



EMPLOYMENT STRATEGIES
for Low-Income Adults *Evidence Review*

OPRE REPORT 2019-38

**Employment and Health Among Low-
Income Adults and their Children: A
Review of the Literature**

March 2019

This page has been left blank for double-sided copying.

Employment and Health Among Low-Income Adults and their Children: A Review of the Literature

March 2019

Emily Sama-Miller
Rebecca Kleinman
Lori Timmins
Heather Dahlen

Submitted to:

Office of Planning, Research, and Evaluation
Administration for Children and Families
U.S. Department of Health and Human Services
<https://www.acf.hhs.gov/opre>
Project Officer: Kimberly Clum
Contract Number: HHSP23320095642WC/HHSP2337044T

Submitted by:

Mathematica Policy Research
1100 First Street, NE
12th Floor
Washington, DC 20002

Project Director: Emily Sama-Miller
Reference Number: 40307

This report is in the public domain. Permission to reproduce is not necessary. Suggested citation: Sama-Miller, E., Kleinman, R., Timmins, L., and Dahlen, H. (2019). *Employment and Health Among Low-Income Adults and their Children: A Review of the Literature*. Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services. Washington, DC.

Disclaimer: The views expressed in this publication do not necessarily reflect the views or policies of the Office of Planning, Research and Evaluation, the Administration for Children and Families, or the U.S. Department of Health and Human Services.

This report and other reports sponsored by the Office of Planning, Research and Evaluation are available at <http://www.acf.hhs.gov/opre>.



This page has been left blank for double-sided copying.

ACKNOWLEDGMENTS

We thank the Office of Planning, Research, and Evaluation (OPRE) at the Administration for Children and Families (ACF), U.S. Department of Health and Human Services for its support of the Employment Strategies for Low-Income Adults Evidence Review (ESER) literature review. We appreciate the guidance provided by Kimberly Clum, our project officer. We also benefitted from insightful comments on the report from OPRE’s leaders and senior staff, including Mark Fucello, Emily Schmitt, and Naomi Goldstein, and from other ACF staff who provided input, including Laura Hoard.

Many individuals made important contributions to this study, and we are fortunate to work with a strong and collaborative study team at Mathematica. William Rafferty and Jen de Richemond helped develop the literature search terms and strategy and conducted the literature search. Jessica Harding, Nickie Fung, Anne Scherer, and Armando Yanez provided invaluable assistance with sifting through and summarizing the literature that we found. We are grateful to David Mann, Annalisa Matri, and Sheena McConnell for the insights and wisdom they provided in their expert quality assurance reviews. We appreciate Walt Brower and Jennifer Brown for their editing expertise; and Sharon Clark and Dorothy Bellow for their skills in production and formatting.

This page has been left blank for double-sided copying.

CONTENTS

OVERVIEW	vii
EXECUTIVE SUMMARY	xi
I INTRODUCTION AND PURPOSE	1
A. Overview and research questions	1
B. Purpose	2
C. Organization of the report	3
II MOTIVATION AND BACKGROUND FOR THE LITERATURE REVIEW	5
A. Motivation for focus on low-income Americans	5
1. Low-income focus	5
2. U.S. focus	6
B. Summary of prominent literature on employment and health	6
C. Defining health and employment	7
1. Dimensions of health	7
2. Dimensions of employment	7
D. Conceptual framework for the employment–health relationship	8
E. The importance of research designs in understanding the relationship between employment and health	9
III METHODOLOGY	13
A. Search process	13
B. Study designs included	13
C. Focus of studies eligible for inclusion	14
D. Results of the search and screening	16
IV FINDINGS FROM THE REVIEW	17
A. Research question 1: How does employment relate to health among low-income adults and their children?	17
1. Causal research	17
2. Correlational research	25
B. Research question 2: For low-income employed adults, what is the relationship between their work environment and their health?	25
1. Job demands and control	25
2. Support from supervisors or coworkers	26
3. Nonstandard schedules and worker flexibility	27
4. Wages and wage fairness	27

C.	Research question 3: For low-income employed single parents, what is the relationship between their work environment and the health of their children?	27
1.	Nonstandard work schedules.....	27
2.	Job instability.....	28
3.	Job satisfaction	29
V	DISCUSSION AND DIRECTIONS FOR FUTURE RESEARCH	31
A.	Key takeaways	31
1.	Research question 1: Employment-health relationship for low-income adults and children.....	31
2.	Research questions 2 and 3: Relationship of work environment to low income workers' health and their children's well-being	31
B.	Limitations of this review	32
C.	Potential directions for future research.....	32
	REFERENCES.....	35
APPENDIX A	LITERATURE SEARCH AND SCREENING STRATEGY FOR RESEARCH QUESTION 1	A.1
APPENDIX B	LITERATURE SEARCH AND SCREENING STRATEGY, AND SUMMARY OF STUDIES FOR RESEARCH QUESTIONS 2 AND 3.....	B.1

EXHIBITS

ES.1	Hypothetical relationship between employment and health.....	xiii
I.1	Key Terms.....	2
II.1	Hypothetical relationship between employment and health.....	9
II.2	How do researchers determine whether an event <i>caused</i> an observed outcome?	10
II.3	Positive, negative, and null correlations.....	12
III.1	Focus of literature review on health and employment	15
IV.1	Statistical significance explained	17
IV.2	Summary of studies testing a causal relationship between health and employment (research question 1)	22

TABLES

A.1	Publication database search terms for research question 1.....	A.4
B.1	Publication database search terms for research questions 2 and 3.....	B.4
B.2	Studies used to address research questions 2 and 3.....	B.7

OVERVIEW

Introduction

Decades of research have produced convincing evidence of a strong relationship between having a job and enjoying good health. But does employment cause health outcomes or does health cause employment outcomes? If employment can cause health outcomes, does working make health better or worse? That is, it could be that:

- **Employment affects health.** Employment could be good for health because working people earn money, have access to health insurance, and enjoy psychological benefits like social status. On the other hand, the benefits of working could depend on the nature and quality of a job. A favorable work environment could improve health, and an unfavorable one could worsen it.
- **Health affects employment.** People in poor health might have trouble getting or keeping a job. Conversely, people in good health might be more productive, making them more likely to find a job and keep it.

Alternatively, both these relationships could be true and mutually reinforcing—or another factor or factors such as a person’s education level, neighborhood, or exposure to adverse childhood experiences may actually be driving the employment-health relationship.

We distilled the findings from a voluminous literature to draw what conclusions we could from research about the causal relationship between employment and health. That is, we were interested in research evidence that could demonstrate whether a change in employment is responsible for a change in health or vice versa. We also examined the causal relationship between work environment and health, because the relationship between employment and health may depend on the nature and quality of a job, as well.

The literature review was part of a larger project, the Employment Strategies for Low-Income Adults Evidence Review, funded by the Office of Planning, Research, and Evaluation (OPRE).

Primary research questions

The literature review was designed to answer three research questions:

1. How does employment relate to health among low-income adults and their children?
2. For low-income employed adults, what is the relationship between their work environment and their health?
3. For low-income employed single parents, what is the relationship between their work environment and the health of their children?

In this review, the term “health” for adults encompasses physical health, behavioral health, and general well-being. “Children’s health” encompasses many dimensions of a child’s development, including physical health, emotional health and behavior, cognitive development, and early learning.

Purpose

Policymakers, administrators of human services programs, and employers all have an interest in understanding the relationship between employment and health. Findings from this literature review can help inform decisions about the design of programs directed towards improving health or employment outcomes for low-income adults and children in the United States, and also lay the groundwork for future research. A clear review of the causal literature can support ACF's mission to foster the health of low-income families.

Key findings and highlights

- Little research has been done on the causal relationship between employment and health among low-income Americans. Instead, the existing research is mostly *correlational*: it does not shed light on whether a change in employment is responsible for a change in health (or vice versa) because it cannot rule out the possibility that other factors are actually causing the changes in both. Much of the existing research is also based outside the United States and/or on a general population and its findings may not apply to low-income adults and families in the United States.
- The causal research that does exist typically does not directly test the effects of employment on health or vice versa. Instead, most of the research tests the impact of welfare-to-work programs, which offer a bundle (or package) of employment services, on health. This is problematic because we cannot say definitively whether changes in health were caused by being employed or by some effect of the welfare-to-work services accessed through the program.
- On the whole, the studies we reviewed suggest that the welfare-to-work programs, although they did help people find jobs, did not affect mothers' well-being or have lasting effects on their children's development. There was some evidence, however, that health programs that provided case management can help people find jobs.
- Although we did find that aspects of the work environment were correlated with health, there was little causal evidence about this relationship. For example, high job demands and a lack of autonomy or control over one's work were correlated with lower well-being. Among children of low-income single parents, mothers' nonstandard schedules were correlated with adverse outcomes for children.

These findings are based on just a few studies, however, limiting our ability to draw definitive conclusions.

Methods

The literature review had three steps:

- Searching electronic databases for published research released from 1990 through 2018, and searching for articles and reports that would not be in the electronic databases
- Screening the studies we found for their relevance by using the titles and abstracts; we emphasized causal studies but also included correlational studies

- Reviewing studies relevant to the research questions—for research question 1, we reviewed 19 studies, 11 of which used a causal design. For research questions 2 and 3, we reviewed 11 and 7 studies, respectively, and all but two were correlational.

Recommendations

This review identifies gaps in the existing research literature on the relationship between employment and health for low-income individuals. Addressing those gaps through the development of carefully designed causal studies that focus on low-income individuals and families in the U.S. could considerably strengthen what we know about the relationship between employment and health. As the research base grows, researchers could do a meta-analysis to tease out how distinct employment program component affects health. Finally, reviewing or conducting qualitative research on the specific means through which employment may affect health, and the aspects of the work environment that matter to different people, could guide the focus of quantitative studies.

This page has been left blank for double-sided copying.

EXECUTIVE SUMMARY

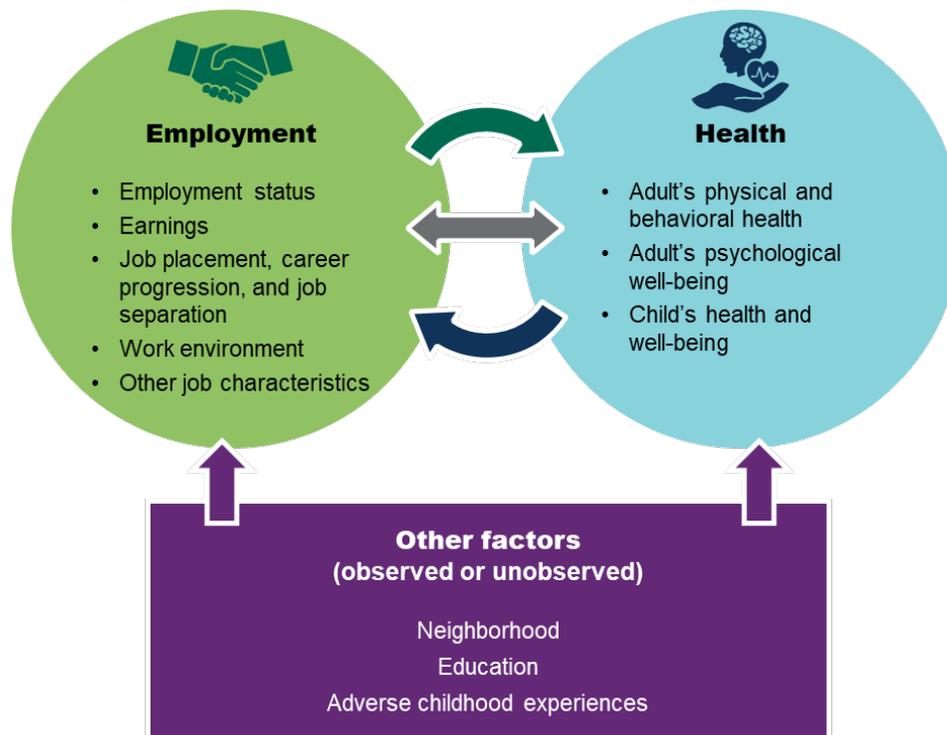
Purpose and research questions

Decades of research have produced convincing evidence of a strong relationship between work and good health, but understanding if and how employment affects health or health affects employment is challenging (Aron et al. 2015; Deaton 2003; Larrimore 2011; Waddell and Burton 2006). Does employment cause health outcomes? Or, does health cause employment outcomes? If employment causes health outcomes, does working make health better or worse? That is, it could be that:

- **Employment affects health.** Employment could be good for health because working people earn money, have access to health insurance, and enjoy psychological benefits such as status. On the other hand, the benefits of working depend to some degree on the nature and quality of a job. Good elements of the work environment might improve health, while negative aspects like high job demands or job insecurity could worsen health.
- **Health affects employment.** People in poor health might have trouble getting or keeping a job. For example, physical or mental health conditions could make it more likely for people to miss workdays or have trouble doing their jobs. Conversely, people in good health might be more productive, making them more likely to find a job and keep it.

Alternatively, both these mechanisms may be true and mutually reinforcing, or another factor or factors such as education level, neighborhood, or exposure to adverse childhood experiences may actually be driving the employment-health relationship (Exhibit ES.1).

Exhibit ES.1. Hypothetical relationship between employment and health



We conducted this literature review to get a better understanding of the relationship between employment and health for low-income adults. We distilled the findings from an extensive literature to draw what conclusions we could from research about the causal relationship between employment and health for these adults. We also examined the causal relationship between work environment and health for low-income adults, because the nature and quality of a job could make a difference in a person's health, too.¹

The literature review was conducted as part of the *Employment Strategies for Low-Income Adults Evidence Review*, which was funded by the Office of Planning, Research, and Evaluation (OPRE) in the Administration for Children and Families (ACF), U.S. Department of Health and Human Services. ACF oversees human services programs, including those that involve work requirements, and low-income adults and families are a key population of interest.

The literature review was designed to answer three research questions:

1. How does employment relate to health among low-income adults and their children? Specifically, does employment lead to improved health, does better health lead to improved employment, do both occur, or are employment and health changes caused by other factors? Or do we not know?
2. For low-income employed adults, what is the relationship between their work environment and their health?
3. For low-income employed single parents, what is the relationship between their work environment and the health of their children?

In this review, the term “health” for adults encompasses physical health, behavioral health, and other aspects of psychological well-being including stress and depressive symptoms. When we discuss children's health, it encompasses many dimensions of a child's development, including physical health, emotional health and behavior, cognitive development and early learning.

Policymakers, administrators of human services programs, and employers all have an interest in understanding the relationship between employment and health. Findings from this literature review can help inform decisions about the design of programs directed towards improving health or employment outcomes for low-income adults and children in the United States, and also lay the groundwork for future research. A clear review of the causal literature can support ACF's mission to foster the health of low-income families.

Motivation and background

1. Rationale for focusing on low-income adults and children in the United States

We focused on studies of low-income adults and children in the United States because ACF programs are designed to serve this population. Low-income Americans tend to face different

¹ The complex factors that contribute to low-income status are not the focus of this review. Those factors may be rooted in health (for example, high medical bills or debt) or employment status (for example, sustained unemployment). But, many other factors may also contribute to having a low income.

challenges than Americans with higher incomes do, particularly when it comes to health and employment. For example, those with low incomes report worse health status than the United States population as a whole does (Antonisse and Garfield 2018). They may have less access to health insurance or behavioral health treatment—resources that could bolster their health (Woolf et al. 2015; Substance Abuse and Mental Health Services Administration 2015; U.S. Government Accountability Office 2015). Low-wage jobs can be more hazardous; offer nonstandard, unpredictable, or inflexible work schedules; or offer less job security or autonomy than higher-wage positions do (Evans and Kantrowitz 2002; Cubbin et al. 2000; Lundberg 1991; Dunifon et al. 2013; Lambert et al. 2014; Levi 1982). We did not include studies focused on a general or higher income population because findings about them do not necessarily apply to people with low incomes.

We focused on studies conducted in the United States because studies done in other countries are unlikely to be relevant for ACF. In particular, the health care systems and social policies of other countries often differ substantially from those in the United States. The United States does not have universal health care, Medicaid is not offered to all low-income adults, and many low-income workers do not have health insurance. This means employment and health could be more tightly linked in the United States than they are in countries where health care is socialized and not employer-sponsored. U.S. social safety net programs also differ in important ways from social safety net programs in other countries.

2. How can we tell if there is a causal relationship between employment and health?

We sought studies that could untangle the causal relationship between employment and health. Many studies observe a *correlation* between employment and health, but much fewer explore *causation*. This is largely because a randomized controlled trial (RCT), the gold standard for making a causal claim (and ruling out that the relationship is actually a result of other factors), is challenging in this setting. It would be unethical (even if it were possible) to randomly assign people to have good or bad health and then examine their employment outcomes, and studies that randomly select people for job opportunities have their own challenges.

Instead, researchers have taken a different approach: examining the effect of employment **programs** on health and the effects of health-promoting programs on employment. For example, in RCT studies of welfare-to-work programs, people were assigned at random to a treatment group that receives a bundle (or package) of employment services or to a control group that does not receive them. The bundle of services may include job placement, job training or coaching, child care subsidies, and/or transportation subsidies to help a person get and keep a job. Researchers can then compare the health of people who were randomly selected for welfare-to-

Correlation does not prove causation

Many studies reveal a correlation between employment and health; fewer explore the direction of causation.

- A **correlation**, or association, is a relationship between two variables in which a change in one variable may or may not be causing a change in the other. The two variables may move in the same direction (that is, if one improves, the other improves), or may move in opposite directions (if one improves, the other worsens).
- In a **causal** relationship, there is evidence that a change in one variable is responsible for a change in the other variable.

work (the treatment group) and people in the control group to see whether the welfare-to-work program has a causal effect on health.

Although these studies use a causal design, they cannot definitively conclude whether finding a job or one of the other service elements actually changed workers' health conditions. Less often, researchers have also used sophisticated statistical analysis techniques in non-experimental causal studies (in which the treatment and comparison groups are not formed randomly) to isolate the effect of being employed on health. However, these types of studies must meet stringent criteria to be credible.

Consequently, many studies (including prominent literature reviews on the employment-health relationship) do not address causation at all, instead relying on correlational analysis. Correlational analyses can determine whether a relationship between two variables exists, but cannot tell which one *causes* the other, or whether another factor (or combination of other factors) is driving both. Some correlational studies use longitudinal data sets, which follow the same people over time and can shed light on which came first, ill health or unemployment. For example, a longitudinal data set that measured health outcomes following a mass layoff could demonstrate worsened health status among those affected by the layoff; but even studies using this type of data rely on assumptions that workers' health status did not affect who was chosen for the layoff. Other correlational studies use cross-sectional data, which represent just a snapshot of a person's employment status and health at a given time. These designs cannot rule out alternative reasons for any relationship that is observed between employment and health.

Methodology

The literature review involved three steps:

- **Searching electronic databases for published research released from 1990 through 2018, and searching for articles and reports that would not be included in the electronic databases.** We identified keywords that were relevant to the population, employment, work environment, health and well-being, and quantitative research designs. We excluded narrowly defined research on things like specific health diagnoses, chronic disease, and disabilities in children, and excluded studies of voluntary job exits, such as retirement or resignations.
- **Screening the identified studies for relevance using titles and abstracts.** During our screening, we emphasized identifying causal study designs, including individual causal studies and research that synthesizes more than one study, such as a meta-analysis or a systematic review. For research question 1, we looked for studies that tested causality in either direction (whether employment caused health outcomes or health caused employment outcomes). For all three research questions, we included correlational research because we identified few causal studies.
- **Reviewing studies relevant to the research questions.** For research question 1, we reviewed 19 studies, 11 of which used a causal design. For research questions 2 and 3, we reviewed 11 and 7 studies, respectively, and all but two were correlational.

Findings

Only a few studies directly tested the effect of employment on health (or of health on employment) among low-income U.S. adults and children. Instead, most of the causal research tested the impact of welfare-to-work programs that offered a bundle of services. The findings that follow are, therefore, based on a small number of studies, which limits our ability to make definitive conclusions.

- The studies we reviewed on welfare-to-work programs suggest that although they helped spur people to find jobs, they did not affect mothers' psychological well-being or have lasting effects on children's development. Specifically, three of the four studies that examined mothers' well-being found that the employment program did not lead to a change in health conditions, and one had mixed results (mothers had more depressive feelings, but no changes in self-reported overall health). For children, a review of seven studies revealed a mix of positive and negative impacts that the welfare-to-work programs had on children's outcomes. For example, some studies found that the programs improved or worsened (depending on the study) children's early learning and academic performance, behavior, and health. The studies that also examined long-term outcomes found that any effects faded within three to five years after random assignment.
- Two studies produced some evidence that health programs can improve employment. Both studies tested case management programs with substance-abusing populations: one focused on TANF-eligible women and the other on homeless male veterans. Both found the case management program, which offered a range of supports, led to better health and employment outcomes.
- We found a number of studies indicating that aspects of the work environment are correlated with health, but there was little causal evidence on this relationship. For example, high job demands and a lack of autonomy or control over one's work were correlated with low job satisfaction, stress, depressive symptoms, and job burnout among low-income American workers. For low-wage workers, concerns over wages or job security might outweigh the benefits or challenges of other working conditions. Among children of low-income single parents, mothers' nonstandard schedules may be correlated with their children's well-being.

Potential directions for future research

By revealing gaps in existing information, this review provides an opportunity for policymakers and researchers to shape the research base moving forward. Those commissioning or designing research could strengthen what we know about the relationship between employment and health for low-income individuals, parents, and children by acting on the suggestions below.

- **Focus on low-income adults and single-parent families in the United States while broadening the focus beyond welfare-to-work recipients.** We found a relatively small body of work that was specific to the United States and low-income adults. In fact, we screened out much of the literature we initially identified because it did not meet one or both of these criteria. Future studies should also expand beyond welfare-to-work recipients (who are mainly single mothers), to broaden what we can learn about working and health under other scenarios and for different populations. (The fact that this review mainly covered

welfare-to-work studies is partially the result of our approach: for research question 1, we excluded individual causal studies on specific health diagnoses or disabling conditions in order to achieve a volume of literature that was feasible to review.)

- **Design causal studies to isolate the effect of employment changes on health, or of health changes on employment, and gather data on the employment context.** There are a few options for study designs. For example, researchers could analyze data from an RCT of a job placement program to isolate the effect of employment on health, even if that was not the primary purpose of the RCT. This approach, when well executed, can produce relatively convincing causal claims. To expand the literature, more studies of employment programs should include health outcomes, which is not standard practice now. As the research base grows, researchers could do a meta-analysis on all available studies of employment programs that also measure health effects to tease out how each distinct program component affects health. Researchers could also evaluate an employment program that offers only job placement—meaning participants are randomly assigned to jobs and given no other supports—to rule out the possibility that other service components contribute to changes in health.
- **Incorporate qualitative research alongside quantitative.** Qualitative research exploring the mechanisms through which employment (including the work environment) affects health can guide quantitative studies. With one exception (a case study on nonstandard schedules in the retail sector that we included because it provided useful context for research question 3), we did not review qualitative research.
- **Implement standardized definitions, and use common measures or calculations.** Standardized definitions and measures of health, well-being, work environment, and job quality are important for drawing connections between studies. Definitions of outcome measures should also be culturally sensitive and meaningful for different racial and ethnic groups.

I. INTRODUCTION AND PURPOSE

Decades of research have produced convincing evidence that work and good health often go hand in hand, but understanding whether and how employment directly affects health and whether and how health affects employment is challenging. A better understanding of the relationship between employment and health can inform policies aimed at improving both employment and health. This literature review seeks to distill the findings from a vast and complex literature so that we can draw conclusions about what we know from research and what we have yet to learn about the employment–health relationship. The literature review was conducted as part of the *Employment Strategies for Low-Income Adults Evidence Review* project, which was funded by the Office of Planning, Research, and Evaluation (OPRE) in the Administration for Children and Families (ACF), U.S. Department of Health and Human Services.

A. Overview and research questions

A large body of research suggests that being employed is *correlated with* health (see Exhibit I.1. for definitions of key terms). On average, people who are employed are healthier and report greater well-being than those who are not employed (Aron et al. 2015; Deaton 2003; Larrimore 2011; Waddell and Burton 2006). However, the reason for this correlation is not well understood. It could be that:

- **Employment may affect health.** Employment may be good for health through the provision of material benefits, such as earnings and health insurance, and intangible benefits, such as social contact and social status. On the other hand, the benefits of working depend to some degree on the nature and quality of the job. Favorable elements of the work environment may strengthen the health benefits of being employed, while unfavorable ones, such as high job demands or job insecurity, may reduce them.
- **Health may affect employment.** People in poor health might have difficulty getting or keeping a job. For example, people with poor physical or mental health may be more apt to miss days of work or have difficulty fulfilling their job duties. Or they may have gaps in their resumes that employers perceive negatively. Conversely, people in good health may be more productive and hence more likely to be employed.

These two theories may both be true and mutually reinforcing, such that better health begets better employment outcomes, which in turn beget better health outcomes. Another possibility is that a third element (or combination of other elements) affects both employment and health. For instance, a person’s education level, neighborhood, or lack of exposure to adverse childhood experiences may lead to good health and good employment and is responsible for the correlation that researchers observe between employment and health.

This literature review also examines the relationship between health and the work environment, which it defines as the nonphysical aspects of a job.² It may be that the relationship

² This literature review does not explore physical aspects of work environment, such as exposure to worksite pollution or health hazards, for which a rich literature exists.

Exhibit I.1. Key Terms

Health, for the purposes of this report, includes physical health, behavioral health, and other aspects of psychological well-being, such as stress and happiness.

Work environment, for this report, includes the nonphysical aspects of a job. These may include job demands, worker control, supervisor support, work hours, earnings, and job stability or security, which together contribute to objective (observable) dimensions of the working environment or job quality. The quality of the working environment, or job quality, refers to the combination of objective job characteristics, while workers' assessments of their job quality may be subjective (Organization for Economic Cooperation and Development [OECD] 2017).

Correlation, or association, is a relationship between two things or phenomena. They may move in the same direction or in opposite directions. A positive correlation occurs when they move in the same direction; a negative correlation occurs when they move in opposite directions. A correlation might not be due to one thing or phenomenon causing the other.

Causation is a relationship in which one thing or phenomenon causes the other; those things might also move in the same direction or in opposite directions.

between employment and health depends on the work environment. Given that many employed adults spend much of their day at work and that most depend on their jobs for their livelihoods, it stands to reason that the quality of their jobs matters to their well-being. Or as Waddell and Burton (2006) put it: “work is generally good for your health and well-being, provided you have a ‘good’ job.”

Specifically, the literature review addresses three research questions:

- **Research question 1:** How does employment relate to health among low-income adults and their children? Specifically, does employment lead to improved health, does better health lead to employment, do both occur, or are employment and health changes caused by other factors? Or do we not know?
- **Research question 2:** For low-income employed adults, what is the relationship between their work environment and their health?
- **Research question 3:** For low-income employed single parents, what is the relationship between their work environment and the health of their children?

When addressing these research questions, we were especially interested in research designed to identify causal relationships. In other words, to what extent do existing studies establish the direction of cause and effect (rather than just correlation) between health and employment, and what do they find is the direction? Each research question focuses on low-income Americans, a population widely served by ACF programs. The questions become increasingly specific: low-income adults in general for the first question, employed low-income adults for the second, and employed low-income single parents for the third.

B. Purpose

Policymakers, program administrators, and employers all have an interest in better understanding the employment-health relationship. Many policies and programs are directed at obtaining employment, job retention, or health, and an understanding of the relationship between employment and health is important for understanding the far-reaching effects of these policies.

Employers also have a business case for considering how the working environment can minimize workers' ill health and maximize workers' productivity. However, there is a large body of research on employment and health. Although most of it does not use causal designs and most of it also does not focus on low-income adults in the U.S., the sheer volume of publications makes it difficult for stakeholders to easily understand the direction of cause and effect between employment and health for low-income adults and their families in the United States specifically, and whether the work environment plays a role in this relationship.³ Therefore, findings from this literature review can help inform decisions about programs designed to improve health or employment outcomes for low-income adults and children and lay the groundwork for future research.

C. Organization of the report

The rest of the report is organized as follows:

- Chapter II summarizes prominent themes that motivated our research questions and describes the specific focus of this literature review. First, we provide a rationale for limiting the review to studies of low-income adults and families in the United States. Then we summarize existing prominent literature on employment and health. Next, we define key terms and describe a conceptual framework for the relationship between employment, work environment, and health. Finally, we describe the importance of research designs in understanding the relationship between employment and health.
- Chapter III describes how we conducted the literature search and the number and types of studies we found, including whether the studies examined the correlation of employment and health or tested a causal relationship. The appendices contain a more detailed description of the research methods.
- Chapter IV reports the results of the literature review for each research question.
- Chapter V distills the findings of the earlier chapters into key conclusions about each research question, discusses limitations of the findings, and suggests directions for future research.

³ The complex factors that contribute to low-income status are not the focus of this review. Those factors may be rooted in health (for example, high medical bills or debt) or employment status (for example, sustained unemployment). But, many other factors may also contribute to having a low income.

This page has been left blank for double-sided copying.

II. MOTIVATION AND BACKGROUND FOR THE LITERATURE REVIEW

Employment and health are broad concepts examined in wide, sometimes overlapping, literatures. We begin this chapter by describing why research questions for our literature review focused on low-income populations in the United States. Next, we briefly summarize, from two other prominent literature reviews, findings that focus on the relationship between employment and health and discuss their applicability to the U.S. low-income population. Then we define the dimensions of health and employment that we examine in our literature review. Finally, we present hypotheses on how employment—including the work environment—and health may relate to one another (specifically, which of these may cause the other) and discuss the types of research designs that would provide empirical support for, or rule out, these hypotheses.

A. Motivation for focus on low-income Americans

ACF programs focus on low-income Americans. Low-income Americans tend to face different challenges around both health and employment than higher-income Americans. Because we were interested in better understanding the causal relationship between health and employment in a way that would have most relevance for ACF, we focused on locating studies of low-income populations in the United States.

1. Low-income focus

The employment–health relationship may differ for low-income populations. People from different socioeconomic backgrounds have key differences in health conditions and mortality (Waddell and Burton 2006; Acheson et al. 1998; Fryers et al. 2003). For example, low-income Americans report worse health status compared to the U.S. population as a whole (Antonisse and Garfield 2018). Further, low-income workers may have difficulty securing health insurance or access to behavioral health treatments—resources that could bolster their health (Woolf et al. 2015; Substance Abuse and Mental Health Services Administration 2015; U.S. Government Accountability Office 2015). They are also more likely to hold more dangerous and hazardous jobs (Evans and Kantrowitz 2002; Cubbin et al. 2000; Lundberg 1991). In today’s economy, nonstandard, unpredictable, or fluctuating work schedules may be common across industries (Lambert et al. 2014). These, along with lower autonomy and job control, are more common among low-wage workers than those employed at higher wages, which reflects the prevalence of service occupations over management and professional positions (Dunifon et al. 2013; Lambert et al. 2014; Levi 1982).

Recognizing that a parent’s employment and health can have considerable influence on a child’s development, this review also examines research on children of low-income parents (Cummings and Davies 1994; Duncan et al. 2010; Smith 2004). Family economic hardship during early childhood poses significant risks to successful learning and healthy social development later on (Duncan and Murnane 2011; Duncan et al. 2010). A child can also be affected by a parent’s work environment. For example, a child can be affected if a parent’s work schedule leaves little time to devote to the child or if the job conditions affect a parent’s own health in a manner that influences his or her parenting practices. Children in single-parent families can be especially vulnerable to their parents’ employment and health because there is often no other adult, nor another adult’s income, to consistently act as a buffer.

2. U.S. focus

The health care systems and social policies of other countries often differ significantly from those of the United States. For instance, the United States does not have universal health care, Medicaid is not offered to all low-income adults, and many low-income workers do not have health insurance. Therefore, the health status and experiences of Americans may differ from those of people in nations whose populations have consistent access to health care.

Furthermore, U.S. social policies that cover low-income families can influence the health status and work incentives of low-income individuals, such as single parents, differently from social policies in other countries. Compared to other wealthy countries, the United States has higher rates of overall poverty, and of children in poverty (UNICEF Innocenti Research Centre 2012). The 1996 Personal Responsibility Work Opportunity Reconciliation Act led to the expectation that mothers and other low-income adults who qualify for welfare benefits should work. Low-income working parents often need assistance with child care to support their employment goals (Gorey 2009). Yet child care in the United States is costly and not universally available,⁴ which complicates labor market decisions for parents, and especially for low-income single parents, for whom balancing work and family can be particularly complex.

B. Summary of prominent literature on employment and health

A large body of international and U.S. research suggests that employment is correlated with health in complex ways (Deaton 2003; Waddell and Burton 2006; Marmot et al. 2010). The boost to health a person may get from a job may depend on the person and the work environment (Dooley et al. 1996; Goldman-Mellor et al. 2010; Gupta and Huston 2009; Marsella et al. 1994; Waddell and Burton 2006; Wanberg 2012). Generally, two prominent papers (Waddell and Burton 2006; Marmot et al. 2010) found some support for the causality running in each direction: improved health leading to improved employment situations and vice versa.

Waddell and Burton (2006) comprehensively reviewed the research on employment and health and found strong evidence that working is correlated with better physical and mental health and well-being, provided you have what they call a ‘good job.’ Marmot et al. (2010) reached a similar conclusion in their review, finding that unemployment is correlated with poorer physical and mental health, while work re-entry is correlated with improved health, but adverse working conditions can damage health. In other words, they find that working is good for health, but a particular job could be beneficial, net neutral, or overall bad for health. These two reviews reached their conclusions by examining studies that employed a mix of methods: some of the reviewed studies used methods that could lead one to conclude whether or not employment caused changes in health status, while other studies were purely correlational.

For several reasons, the findings from these two literature reviews may not apply to the low-income U.S. population or otherwise indicate what would happen in the United States. Both

⁴ The Child Care and Development Fund block grant program provides subsidies for child care to low-income families. Only 15 percent of children eligible for the program under federal rules received child care funded by CCDF or related services in 2014 and 2015 (ACF 2019). Because not all eligible children can be served, states prioritize families in especially high-risk populations, such as families with very low incomes and homeless families.

reviews focused on studies conducted in the United Kingdom, which has a national health system, an entirely different series of social policies for low-income populations, and many other social, economic, demographic, and cultural differences. In addition, both reviews examined a broad population of adults in the United Kingdom, rather than low-income adults.

C. Defining health and employment

1. Dimensions of health

In this report, we use *health* as an umbrella term to mean physical health, behavioral health, and other aspects of psychological well-being, consistent with the way others have defined the term (Dooley et al. 1996; World Health Organization 2006). According to Dooley and colleagues' framework, physical health includes clinical physical illness or mortality (Dooley et al. 1996). Behavioral health includes clinical mental health disorders and substance abuse (National Quality Forum 2012). Well-being is considered a subclinical emotional state (Dooley et al. 1996). For well-being, we focus on its physical, emotional, and psychological aspects. Emotional and psychological well-being includes stress, anxiety, depression, and other related negative emotions. We do not focus on social and economic well-being, life satisfaction, and other concepts that are sometimes included in the definition (Centers for Disease Control and Prevention 2016).

In a family, the health and well-being of children may be closely intertwined with the well-being of their parents. The World Health Organization (2006) defines *child health* broadly as a state of physical, mental, intellectual, social, and emotional well-being. It speculates that healthy children live in families and communities that provide them with the opportunity to reach their fullest development potential. Thus, we included in our review studies that examined children's cognitive development as well as their physical and behavioral health.

2. Dimensions of employment

In this review, we considered a range of employment characteristics that could be related to health among low-income adults. Specifically, we considered:

- **Employment status:** whether or not a person is employed, how many jobs the persons holds, and how long the person has been in a job.
- **Job placement:** the transition into work. It may be driven by services that help people find jobs, such as in welfare-to-work (WTW) programs.
- **Career progression:** whether a person is achieving promotions and wage increases.
- **Job characteristics** include wage rate, earnings, whether part-time or full-time, number of hours worked, type of employment (wage and salary, self-employment, independent contractor), occupation, and physical work environment.
 - **Work environment** is one aspect of job characteristics. It includes work schedule, job requirements or demands, autonomy, flexibility, support and interactions with colleagues and supervisors, and job stability.
- **Job separation:** the transition out of employment, which may be voluntary or involuntary (such as layoffs).

Educational attainment is highly correlated with employment, and some research examines the effect of preparing for employment through job training, coaching, or other similar programs. We included these types of studies in our literature review.

D. Conceptual framework for the employment–health relationship

The relationship of employment to health could operate in one of four ways.

1. **Employment affects health.** Employment could affect health through providing earnings, purpose, social status, time structure, and access to health care, among other pathways. Lack of employment may result in poor health by de-linking people from their health insurance, decreasing their social contact, and reducing income that can be used to address health needs or prevent health problems. Researchers have termed this *social causation* (Gupta and Huston 2009).

The work environment may matter to a person’s health and well-being, and a deeper understanding of this relationship can help answer broader questions about the relationship between employment and health for low-income populations. Influential research by Levi et al. (1982), as reported in Marsella (1994), identified, in low-wage jobs, four factors that pose risks to workers’ well-being:

- **Overload**, such as too much work to do, time pressures, and repetition
- **Underload**, such as narrow content, low social interaction, or stimulus variation
- **Lack of control**, for example, over the pace or approach to work or over work schedule
- **Lack of social support** from colleagues, supervisors, or managers

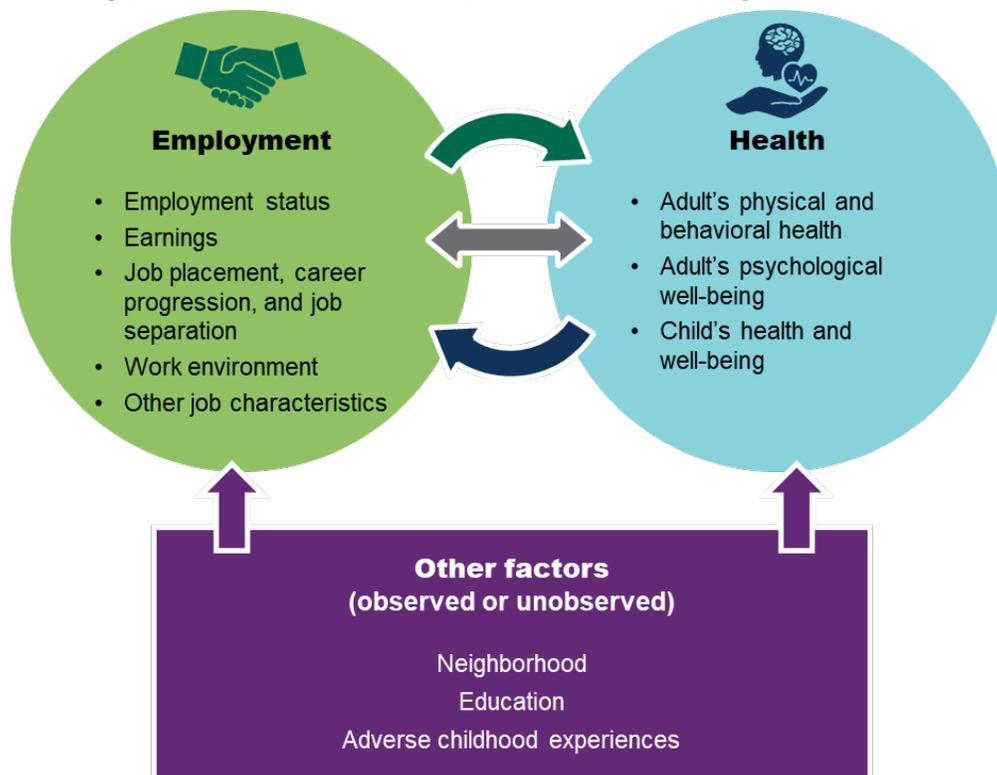
Jobs with high demand and low control are theorized to result in high strain or low psychological well-being (Marsella 1994; Simmons and Swanberg 2009; Waddell and Burton 2006). Another theory holds that strain or stress results when workers perceive high effort and low rewards (Siegrist 1996). Workers’ perceptions of their work environment, influenced by their personalities and resources, may be more important than the actual situation because perceptions mediate health-related behaviors (Rodin and Salovey 1989 as reported in Marsella 1994).

2. **Health affects employment.** Researchers call this *social selection* (Gupta and Huston 2009). Health could affect employment if it affects a person’s ability to fulfill his or her job duties. For example, workers in good health might be more likely to find and keep a job if their job attendance or performance is better or more consistent than that of workers in poor health.
3. **Employment and health affect and mutually reinforce each other.** The two pathways above might occur in an interactive way that strengthens each outcome. For example, healthy individuals may be more likely to maintain consistent work and sustained employment, which in turn aides their health.
4. **Other factors affect both employment and health.** A third factor (or other factors) could be observable or unobservable, but if it affects both employment and health, it will make employment and health appear to be directly related even if they are not. Some studies statistically control for other factors (such as education) that may drive the relationship.

However, some factors are impossible or difficult to measure at all, or are not routinely measured in health and employment studies. These unmeasured factors (such as exposure to adverse childhood experiences or detailed neighborhood characteristics) may be important sources of bias that prevent us from drawing causal conclusions.⁵ Accounting for this possibility is an important challenge to understanding causal relationships, as we describe later.

Exhibit II.1 illustrates how these relationships might function. Moving from left to right, employment and economic factors may cause health outcomes. Conversely, moving from right to left, health characteristics of individuals may cause poor employment outcomes through limited functioning. It may also be that both directions occur interactively, or that they cancel each other out. Finally, the bottom pane shows that another element, such as education, might affect both employment and health (Deaton 2003; Marmot 2010).

Exhibit II.1. Hypothetical relationship between employment and health



E. The importance of research designs in understanding the relationship between employment and health

A core aspect of ACF's mission is to leverage federal connections and resources to foster the health of families. Better understanding whether (and how) employment affects health or

⁵ Adverse childhood experiences (ACEs) are specific traumatic events that an individual experiences before age 18, including abuse and neglect, parental mental illness, parental substance use, parental divorce, incarceration of a household member, and domestic violence (Substance Abuse and Mental Health Services Administration 2018).

whether (and how) health affects employment helps advance this mission. Many studies observe the correlation between employment and health; fewer explore the direction of causation.

Exploring a causal relationship between employment and health and ruling out that the relationship is a result of other unobserved factors is difficult. Researchers have developed some methods that allow them to test whether an intervention or other change *causes* changes in outcomes (Exhibit II.2). The most rigorous approach is to use a randomized controlled trial (RCT). However, it would be unethical (even if it were possible) to randomly assign people to have good or bad health and then examine their employment outcomes, and studies that randomly select people for job opportunities have their own challenges.

Exhibit II.2. How do researchers determine whether an event *caused* an observed outcome?

Researchers have developed study designs to assess whether one variable *causes* the other. These designs differ from studies of correlation, which simply allow the researcher to assess whether a relationship of any kind exists. Causal studies require some outside event that changes the theorized outcome, but is unrelated to the theorized outcome. Researchers often design causal studies by creating this outside event (such as by randomly assigning people to participate in a program or policy). Another key ingredient for causal research is a comparison group that does not experience the outside event.

Treatment and comparison groups

Researchers often determine whether an event *causes* an outcome by comparing the outcomes of two groups of people: a **treatment group** and a **comparison group**.

- The treatment group experienced the event being evaluated.
- The comparison group (sometimes known as the *business-as-usual*, *counterfactual*, or *control* group) did not experience the event.

The comparison group represents what *would have* happened to the treatment group in the absence of the event being studied. Researchers aim to form comparison groups that resemble the characteristics of the treatment group *before* the event took place. This helps rule out all explanations for change, including unmeasured factors, other than the event itself. Without a valid comparison group, researchers cannot differentiate between changes in outcomes caused by the event and changes that arise for other reasons.

Example: A study could examine whether employment leads to improved health by comparing the health outcomes of participants in a job placement program (the treatment group) to unemployed individuals not participating in the program (the comparison group). In the figure below, if we were to look only at the outcomes for those in the job placement program, we would see that 80 percent of individuals report being in good health after the job placement program compared to 65 percent before. This might seem to indicate that the program was very effective in improving health outcomes.

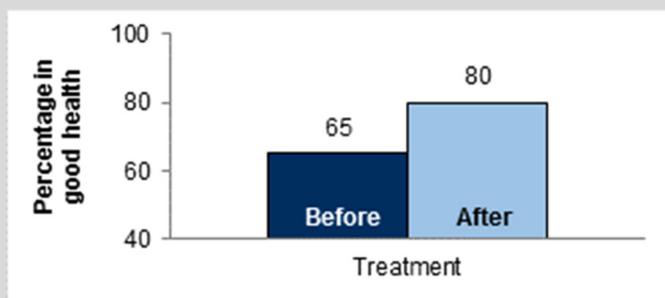
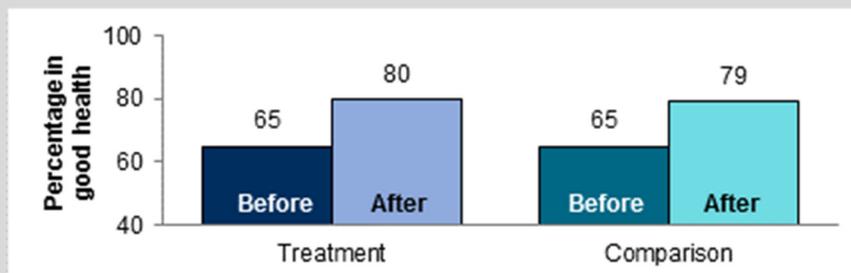


Exhibit II.2. (continued)

However, when we compare the treatment group data to the comparison group, we would see that 79 percent of the comparison group report being in good health during the same period. With such a small difference in the change in health outcomes between the treatment and comparison groups, we would conclude that the job placement program was not very effective at improving health.

**Which types of studies did we target in our literature review?**

For this review, we were most interested in two types of studies designed to support confident conclusions that an event caused the outcome being examined.

1. **Randomized controlled trials are the gold standard** for establishing causality, because the random assignment process lets researchers confidently assume that treatment and comparison groups are similar, on average, across all characteristics—including unmeasurable ones—before the study begins. Researchers can rule out unobserved factors as an explanation of differences.
2. **In a non-experimental design**, the comparison group is not formed by random assignment, but rather constructed to ensure that the treatment and comparison group members are similar in key ways before the study. This gives researchers **confidence** that the event being studied caused the observed difference across the groups. However, with non-experimental designs, researchers can never be sure they have accounted for all important differences—especially unobserved ones—between these non-randomly formed groups.

Because of the challenges associated with exploring any causal employment-health relationship with an RCT, researchers have taken alternative approaches to the relationship, but these approaches do not always directly answer whether employment causes health (or vice versa). Instead, it is common for researchers to examine the effects of employment *programs* on health (or health programs on employment). In these designs, researchers randomly assign people to participate in a program that could be expected to affect employment or health and compare outcomes between people randomly assigned to participate and those randomly assigned to not participate. One example of this is the randomization into a welfare-to-work (WTW) program that is expected to improve employment outcomes, or to a control group that does not receive WTW services. The differences in health between people randomly assigned to the WTW program and the control group could provide an indication of the impact of employment on health. However, the findings might not provide definitive evidence because programs frequently offer a range of services, and these other services, rather than employment resulting from the services, may have their own effects on health. These types of studies estimate the effect of the program as a whole on health, rather than of employment alone. Less commonly, researchers have also used sophisticated statistical analysis techniques in nonexperimental causal studies (in which the treatment and comparison groups are not formed

randomly) to isolate the effect of being employed on health. However, these types of studies, such as those using instrumental variable techniques, must meet stringent criteria to be credible.

Many studies do not address causation at all but instead use correlational designs, which can determine whether a relationship between two variables exists, but cannot tell which one *causes* the other, or whether there is an unobserved third factor (or combination of other factors) driving both. Some correlational studies use longitudinal or panel data sets, which follow the same people over time and can shed light on whether ill health or unemployment came first. Other correlational studies use cross-sectional data, which represent one snapshot of employment and health at a given time. Correlational study designs can identify positive, negative, or null correlations between two outcomes (Exhibit II.3).

Exhibit II.3. Positive, negative, and null correlations

A positive correlation means two variables tend to move in the same direction—the level on one outcome increases at the same time the level on another outcome increases, or the level on one decreases at the same time another decreases. This does not mean the outcome is desirable: perhaps employment outcomes getting worse corresponds to health outcomes getting worse, for example.

A negative correlation means that the two outcomes tend to move in the opposite direction from each other—the level on one outcome decreases at the same time the level on another outcome increases, or the level on one increases at the same time another decreases. This does not mean the outcome is undesirable: improved employment outcomes could correspond to reduced mental health problems, for example.

A null correlation means there is not a distinguishable relationship between the two outcomes—the level of one outcome does not change when the other outcome increases or decreases.

III. METHODOLOGY

For each research question, we searched a number of different publication databases, prioritizing our attention on causal studies that resulted from the search. We ultimately identified a small volume of relevant causal or correlational studies. This chapter provides an overview of the methodology we used to search for and screen studies.

A. Search process

To find studies relevant to each research question, we searched publication databases and conducted tailored searches for grey (unpublished) literature. An information specialist in library services led the search, following established best practices. Among studies related to the three research questions, we focused in on those with greatest relevance to the populations served by ACF's programs. We also reviewed articles that ACF identified as high-priority or high-interest, and these helped to shape the scope of and terms used during the search. Appendices A and B describe the literature search and screening strategy in greater detail for research question 1, and research questions 2 and 3, respectively.

Our search for literature was thorough and methodical. It was not "systematic" because a systematic literature review also rates the quality of the study designs and the credibility of their findings, which we did not do. Further, we summarize the high-level findings but do not present a cross-study analysis of detailed findings, as a systematic review would.

B. Study designs included

Our intention was to find research based on rigorous study designs that would support causal conclusions. We sought studies that tested causality in either direction (for example, whether employment caused health outcomes or health caused employment outcomes), as well as research examining whether the relationship between the two is mutually reinforcing or driven by other factors. However, we had to broaden the scope of the search to include some correlational research, because preliminary searches revealed that causal research on our target population was so limited. We distinguish between the two types of evidence when we discuss our findings (Chapter IV).

For research question 1 (the employment and health relationship for low-income Americans), given its broad scope, we initially attempted to conduct a modified overview of other reviews. An overview typically looks across a group of systematic reviews to draw cross-cutting conclusions (Hunt et al. 2018). We searched for three types of studies: literature reviews, systematic evidence reviews, and meta-analyses. Although we preferred the latter two types, which tend to include only causal research, we found few such studies. Therefore, we also included traditional narrative literature reviews, whose conclusions sometimes rely on correlational studies. We clearly indicate when points in our findings draw only from correlational research, as these do not prove a cause-and-effect relationship.

For research questions 2 and 3, which were more limited in scope, we searched for individual causal studies. However, our early searches found that causal research (both syntheses and individual studies) was limited. Hence, we expanded our efforts and included correlational research about these topics as well. In describing the findings (Chapter IV), we clearly indicate

the correlational nature of most of the conclusions, and specify the few studies that used a causal design.

C. Focus of studies eligible for inclusion

To be included in our review, studies had to be set in the United States and focused on a low-income population. The U.S. health care system differs in several substantive ways from that of many developed countries (see Chapter II). Some research from other countries, especially the United Kingdom, is discussed in our findings because it is prominently cited, but because of the different context, we clearly mark when that occurs. We focused our search on studies examining low-income adults and their children, as these groups face health and employment conditions different from those of higher-income adults.

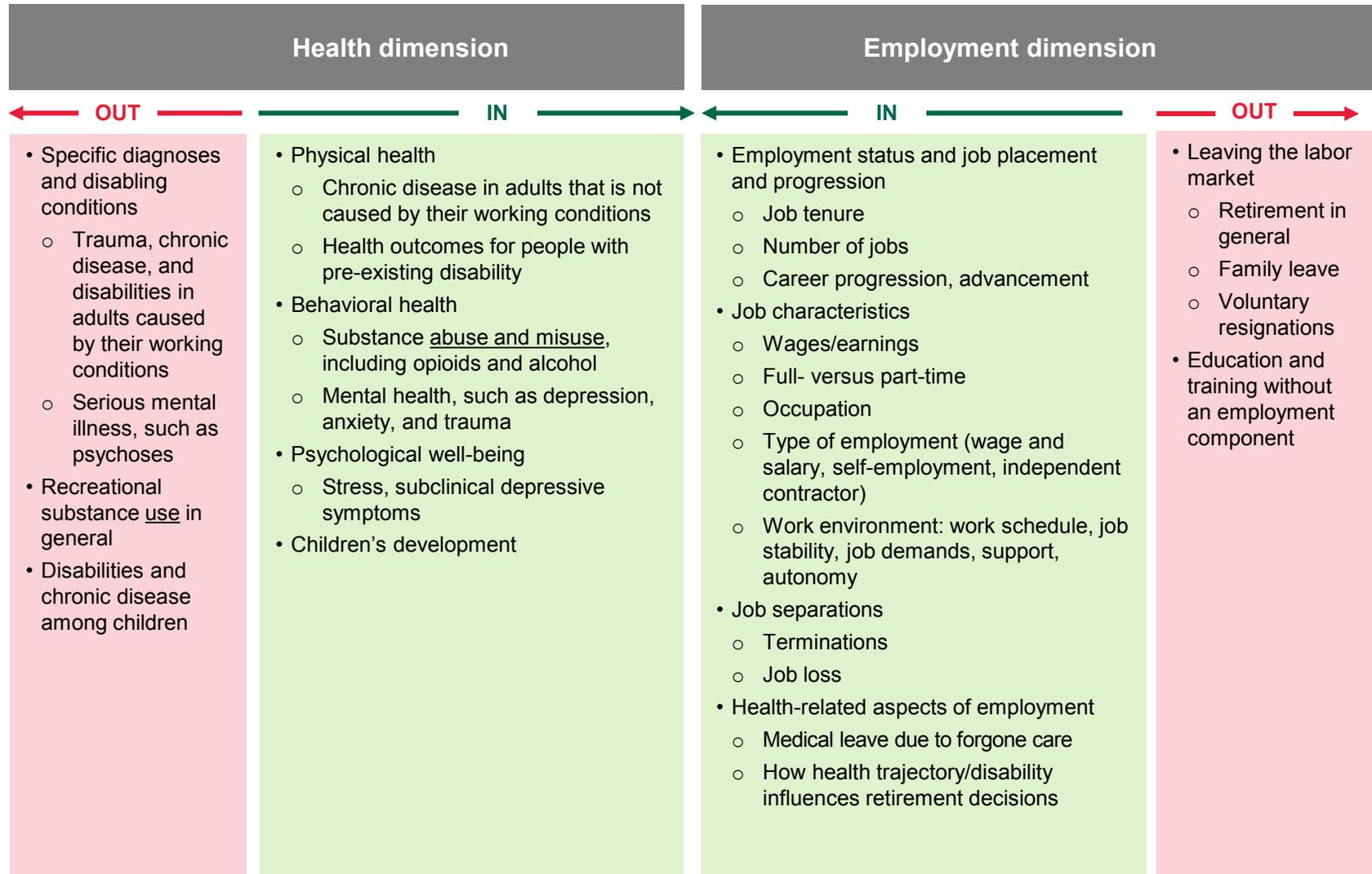
Health and employment are broad concepts, each with deep research literature, so we refined our focus before starting our review. We aimed to exclude topics that were either too specialized or too broad to align with ACF's programmatic focus (Exhibit III.1). For example, for research question 1 in particular, we looked for:

- Literature on physical and/or mental health in general, although we excluded literature exclusively focused on populations with specific diagnoses⁶
- Studies about substance abuse and misuse, but not research on recreational substance use more broadly
- Research focused strictly on employment. We additionally included research that examined education and training if it also examined employment

Because we were interested in how health and employment (including the qualitative work environment) relate, we excluded research about voluntary employment transitions, such as retirement or family leave. The employment decisions and health circumstances may be unique for people in these categories compared to the broader low-income population.

⁶ As noted above, we screened out *specific-diagnosis* research, in which the sample consisted entirely of people with the same diagnoses and the study tested what happened to an employment outcome after a particular treatment. We did this because of the sheer volume of such studies and because few were limited to low-income U.S. individuals.

Exhibit III.1. Focus of literature review on health and employment



D. Results of the search and screening

We located a high volume of research using these search methods, which we screened to identify syntheses (literature reviews, meta-analyses, and systematic reviews) and individual causal studies. Despite uncovering a vast amount of literature, we found that less than 1 percent of the research identified by our search met our criteria for study design and focus. Very little research used a causal design. When we did locate causal studies, they typically did not focus on low-income populations in the United States.

- **Research question 1.** We found a total of 5,583 studies keeping with the breadth of this topic. However, only 20 were ultimately eligible for inclusion in our review. These included 8 literature reviews that summarized correlational research, and 12 individual causal studies (all but three were RCTs). Among the causal research (the individual studies and the meta-analysis), most of it (10 studies) addressed the question of whether employment causes health, and the other two addressed the question of whether health causes employment. Importantly, within the causal research, the studies predominately tested complex interventions that make it difficult to conclude whether employment or health directly causes the other. Any observed relationship may be due to some other aspect of the program, or due to the program's influencing some other factor, such as a person's social connections. We found no causal research testing whether the employment–health relationship is mutually enforcing.
- **Research question 2.** We found a total of 1,229 studies. Among them, 11 were eligible for inclusion in this review, including only one causal study.
- **Research question 3.** We found a total of 776 studies, among which 7 were eligible for inclusion in this review, including only one causal study.

IV. FINDINGS FROM THE REVIEW

This chapter summarizes the findings from the literature review. We first discuss the findings for research question 1, the relationship between employment and health for adults and children. Then, for research questions 2 and 3, (the relationship between the work environment and health for adults and for working adults' children, respectively), we organize the findings around different aspects of the work environment and highlight the few topics for which our search identified causal research. For all research questions, the research was limited, and many of the studies were correlational rather than causal.

A. Research question 1: How does employment relate to health among low-income adults and their children?

This section begins by summarizing the findings from studies that tested a *causal* link between employment and health for low-income adults, organized by direction of the relationship between the two outcomes. Then we summarize findings from literature reviews that showed a *correlational* relationship between employment and health. We report on causal or correlational relationships that authors found to be statistically significant, which suggests the relationship is real and not due to chance (Exhibit IV.1).⁷

Exhibit IV.1. Statistical significance explained

A *statistically significant or significant* relationship between two or more elements is one in which the observed pattern is likely due to a true underlying relationship and not to chance. Conversely, if a relationship is not statistically significant, the observed pattern is likely due to chance.

1. Causal research

Causal studies can identify whether employment causes changes in health or whether health causes changes in employment. While we found a number of international and U.S. studies examining the relationship between employment and health among the general population, we found only 12 that specifically examined the relationship between employment and health among low-income Americans. We describe those studies here.

Most studies we found did not directly test the effect of employment on health (and vice versa). Instead, they tested whether another factor (a program consisting of combined services to address a worker's complex problems) affected both health and employment. As described in Chapter III, we found 10 causal studies exploring whether employment affects health for low-income populations in the United States. Of these, 8 looked at the impacts on health of welfare-to-work (WTW) programs, which encourage and support employment.⁸ Only three of these WTW studies directly tested the effect of employment on health and used

⁷ We defer in this report to authors' definition or threshold for statistical significance. If an author did not define a threshold, we defined statistical significance as parameter estimates (as measured by the study authors) with $p < 0.05$. For ease of reading, we do not show the statistically significant p -values throughout the report.

⁸ We excluded causal WTW studies that, although they tested whether WTW policies affected health outcomes, did not explicitly test whether the policies being studied led to changes in employment. Narain et al. (2017) and Jagannathan et al. (2010) are two examples. These studies do not directly answer our research question.

nonexperimental causal methods, while the remaining studies tested the impact of the program as a whole. The remaining two studies of the effect of employment on health examined other employment and training programs, outside of WTW programs. Two additional causal studies examined whether complex programs designed to improve health also improved employment (Exhibit IV.2).

a. The effect of employment on health

All the WTW studies found that the WTW programs increased employment among participants,⁹ but they reached conflicting conclusions on the impact of these programs on adult health and child well-being. Most of these studies were RCTs in which welfare applicants or recipients were randomly assigned either to enter a WTW program, usually employment services or education, or to join a comparison group, usually one that received traditional welfare benefits without access to training. This strategy ensures that any differences in employment rates between the treatment and control groups are attributable to the WTW program being tested, and not to other factors. Moreover, any changes in health can also be attributed to the program.

A key limitation of most WTW studies is that they tested the effectiveness of a program, not of employment directly (although the program led to increased employment). All eight analyses of WTW programs examined a range of adult and child health outcomes. However, the programs studied differed in the types of services they provided and their requirements. For example, some programs included services such as education (Hamilton et al. 2001), and others included income subsidies (Williams and Hendra 2018). Therefore, in these cases, we cannot rule out the explanation that changes in health were due to other program components, such as higher income or higher education, rather than health being directly affected by changes in employment. In effect, these studies examine the impact of the WTW program as a whole on health outcomes.

Only three of the WTW studies directly tested whether employment predicts health and all were non-experimental causal studies. Gennetian et al. 2010 and Hill et al. 2011 both used a specific nonexperimental approach (namely, instrumental variables analysis) to examine whether employment changes caused changes in child developmental outcomes. Both of these studies examined the National Evaluation of Welfare-to-Work Strategies (NEWS) Labor Force Attachment (LFA) program, which focused almost exclusively on helping low-income single mothers find jobs, rather than providing education, training, or other supports such as child care subsidies or health insurance coverage. The authors reanalyzed the data produced by the original LFA studies. By using the instrumental variables approach (a sophisticated econometric method) to do this reanalysis, the authors sought to isolate the effect of the employment portion of the WTW program. In another study, Herbst (2017) used a facet of the WTW employment requirements – the fact that some mothers may be exempt from work for longer intervals than others based on the age of their youngest child – to compare the effects of employment among mothers participating in WTW programs; thus, using a nonexperimental technique to create comparative groups. In this study, the author examined whether increases in maternal

⁹ Although Miller et al. (2012) find employment and earning effects in the period immediately following the program, they find the effects fade after three years.

employment due to these work requirements affected adult and child health outcomes. Although all three of these studies directly test whether maternal employment affects health, since they are all nonexperimental studies, we cannot be certain that all other factors that could affect health, besides employment, are accounted for.

Three of the eight WTW studies looked at adult health outcomes, and only one found any effect of employment on health. In the direct test of whether employment affected health described above, Herbst (2017) concluded that employment led to an increase in depressive symptoms but had no effect on self-reported health. The remaining two studies (Fraker et al. 2002 and Freedman et al. 2000) did not isolate the effect of employment and found no effect of WTW programs on parents' psychological well-being and depression. The Freedman et al. (2000) study also found that the WTW program had no effect on whether a person indicated that they had health or emotional problems that made it difficult for them to work. These two studies examined populations that were predominately female, and covered populations that were either mainly white or mainly black or Hispanic (depending on the study).

Six of the eight studies looked at the short-term impact (less than three years) of WTW programs on child physical health, behavioral health, and cognitive outcomes and reached different conclusions. Three found negative effects of the program on these outcomes, two found positive effects, and one found mixed effects. We summarize the findings below and note which studies provided a direct test of whether employment affected health versus testing the effect of the WTW program(s) as a whole.

- Herbst (2017) found that increased maternal employment (as a result of WTW programs) resulted in meaningful reductions in children's test scores and classroom behavior, with larger declines in white children's scores compared to those of black and Hispanic children. This study was a direct test of whether employment affected health.
- Gennetian et al. (2010) found that that increased maternal employment from a WTW program that focused exclusively on directing mothers to quickly join the labor market led to small declines in children's health, as reported by the mothers. This study was a direct test of whether employment affected health.
- Hamilton et al. (2001) evaluated employment-focused and education-focused WTW programs in four cities and found that the programs led to few effects (grade repetition, suspension, dropping out of school, needing to attend a special class for a condition) on all children (age 6 and older); but in two sites, the impacts were unfavorable for adolescents ages 15–23 (increased grade repetition; increased probability of school dropout; and increased physical, emotional, or mental conditions).
- Gennetian and Morris (2003) found WTW programs with generous earnings disregards and employment services led to small to moderate improvements in early learning, academic performance, and behavior for children ages 5–12.
- Loeb (2003) found small favorable effects of an employment initiative with time limits and work incentives on early learning of children ages 12–42 months.
- Freedman et al. (2000) studied an on-the-job training program in a WTW pilot study and found mixed effects. After two years, the children of program recipients experienced a lower

proportion of suspensions or expulsions from school, relative to the control group. However, children who were younger (ages 4–5) when their parents started the program were more likely to repeat a grade.

Four of these eight studies examined the longer-term effects of WTW on child outcomes and only one found sustained effects. In one of the instrumental variables analyses mentioned earlier (which allows for a direct test of how employment affects health), Hill et al. (2011) found that sustained unemployment during children’s preschool years led to increased child problem behavior in the classroom five years later. In contrast, Herbst (2017) found early maternal employment (when children were 9 to 24 months) had no effect on children’s test scores or negative classroom behavior 60 months later. The remaining two WTW studies, which were not direct tests, found no long-run effects. For example, Fraker and colleagues (2002) found no effects of WTW on children’s health and use of health care four to five years after random assignment into the program. Even when the policies had a negative impact on child academic functioning and physical health in the first three years, the effects of the WTW program faded in later years (Hamilton et al. 2001).

None of the WTW studies directly testing whether employment predicts health examined the mechanism through which health was affected. Some studies hypothesized that the employment changes resulting from various WTW policies changed the home environment, income, parental economic self-sufficiency, and child care, which in turn affect children’s early learning (Loeb 2003; Gennetian and Morris 2003). However, other components of the WTW program could have had their own independent effect on health outcomes.

Two additional studies examined the effect of employment on health, both studying contexts outside WTW; these had mixed findings (employment supports adults’ health, and employment support programs had no effect on adults’ mental health) but had important limitations. One of these studies focused on hard-to-employ individuals, a common low-income population affected by ACF policies. The study population included recipients of Temporary Assistance for Needy Families (TANF) as well as people with criminal records, young people who are neither in school or working, noncustodial parents, and others (Williams and Hendra 2018). The study examined a set of employment training programs aimed at hard-to-employ individuals and found that participants were more likely to assess their well-being positively compared to nonparticipants. These effects faded one year after the random assignment in the program. Importantly, like the WTW studies, this study also tested the effect of a bundle (or package) of services on employment and health, rather than the direct effect of employment on health. The other study was an assessment of a work support program designed to increase the incomes and stabilize the employment of low-wage workers (Miller et al. 2012). Although the program improved work support, earnings, and training, the authors did not find that changes in these employment-related outcomes affected adult mental distress.

b. The effect of health on employment

The two studies we identified that tested the effect of health on employment (both RCTs) found that targeted interventions reliant on case management improved health and subsequently improved employment outcomes. Neither of these studies examined whether the employment effects were generated solely by changes in health rather than other aspects of case

management. Conrad et al. (1998) in particular cautioned that some of the effects could have been due to other aspects of the program, not solely the treatment of substance abuse.

- Morgenstern et al. (2009) examined use of intensive case management over a 24-month period among substance-dependent TANF-eligible women. The study found that compared to those in the usual care group that received screening and a referral, women in the intensive case management group had a higher rate of improvement in terms of employment outcomes (any employment and employed full time) than the usual care group.
- Conrad et al. (1998) examined the effect of case-managed residential care on substance abuse, unemployment, and health of homeless male veterans. Compared to people in the customary control condition of a 21-day hospital program with referral to community services, those in case management had significant improvement in managing substance abuse and had improved employment.

Exhibit IV.2. Summary of studies testing a causal relationship between health and employment (research question 1)

Citation	Study population	Dimensions of employment	Dimensions of health	Findings
<i>The effect of employment on health: WTW studies</i>				
Freedman et al. (2000)	Mostly urban and black or Hispanic, mostly single mothers, fewer than half had high school diploma or GED	WTW pilot program: mandatory employment,	Children's academic and behavior outcomes	WTW had no effect on health or emotional problems that were severe enough to prevent someone from working; employment had mixed effects on children's academic outcomes
Fraker et al. (2002)	Low-income clients of AFDC, predominantly female, white, and urban	WTW pilot program with package of services, including financial incentives tied to work and participation in employment and training programs	Parent's mental health, children's health status and use of medical care	WTW had no effect on psychological well-being and depression of adults; WTW had no effects on children's health
Gennetian and Morris (2003)	Low-income single mothers and their children	WTW policy: "make work pay" and time limits	Maternal- and teacher-reported child behavior and academic performance	WTW policies led to small, moderate improvements in early learning, academic performance, and behavior of children ages 5–12
Hamilton et al. (2001)	Single mothers	WTW policy: 11 different programs, some employment-focused and some education-focused	Child outcomes: behavior, academic functioning, health and safety	Work requirements for parents do not affect young children's academic functioning and health and the negative impacts on adolescents (e.g., grade repetition and probability of dropping out) fade over time
Loeb (2003)	Single mothers in Connecticut	WTW policy: time limits and work incentives	Early childhood learning	WTW policies led to favorable effects on early childhood learning of children ages 12–42 months
<i>WTW studies with direct tests of employment affecting health (all non-experimental causal)</i>				
Gennetian et al. (2010)	Low-income single mothers and their children	WTW policy: National Evaluation of Welfare-to-Work Strategies (NEWWS) Labor Force Attachment (LFA) program; focused on helping participants find jobs	Maternal-reported child health	Maternal employment led to small declines in children's health

EXHIBIT IV.2. (continued)

Citation	Study population	Dimensions of employment	Dimensions of health	Findings
Herbst (2017)	Potentially welfare-eligible mothers and their children: those with less than a college degree or unmarried.	WTW policy: maternal employment affected by states' age-of-youngest-child exemptions	Maternal self-reported health and depression; Early child cognitive ability	Increased maternal employment led to an increase in depressive symptoms but had no effect on self-reported health of mothers; maternal employment led to reductions in children's test scores 24 months after maternal employment but the effects do not persist over time (60 months after baseline)
Hill et al. (2011)	Low-income single mothers and their children (aged 3 to 5 at baseline)	WTW policy: National Evaluation of Welfare-to-Work Strategies (NEWWS) Labor Force Attachment (LFA) program; focused on helping participants find jobs	Social behavior and problem behavior of children	Sustained maternal job loss during a child's preschool years led to increases in children's problem behavior five years later.
<i>The effect of employment on health – other causal studies</i>				
Miller et al. (2012)	Mostly urban and black or Hispanic, mostly single mothers, most had a little education beyond high school	Integrated, intensive retention and advancement services to incumbent workers	Adult stress/psychological distress	Work support program had no effect on psychological distress
Williams and Hendra (2018)	Hard-to-employ individuals	Employment programs: 8 different programs that gave participants opportunities to learn employment skills and support services to help personal barriers to steady work	Subjective well-being and health	Targeted training programs improved well-being initially, but the effects faded one year after study assignment
<i>The effect of health on employment</i>				
Morgenstern et al. (2009)	Substance-dependent women receiving TANF in intensive case management	Employment status Full- or part-time employment	Substance dependence	Targeted case management improved health and subsequent employment

EXHIBIT IV.2. *(continued)*

Citation	Study population	Dimensions of employment	Dimensions of health	Findings
Conrad et al. (1998)	Substance-dependent homeless men	Employment status	Substance dependence	Targeted case management improved health and subsequent employment

AFDC = Aid to Families with Dependent Children; TANF = Temporary Assistance for Needy Families; WTW = Welfare-to-Work.

2. Correlational research

Because we found few causal studies on the employment-health relationship for the low-income U.S. population, we also searched for literature reviews on this relationship. The literature reviews that passed our screening criteria were mostly studies with correlational designs. Correlational studies cannot identify whether one outcome causes another, just whether they tend to move together in some way. Nonetheless, because so little causal literature was available to answer research question 1, we summarize the correlational studies' findings here to give readers a broad sense of what the research indicates the relationship may be. We found eight literature reviews examining low-income individuals in the United States.

Three reviews summarized how health and employment relate for low-income adults and found mixed results: Employment gains were correlated with worse mental health for women, but employment losses were correlated with worse physical and mental health for men. Specifically, the two literature reviews looking at employment and mental health for low-income women found that increases in employment levels were negatively correlated with psychological health (O'Campo and Rojas-Smith 1998) and depression (Lennon et al. 2001). The review that focused on low-income men (Institute for Research on Poverty 2017) found that higher unemployment was correlated with worse mental and physical health and disability.

Several literature reviews examining the correlation of employment for low-income mothers with the health, well-being, and development of their children had mixed findings about whether there was a correlation and the direction of the correlation. Specifically, two reviews (Sandstrom and Huerta 2013; Carnochan et al. 2005) found that unfavorable child outcomes were correlated with a change in employment (job gain or loss). Sandstrom and Huerta (2013) showed a negative correlation between maternal job loss and problem behaviors and low social competence among children. Carnochan et al. (2005) showed that for adolescents, maternal job gain was negatively correlated with school performance and passing/completing a grade in school. Other studies suggest a positive correlation between maternal employment and student achievement and classroom behavior, though these reviews found correlations only when something else, such as earnings (Blank 2002) or educational attainment (Zaslow et al. 2002) for mothers was also higher. Several studies (Huston 2012; Carnochan et al. 2005; Zaslow et al. 2002) also found no correlation between maternal employment and children's outcomes (cognitive or social development).

B. Research question 2: For low-income employed adults, what is the relationship between their work environment and their health?

For research question 2 (and research question 3 in the next section), we organize the findings around different dimensions of the work environment and highlight the two dimensions for which our search identified causal research. To address research question 2, we identified 11 studies, only one of which used a causal design.

1. Job demands and control

High job demands and lack of control over one's work were correlated with low job satisfaction, depressive symptoms, and job burnout in three studies; we found no studies testing whether the work environment caused these unfavorable outcomes. Among low-

income state government workers, high job demands (defined as “involving too much work to do everything well”) were significantly correlated with less job satisfaction (Sloan 2012). Conversely, greater complexity of work and autonomy were associated with a perception of greater satisfaction among the workers. The study showed similar yet smaller statistically significant correlations between psychological distress and job autonomy, complexity of work, and job demands. Similarly, Font (2012) looked at autonomy, opportunities for achievement, and job burnout in child welfare workers who earned a median annual salary of \$38,000 and found that job satisfaction was related to slight decreases in job burnout. Muntaner et al. (2006) found that low-wage nursing assistants¹⁰ who had previously perceived their jobs as involving higher emotional demands experienced more depressive symptoms than those who had perceived the emotional demands as low.

2. Support from supervisors or coworkers

A single study suggested that more training and support for one group of low-income workers—preschool teachers—can improve some, but not all, facets of job stress. Zhai et al. (2011) conducted an RCT of a training and support model for Head Start teachers. The model significantly improved two of three dimensions of teachers’ job stress and had a negative impact on their confidence. Because we found only one causal study on this topic, and it examined a specific training model and job sector, we cannot be confident that these results would apply to all low-income workers.

Positive interactions with supervisors and coworkers are correlated with low-income workers’ well-being, but perhaps less so than job security; aside from the study above (Zhai et al. 2011), we found no causal research testing whether such interactions affect well-being. Support from coworkers and supervisors was negatively correlated with depressive symptoms in a nationally representative study, but the relationship did not hold among the working poor, for whom “job insecurity was the single significant correlate of depressive symptoms after adjusting for [other factors]” (Simmons and Swanberg 2009). In contrast, Sloan (2012) found that among low-earning state government workers, perceived unfair treatment by a supervisor was correlated negatively with job satisfaction and positively with psychological distress. Support from a coworker mitigated workers’ reactions to unfair supervisor treatment; coworker support on its own was not significantly correlated with job satisfaction or distress.

Differences in the perception of fairness based on race or ethnicity was explored in two studies. Hoppe et al. (2010) found that for Latino workers, management fairness was associated with significantly lower job stress but had no significant relationship to psychological well-being (such as unhappiness or depression). White workers had the opposite reaction: management fairness was not associated with job stress but was positively associated with psychological well-being. For both Latino and white workers, management fairness was more important than supervisor support. De Castro and colleagues (2008) found that respondents who perceived work discrimination also had slightly more self-reported negative health conditions.

¹⁰ Most study participants had a household annual income of \$35,000 per year or less.

3. Nonstandard schedules and worker flexibility

A predictable and flexible schedule may correlate more than working standard hours to better management of work-life conflict, but we did not find any causal research that tested these ideas. For retail workers, limited advance notice of schedules and last-minute scheduling changes were significantly correlated with work-life conflict (Henly and Lambert 2014). Only about one-third of the sample had caregiving responsibilities, which implies that schedule unpredictability is disruptive regardless of parenting responsibilities. Similarly, Nomaguchi and Johnson (2016) found that workplace inflexibility—rather than a nonstandard schedule—was correlated to parenting stress. Inflexibility had a large influence on parenting stress and was comparable to the influence of unemployment. Nonstandard work hours were not significantly correlated to work-life conflicts or parenting stress in these studies. In contrast, a descriptive study, which did not test for statistical significance, found that evening shift workers reported the most instances of pain (such as shoulder pain or headaches) and morning shift workers the least (Genaidy et al. 2008).

4. Wages and wage fairness

According to three studies, workers' perceptions of their wages are correlated with job satisfaction and retention for some (but not all) workers, but we did not find causal studies on the effect of wages and perceived wage fairness on low-income workers' attitudes. For early child care staff who earned poverty-level wages on average, paid preparation time was correlated with greater job autonomy, work-family balance, and satisfaction with supervisors and working conditions (Phillips et al. 1991). Hoppe and colleagues (2010) found that wage fairness contributed to job stress among white, but not Latino, warehouse workers in furniture distribution centers. A study on burnout among child welfare workers did not find any statistically significant associations between worker pay and job burnout (Font 2012).

C. Research question 3: For low-income employed single parents, what is the relationship between their work environment and the health of their children?

Because the work environment can influence adults and work-family life, can it also influence the children of low-income single-parents? We identified only seven studies to address research question 3, only one of which used a causal design. Most (or close to half) of the mothers who made up the study samples were single.

1. Nonstandard work schedules

Nonstandard schedules—and perhaps night shifts in particular—may be correlated with adverse outcomes for children in single-parent families, but we did not find causal research on this topic. Among the research we found (three correlational studies, one literature review, and one qualitative study), nonstandard schedules were correlated with child behavior problems, poorer child development, and family involvement with Child Protective Services (CPS). In looking at an array of different kinds of work schedules, Dunifon and colleagues (2013) found that night-shift work for mothers was the only type of schedule with a significant relationship to young children's aggressive or anxious behavior. Maternal evening, weekend, irregular, and standard schedules were not associated with aggressive or anxious behaviors.

In contrast to Dunifon and coauthors (2013), who measured several types of nonstandard schedules, Han and colleagues (2013) defined nonstandard schedules as work hours outside 8 a.m. to 5 p.m. weekdays and found somewhat different results: that low-income, mostly single mothers of young children who were working nonstandard hours had a 73 percent higher likelihood of a CPS contact compared to mothers who worked only standard schedules, even after controlling for various factors. The authors speculated that nonstandard schedules may force parents, especially single mothers, to leave children unattended at times, potentially leading to CPS reports of child neglect. In a literature review, Li and coauthors (2014) also found, based on three correlational studies, negative associations between mothers working nonstandard schedules and child development problems. The authors suggested that parents working nonstandard schedules, especially single parents, may experience difficulty juggling the demands of work and family.

Two studies reported mediating factors that help explain why nonstandard schedules may relate to child outcomes, but did so descriptively and did not test whether these factors cause the differences observed. First, in a qualitative case study, Henly and coauthors (2006) reported that for single-mothers in the retail sector, working into the evening may mean dinners are late, bedtimes postponed, or children's sleep patterns disrupted. Mothers might leave children home alone or place undue burden on informal support networks.¹¹ Unpredictable work schedules and a lack of flexibility for unplanned time off were also challenges in the retail sector. As the authors explained, "The flextime policies that are frequently discussed in the work-life literature are entirely absent from these workplaces. Vacation, sick, and personal-day policies exist but are limited in value" (Henly et al. 2006). Second, Han et al. (2010) conducted many statistical tests to examine pathways or mediators through which nonstandard schedules relate to children's risky behaviors. The authors found that the number of years a mother worked night shifts was generally correlated with her children's later adolescent smoking, drinking, sexual activity, and delinquency, depending on the age of the child when the mother was working night shifts. Yet, a few of the results pointed to favorable associations between mothers' night shifts and children's behavior. For example, for children younger than age 5, the number of years a mother worked night shifts was also directly related to a *decrease* in adolescent sex. For children ages 5 through 10 and children ages 11 and 12, maternal irregular shifts were associated with a significant *increase* in parental knowledge of children's whereabouts and later declines in risky behaviors.¹²

2. Job instability

A study consisting mostly of single mothers found that job loss contributed to child behavior problems, but not to changes in positive behaviors (Hill et al. 2011).¹³ In this

¹¹ For working parents with nonstandard work schedules, making child care arrangements is especially complex. Child care centers that serve families with "fixed, daytime, weekday hours" typically do not accommodate families who need nonstandard hours of care. Parents with such schedules often rely on family, friends, and neighbors, according to a descriptive study that analyzed national survey data (Enchautegui, Johnson, and Gelatt 2015).

¹² The authors did not explain possible reasons for these unexpected results. We did not review the quality of the research designs for any of the studies.

¹³ Hill et al. (2011) was also reviewed for the first research question on employment and health. It was one of the three studies that used an instrumental variables approach to directly test whether employment affected health. We

nonexperimental, instrumental variables study, children whose mothers experienced one or more sustained job loss episodes during a five-year period had significantly worse problem behavior scores at the end of the five-year period than children whose mothers experienced no job loss at all.¹⁴ Each sustained job loss episode worsened problem behavior scores by a moderate amount.¹⁵ Job loss episodes were not significantly related to children's positive behaviors, reflecting that this observed relationship was relatively small and likely due to chance.

3. Job satisfaction¹⁶

A mother's employment satisfaction was correlated with child maltreatment potential in one study, but we found no causal research on this topic. A correlational study of mothers who had been referred to CPS for child neglect and were identified as users of illicit drugs found that mothers' happiness with their employment had an inverse relationship to child abuse potential (controlling for social desirability).

included it under research question 3 as well because repeated job losses are indicative of job instability in the work environment.

¹⁴ In one estimate, children whose mothers experienced one or more sustained job losses had problem behavior scores that were more than one standard deviation (considered a large effect) worse than children whose mothers experienced no job loss at all.

¹⁵ Each sustained job loss worsened problem behavior scores by more than half a standard deviation, which is considered a moderate amount.

¹⁶ The literature we reviewed typically measured job satisfaction as a well-being outcome, but some literature reported job satisfaction as a composite or proxy for job quality. We include it here as a working condition to align with the study.

This page has been left blank for double-sided copying.

V. DISCUSSION AND DIRECTIONS FOR FUTURE RESEARCH

A. Key takeaways

In order to inform policies aimed at improving employment, health, or both, we sought a better understanding of the relationship between the two. We searched a vast literature on the topic and identified and reviewed 37 studies that were specific to low-income adults and families in the United States. In this chapter, we draw conclusions about (1) what we know about the employment and health relationship from research, and (2) what we have yet to learn.

1. Research question 1: Employment-health relationship for low-income adults and children

There is little research examining the relationship between employment and health among the low-income U.S. population. The research is mostly correlational and the bulk of the causal research that does exist does not directly examine the effects of employment on health. Although there are numerous international and U.S. studies on the general population, the literature we found rarely focused explicitly on low-income Americans. This is problematic for policies that target low-income adults in the United States, because conclusions drawn from studies of higher-income adults (who tend to be healthier) or of other countries (which may have universal health care and different social supports and certainly have different demographics and culture) may not apply to the target population. Much of the causal research of the effects of employment on health that does exist examined the impact of WTW programs. Because these programs typically offer a bundle of services, we cannot say definitively whether changes in health were caused by employment changes or another service component. Therefore, studying such programs is problematic in establishing the relationship between employment and health. Similarly, in two studies we identified that examined the effect of a specific health (substance use) program on employment, it was unclear whether changes in health or the impact of other program components were responsible for the improved employment outcomes.

The studies we reviewed on WTW programs suggest that they did not affect mothers' psychological well-being nor have lasting effects on their children's development. Three of the four studies that examined the psychological well-being of mothers participating in WTW programs found no effects, and one had mixed results (mothers had more depressive feelings but no changes in self-reported overall health). For children, across seven studies, there was a mix of some positive and some negative impacts of WTW programs on children's early learning and academic performance, child behavior, and health, but the WTW policies seem to have had no long-term effects on children's academic or behavioral development three to five years after random assignment.

2. Research questions 2 and 3: Relationship of work environment to low income workers' health and their children's well-being

There is little causal evidence on the effects of the work environment on health and well-being but correlational studies suggest that they are related. Taken together, the studies we reviewed found that for low-income adults, high job demands and a lack of autonomy or control over one's work were correlated with low job satisfaction, stress, depressive symptoms, and job burnout among low-income workers. Support offered by supervisors or coworkers and

the flexibility of a worker's schedule might also influence well-being, though some correlational findings were mixed. For low-wage workers, concerns over wages or job security might outweigh the benefits or challenges of other working conditions. Among children of low-income single parents, the correlational research suggests that mothers' nonstandard schedules and employment satisfaction may correlate with child well-being, though this is based on only a few studies and results were somewhat mixed. Because these studies do not use causal designs, we cannot determine the direction of the relationship nor rule out whether other (unmeasured) factors, such as education or specific neighborhood characteristics, rather than the work environment, explained these studies' findings.

B. Limitations of this review

We did not systematically assess study quality. We did not assess the data sources or survey questions, data collection procedures, or analytic approaches in the studies considered in the literature review. To determine whether a study was causal, we looked at the overall study design (for example, whether it was an RCT) and did not assess the credibility of the specific approach (for example, the rate at which people left the study, or how alike the treatment and comparison groups were before the study began). Further, we took the findings from the synthesis studies at face value and did not thoroughly examine individual studies included in the reviews. A future assessment of the literature, perhaps after more causal studies are conducted, could better assess the limitations and sources of bias in the underlying studies.

The findings may not be generalizable to other populations, jobs, and settings. The literature we reviewed was thin and was spread broadly over a range of WTW policies, occupations, industries, job conditions, health interventions, and health outcomes. Further, many of the causal studies exploring the employment–health relationship focused on specific populations, especially low-income single mothers and their children. It is challenging to generalize findings from these study samples to other low-income populations or other settings.

Studies used different measures for the same work environment dimension and for the same health outcome, thereby limiting our ability to draw conclusions across the research. Some studies combined different aspects of the work environment into one index measure, which made them difficult to compare to other studies. Similarly, studies on the work environment and those on employment and health in general used a variety of instruments to measure depressive symptoms, reported health, and child developmental outcomes at various ages. Without (1) re-analyzing study data to translate findings into a common metric and (2) grappling with measurement differences, we lose some confidence in the conclusions we can make across studies about the relative size and meaning of the effects.

C. Potential directions for future research

This review identifies an opportunity for policymakers and researchers to shape the research base. Those commissioning or designing future research could strengthen what we know about the relationship between employment and health for low-income individuals, parents, and children by acting on the suggestions below.

Focus on low-income adults and single-parent families in the United States while broadening beyond WTW recipients. On the relationship between employment and health and

between the work environment and health, we found a relatively small body of work that was specific to the United States and low-income adults. Future studies should also expand beyond WTW recipients (who are mainly single mothers), the bulk of the research population in studies we identified for our first research question. Finally, future studies should examine differences in the employment–health relationship by race or ethnicity. Few studies that we identified considered race and ethnicity, even though the labor market experiences and health outcomes of low-income adults generally vary considerably by those factors.

Design causal studies to isolate the effect of employment changes on health, or of health changes on employment, and gather data on the employment context. The causal studies in this literature review focused on employment and health programs that offered participants a bundle of services, which typically made it impossible to identify a singular mechanism driving the effects. To confidently assert the direction of the employment–health relationship, researchers must use study designs that can attribute the observed changes in outcomes to either employment or health changes alone. Moving beyond tests of WTW interventions would further this goal. For example, an evaluation of an employment program that offers job placement alone, wherein an individual is randomly assigned to a job and no other supports, would rule out the possibility that other service components contributed to changes in health. Future rigorously designed causal studies should also attempt to tease out the reason a job may improve health by looking beyond employment status and by measuring the work environment and job types. Doing so could contribute more causal research on the work environment and allow researchers to consider differences across job types and industries.

Include health outcomes in studies of employment programs for low-income adults. Doing so could help generate a larger literature base to address the question of whether employment affects health, yet health outcomes are not typically included in effectiveness studies of employment interventions. As the research base grows, researchers could conduct a meta-analysis on all available studies of multi-component employment programs that also measure health effects to try and isolate an estimate of how each distinct program component affects health. Additionally, when employment studies did measure health, they measured mostly mental health or psychological well-being outcomes, such as depressive symptoms or job satisfaction. Physical health outcomes are useful to explore, too, because employment status or the work environment can contribute to stress that in turn can manifest itself as a physical ailment or illness. Administrative medical data (such as from Medicaid) may be appropriate for assessing physical conditions in future studies, although would need to be carefully considered (for example, relying on Medicaid or another insurance data is only practicable if the study population is and remains eligible for the insurance as their employment status changes).

Incorporate qualitative alongside quantitative research. Qualitative research that explores (1) the mechanisms through which employment affects health, or (2) the working conditions that matter to various people, can play an important role in guiding quantitative studies. It could help take the literature beyond exploratory approaches in which researchers run dozens of statistical models. With one exception (a case study that we included on nonstandard schedules in the retail sector because it provided useful context for research question 3), we did not review qualitative research.

Implement standardized definitions and use common measures or calculations.

Standardized definitions and measures of health, well-being, working conditions, and job quality are important for drawing connections across the literature.¹⁷ Outcome measures should also be culturally sensitive and valid for various racial and ethnic groups. Consistently reporting effect sizes (a statistical method for translating results into a common metric) or the numbers needed for readers to calculate them can also help researchers make comparisons across studies.

¹⁷ Recognizing the need for standardized measures of job quality, in 2017 OECD released *OECD Guidelines on Measuring the Quality of the Working Environment*, which it hopes will help to increase the availability of high-quality job quality data and allow for cross-country comparisons).

REFERENCES

- Acheson, D., D. Barker, J. Chambers, H. Graham, M. Marmot, and M. Whitehead. *Independent Inquiry into Inequalities in Health Report*. London: The Stationery Office, 1998.
- Administration on Children and Families. “Report on States Serving Prioritized Children with Child Care Assistance Under the CCDBG Act of 2014.” Available at https://www.acf.hhs.gov/sites/default/files/occ/fy_2018_ccdf_priorities_report.pdf. Accessed February 13, 2019.
- Antonisse, L., and R. Garfield. “The Relationship Between Work and Health: Findings from a Literature Review.” Kaiser Family Foundation, 2018. Available at <https://www.kff.org/medicaid/issue-brief/the-relationship-between-work-and-health-findings-from-a-literature-review/>. Accessed November, 12, 2018.
- Aron, Laudan, Lisa Dubay, Emily Zimmerman, Sarah M. Simon, Derek Chapman, and Steven H. Woolf. “Can Income-Related Policies Improve Population Health?” Washington, DC: Urban Institute and Center on Society and Health, April 2015.
- Blank, Rebecca M. “Evaluating Welfare Reform in the United States.” *Journal of Economic Literature*, vol. 40, no. 4, 2002, pp. 1105–1166.
- Carnochan, S., V. Ketch, de Marco, A. “Assessing the Initial Impact of Welfare Reform: A Synthesis of Research Studies (1998–2002).” *Journal of Policy Practice*, vol. 4, no. 1, 2005, pp. 3–31.
- Centers for Disease Control and Prevention. “Well-Being Concepts.” May 2016. Available at <https://www.cdc.gov/hrqol/wellbeing.htm>. Accessed October 31, 2017.
- Conrad, Kendon J., Cheryl I. Hultman, Annie R. Pope, John S. Lyons, William C. Baxter, Amin N. Daghestani, Joseph P. Lisiecki Jr., Phillip L. Elbaum, Martin McCarthy Jr., and Larry M. Manheim. “Case Managed Residential Care for Homeless Addicted Veterans: Results of a True Experiment.” *Medical Care*, vol. 36, no. 1, 1998, pp. 40–53.
- Cubbin, C., F.B. LeClere, and G.S. Smith. “Socioeconomic Status and the Occurrence of Fatal and Nonfatal Injury in the United States.” *American Journal of Public Health*, vol. 90, no. 1, 2000, pp. 70–77.
- Cummings, E. Mark, and Patrick T. Davies. “Maternal Depression and Child Development.” *Journal of Child Psychology and Psychiatry*, vol. 35, no. 1, 1994, pp. 73–112.
- Deaton, Angus. “Health, Income, and Inequality.” National Bureau of Economic Research (NBER) Reporter: Research Summary. Spring 2003. Available at <http://www.nber.org/reporter/spring03/health.html>. Accessed January 23, 2018.
- De Castro, A., G. Gee, and D. Takeuchi. “Workplace Discrimination and Health Among Filipinos in the United States.” *American Journal of Public Health*, vol. 98, no. 3, 2008, pp. 520–526.

- Dooley, D., J. Fielding, and L. Levi. "Health and Unemployment." *Annual Review of Public Health*, vol. 17, no. 1, 1996, pp. 449–465.
- Duncan, G.J., and R.J. Murnane. *Whither Opportunity? Rising Inequality and the Uncertain Life Chances of Low-Income Children*. New York: Russell Sage Foundation, 2011.
- Duncan, Greg J., Kathleen M. Ziol-Guest, and Ariel Kalil. "Early Childhood Poverty and Adult Attainment, Behavior, and Health." *Child Development*, vol. 81, no. 1, 2010, pp. 306–325.
- Dunifon, R., A. Kalil, D. Crosby, and J. Su. "Mothers' Night Work and Children's Behavior Problems." *Developmental Psychology*, vol. 49, no. 10, 2013, pp. 1874–1885.
- Enchautegui, M., M. Johnson, and J. Gelatt. "Who Minds the Kids When Mom Works a Nonstandard Schedule?" Washington, DC: The Urban Institute, July 2015. Available at <https://www.urban.org/sites/default/files/publication/64696/2000307-Who-Minds-the-Kids-When-Mom-Works-a-Nonstandard-Schedule.pdf>. Accessed February 13, 2019.
- Evans, Gary W., and Elyse Kantrowitz. "Socioeconomic Status and Health: The Potential Role of Environmental Risk Exposure." *Annual Review of Public Health*, vol. 23, no. 1, 2002, pp. 303–331.
- Font, S. "Burnout in Child Welfare: The Role of Employment Characteristics and Workplace Opportunities." *Social Service Review*, vol. 86, no. 4, 2012, pp. 636–659.
- Fraker, Thomas M., Christine M. Ross, Rita A. Stapulonis, Robert B. Olsen, Martha D. Kovac, M. Robin Dion, and Anu Rangarajan. "The Evaluation of Welfare Reform in Iowa." Mathematica Policy Research Report, 2002.
- Freedman, Stephen, Jean Tansey Knab, Lisa A. Gennetian, and David Navarro. "The Los Angeles Jobs–First GAIN Evaluation: Final Report on a Work First Program in a Major Urban Center." MDRC Report, 2000.
- Fryers, T., D. Melzer, and R. Jenkins. "Social Inequalities and the Common Mental Disorders: A Systematic Review of the Evidence." *Social Psychiatric Epidemiology*, vol. 38, 2003, pp. 229–237.
- Genaidy, A., M. Rinder, and A.A. Rehim. "The Work Compatibility Improvement Framework: An Assessment of the Worker–Work Environment Interaction in the Manufacturing Sector." *Ergonomics*, vol. 51, no. 8, 2008, pp. 1195–1218.
- Gennetian, L., H.D. Hill, A.S. London, and L.M. Lopoo. "Maternal Employment and the Health of Low-Income Young Children." *Journal of Health Economics*, vol. 29, no. 3, 2010, pp. 353–363.
- Gennetian, Lisa A., and Pamela A. Morris. "The Effects of Time Limits and Make-Work-Pay Strategies on the Well-being of Children: Experimental Evidence from Two Welfare Reform Programs." *Children and Youth Services Review*, vol. 25, no. 1, 2003, pp. 17–54.

- Goldman-Mellor, S., K. Saxton, and R. Catalano. "Economic Contraction and Mental Health: A Review of the Evidence, 1990–2009." *International Journal of Mental Health*, vol. 39, no. 2, 2010, pp. 6–31.
- Gorey, K.M. "Welfare-to-Work Programs in America, 1980 to 2005: Meta-analytic Evidence of the Importance of Job and Child Care Availability." *Journal of Policy Practice*, vol. 8, no. 4, 2009, pp. 265–281.
- Gupta, Anjali E., and Aletha Huston. "Depressive Symptoms and Economic Outcomes of Low-Income Women: A Review of the Social Causation, Social Selection, and Interactionist Hypotheses." *Social Issues and Policy Review*, vol. 3, no. 1, 2009, pp. 103–140.
- Hamilton, Gayle, Stephen Freedman, Lisa Gennetian, Charles Michalopoulos, Johanna Walter, Diana Adams-Ciardullo, Anna Gassman-Pines, Sharon McGroder, Martha Zaslow, Surjeet Ahluwalia, and Jennifer Brooks. "How Effective Are Different Welfare-to-Work Approaches? Five-Year Adult and Child Impacts for Eleven Programs." MDRC Report, 2001. Available at <https://www.mdrc.org/publication/how-effective-are-different-welfare-work-approaches>. Accessed November 12, 2018.
- Han, W., C. Huang, and M. Williams. "The Role of Parental Work Schedule in CPS Involvement." *Children and Youth Services Review*, vol. 35, no. 5, 2013, pp. 837–847.
- Han, W., D. Miller, and J. Waldfogel. "Parental Work Schedules and Adolescent Risky Behaviors." *Developmental Psychology*, vol. 46, no. 5, 2010, pp. 1245–1267.
- Henly, J., H. Shaefer, and E. Waxman. "Nonstandard Work Schedules: Employer- and Employee-Driven Flexibility in Retail Jobs." *Social Service Review*, vol. 80, no. 4, 2006, pp. 609–634.
- Henly, Julia, and Susan Lambert. "Unpredictable Work Timing in Retail Jobs: Implications for Employee Work-Life Conflict." *Industrial and Labor Relations Review*, vol. 67, no. 3, 2014, pp. 986–1016.
- Herbst, Chris M. "Are Parental Welfare Work Requirements Good for Disadvantaged Children? Evidence from Age-of-Youngest-Child Exemptions." *Journal of Policy Analysis and Management*, vol. 36, no. 2, 2017, pp. 327–357.
- Hill, H., P. Morris, N. Castells, and J. Walker. "Getting a Job Is Only Half the Battle: Maternal Job Loss and Child Classroom Behavior in Low-Income Families." *Journal of Policy Analysis and Management*, vol. 30, no. 2, 2011, pp. 310–333.
- Hoppe, A., C. Heaney, and K. Fujishiro. "Stressors, Resources, and Well-being Among Latino and White Warehouse Workers in the United States." *American Journal of Industrial Medicine*, vol. 53, no. 3, 2010, pp. 252–263.

- Hunt, Harriet, Alex Pollock, Pauline Campbell, Lise Estcourt, and Ginny Brunton. "An Introduction to Overviews of Reviews: Planning a Relevant Research Question and Objective for an Overview." *Systematic Reviews*, vol. 7, no. 1, 2018, p. 39. Available at <https://systematicreviewsjournal.biomedcentral.com/articles/10.1186/s13643-018-0695-8>. Accessed November 12, 2018.
- Huston, Aletha C. "How Welfare and Employment Policies Influence Children's Development." In *The Oxford Handbook of Poverty and Child Development*, edited by Rosalind B. King and Valerie Maholmes (pp. 278–293). New York: Oxford University Press, 2012.
- Institute for Research on Poverty, University of Wisconsin–Madison. "Work and Well-being Among Low-Income Men." Research/Policy Brief. *Fast Focus*, no. 30, 2017. Available at <https://www.irp.wisc.edu/publications/fastfocus/pdfs/FF30-2017.pdf>. Accessed November 12, 2018.
- Jagannathan, R., M.J. Camasso, and U. Sambamoorthi. "Experimental Evidence of Welfare Reform Impact on Clinical Anxiety and Depression Levels Among Poor Women." *Social Science and Medicine*, vol. 71, no. 1, 2010, pp. 152–160.
- Lambert, S.J., P.J. Fugiel, and J.R. Henly. "Precarious Work Schedules Among Early-Career Employees in the US: A National Snapshot." Chicago, IL: University of Chicago Employment Instability, Family Well-being, and Policy Network, 2014.
- Larrimore, Jeff. "Does a Higher Income Have Positive Health Effects? Using the Earned Income Tax Credit to Explore the Income-Health Gradient." *Milbank Quarterly*, vol. 89, no. 4, 2011, pp. 694–727.
- Lennon, M.C., J. Blome, and K. English. "Depression and Low-Income Women: Challenges for TANF and Welfare-to-Work Policies and Programs." Research Forum on Children, Families, and the New Federalism, National Center for Children in Poverty, Mailman School of Public Health, Columbia University, April 2001.
- Levi, L., M. Frankenhauser, and B. Gardell. "Work Stress Related to Social Structures and Processes." In *Research on Stress and Human Health*, edited by G. Elliot and C. Eisdorfer. New York: Springer, 1982. Reported in Marsella (1994).
- Li, J., S. Johnson, W. Han, S. Andrews, G. Kendall, L. Strazdins, and A. Dockery. "Parents' Nonstandard Work Schedules and Child Well-being: A Critical Review of the Literature." *Journal of Primary Prevention*, vol. 35, no. 1, 2014, pp. 53–73.
- Loeb, S. How Welfare Reform Affects Young Children: Experimental Findings from Connecticut—A Research Note. *Journal of Policy Analysis and Management*, vol. 22, no. 4, 2003, pp. 537–550.
- Lundberg, O. "Causal Explanations for Class Inequality in Health—An Empirical Analysis." *Social Science & Medicine*, vol. 32, no. 4, 1991, pp. 385–393.

- Marmot, M., J. Allen, P. Goldblatt, T. Boyce, D. McNeish, M. Grady, and I. Geddes. *Fair Society, Healthy Lives: Strategic Review of Health Inequalities in England Post 2010*. London: Marmot Review, 2010.
- Marsella, Anthony J. “The Measurement of Emotional Reactions to Work: Conceptual Methodological and Research Issues.” *Work & Stress*, vol. 8, no. 2, 1994, pp. 153–176.
- Miller, Cynthia, Mark van Dok, Betsy L. Tessler, and Alexandra Pennington. “Strategies to Help Low-Wage Workers Advance: Implementation and Final Impacts of the Work Advancement and Support Center (WASC) Demonstration.” MDRC Report, 2012.
- Morgenstern, Jon, Charles J. Neighbors, Alexis Kuerbis, Ann Riordan, Kimberly A. Blanchard, Katharine H. McVeigh, Thomas J. Morgan, and Barbara McCrady. “Improving 24-Month Abstinence and Employment Outcomes for Substance-Dependent Women Receiving Temporary Assistance for Needy Families with Intensive Case Management.” *American Journal of Public Health*, vol. 99, no. 2, 2009, pp. 328–333.
- Muntaner, C., Y. Li, X. Xue, T. Thompson, H. Chung, and P. O’Campo. “County and Organizational Predictors of Depression Symptoms Among Low-Income Nursing Assistants in the USA.” *Social Science & Medicine*, vol. 63, no. 6, 2006, pp. 1454–1465.
- Narain, K., M. Bitler, N. Ponce, G. Kominski, and S. Ettner. “The Impact of Welfare Reform on the Health Insurance Coverage, Utilization and Health of Low Education Single Mothers.” *Social Science & Medicine*, vol. 180, 2017, pp. 28–35.
- National Quality Forum. “Behavioral Health Measures – Phases I and II.” 2012. Available at <http://www.qualityforum.org/ProjectDescription.aspx?projectID=69293>. Accessed November 12, 2018.
- Nomaguchi, Kei, and Wendi Johnson. “Parenting Stress Among Low-Income and Working-Class Fathers.” *Journal of Family Issues*, vol. 37, no. 11, 2016, pp. 1535–1557.
- O’Campo, P., and L. Rojas-Smith. “Welfare Reform and Women’s Health: Review of the Literature and Implications for State Policy.” *Journal of Public Health Policy*, vol. 19, no. 4, 1998, pp. 420–446.
- Organization for Economic Cooperation and Development (OECD). “OECD Guidelines on Measuring the Quality of the Working Environment.” Paris, France: Organisation for Economic Co-operation and Development, 2017.
- Phillips, D., C. Howes, and M. Whitebook. “Child Care as an Adult Work Environment.” *Journal of Social Issues*, vol. 47, no. 2, 1991, pp. 49–70.
- Rodin, Judith, and Peter Salovey. “Health Psychology.” *Annual Review of Psychology*, vol. 40, no. 1, 1989, pp. 533–579. Reported in Marsella (1994).
- Sandstrom, Heather, and Sandra Huerta. *The Negative Effects of Instability on Child Development: A Research Synthesis*. Washington, DC: Urban Institute, 2013.

- Siegrist, Johannes. "Adverse Health Effects of High-effort/Low-reward Conditions." *Journal of Occupational Health Psychology*, vol. 1, no. 1, January 1996, pp. 27–41.
- Simmons, Leigh A., and Jennifer Swanberg. "Psychosocial Work Environment and Depressive Symptoms Among U.S. Workers: Comparing Working Poor and Working Non-poor." *Social Psychiatry and Psychiatric Epidemiology*, vol. 44, no. 8, 2009, pp. 628–635.
- Sloan, Melissa M. "Unfair Treatment in the Workplace and Worker Well-being: The Role of Coworker Support in a Service Work Environment." *Work and Occupations*, vol. 39, no. 1, 2012, pp. 3–34.
- Smith, Marjorie. "Parental Mental Health: Disruptions to Parenting and Outcomes for Children." *Child and Family Social Work*, vol. 9, no. 1, 2004, pp. 3–11.
- Substance Abuse and Mental Health Services Administration (SAMHSA). "Accelerating Access to Mental Health Treatment." October 2015. Available at <https://blog.samhsa.gov/2015/10/05/accelerating-access-to-mental-health-treatment/#.WiATvGbruUI>. Accessed November 30, 2017.
- Substance Abuse and Mental Health Services Administration (SAMHSA). "Adverse Childhood Experiences." July 2018. Available at <https://www.samhsa.gov/capt/practicing-effective-prevention/prevention-behavioral-health/adverse-childhood-experiences>. Accessed February 18, 2018.
- UNICEF Innocenti Research Centre. "Measuring Child Poverty." Florence, Italy: UNICEF Innocenti Research Centre, May 2012.
- U.S. Government Accountability Office. "Behavioral Health: Options for Low-Income Adults to Receive Treatment in Selected States." GAO-15-449. Washington, DC: GAO, June 2015.
- Waddell, Gordon, and Kim Burton. "Is Work Good for Your Health and Well-being?" London: The Stationary Office, 2006.
- Wanberg, Connie R. "The Individual Experience of Unemployment." *Annual Review of Psychology*, vol. 63, no. 1, 2012, pp. 369–396.
- Williams, Sonya, and Hendra, Richard. *The Effects of Subsidized and Transitional Employment Programs on Noneconomic Well-being*. OPRE Report 2018-17. Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, 2018. Available at <https://ssrn.com/abstract=3167503>. Accessed November 12, 2018.
- Wolf, Steven H., Laudan Aron, Lisa Dubay, Sarah M. Simon, Emily Zimmerman, and Kim X. Luk. "How are Income and Wealth Linked to Health and Longevity?" Washington, DC: Urban Institute and Center on Society and Health, April 2015.
- World Health Organization. Constitution of the World Health Organization. In *World Health Organization: Basic Documents*, 45th ed. Geneva: WHO, 2006.

Zaslow, M.J., K.A. Moore, J.L. Brooks, P.A. Morris, K. Tout, Z.A. Redd, and C.A. Emig. "Experimental Studies of Welfare Reform and Children." *Future of Children*, vol. 12, no. 1, 2002, pp. 79–95.

Zhai, F., C. Raver, and C. Li-Grining. "Classroom-Based Interventions and Teachers' Perceived Job Stressors and Confidence: Evidence from a Randomized Trial in Head Start Settings." *Early Childhood Research Quarterly*, vol. 26, no. 4, 2011, pp. 442–445.

This page has been left blank for double-sided copying.

APPENDIX A

**LITERATURE SEARCH AND SCREENING STRATEGY FOR
RESEARCH QUESTION 1**

This page has been left blank for double-sided copying.

This appendix details our search strategy for research question 1, on the causal relationship between employment and health. Because our search approach differed for the first research question, for which the literature base was much more expansive compared to the other two, the approaches are described separately.

A. Search approach and literature sources for research question 1

We initially attempted to handle the broad scope of research question 1 by conducting a modified overview of other reviews (Hunt et al. 2018). We searched initially for systematic evidence reviews and meta-analyses, which tend to include only causal research. Because we found few such studies, we also included individual causal studies and traditional narrative literature reviews, which sometimes base conclusions on correlational studies, with caveats about their inability to support causal conclusions.

We used three approaches to search for relevant literature: (1) database searching, (2) grey literature searching, and (3) snowball searching. Our database and grey literature searching used the Peer Review of Electronic Search Strategies (PRESS) method. One librarian carefully searched electronic databases, documenting each step of the process, and another applied the PRESS 2015 Evidence-Based Checklist (McGowan et al. 2016) to provide guidance and check the results.

1. Database searching

We searched electronic scholarly subscription databases for published research using search terms that the research team developed in consultation with a librarian and OPRE staff. We searched eleven databases: Academic Search Premier, Business Source Corporate Plus, Cochrane Database of Systematic Reviews, EconLit, e-journals, Education Research Complete, ERIC, MEDLINE, PsycINFO, Scopus, SocINDEX. The search terms (listed in Appendix Table A.1) encompassed the following:

- **Dates** generally spanning January 2000 through August 2018, but with exceptions. Specifically:
 - Research syntheses (systemic reviews, meta-analyses, literature reviews of causal studies) from 2000 to 2018.
 - In databases that include key social work journals (PsycINFO and SocINDEX), 18 research syntheses from 1990 to 2018 to capture research on welfare reform that occurred during that decade.
 - Individual studies with causal designs from 2010 to 2018. Research older than that focused on a policy and economic context that differs from the current environment.
- **Population terms** pertaining to low-income individuals and families
- **Employment terms** to capture employment status and job characteristics
- **Health terms** that reflect physical and behavioral health

¹⁸ *Social Services Review, Children and Youth Services Review, Journal of Social Service Research, Women & Health, Journal of Social Issues*

- **Research designs** to limit results to research syntheses or quantitative studies that use effectiveness, correlational, or descriptive study designs and that exclude commentaries, briefs, book summaries, or other nonstudy publications

Table A.1. Publication database search terms for research question 1

Search domain	Keywords	Subject terms
Dates	January 2000 through August 2018 (Searched back to January 1990 in PsycInfo and SocIndex, which contain highly relevant social science journals that would have published key research in the era of welfare reform in the mid-1990s)	
Population	disadvantage* OR "low income" OR "low-income" OR "low wage" OR "low-wage" OR medicaid OR poor OR poverty OR tanf OR "temporary assistance for needy families" OR welfare OR AFDC OR "Aid to Families with Dependent Children"	MJMESH.EXACT("Medicaid") OR MJMESH.EXACT("Poverty") OR MESH.EXACT("Working Poor")
Employment	employment OR "self-employ*" OR "job insecurity" OR "job loss" OR "job security" OR jobless* OR occupation OR "return to work" OR "return-to-work" OR underemployment OR unemployment OR "working age" OR "working-age" OR "working families" OR "working hours" OR "working individuals" OR "working poor" OR "working uninsured" OR "working women" OR "working parent*" OR worklessness OR "labor force" OR "labour force"	MJMESH.EXACT("Employment") OR MJMESH.EXACT("Return to Work") OR MJMESH.EXACT("Unemployment") OR MJMESH.EXACT("Work")
Health and well-being	absen* OR health OR "well-being" OR "well being"	MJMESH.EXACT("Health") OR MESH.EXACT("Health Status") OR MESH.EXACT("Health Status Indicators") OR MESH.EXACT("Sick Leave -- trends") OR MESH.EXACT("Sick Leave -- statistics & numerical data")
Research designs	(review n/3 (literature OR studies OR intervention* OR systematic OR scoping)) OR "meta-analys*" OR metaanalys* OR any of these: Quasi-experiment* Quasiexperiment* Nonexperimental Non-experimental Experimental Causa* Random* (w/2 assign*) Random* (w/2 trial) Efficac* Impact	NOT (MJMESH.EXACT("Editorial") OR MJMESH.EXACT("Comment") OR MJMESH.EXACT("Letter") OR (MJMESH.EXACT("Newspaper Article")))

Notes: An asterisk indicates a truncation. When used in a search term, all words with the root will be returned. For instance, a search on *analy** will return citations that include (for example) *analyze*, *analysis*, and *analytic*. Database queries identify phrases that use both hyphenated and unhyphenated spellings (for example, "low-income" and "low income" or "quasi experiment*" "quasi-experiment*" and "quasiexperiment*"). This table includes only one version of any such terms. The search identifies any studies released as of the date that the search took place. A search conducted in August 2018 may identify studies with publication dates in the future (e.g., October 2018 or fall 2018) if they have already been released online. The proximity search function "n/3" finds keywords within three words of each other in a search result.

We searched for the key terms in the title, abstract, subject, and keywords if all four fields were available in the database and relevant. Subject terms are not available in Scopus, for example, and the subject terms in Education Research Complete were not relevant because they are education focused (such as health education). We also tailored the search terms for each database to achieve a manageably sized result set while retaining the most relevant results. In the largest databases – EconLit and Scopus – we used narrower terms (for example, mental health and physical health instead of just “health”)¹⁹ to refine the subject term searching. For Scopus (the largest of the databases we searched), we only searched for the following document types: article or review, article in press, book or book chapter, and errata. Our searches of the ProQuest Dialog databases, ERIC and MEDLINE, omitted the IF (that is, Keyword) field because the field contained data that were automatically gathered by a search engine. Upon close examination, initial searches of the IF field returned results that seemed out of alignment with the terms we searched and therefore did not yield useful results for addressing our first research question.

2. Grey literature searching

Studies, reports, and articles not published in peer-reviewed academic journals are known as grey literature. We looked for this type of research using four strategies:

- **OPRE’s *Employment Strategies for Low-Income Adults Evidence Review’s (ESER) database.*** The database includes grey literature from 1990 through mid-2014 on the topic of labor programs to support employment and other outcomes for low-income adults. We limited our scan to studies that ESER rated as having high or medium study quality and identified as having secondary outcomes in the domains of physical health, mental health, child well-being, parenting or co-parenting, and/or family formation. We then read the abstracts or introductions for relevance. (<https://employmentstrategies.acf.hhs.gov/>).
- **A customized Google search** that crawled four research databases:
 - OPRE’s publication database (available at <https://www.acf.hhs.gov/opre/resource-library/search?sort=recent>). We searched for relevant articles released since 1991 (the earliest year in the database) that were classified as reports and under the topic of cross-cutting, self-sufficiency, or welfare and employment.
 - U.S. Department of Labor, Employment and Training Administration’s publication database (available at <https://www.acf.hhs.gov/opre/resource-library/search?sort=recent> and https://wdr.doleta.gov/research/eta_default.cfm). We iteratively searched in the title and abstract using different combinations of keywords.
 - Research Papers in Economics (RePEc: <http://repec.org/>)
 - The National Bureau of Economic research (NBER: <https://www.nber.org/>)

¹⁹ To narrow terms for Scopus, we relied on a recent systematic review about employment as a determinant of health (Hergenrather et al. 2015) to suggest the narrower terms we would use. Due to the scope of the EconLit database, the topics of subject headings in EconLit were not congruent with the subject headings used in other database searches, so we did not search by a narrower list of subject headings in EconLit.

- **The Harvard Think Tank Engine.** This publicly available customized Google search engine searches the websites of institutions that generate public policy research, analysis, and activity. These sites are affiliated with universities, governments, advocacy groups, foundations, non-governmental organizations, and businesses. (https://guides.library.harvard.edu/hks/think_tank_search).
- **Recommendations from staff at the Administration of Children and Families (ACF).** Our search included studies, causal or otherwise, that were of high interest to ACF and highly relevant. Many of these were useful for framing the discussion in Chapter II.

3. Snowball searching

Finally, we conducted some limited “snowball” searching. We used reference lists from systematic reviews, meta-analyses, and literature reviews as a springboard to find highly relevant individual causal studies. We undertook this step when the results of the database and grey literature search steps indicated that our strategy to conduct an overview of reviews was yielding too few reviews to answer the research question. The fact there were few reviews suggested that very few individual causal studies were available, and that reviewing individual studies would be manageable. We also scanned reference lists to identify synthesis studies that appeared to meet our inclusion criteria but had not been captured by our initial search results.

B. Screening criteria

After searching the databases, we screened the article titles and abstracts against set criteria, then reviewed the studies that met the criteria. An article title or abstract had to explicitly signify that a study satisfied the following inclusion criteria:

- **Language:** English.
- **Location:** Conducted in the United States or, if a research synthesis, most of the studies were conducted in the United States.
- **Study designs:** Syntheses (including systematic reviews, meta-analyses, and literature reviews) and causal studies (including randomized controlled trials and nonexperimental designs such as matched comparison group designs, regression discontinuity designs, and single case designs/single subject designs).
- Focused on “**low-income**” adults, which we defined as any of the following:
 - A study sample described by the authors as exclusively or partially low income
 - The jobs under discussion are low-wage or low-skill
 - People who are homeless, formerly incarcerated, or recipients of public benefits (may include participation in TANF, Supplemental Nutrition Assistance Program, Medicaid, National School Lunch Program, among others)
- Reported on **dimensions of both health and employment.** This included both research that examined the effect of employment on health, and research that examined the effect of health on employment.

APPENDIX B

LITERATURE SEARCH AND SCREENING STRATEGY, AND SUMMARY OF STUDIES FOR RESEARCH QUESTIONS 2 AND 3

This page has been left blank for double-sided copying.

Appendix B details the methodology for research questions 2 and 3. It first explains the approach and sources of literature for these research questions, and then describes the screening criteria. Section B.2 contains a summary table of the studies included in the review for research questions 2 and 3. The table includes information on each study design and the studies' work environment and health measures.

B.1. LITERATURE SEARCH AND SCREENING STRATEGY

A. Search approach and literature sources

Our approach to finding literature for the second two, narrower research questions was more inclusive from the outset than our approach to the first research question. For the final two research questions, which were narrowly focused on work environment and health, and further focused on single parents and their children for research question 3, we recognized from the start that the literature base would likely be small and mostly take the form of correlational studies. We therefore did not limit the search to causal studies, but instead, given that correlational studies cannot demonstrate causality, caution readers that our results reflect only associations between work environment and health.

We used two approaches to search for relevant literature: a database search for peer-reviewed journal articles and a search for grey literature, each described next.

1. Database searching

Our primary method was a search of electronic scholarly subscription databases for published research using search terms that the research team developed in consultation with a librarian and OPRE staff. We searched the following databases: PsycINFO, Scopus, SocIndex, Academic Search Premier, Business Source Corporate, Econlit, ERIC, Medline, and Education Research Complete. For each research question, we conducted a separate search of title, abstract, subject, and keywords. The search terms (shown in Appendix Table B.1) encompassed:

- **Dates** spanning January 1990 through August 2017²⁰
- **Population terms** pertaining to low-income individuals and families and, for research question 3, terms related to children and parents
- **Employment terms** to capture the work environment
- **Health terms** that reflect physical and behavioral health and well-being, with additional terms to capture a range of child development outcomes
- **Research designs** to limit results to research syntheses or quantitative studies that use effectiveness, correlational, or descriptive study designs and that exclude commentaries, briefs, book summaries, or other nonstudy publications

²⁰ The date cutoff for these research questions was earlier than for research question 1 because we conducted the literature search a year earlier.

Table B.1. Publication database search terms for research questions 2 and 3

Search domain	Keywords	
	Research question 2: Work environment and health of low-income adults	Research question 3: Work environment and the health of children in low-income, single-parent families
Dates	January 1990 through August 2017	Same as research question 2
Population	low-income or low-wage or low-skill* or disadvantage* or welfare or TANF or AFDC or homeless or ex-offender or poor or poverty	Same as research question 2, plus AND child* or infant* or baby or babies or toddler or newborn or youth or teen* or adolescent or parent* or father* or mother* Note: Screeners will identify studies about single-parent families after the searching.
Employment	employ* or occupation or job AND control or psychosocial or flexibil* or insecurity or work* conditions or work* environment or employee input or hours or shift time or schedule	Same as research question 2
Health and well-being	well-being or wellbeing or satisf* or happiness or stress or depress* or anxiety or work-life or work-family or conflict or health or physical* or mental* or psychological* or behavioral* or emotional* or socioemotional*	Same as research question 2, plus OR development* or home environment or behavior* or internalizing or externalizing or attachment or cognitive or violence or abuse or neglect
Research designs	literature review or comprehensive review or systematic review or evidence review or review of evidence or meta-analy* or metaanalys* or meta analysis OR regression or correlat* or difference in difference* or fixed effect* or instrumental variable* or non experimental or follow up or pre test or post test or evaluat* OR control group or experiment* or random* (within 2 words of assign* or trial) or RCT or effect* or effica* OR comparison group or counterfactual or propensity score or quasi experiment* or two stage least squares	Same as research question 2

Notes: An asterisk indicates a truncation. When used in a search term, all words with the root will be returned. For instance, a search on analy* will return citations that include (for example) analyze, analysis, and analytic. Database queries identify phrases that use both hyphenated and unhyphenated spellings (for example, "low-income" and "low income" or "quasi experiment," "quasi-experiment," and "quasiexperiment"). This table includes only one version of any such terms. The search identifies any studies released as of the date that the search took place. A search conducted in August 2017 may identify studies with publication dates in the future (e.g., October 2017 or fall 2017) if they have already been released online.

2. Grey literature searching

In addition to the primary search for published literature in electronic databases, we searched for studies, reports, and articles not published in peer-reviewed academic journals, known as grey literature. We searched the four sources below. None of the results were relevant to the research questions.

- **OPRE’s *Employment Strategies for Low-Income Adults Evidence Review’s (ESER) database.*** The database includes grey literature from 1990 through mid-2014 on the topic of labor programs to support employment and other outcomes for low-income adults. We limited our scan to studies EESER rated as having high or medium study quality and identified as having secondary outcomes in the domains of physical health, mental health, child well-being, parenting or co-parenting, and/or family formation. We then read the abstracts or introductions and found that none were relevant to the research questions. Rather, the studies reported on tests of services to help welfare recipients or other low-income populations obtain a job, and did not reflect the work environment.
- **OPRE’s publication database** (available at <https://www.acf.hhs.gov/opre/resource-library/search?sort=recent>). We searched for relevant articles released since 1991 (the earliest year in the database) that were classified as reports and under the topic of cross-cutting, self-sufficiency, or welfare and employment.
- **U.S. Department of Labor, Employment and Training Administration’s publication database** (available at <https://www.acf.hhs.gov/opre/resource-library/search?sort=recent> and https://wdr.doleta.gov/research/eta_default.cfm). We iteratively searched in the title and abstract by using different combinations of key-words.
- **A customized Google search.** We searched the websites of 12 research organizations that possibly had grey literature on our topic, including MDRC, Heritage Foundation, Congressional Research Service, and others. The key terms we used were employment, employee, well-being, health, stress, psychosocial, low-income, and low-wage.
- **Recommendations from staff at the Administration of Children and Families (ACF).** Our search included studies, causal or otherwise, that were of high interest to ACF and highly relevant. Many of these were useful for framing the discussion in Chapter II.

B. Screening criteria

After searching the databases, we screened the article titles and abstracts against set criteria, then reviewed the studies that met the criteria. An article title or abstract had to explicitly signify that a study satisfied the following inclusion criteria:

- **Language:** English.
- **Location:** Conducted in the United States or, if a literature review, most of the studies were conducted in the United States.
- **Study designs:** Literature review, meta-analyses, correlational design, descriptive design, randomized controlled trial, or nonexperimental design (includes regression discontinuity designs, single case designs/single subject designs).
- Focused on “**low-income**” adults, which we defined as any of the following:
 - A study sample described by the authors as exclusively or partially low income
 - The jobs under discussion are low-wage or low-skill (such as health aide, many types of manual labor, child development assistant, front-line retail staff, or part-time or hourly employees)

- People who are homeless, formerly incarcerated, or recipients of public benefits (may include TANF/welfare, Supplemental Nutrition Assistance Program, Medicaid, National School Lunch Program, among others)
- Reported a **working condition** in relation to health, as defined in the Chapter II.
- Reported **health or well-being outcomes**, as defined in Chapter II; we excluded studies reporting only on substance use outcomes.
- **For research question 3**, studies had to mention outcomes for children under age 18 in **single-parent households**. Single parents had to represent either the majority of the study sample or a subgroup. We also included one study that nearly met this criterion: single parents comprised 46 percent of the study sample.

B.2. SUMMARY OF STUDIES REVIEWED FOR RESEARCH QUESTIONS 2 AND 3

Using the criteria listed in Section B.1, we screened more than 2,000 articles resulting from our literature search. After screening the articles, we found 11 articles that met the inclusion criteria for research question 2 and 7 articles that met the inclusion criteria for research question 3. Only one study about each of these research questions used a causal design. Therefore, the results described in Chapters IV focus mainly on correlational, descriptive, and qualitative research. Appendix Table B.2 provides additional detail on the studies reviewed for research questions 2 and 3.

Table B.2. Studies used to address research questions 2 and 3

Citation	Study design	Cross-sectional or longitudinal data (if correlational design)	Work environment dimension discussed in report	Health and well-being outcome(s) discussed in report	Occupation or job sector
Research question 2					
DeCastro et al. 2008	Correlational	Cross-sectional	Work discrimination based on ethnicity	Incidence of health conditions	Several sectors (manual labor, trade, service sector)
Font 2012	Correlational	Cross-sectional	Achievement opportunities; autonomy opportunities; worker pay	Job satisfaction; job burnout	Child welfare workers
Genaidy et al. 2008	Descriptive (quantitative)	Cross-sectional	Shift-work schedules; nonstandard schedules	Musculoskeletal pain; physical symptoms	Manufacturing
Henley and Lambert 2014	Correlational	Cross-sectional	Unpredictable schedules; nonstandard schedules	Time-based conflict; strain-based conflict	Retail
Hoppe et al. 2010	Correlational	Cross-sectional	Management fairness; supervisor support; wage fairness	Job stress; psychological well-being	Furniture warehouse workers
Muntaner et al. 2006	Correlational	Longitudinal	Emotional demands	Depressive symptoms	Nursing assistants employed in nursing homes
Nomaguchi and Johnson 2016	Correlational	Cross-sectional	Workplace inflexibility; nonstandard schedule	Parenting stress	Not specified
Phillips et al. 1991	Correlational	Longitudinal	Paid preparation time; job autonomy; challenge; satisfaction with supervisors; satisfaction with working conditions; job security; work-family relations; salaries and benefits; social status	Job satisfaction; job turnover	Center-based early child care workers
Simmons and Swanburg 2009	Correlational	Cross-sectional	Coworker support; supervisor support; job security	Depressive symptoms	General working population
Sloan 2012	Correlational	Cross-sectional	Job demands; job complexity; job autonomy; unfair treatment by supervisor, coworkers, or customers; coworker support	Job satisfaction; psychological distress	State government
Zhai et al. 2011	Randomized controlled trial	–	Emotional support to children; job control; job resources; job demands	Job satisfaction	Head Start teachers

Citation	Study design	Cross-sectional or longitudinal data (if correlational design)	Work environment dimension discussed in report	Health and well-being outcome(s) discussed in report	Occupation or job sector
Research question 3					
Donohue et al. 2017	Correlational	Cross-sectional	Job satisfaction	Child abuse potential	Not specified
Dunifon et al. 2013	Correlational	Longitudinal	Nonstandard schedules; irregular schedules	Children's aggressive and anxious behavior	General working population
Han et al. 2010	Correlational	Longitudinal	Nonstandard schedules; irregular schedules	Children's risky behavior, including adolescent smoking, drinking, and sexual activity; time spent with children; home environment quality; knowledge of child's whereabouts	Retail
Han et al. 2013	Correlational	Longitudinal	Nonstandard schedules	Child neglect; psychological aggression; physical assault; CPS contacts	General working population
Henley et al. 2006	Qualitative case study	-	Nonstandard schedules; unpredictable schedules; workplace inflexibility	Unstable and inconsistent family routines	Retail
Hill et al. 2011	Nonexperimental (instrumental variables)	Longitudinal	Repeated job losses	Child problematic and positive behaviors	Not specified
Li et al. 2014	Literature review	-	Nonstandard schedules	Child development problems	Not specified

CPS = Child Protective Services

This page has been left blank for double-sided copying.

www.mathematica-mpr.com

**Improving public well-being by conducting high quality,
objective research and data collection**

PRINCETON, NJ ■ ANN ARBOR, MI ■ CAMBRIDGE, MA ■ CHICAGO, IL ■ OAKLAND, CA ■
SEATTLE, WA ■ TUCSON, AZ ■ WASHINGTON, DC ■ WOODLAWN, MD



Mathematica® is a registered trademark
of Mathematica Policy Research, Inc.