferraro, Kenneth F. 2016. "Life Course Lens on Aging and Health." Pp. 389–406 in *Handbook of the Life Course: Volume II*, *Handbooks of Sociology and Social Research*, edited by M. J. Shanahan, J. T. Mortimer, and M. Kirkpatrick Johnson. Cham: Springer International Publishing.

Ferraro, Kenneth F., Markus H. Schafer, and Lindsay R. Wilkinson. 2016. "Childhood Disadvantage and Health Problems in Middle and Later Life: Early Imprints on Physical Health?" *American Sociological Review* 81(1):107–33. doi: 10.1177/0003122415619617.

Fording, Richard C., Joe Soss, and Sanford F. Schram. 2007. "Devolution, Discretion, and the Effect of Local Political Values on TANF Sanctioning." *Social Service Review* 81(2):285–316. doi: 10.1086/517974.

Gilman, Stephen E., Ichiro Kawachi, Garrett M. Fitzmaurice, and Stephen L. Buka. 2002. "Socioeconomic Status in Childhood and the Lifetime Risk of Major Depression." *International Journal of Epidemiology* 31(2):359–67. doi: 10.1093/ije/31.2.359.

Goosby, Bridget J. 2013. "Early Life Course Pathways of Adult Depression and Chronic Pain." *Journal of Health and Social Behavior* 54(1):75–91. doi: 10.1177/0022146512475089.

Grogger, Jeff, and Lynn A. Karoly. 2005. *Welfare Reform: Effects of a Decade of Change*. Cambridge, MA: Harvard University Press.

Hahn, Heather, Laudan Aron, Cary Lou, Eleanor Pratt, and Adaeze Okoli. 2017. *Why Does Cash Welfare Depend on Where You Live.* Washington, D.C.: Urban Institute.

Halpern-Meekin, Sarah, Kathryn Edin, Laura Tach, and Jennifer Sykes. 2015. *It's Not Like I'm Poor: How Working Families Make Ends Meet in a Post-Welfare World*.

Hargrove, Taylor W., Lauren Gaydosh, and Alexis C. Dennis. 2022. "Contextualizing Educational Disparities in Health: Variations by Race/Ethnicity, Nativity, and County-Level Characteristics." *Demography* 59(1):267–92. doi: 10.1215/00703370-9664206.

Harris, Kathleen Mullan. 2010. "An Integrative Approach to Health." *Demography* 47(1):1–22.

Hartley, Robert Paul, Carlos Lamarche, and James P. Ziliak. forthcoming. "Welfare Reform and the Intergenerational Transmission of Dependence." *Journal of Political Economy*.

Hatzenbuehler, Mark L., Jo C. Phelan, and Bruce G. Link. 2013. "Stigma as a Fundamental Cause of Population Health Inequalities." *American Journal of Public Health* 103(5):813–21. doi: 10.2105/AJPH.2012.301069.

Hayward, Mark D., and Bridget K. Gorman. 2004. "The Long Arm of Childhood: The Influence of Early-Life Social Conditions on Men's Mortality." *Demography* 41(1):87–107. doi: 10.1353/dem.2004.0005.

Herd, Pamela, Hilary Hoynes, Jamila Michener, and Donald Moynihan. 2023. “Introduction: Administrative Burden as a Mechanism of Inequality in Policy Implementation.” *RSF: The Russell Sage Foundation Journal of the Social Sciences* 9(5):1–30. doi: 10.7758/RSF.2023.9.5.01.

Herd, Pamela, and Donald P. Moynihan. 2019. *Administrative Burden: Policymaking by Other Means*. 1st edition. New York: Russell Sage Foundation.

Heymann, Jody, Alison Earle, and Kristen McNeill. 2013. “The Impact of Labor Policies on the Health of Young Children in the Context of Economic Globalization.” *Annual Review of Public Health* 34:355–72. doi: 10.1146/annurev-publhealth-031912-114358.

Holl, Jane L., Elissa H. Oh, Joan Yoo, Laura B. Amsden, and Min-Woong Sohn. 2012. “Effects of Welfare and Maternal Work on Recommended Preventive Care Utilization among Low-Income Children.” *American Journal of Public Health* 102(12):2274–79. doi: 10.2105/AJPH.2012.300803.

Hoynes, H, DW Schanzenbach, and D. Almond. 2016. “Long-Run Impacts of Childhood Access to the Safety Net.” *AMERICAN ECONOMIC REVIEW* 106(4):903–34. doi: 10.1257/aer.20130375.

Hoynes, Hilary, Diane Whitmore Schanzenbach, and Douglas Almond. 2016. “Long-Run Impacts of Childhood Access to the Safety Net.” *American Economic Review* 106(4):903–34. doi: 10.1257/aer.20130375.

Hoynes, Hilary W., and Diane Whitmore Schanzenbach. 2018. *Safety Net Investments in Children*. *Working Paper*. 24594. National Bureau of Economic Research. doi: 10.3386/w24594.

Idler, Ellen L., and Yael Benyamini. 1997. “Self-Rated Health and Mortality: A Review of Twenty-Seven Community Studies.” *Journal of Health and Social Behavior* 38(1):21–37. doi: 10.2307/2955359.

Institute for Social Research. 2021. *PSID Main Interview User Manual: Release 2021.* Ann Arbor: University of Michigan.

Kalil, Ariel, Hope Corman, Dhaval Dave, Ofira Schwarz-Soicher, and Nancy E. Reichman. 2023. “Welfare Reform and the Quality of Young Children’s Home Environments.” *Demography* 11037907. doi: 10.1215/00703370-11037907.

Kalil, Ariel, Kristin S. Seefeldt, and Hui-chen Wang. 2002. “Sanctions and Material Hardship under TANF.” *Social Service Review* 76(4):642–62. doi: 10.1086/342998.

Kaplan, Kathryn, Suniya Farooqui, Jamela Clark, Emily Dobson, Rita Jefferson, Niya Kelly, Katherine Buitrago, Kimberly Drew, Aces Lira, Maxica Williams, Taishi Neuman, and Yoojin Kim. 2022. “Temporary Assistance For Needy Families: Sanctioning And Child Support Compliance Among Black Families In Illinois.” *Health Affairs* 41(12):1735–43. doi: 10.1377/hlthaff.2022.00746.

Keiser, Lael R., Peter R. Mueser, and Seung-Whan Choi. 2004. "Race, Bureaucratic Discretion, and the Implementation of Welfare Reform." *American Journal of Political Science* 48(2):314–27. doi: 10.1111/j.0092-5853.2004.00072.x.

Kessler, Ronald C., Peggy R. Barker, Lisa J. Colpe, Joan F. Epstein, Joseph C. Gfroerer, Eva Hiripi, Mary J. Howes, Sharon-Lise T. Normand, Ronald W. Manderscheid, Ellen E. Walters, and Alan M. Zaslavsky. 2003. "Screening for Serious Mental Illness in the General Population." *Archives of General Psychiatry* 60(2):184–89. doi: 10.1001/archpsyc.60.2.184.

Khullar, Dhruv, and Dave A. Chokshi. 2018. "Health, Income, & Poverty: Where We Are & What Could Help | Health Affairs Brief." *Health Affairs Health Policy Brief*. doi: 10.1377/hpb20180817.901935.

King, Michael D. 2021. "Those With a High School Diploma or Less Make Up Majority of Government Assistance Recipients." *Census.Gov*. Retrieved May 26, 2023 (https://www.census.gov/library/stories/2021/05/more-than-one-in-seven-social-safety-net-recipients-in-2017-were-college-graduates.html).

Komro, Kelli, Scott Burris, and Alexander Wagenaar. 2014. "Social Determinants of Child Health: Concepts and Measures for Future Research." *Health Behavior & Policy Review* 1:432–45. doi: 10.14485/HBPR.1.6.1.

Lee, Kyoung Hag, and Dong Pil Yoon. 2012. "A Comparison of Sanctions in African American and White TANF Leavers." *Journal of Evidence-Based Social Work* 9(4):396–413. doi: 10.1080/15433714.2011.552035.

Liu, Hui, and Robert A. Hummer. 2008. "Are Educational Differences in U.S. Self-Rated Health Increasing?: An Examination by Gender and Race." *Social Science & Medicine* 67(11):1898–1906. doi: 10.1016/j.socscimed.2008.09.021.

Liu, Sze Yan, Jennifer J. Manly, Benjamin D. Capistrant, and M. Maria Glymour. 2015. "Historical Differences in School Term Length and Measured Blood Pressure: Contributions to Persistent Racial Disparities among US-Born Adults." *PloS One* 10(6):e0129673. doi: 10.1371/journal.pone.0129673.

Luo, Ye, and Linda J. Waite. 2005. "The Impact of Childhood and Adult SES on Physical, Mental, and Cognitive Well-Being in Later Life." *The Journals of Gerontology: Series B* 60(2):S93–101. doi: 10.1093/geronb/60.2.S93.

Matthay, Ellicott C., Erin Hagan, Spruha Joshi, May Lynn Tan, David Vlahov, Nancy Adler, and M. Maria Glymour. 2021. "The Revolution Will Be Hard to Evaluate: How Co-Occurring Policy Changes Affect Research on the Health Effects of Social Policies." *Epidemiologic Reviews* 43(1):19–32. doi: 10.1093/epirev/mxab009.

Meyer, Laura, and Ife Floyd. 2020. "Cash Assistance Should Reach Millions More Families to Lessen Hardship." *Center on Budget and Policy Priorities*. Retrieved October 18, 2021

(https://www.cbpp.org/research/family-income-support/cash-assistance-should-reach-millions-more-families-to-lessen).

Miller, W. D., T. Sadegh-Nobari, and M. Lillie-Blanton. 2011. "Healthy Starts for All: Policy Prescriptions." *American Journal of Preventive Medicine* 40(1 SUPPL. 1):S19–37. doi: 10.1016/j.amepre.2010.10.001.

Moen, Phyllis, Erin L. Kelly, Eric Tranby, and Qinlei Huang. 2011. "Changing Work, Changing Health: Can Real Work-Time Flexibility Promote Health Behaviors and Well-Being?" *Journal of Health and Social Behavior* 52(4):404–29. doi: 10.1177/0022146511418979.

Moffitt, Robert A., and James P. Ziliak. 2020. *Covid-19 and the U.S. Safety Net*. *Working Paper*. 27911. National Bureau of Economic Research. doi: 10.3386/w27911.

Montez, Jennifer Karas, and Jacob M. Grumbach. 2023. "US State Policy Contexts and Population Health." *The Milbank Quarterly* 101(S1):196–223. doi: 10.1111/1468-0009.12617.

Morrissey, Taryn W., Yun Cha, Sharon Wolf, and Mariam Khan. 2020. "Household Economic Instability: Constructs, Measurement, and Implications." *Children and Youth Services Review* 118:105502. doi: 10.1016/j.childyouth.2020.105502.

Muller, Christopher, Robert J. Sampson, and Alix S. Winter. 2018. "Environmental Inequality: The Social Causes and Consequences of Lead Exposure." *Annual Review of Sociology* 44:263–82.

Narain, Kimberly, Marianne Bitler, Ninez Ponce, Gerald Kominski, and Susan Ettner. 2017. "The Impact of Welfare Reform on the Health Insurance Coverage, Utilization and Health of Low Education Single Mothers." *Social Science & Medicine (1982)* 180:28–35. doi: 10.1016/j.socscimed.2017.03.021.

Noghanibehambari, Hamid, and Michal Engelman. 2022. "Social Insurance Programs and Later-Life Mortality: Evidence from New Deal Relief Spending." *Journal of Health Economics* 86:102690. doi: 10.1016/j.jhealeco.2022.102690.

Office of Family Assistance. 2021. "Characteristics and Financial Circumstances of TANF Recipients, Fiscal Year 2020." *Office of Family Assistance*. Retrieved May 23, 2022 (https://www.acf.hhs.gov/ofa/data/characteristics-and-financial-circumstances-tanf-recipients-fiscal-year-2020).

Parolin, Zachary. 2021a. "Decomposing the Decline of Cash Assistance in the United States, 1993 to 2016." *Demography* 58(3):1119–41. doi: 10.1215/00703370-9157471.

Parolin, Zachary. 2021b. "Temporary Assistance for Needy Families and the Black–White Child Poverty Gap in the United States." *Socio-Economic Review* 19(3):1005–35. doi: 10.1093/ser/mwz025.

Parolin, Zachary, and David Brady. 2019. “Extreme Child Poverty and the Role of Social Policy in the United States.” *Journal of Poverty and Social Justice* 27. doi: 10.1332/175982718X15451316991601.

Parolin, Zachary, Christina J. Cross, and Rourke O’Brien. 2023. “Administrative Burdens and Economic Insecurity Among Black, Latino, and White Families.” *RSF: The Russell Sage Foundation Journal of the Social Sciences* 9(5):56–75. doi: 10.7758/RSF.2023.9.5.03.

Pavetti, LaDonna, Michelle K. Derr, and Heather Hesketh Zaveri. 2003. *Review of Sanction Policies and Research Studies*. Washington, D.C.: US Department of Health and Human Services.

Power, Chris, Diana Kuh, and Susan Morton. 2013. “From Developmental Origins of Adult Disease to Life Course Research on Adult Disease and Aging: Insights from Birth Cohort Studies.” *Annual Review of Public Health* 34:7–28. doi: 10.1146/annurev-publhealth-031912-114423.

Radey, Melissa, Lenore McWey, and Ming Cui. 2020. “Psychological Distress among Low-Income Mothers: The Role of Public and Private Safety Nets.” *Women & Health* 60(6):692–706. doi: 10.1080/03630242.2019.1700586.

Ray, Victor, Pamela Herd, and Donald Moynihan. 2023. “Racialized Burdens: Applying Racialized Organization Theory to the Administrative State.” *Journal of Public Administration Research and Theory* 33(1):139–52. doi: 10.1093/jopart/muac001.

Reynolds, Megan M., Ashley M. Fox, Ming Wen, and Michael W. Varner. 2020. “Is Less More? Examining the Relationship between Food Assistance Benefit Levels and Childhood Weight.” *SSM - Population Health* 11:100573. doi: 10.1016/j.ssmph.2020.100573.

Rosewater, Ann. 1997. *Setting the Baseline: A Report on State Welfare Waivers*. Washington, D.C.: Office of the Assistant Secretary for Planning and Evaluation.

Safawi, Ali. 2021. “Remaining States Should Lift Racist TANF Drug Felony Bans; Congress Should Lift It Nationwide.” *Center on Budget and Policy Priorities*. Retrieved February 3, 2022 (https://www.cbpp.org/blog/remaining-states-should-lift-racist-tanf-drug-felony-bans-congress-should-lift-it-nationwide).

Safawi, Ali, and LaDonna Pavetti. 2020. “Most Parents Leaving TANF Work, But in Low-Paying, Unstable Jobs, Recent Studies Find.” *Center on Budget and Policy Priorities*. Retrieved May 19, 2023 (https://www.cbpp.org/research/family-income-support/most-parents-leaving-tanf-work-but-in-low-paying-unstable-jobs).

Schott, Liz, Ladonna Pavetti, and Ife Floyd. 2015. *How States Use Federal and State Funds Under the TANF Block Grant*. Washington, D.C.: Center on Budget and Policy Priorities.

Schram, Sanford F., Joe Soss, Richard C. Fording, and Linda Houser. 2009. “Deciding to Discipline: Race, Choice, and Punishment at the Frontlines of Welfare Reform.” *American Sociological Review* 74(3):398–422. doi: 10.1177/000312240907400304.

Shaefer, H., Kathryn Edin, Vincent Fusaro, and Pinghui Wu. 2019. "The Decline of Cash Assistance and the Well-Being of Poor Households with Children." *Social Forces* 98. doi: 10.1093/sf/soz020.

Shanahan, Michael J., Jeylan T. Mortimer, and Monica Kirkpatrick Johnson, eds. 2015. *Handbook of the Life Course: Volume II*. 1st ed. 2016 edition. Cham, Heidelberg, New York, Dordrecht, London: Springer.

Spencer, Rachael A., and Kelli A. Komro. 2017. "Family Economic Security Policies and Child and Family Health." *Clinical Child and Family Psychology Review* 20(1):45–63. doi: 10.1007/s10567-017-0225-6.

Spencer, Rachael A., Melvin D. Livingston, Kelli A. Komro, Nolan Sroczynski, Shelby T. Rentmeester, and Briana Woods-Jaeger. 2021. "Association between Temporary Assistance for Needy Families (TANF) and Child Maltreatment among a Cohort of Fragile Families." *Child Abuse & Neglect* 120:105186. doi: 10.1016/j.chiabu.2021.105186.

Spencer, Rachael, Melvin Livingston, Briana Woods-Jaeger, Shelby Rentmeester, Nolan Sroczynski, and Kelli Komro. 2020. "The Impact of Temporary Assistance for Needy Families, Minimum Wage, and Earned Income Tax Credit on Women's Well-Being and Intimate Partner Violence Victimization." *Social Science & Medicine (1982)* 266:113355. doi: 10.1016/j.socscimed.2020.113355.

Strully, Kate W., David H. Rehkopf, and Ziming Xuan. 2010. "Effects of Prenatal Poverty on Infant Health: State Earned Income Tax Credits and Birth Weight." *American Sociological Review* 75(4):534–62. doi: 10.1177/0003122410374086.

Trisi, Danilo, and Matt Saenz. 2020. "Deep Poverty Among Children Rose in TANF's First Decade, Then Fell as Other Programs Strengthened | Center on Budget and Policy Priorities." *Center on Budget and Policy Priorities*. Retrieved May 18, 2023 (https://www.cbpp.org/research/poverty-and-inequality/deep-poverty-among-children-rose-in-tanfs-first-decade-then-fell-as).

U.S. Department of Health & Human Services. 2021. "TANF Caseload Data 2020." *Office of Family Assistance*. Retrieved October 5, 2021 (https://www.acf.hhs.gov/ofa/data/tanf-caseload-data-2020).

Wadsworth, Michael E. J., and Diana Kuh. 2016. "Epidemiological Perspectives on the Life Course." Pp. 639–59 in *Handbook of the Life Course: Volume II*, *Handbooks of Sociology and Social Research*, edited by M. J. Shanahan, J. T. Mortimer, and M. Kirkpatrick Johnson. Switzerland: Springer International Publishing.

Walker, Andrew, Rachael A. Spencer, Emily Lemon, Briana Woods-Jaeger, Kelli A. Komro, and Melvin D. Livingston. 2023. "The Impact of Temporary Assistance for Needy Families Benefit Requirements and Sanctions on Maternal Material Hardship, Mental Health, and Parental Aggravation." *Maternal and Child Health Journal*. doi: 10.1007/s10995-023-03699-0.

Wang, Julia Shu-Huah. 2015. “TANF Coverage, State TANF Requirement Stringencies, and Child Well-Being.” *Children and Youth Services Review* 53:121–29. doi: 10.1016/j.childyouth.2015.03.028.

Zajacova, Anna, and Jennifer Beam Dowd. 2011. “Reliability of Self-Rated Health in US Adults.” *American Journal of Epidemiology* 174(8):977–83. doi: 10.1093/aje/kwr204.

Ziliak, James P., ed. 2015. *Welfare Reform and Its Long-Term Consequences for America’s Poor*. Reprint edition. Cambridge University Press.

Table 1. Weighted Descriptive Statistics of Study Sample

	Self-Rated Health (N = 13,415)			Psychological Distress (N = N=12,723)		
	High Participation Sample	Placebo Sample	p-value	High Participation Sample	Placebo Sample	p-value
Poor Health	14.3%	7.3%	<0.001	-	-	-
Distress	-	-	-	4.3	4.0	0.030
Welfare Reform Exposure (years)	9.4	9.2	0.407	9.6	9.3	0.264
Individual-Level Covariates						
Race			<0.001			<0.001
White, Non-Hispanic	57.2%	83.4%		56.6%	83.2%	
Black, Non-Hispanic	26.3%	8.6%		27.5%	8.7%	
Hispanic	14.2%	5.0%		13.6%	4.9%	
Other	2.3%	3.0%		2.3%	3.2%	
Female	57.7%	50.8%	0.036	61.0%	51.1%	0.006
State-Level						
Unemployment Rate	7.2%	7.0%	0.234	7.1%	7.0%	0.259
Median Income	35,008.45	35,562.96	0.282	35,348.82	35,790.92	0.399
EITC Amount	0.2%	0.3%	0.262	0.2%	0.3%	0.276
EITC Refundable	1.1%	1.1%	0.958	1.2%	1.1%	0.901
Minimum Wage	3.31	3.31	0.968	3.32	3.33	0.845

Table 2. Estimated Effects of Welfare Reform in Childhood on Adult Health

	Model 1	Model 2	Model 1	Model 2
	Poor Self-Rated Health		**Psychological Distress**	
Welfare reform exposure	-0.01	-0.01	0.02	0.002
	(0.005)	(0.01)	(0.07)	(0.06)
Participation	0.09**	0.09**	0.93	0.92
	(0.03)	(0.03)	(0.48)	(0.49)
Welfare reform×Participation	-0.004	-0.004	-0.06	-0.06
	(0.002)	(0.002)	(0.04)	(0.04)
Sample size		13,415		12,723

***p<0.001, **p<0.01, *p<0.05

[a]Model 1 controls for childhood state fixed effects, year of interview fixed effects, time-varying state-level characteristics, and individual demographics

[b]Model 2 also controls for state-specific linear time trends

Table 3. Estimated Effects of Welfare Reform in Childhood on Adult Health by Race/Ethnicity-Welfare Participation Groups

	Model 1	Model 2	Model 1	Model 2
	Poor Self-Rated Health		**Psychological Distress**	
Welfare reform exposure	-0.005	-0.004	0.04	0.02
	(0.005)	(0.01)	(0.07)	(0.07)
Race	0.11*	0.12*	-1.47**	-1.54**
	(0.05)	(0.05)	(0.50)	(0.49)
Participation	0.05	0.05	0.26	0.24
	(0.03)	(0.03)	(0.46)	(0.46)
Welfare reform×Race	-0.01	-0.01	0.12*	0.13*
	(0.004)	(0.004)	(0.05)	(0.05)
Welfare reform×Participation	-0.001	-0.001	-0.004	-0.004
	(0.003)	(0.003)	(0.04)	(0.04)
Participation×Race	0.08	0.08	2.72***	2.77***
	(0.06)	(0.06)	(0.72)	(0.72)
Welfare reform×Race×Participation	-0.01	-0.01	-0.24***	-0.24***
	(0.01)	(0.01)	(0.06)	(0.06)
Sample size		13,146		12,462

***p<0.001, **p<0.01, *p<0.05

[a]Model 1 controls for childhood state fixed effects, year of interview fixed effects, time-varying state-level characteristics, and individual demographics

[b]Model 2 also controls for state-specific linear time trends

Table 4. Difference in Health with a One-Year Increase in Welfare Reform Exposure by Race/Ethnicity-Welfare Participation Groups

	High Participation White Sample	High Participation Black and Hispanic Sample	Placebo White Sample	Placebo Black and Hispanic Sample
Difference in probability of reporting poor health	-0.01	-0.02**	-0.005	-0.01
	(-0.02, 0.01)	(-0.03, -0.01)	(-0.01, 0.01)	(-0.02, 0.001)
Difference in psychological distress level	0.03	-0.09	0.04	0.16
	(-0.11, 0.18)	(-0.25, 0.07)	(-0.10, 0.17)	(-0.01, 0.33)

***p<0.001, **p<0.01, *p<0.05

[a]Results are based on regressions from Table 3, Model 1 for each outcome.

[b]Model 1 controls for childhood state fixed effects, time-varying state-level characteristics, individual demographics, and year of interview fixed effects.

Figure 1. Timeline of Economic Policies Relevant to Health

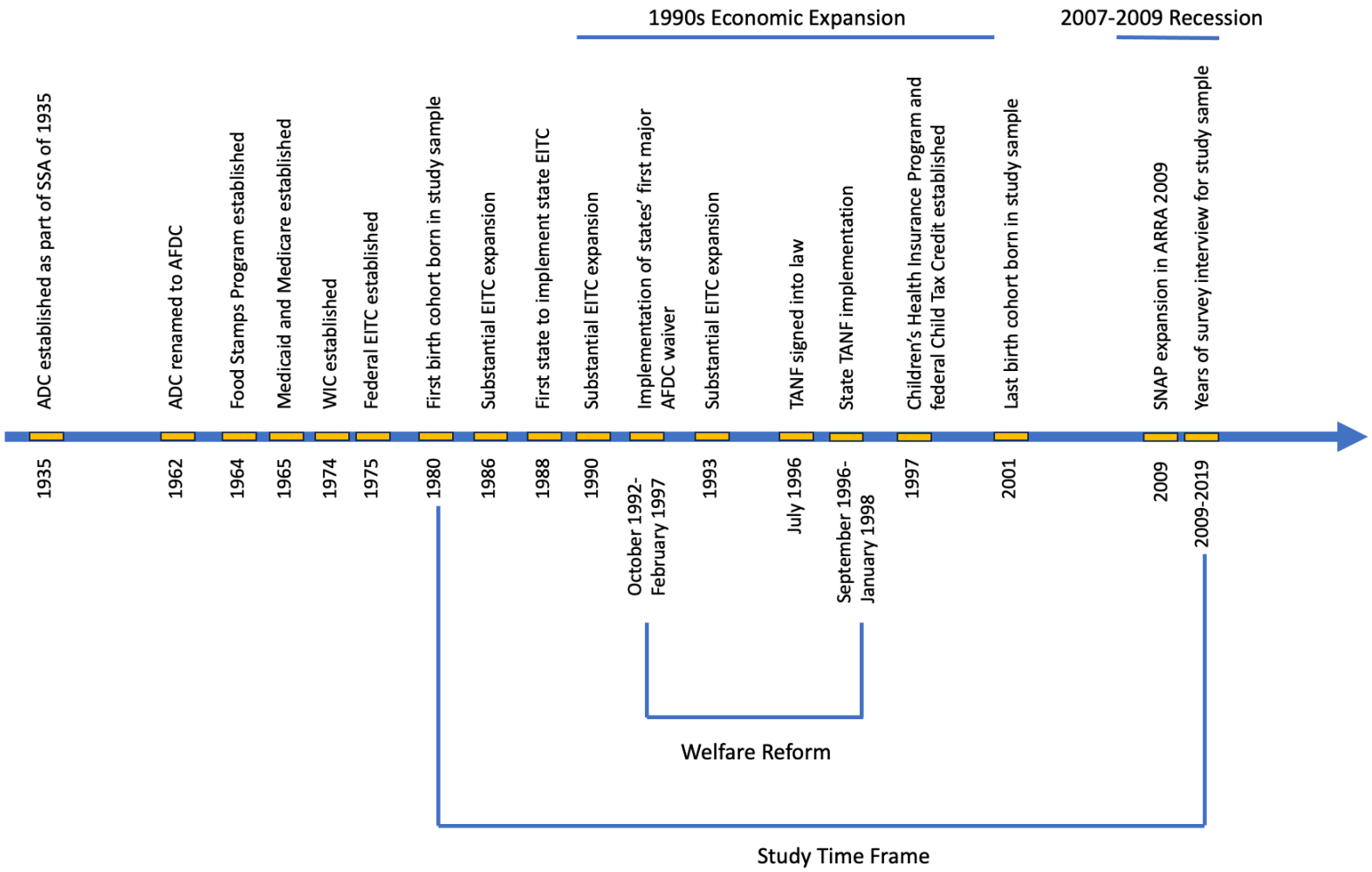


Figure 2. Conceptual Framework

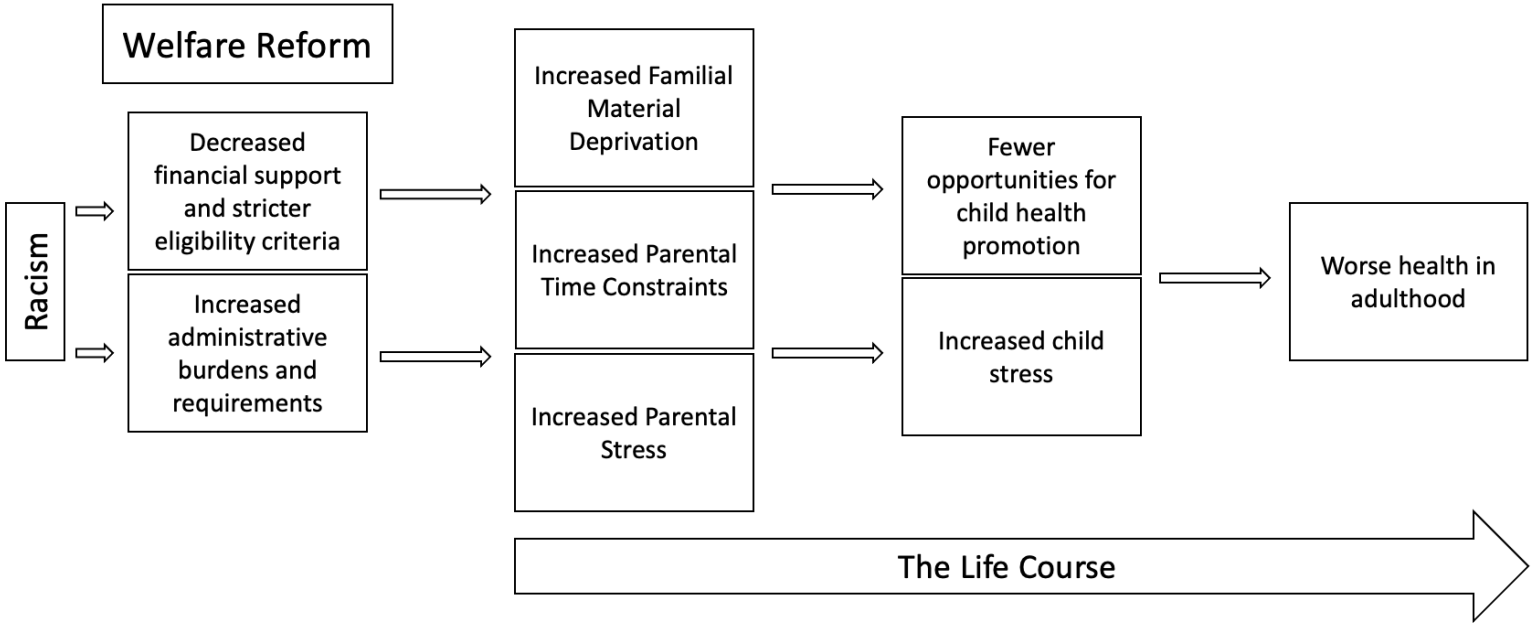
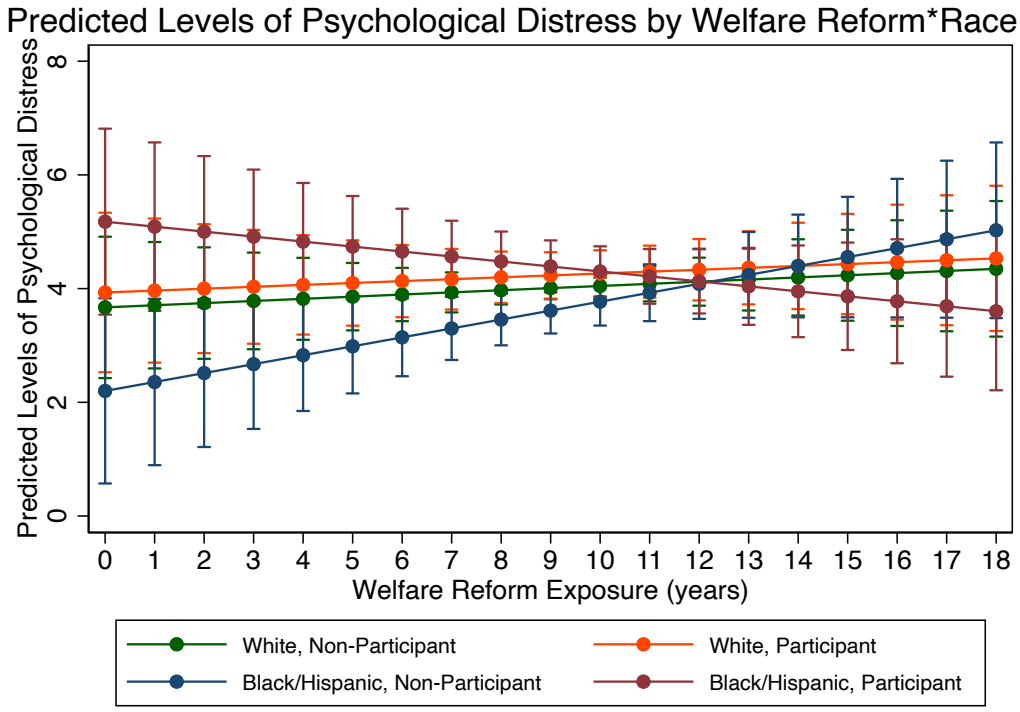


Figure 3. Predicted Levels of Psychological Distress by Welfare Reform Exposure and Race/Ethnicity



Conclusion

This dissertation explored the relationship between social, economic, and political contexts in childhood and health in adulthood. Millions of children experience poverty each year in the U.S., which has troubling implications for their long-term health. These chapters went beyond examining individual-level relationships between childhood SES and adult health to search for potential leverage in state context and policy to disrupt this relationship. Overall, the results suggested that childhood state context plays an important role in shaping the relationship between childhood SES and health, though there remain many questions about which context and policy have the strongest impact. Chapter 1 summarized the literature on the effect of social and economic policy exposures in childhood on health in adulthood using a scoping review methodology. Although this literature was small and encompasses a broad array of policies, it provided strong evidence for the lasting health impacts of economic and social policies. More specifically, childhood exposure to desegregation, income support, in-kind assistance, and government investment policies and programs overwhelmingly led to positive health outcomes in adulthood. The consistency of these findings was especially meaningful given the studies' strong research designs and the variation in policies, time period, cohorts, and health outcomes studied.

The important role of the state was echoed in the second chapter, which examined state variation in the relationship between childhood SES and adult health. I hypothesized that state context plays a role in this relationship because different state characteristics and policies affect resources and opportunities for individuals, facilitating (or not facilitating) their social mobility and improving health trajectories. This analysis found support for the hypothesis that there would be state variation in the relationship between childhood SES and self-rated health in adulthood,

and that this relationship would be driven by a greater difference in health outcomes of the lower-SES group. These findings suggest that state context is important. However, the two state-level variables examined (welfare spending and income inequality) did not alter the relationship between childhood SES and health as expected. Yet, the role of the individual's own education varied in how it modified the relationship between childhood SES and health across states, suggesting this is a fruitful area for future research. Thus, this study provided some support for the overall theoretical underpinning of the dissertation, that state context is important, but provided little explanation about which kind of state context makes the most difference.

The final chapter hypothesized that childhood exposure to welfare reform would have negative long-term effects because of increased administrative burdens and decreased access to material resources for low-SES families when TANF replaced AFDC in the 1990s. Additionally, I hypothesized that the effects would be particularly detrimental to welfare participants of color due to the combination of historical racism in the welfare system and TANF's increased use of punitive measures. Yet, I found null results for the main analysis. Although there was some evidence of differential effects by race, the evidence leaned more toward residual bias than support for the hypotheses due to an effect found for the placebo group. This chapter's null findings conflict with the findings from most studies in the scoping review, but parallel the null findings from the second chapter on state contexts that impact life course health.

Although the results of chapter 3 were not as expected, I believe the dissertation findings taken as a whole provide support for continuing this research and digging deeper into uncovering childhood contexts and policies that have long-term implications for health. As seen during the COVID-19 pandemic, U.S. policymakers can decrease the child poverty rate by implementing a variety of income support policies (Burns, Fox, and Wilson 2022). When policymakers have the

political will to decrease the negative impacts of poverty, they can do so decisively. While it will be years until researchers can measure the long-term impact of these pandemic era policies, the short-term effects have been clear. The Child Tax Credits decreased food insufficiency, changes to state TANF programs improved mental, physical, and behavioral health outcomes, and receiving unemployment insurance was associated with better health care access and fewer mental health symptoms (Berkowitz and Basu 2021; Dore, Livingston, and Shafer 2022; Shafer et al. 2022). While we cannot measure the long-term effects of these policies yet, we can measure the long-term effects of previous social and economic policies, providing insight into the future of our children's health.

Strengths and Limitations

Each paper described its own limitations, but overall the biggest limitation in life course research is the inability to fully capture the complexity of a lifetime within one study. One manuscript cannot account for all exposures across a lifetime, and therefore may automatically omit important information. Schwartz and Glymour (2023) lay out these challenges in a recent review of causal approaches to life course questions, imploring researchers to "rigorously interrogate bias from unmeasured and potentially time-varying confounders" (p. 14.15-14.16) which is a relevant request for all research but is especially true for research questions that span decades and include countless exposures to health shaping experiences. For example, will the likely long-term positive impacts of the pandemic era income support policies be canceled out by the reversal of these policies shortly after implementation? If the study is not carefully designed, it is possible that projects studying long-term health effects of pandemic policies will show null results because of confounding events occurring afterwards. A middle-aged person has lived

through many economic, social, and political contexts in their lives, and it is difficult, though not impossible, to disentangle the effect of each.

The main strength of this dissertation was the theoretical, interdisciplinary foundation that pulled from life course theories and evidence from sociology, social epidemiology, economics, and political science to formulate research questions, hypotheses, and study designs. The chapters addressed similar questions, which helps to draw more convincing conclusions and clear pathways forward. For example, while evidence from the scoping review conflicts with the findings from chapter 3, the differences between policies, health outcomes, and methods between each of the papers suggest explanations for the conflicting results. The papers all used different methods, which also helps to triangulate the evidence and contribute to this growing field.

Policy and Research Implications

One implication of these findings taken together is that policymakers should implement policies that provide greater support to American families and that they should standardize this support across states. Evidence on the positive long-term impacts of SNAP, the Mothers' Pension program, EITC, and government investment suggests the importance of childhood exposure to more generous government policies (Aizer et al. 2016; Arthi 2018; Braga, Blavin, and Gangopadhyaya 2020; Hoynes, Schanzenbach, and Almond 2016; Insolera, Cohen, and Wolfson 2022; Modrek et al. 2022; Noghanibehambari and Engelman 2022; Vartanian and Houser 2012). Although Chapter 3 found little support for the long-term negative health effects of a less generous welfare program, more research is needed before making final decisions on this question. However, it is possible that the change from AFDC to TANF was not as impactful as expected, given the drawbacks of AFDC, including the stigmatizing discourse around the

program and its participants already occurring pre-welfare reform (Baekgaard, Herd, and Moynihan 2022; Herd and Moynihan 2019).

As many scholars have noted, unconditional cash transfer programs are more beneficial to participants and their families compared to programs conditioned on requirements such as working or participating in work activities (Davis 2019; Herbst 2017). Stigma is also an important consideration when implementing a government cash assistance program given the substantial public backlash to and discourse about the U.S. welfare system and its participants. While changing cultural beliefs about poverty and who is deserving is difficult, designing programs to limit stigma and increase participation is possible (Halpern-Meekin et al. 2015; Lasky-Fink and Linos 2023). One way to design a less stigmatizing program is to make access universal. Curran and colleagues (2021) highlight that the U.S. is the only country without a national child allowance among its peer countries. They argue that to decrease the negative impacts of poverty, the U.S. should take note of the positive and wide-reaching impact of the generous government response to the COVID-19 pandemic by providing nationally standardized, unconditional, per capita cash benefits, and policymakers and program administrators must ensure access to those often excluded.

Future research can explore these questions by comparing the health effects of childhood exposure to universal government programs compared to means-tested programs. For example, research can build on the findings of Chapter 3 by further exploring 1) whether these findings are replicable with a different study design and/or data set and 2) if there continue to be null findings, is that because both AFDC and TANF are means-tested programs administered in a time period during which poverty was heavily stigmatized? Is stigma a more important

component in contributing to long-term health than components such as benefit amount or time limits?

Over half of federal spending on children is allocated to means-tested programming (Curran et al. 2021). EITC and SNAP are both means-tested programs that have long-lasting health effects (Braga et al. 2020; Hoynes et al. 2016) but they contain de-stigmatizing components that differentiate them from welfare, including how they are administered (e.g., tax credits) and the benefits they are tied to (e.g., in-kind). Thus, understanding the long-term health effects of the stigmatizing aspects of means-tested programs compared to universal programs can inform policies to have the most positive impact. Additionally, understanding the interactions between policies and context, including the effect of poverty alleviation programs in areas where poverty is heavily stigmatized, can also be an important next step. Many more studies are taking this approach of examining policies' effects across contexts, acknowledging that even the same policies across states can have different economic and health impacts depending on context including income inequality, poverty levels, and the cost of living (McFarland, Hill, and Montez 2023; Wilson et al. 2023). There are still several unanswered questions in this area and many opportunities beyond what I listed here that will expand the field and inform policy that improves population health.

References

Aizer, Anna, Shari Eli, Joseph Ferrie, and Adriana Lleras-Muney. 2016. "The Long-Run Impact of Cash Transfers to Poor Families." *The American Economic Review* 106(4):935–71. doi: 10.1257/aer.20140529.

Arthi, V. 2018. "'The Dust Was Long in Settling': Human Capital and the Lasting Impact of the American Dust Bowl." *Journal of Economic History* 78(1):196–230. doi: 10.1017/S0022050718000074.

Baekgaard, Martin, Pamela Herd, and Donald P. Moynihan. 2022. "Of 'Welfare Queens' and 'Poor Carinas': Social Constructions, Deservingness Messaging and the Mental Health of Welfare Clients." *British Journal of Political Science* 1–19. doi: 10.1017/S000712342200031X.

Berkowitz, Seth A., and Sanjay Basu. 2021. "Unemployment Insurance, Health-Related Social Needs, Health Care Access, and Mental Health During the COVID-19 Pandemic." *JAMA Internal Medicine* 181(5):699–702. doi: 10.1001/jamainternmed.2020.7048.

Braga, B., F. Blavin, and A. Gangopadhyaya. 2020. "The Long-Term Effects of Childhood Exposure to the Earned Income Tax Credit on Health Outcomes." *Journal of Public Economics* 190. doi: 10.1016/j.jpubeco.2020.104249.

Burns, Kalee, Liana Fox, and Danielle Wilson. 2022. "Expansions to Child Tax Credit Contributed to 46% Decline in Child Poverty Since 2020." *Census.Gov*. Retrieved January 4, 2024 (https://www.census.gov/library/stories/2022/09/record-drop-in-child-poverty.html).

Curran, Megan A., Irwin Garfinkel, and Christopher Wimer. 2021. "The Evolution and Impact of Federal Antipoverty Programs for Children." *Academic Pediatrics* 21(8S):S140–45. doi: 10.1016/j.acap.2021.05.003.

Davis, Owen. 2019. "What Is the Relationship between Benefit Conditionality and Mental Health? Evidence from the United States on TANF Policies." *Journal of Social Policy* 48(2):249–69. doi: 10.1017/S0047279418000363.

Dore, Emily C., Melvin D. Livingston, and Paul R. Shafer. 2022. "Easing Cash Assistance Rules During COVID-19 Was Associated With Reduced Days Of Poor Physical And Mental Health." *Health Affairs* 41(11):1590–97. doi: 10.1377/hlthaff.2022.00740.

Halpern-Meekin, Sarah, Kathryn Edin, Laura Tach, and Jennifer Sykes. 2015. *It's Not Like I'm Poor: How Working Families Make Ends Meet in a Post-Welfare World*.

Herbst, CM. 2017. "Are Parental Welfare Work Requirements Good for Disadvantaged Children? Evidence From Age-of-Youngest-Child Exemptions." *JOURNAL OF POLICY ANALYSIS AND MANAGEMENT* 36(2):327-+. doi: 10.1002/pam.21971.

Herd, Pamela, and Donald P. Moynihan. 2019. *Administrative Burden: Policymaking by Other Means*. 1st edition. New York: Russell Sage Foundation.

Hoynes, H., DW Schanzenbach, and D. Almond. 2016. "Long-Run Impacts of Childhood Access to the Safety Net." *AMERICAN ECONOMIC REVIEW* 106(4):903–34. doi: 10.1257/aer.20130375.

Insolera, Noura, Alicia Cohen, and Julia A. Wolfson. 2022. "SNAP and WIC Participation During Childhood and Food Security in Adulthood, 1984-2019." *American Journal of Public Health* 112(10):1498–1506. doi: 10.2105/AJPH.2022.306967.

Lasky-Fink, Jessica, and Elizabeth Linos. 2023. "Improving Delivery of the Social Safety Net: The Role of Stigma." *Journal of Public Administration Research and Theory* muad021. doi: 10.1093/jopart/muad021.

McFarland, Michael J., Terrence D. Hill, and Jennifer Karas Montez. 2023. "Income Inequality and Population Health: Examining the Role of Social Policy." *Journal of Health and Social Behavior* 64(1):2–20. doi: 10.1177/00221465221109202.

Modrek, Sepideh, Evan Roberts, John Robert Warren, and David Rehkopf. 2022. "Long-Term Effects of Local-Area New Deal Work Relief in Childhood on Educational, Economic, and Health Outcomes Over the Life Course: Evidence From the Wisconsin Longitudinal Study." *Demography* 59(4):1489–1516. doi: 10.1215/00703370-10111856.

Noghanibehambari, Hamid, and Michal Engelman. 2022. "Social Insurance Programs and Later-Life Mortality: Evidence from New Deal Relief Spending." *Journal of Health Economics* 86:102690. doi: 10.1016/j.jhealeco.2022.102690.

Schwartz, Gabriel L., and M. Maria Glymour. 2023. "Bridging the Divide: Tackling Tensions Between Life-Course Epidemiology and Causal Inference." *Annual Review of Developmental Psychology* 5:14.1-14.20. doi: Annual Review of Developmental Psychology.

Shafer, Paul R., Katherine M. Gutiérrez, Stephanie Ettinger de Cuba, Allison Bovell-Ammon, and Julia Raifman. 2022. "Association of the Implementation of Child Tax Credit Advance Payments With Food Insufficiency in US Households." *JAMA Network Open* 5(1):e2143296. doi: 10.1001/jamanetworkopen.2021.43296.

Vartanian, Thomas P., and Linda Houser. 2012. "The Effects of Childhood SNAP Use and Neighborhood Conditions on Adult Body Mass Index." *Demography* 49(3):1127–54. doi: 10.1007/s13524-012-0115-y.

Wilson, Danielle, Sophie Collyer, Bradley Hardy, and Christoper Wimer. 2023. "State-Level Poverty Impacts of the Child Tax Credit in 2021." *Columbia University Center on Poverty and Social Policy*. Retrieved January 5, 2024 (https://www.povertycenter.columbia.edu/publication/2023/state-level-impacts-of-2021-child-tax-credit).