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THE EFFECTS OF MINIMUM WAGES ON (ALMOST) EVERYTHING? A REVIEW
OF RECENT EVIDENCE ON HEALTH AND RELATED BEHAVIORS

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The Effects of Minimum Wages on (Almost) Everything? A Review of Recent Evidence on Health and Related Behaviors

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ABSTRACT

The effects of minimum wages on employment, wages, earnings, and incomes, have been studied and debated for decades. In recent years, however, researchers have turned to the effects on a multitude of other behaviors and outcomes – largely related to health. I review and assess the large and growing body of evidence on minimum wage effects on a wide variety of health outcomes and health-related behaviors.

The evidence, even focusing on the more-compelling studies, is decidedly mixed. The evidence on physical health points in conflicting directions, and may lean towards adverse effects, possibly a reflection, in part, of the conflicting influences of minimum wages on factors that can affect health (related to how higher income is spent). In particular, research on the effects of minimum wages on diet and obesity sometimes points to beneficial effects, while other evidence indicates that higher minimum wages increase smoking and drinking and reduce exercise (and possibly hygiene). In contrast, there is rather strong evidence that higher minimum wages reduce suicides, partly consistent with the evidence of effects on other measures of mental health/depression being either positive or mixed.

Overall, policy conclusions that minimum wages improve health are unwarranted or at least premature. Moreover, this research literature would benefit from more rigorous evidence, borrowing from the longer-running research on the labor market impacts of minimum wages.

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“More than a decade’s worth of research indicates that increasing the minimum wage is an effective means of improving public health across many settings...”

(American Public Health Association, 2016)

Introduction

The effects of minimum wages on employment, wages, earnings, and incomes have been studied and debated for decades (see, e.g., Neumark and Wascher, 2008; Neumark and Shirley, 2022). The resulting research literature has established both pros and cons of higher minimum wages: higher wages for some, but – according to most research – job loss for others, and unclear benefits for low-income families in general. For this reason, perhaps, minimum wage policy in the United States remains at somewhat of an impasse. Some states (and localities) have opted for much higher minimum wages, while the federal minimum wage of only \$7.25 remains binding in 21 states and has not increased since 2009.

In recent years, however, researchers have turned to the effects on a multitude of other behaviors and outcomes – largely, but not exclusively, related to health.¹ Some of these studies have led to banner headlines touting the ability of higher minimum wages to reduce suicides; to decrease smoking and increase birthweights; to reduce depression, improve diet, and reduce child neglect; and more.² If a higher minimum wage delivers these kinds of benefits, then perhaps this evidence should weigh more heavily in the policy debate, offsetting the evidence of job loss from higher minimum wages, and bolstering support for substantial increases in the minimum wage.

Indeed, findings like these have led influential health research and advocacy organizations to recommend minimum wage increases to improve health. For example, the American Public Health Association (APHA, 2016) advocates raising and regularly updating the federal minimum wage, based on a policy statement arguing that “More than a decade’s worth of research indicates that increasing the

¹ So the title of this paper overstates a little, although nearly all of the research on non-economic outcomes has focused on health and related behaviors. In addition to these non-economic outcomes, a number of recent papers study effects of minimum wages on economic outcomes that extend beyond the usual focus on employment, wages, and income, including evictions (Agarwal et al., 2022), spending and debt (Aaronson et al., 2022), and consumer credit (Dettling and Hsu (2022)). And there is a larger literature on effects on prices (Lemos, 2008).

² See, e.g., <https://www.nytimes.com/2021/03/10/opinion/minimum-wage-mental-health.html>, <https://newrepublic.com/article/133302/improve-mental-health-america-raise-minimum-wage>, <https://www.nelp.org/publication/u-s-needs-15-minimum-wage/>, Desmond (2019), and Leigh and Du (2018).

minimum wage is an effective means of improving public health across many settings...” The statement cites evidence, for example, that higher minimum wages reduce pre-mature deaths among adults. Similarly, the American Medical Association (AMA) has endorsed increases in federal, state, and local minimum wages, citing studies finding that higher minimum wages reduce low-weight births and neonatal deaths.³

The potential for higher minimum wages to improve health is clear, as a higher minimum wage unambiguously raises incomes for some workers (and their families). On the other hand, job loss can reduce income among other workers and their families. The APHA statement discounts the latter possibility, citing very selectively from research on employment effects to argue that “recent research has shown that minimum wage increases have very little effect...”⁴ In contrast, most studies of the effects of minimum wages on health acknowledge these two offsetting influences (e.g., Andreyeva and Ukert, 2018; Buszkiewicz et al., 2021; Horn et al., 2017; Wehby et al. 2020). Nonetheless, it is entirely possible that health benefits from income gains for some workers outweigh adverse health effects for others who lose their jobs, perhaps because there are almost certainly more income gainers than job losers. This net gain might be more likely if there was clear evidence that minimum wages raise incomes in lower-income families (rather than for low-wage workers). However, the evidence on family income is ambiguous, in part because many minimum wage workers are not in poor or low-income families, and many low-income families have no workers.⁵ Finally, many of these same papers on minimum wages and health point out that higher incomes can increase spending on less healthy products, like alcohol and cigarettes, or that

³ See <https://www.ama-assn.org/press-center/press-releases/ama-adopts-new-policy-connecting-poverty-level-wages-adverse-health>.

⁴ The APHA cites an unpublished study on the Seattle minimum wage, and a “prospective study” that present no “before and after” evidence on the San Francisco minimum wage. It cites one meta-analysis (Doucouliagos and Stanley, 2009). Neumark and Shirley (2022) provide a comprehensive survey showing that most work points to job loss.

⁵ The research on minimum wages and poverty/low income is considerably less extensive than the research on employment effects. Most of this research uses panel data analyses of state-level data on poverty rates, minimum wages, and controls, and fails to find any statistically significant evidence that higher minimum wages reduce poverty (e.g., Card and Krueger, 1995; Neumark and Wascher, 2002; Sabia and Burkhauser, 2010). A recent comprehensive study that presents an extraordinarily large number of analyses confirms this, finding nearly all estimates centered around zero and statistically insignificant (Burkhauser et al., 2022). Other reviews confirm that there are many insignificant results, but the estimates may lean toward poverty reductions (Dube, 2019; Neumark, 2016). There are some exceptions. Neumark et al. (2005) construct counterfactual distributions of family income-to-needs and find evidence suggesting that minimum wages may increase poverty somewhat. And Dube (2019), while using a more traditional panel data analysis, finds quite large reductions in poverty.

minimum wages can have other more complex effects on health-related behaviors.

Thus, there is no reason to dismiss the possibility that higher minimum wages improve health and promote healthy behaviors, nor is there reason to assume that higher minimum wages must be beneficial. Rather, conclusions about how minimum wages impact health and related behaviors or outcomes require careful weighing of the evidence, as well as recognition that the effects may differ for different behaviors or outcomes, because of different sensitivity to income and time allocation and heterogeneity in this sensitivity for workers differentially affected by higher minimum wages.⁶

Given these considerations, we might expect the evidence on minimum wages effects on health and related behaviors or outcomes to be more nuanced than the APHA and AMA statements suggest. Indeed, that is the case, as a number of studies in this recent literature fail to find beneficial health (or related) effects. In addition, some studies find effects that might seem surprisingly large or unexpected, given the ambiguous and potentially modest effects of minimum wages on incomes – like 8,000 fewer suicides nationally from a \$1 increase in the minimum wage (Gertner et al., 2019), or reduced heart disease deaths for 35-64 year-olds (Van Dyke et al., 2018). This raises the possibility that researchers, as well as policy advocates, are sometimes drawing conclusions that are driven more by spurious changes in minimum wages and in health or related behaviors, than from rigorous evidence on causal effects of minimum wages.

In this paper, I provide a review and assessment of this large and growing body of evidence on minimum wage effects on health and health-related behaviors, defining the latter to include some dimensions of “risky” behavior. In addition to surveying and assessing the individual studies, I try to determine the conclusions we can draw from the subset of these that use more convincing research designs (as discussed more below). I also attempt to understand the sources of conflicting evidence.

The research I survey covers nine categories of health and related behaviors: adult and teen health; infant and child health; diet and obesity; mental health; suicide (a specific subset of mental health); family

⁶ In addition, from an economic perspective, answering the question about how minimum wages impact health and health-related behaviors does not necessarily answer the question of how minimum wages affect welfare, both because choices that lead to worse health do not necessarily imply lower utility, and because the welfare effects of minimum wages depend on their impacts on workers’ valuation of jobs offered (including any changes that can affect health) and the potential loss of employment opportunities.

structure and children; risky behavior; crime; and mechanisms that can affect health. Within these categories, the evidence – even from the more compelling studies – sometimes conflicts. Looking across all of these categories of behaviors or outcomes, it is not possible to draw unambiguous conclusions, although within these categories one can sometimes more readily draw conclusions.

The evidence on overall physical health is clearly mixed, although a number of the studies claiming beneficial effects are less convincing. This ambiguity may reflect the conflicting evidence on factors that can affect health in some of the other analyses I consider. The findings on minimum wage effects on diet and obesity either point to beneficial or null effects, but not negative effects, while other evidence indicates that higher minimum wages increase smoking and reduce exercise (and possibly hygiene). The evidence for mental health is ambiguous, with somewhat more studies finding a positive impact than finding no impact (or mixed evidence), but none finding a negative impact. And the evidence for suicide points clearly to beneficial effects of higher minimum wages.⁷

Moving further away from traditional health behaviors and outcomes, the studies on family structure and children point in different directions, with evidence that mothers spend more time with children, no clear indication of changes in treatment of children, but declines in children's test scores. The evidence generally points to minimum wages increasing risky behavior (drinking and smoking). Evidence on the effects of minimum wages on crime is mixed. The best evidence on employer-provided health insurance is more adverse, although Medicaid expansions under the Affordable Care Act (ACA) may have partially mitigated this influence, and there is not clear evidence of greater unmet medical needs. Other evidence suggests that higher minimum wages may affect health adversely via different channels.

Potential Effects of Minimum Wages on Health and Health-Related Behavior

Minimum Wages, Employment, Earnings, and Incomes

⁷ Effects of minimum wages on drug use, perhaps particularly opioids, could impact health and suicides (as well as other outcomes). This would be a natural question to consider. However, I have not found any such evidence. The only reference to drugs in the literature I review is the Agan and Makowsky (forthcoming) finding that minimum wages reduce recidivism for drug crimes, which they interpret as the minimum wage reducing revenue-generating crime. Rangachari et al. (2022) hypothesize that a higher minimum wage might reduce opioid overdoses but present no evidence.

There is a large literature on the effects of minimum wages on employment, wages, earnings, and incomes. Typically, elasticities of earnings with respect to the minimum wage, for lower-skilled workers affected by minimum wage increases, are in the range of about 0.2 or higher, implying that earnings of affected workers rise by about 2% or more for each 10% increase in the minimum wage. Elasticities of employment of lower-skilled workers with respect to the minimum wage are most typically in the range of about -0.1 to -0.2 (Neumark and Shirley, 2022; Wolfson and Belman, 2019), and are strongest for the least-skilled workers, like teenagers.

What can we conclude from this literature about the likely effects of minimum wages on incomes, as a precursor to thinking about how minimum wages might affect health and other behaviors or outcomes sensitive to income? The kinds of minimum wage-employment elasticities reported just above are often characterized as “small” or “modest.” This is often a vague characterization but is intended to suggest that the net benefits for incomes of affected workers must be large.⁸ However, employment elasticities are typically estimated for groups (like teenagers) in which a high share of workers earn wages near the minimum – but by no means all of them. This implies that the elasticity of income of affected workers with respect to the minimum wage must be larger (in absolute value) than is implied by the kinds of employment elasticities that dominate the literature. Moreover, the employment elasticity usually estimated will understate the employment elasticity of demand for affected workers because the size of the average wage increase associated with a higher minimum wage is smaller than the minimum wage increase itself, given that some affected workers already earn more than the old minimum wage. Correspondingly, there is evidence that the elasticity for affected workers is much larger, and even close to -1 .⁹

Of course, even evidence that higher minimum wages on average raise incomes for affected workers is not decisive with regard to how minimum wages affect health and related behaviors or

⁸ Freeman (1996), for example, notes that “[I]f the elasticity of demand for minimum wage workers exceeds one [*in absolute value*], the minimum wage will reduce rather than increase the share of earnings going to the low-paid” (p. 641, italicized text added).

⁹ Jardim et al. (2022) find that the large Seattle minimum wage hike resulted in lower average earnings, Neumark et al. (2014) find evidence that on average workers earning very near the minimum experienced slight declines in earnings after a minimum wage increase, and Clemens and Wither (2019) – focusing sharply on directly-affected workers – estimate an elasticity of -0.97 .

outcomes. The potential effects are complicated. In addition, despite an extensive research literature on the economic effects of minimum wages, we have relatively little evidence on which minimum wage workers gain the most and which lose the most. Given that the response of health to income might differ by age and other individual factors, as well as how that income is spent, the health and behavioral consequences of minimum wages might be quite different if most of the income gains go to teenagers as opposed to, say, low-income mothers. The generally weak link between minimum wages and poverty (or other measures of low family income) suggests that the benefits are not very strongly concentrated on the lowest-income families. But again, this is not decisive because we do not know the responsiveness of health and related behaviors to the competing influences of higher incomes and job loss from minimum wages, nor how this responsiveness varies across families with different incomes.

Minimum Wages and Health and Related Behaviors

Regardless of the average effects of higher minimum wages on incomes, there are almost surely more winners – those earning higher wages – than losers – those experiencing job loss – from a higher minimum wage. The argument underlying the APHA and AMA policy recommendations cited in the Introduction seems to rely on the *only* effect of the minimum wage being to increase earnings, and on the assumption that this effect is unambiguously beneficial.¹⁰

However, the relationships between minimum wages, income, and health and related behaviors are more complicated. First, even if minimum wages on average raise incomes, the effect of a higher minimum wage may not always be positive. If, for example, some positive outcomes are triggered by income rising above a threshold, and lower income does not have much impact, then we would expect positive effects overall, with the smaller but widespread income gains mattering more. But if some negative health outcomes are triggered by sizable income declines, and not affected much by small income gains, the job loss consequences could weigh more heavily.

¹⁰ Note also that the APHA policy statement (2016) calls for raising the “federal minimum wage so that a four-person household with a single minimum-wage earner can live above the federal poverty level.” This would imply a high minimum wage, and as noted earlier the employment elasticity for a large minimum wage increase could be substantially more negative than many of the estimates in the literature (Clemens and Strain, 2021), making the assumption that the only effect of the minimum wage is higher income more fraught.

Second, more income from higher minimum wages might not always impact health or health-related behaviors positively. As examples, the research on risky behavior or diet notes the possibility of positive income effects on less healthy consumption (like unhealthy food, or alcohol), and some of the work on effects on investments in children notes the potential adverse effects of a higher opportunity cost of time from workers now earning higher minimum wages.

To provide a framework for thinking about these issues, as well as additional complexities, consider an outcome H (“overall health”) that is a function of income I (and potentially other characteristics X),

$$H = f(I, X). \tag{1}$$

For now, I assume that income increases H , or $\partial H/\partial I > 0$.

The first complication in considering the effect of a higher minimum wage on H is that the effect of the minimum wage on I is ambiguous. Suppose that share p_I has income increased by a higher minimum wage, and share $(1 - p_I)$ has its income decreased, most likely from job loss. For now, assume for simplicity that the effects of income on health are homogeneous across these two groups. Also assume, as seems natural, that the income decrease from job loss is larger than the income increase from a higher minimum wage. Denote the latter as ΔI_{MW} , so the income change from job loss is $-c \cdot \Delta I_{MW}$, $c > 1$.

Then the predicted change in H from a minimum wage increase is:

$$\partial H/\partial MW = p_I \cdot \partial H/\partial I \cdot \Delta I_{MW} - (1 - p_I) \cdot \partial H/\partial I \cdot c \cdot \Delta I_{MW}. \tag{2}$$

In reality, we are not only considering small changes for which the derivative is an appropriate measure of the change in H with respect to the change in the minimum wage, or the change in health with respect to the change in I . For example, in recent years, a number of many U.S. states (and cities) have implemented sizable minimum wage increases (see, e.g., Neumark and Yen, 2022). Thus, we can write:

$$\Delta H/\Delta MW = p_I \cdot (\Delta H/\Delta I) \cdot \Delta I_{MW} - (1 - p_I) \cdot (\Delta H/\Delta I) \cdot c \cdot \Delta I_{MW}. \tag{3}$$

In the simplest case where the relationship between health and income is linear, $\Delta H/\Delta I$ is constant, say b , in which case we obtain

$$\Delta H/\Delta MW = p_I \cdot b \cdot \Delta I_{MW} - (1 - p_I) \cdot b \cdot c \cdot \Delta I_{MW}. \tag{4}$$

In this case, a higher minimum wage increases health, or $\Delta H/\Delta MW > 0$, if $p_I/(1-p_I) > c$, and vice versa. This makes sense, because c captures the greater change in income (negative) from job loss, vs. from higher minimum wages, which may or may not offset the smaller proportion of workers who are adversely affected by the minimum wage.¹¹ Thus, in this case where health is a linear function of income, the question is simply whether a higher minimum wage on average increases incomes of affected workers or not.

However, $\Delta H/\Delta I$ need not be linear, in which case $\Delta H/\Delta MW$ also depends on the sensitivity of health to income at different income levels. For example, health may be more sensitive to income for those with lower incomes. It seems plausible that those most likely to experience job loss because of a higher minimum wage have on average lower income than those who experience income gains because of a higher minimum wage – because job loss falls on the least skilled. In this case we can distinguish the effects $\Delta H/\Delta I$ for these two groups – call them “income gainers (IG)” and “job losers (JL)” – and if $(\Delta H/\Delta I)_{IG} < (\Delta H/\Delta I)_{JL}$, then even if incomes on average increase because of a higher minimum wage, H may decline. To see this, equation (3) becomes

$$\Delta H/\Delta MW = p_I \cdot (\Delta H/\Delta I)_{IG} \cdot \Delta I_{MW} - (1-p_I) \cdot (\Delta H/\Delta I)_{JL} \cdot c \cdot \Delta I_{MW}. \quad (5)$$

Even if $p_I/(1-p_I) = c$, so average incomes are unaffected, then substituting for $(1-p_I) \cdot c$, and rearranging terms,

$$\Delta H/\Delta MW = p_I \cdot \Delta I_{MW} \cdot [(\Delta H/\Delta I)_{IG} - (\Delta H/\Delta I)_{JL}] < 0. \quad (6)$$

On the other hand, if the health consequences of income changes depend in part on whether or not one loses (or gains) health insurance, then eligibility for public health benefits (Medicaid) triggered by job loss could reduce the magnitude of the second term (when income declines), turning $\Delta H/\Delta MW$ positive. Indeed, some research explores this channel, and in particular how it might have changed with the expansion of Medicaid under the ACA (Kuroki, 2022). Alternatively, declines in H may be triggered by

¹¹ More specifically, rearranging terms, $\Delta H/\Delta MW > 0$ when $p_I > c/(1+c)$. If c is just equal to 1, then under the simplifying assumptions considered here, p_I has to exceed $1/2$ for a minimum wage increase to improve health. In the more likely case that c exceeds 1 – likely by a lot – then p_I has to be larger than $1/2$ for a minimum wage increase to improve health, more so the larger the income loss of job losers relative to the income gain of those who retain their jobs.

income falling below a certain level. For example, if job loss from a higher minimum wage triggers evictions (of which Agarwal et al., 2022, find some short-run evidence), one could imagine a cascade of negative effects on health. In that case, the effects of job loss might predominate.

Effects can also vary with other characteristics. For example, we know that teenagers are among the lowest-wage workers and hence the most impacted by minimum wages. Yet income increases (or decreases) for teenagers may have quite different effects. For example, some studies have suggested that higher minimum wages, by increasing disposable income of teenagers, may increase risky behavior, like purchasing alcohol (Adams et al., 2012). On the other hand, effects of minimum wages on teen employment or earnings would be expected to have little impact on health insurance. Thus, if teenagers are largely the ones affected by minimum wages, we might expect less evidence of beneficial effects on health or related behaviors. On the other hand, if others tend to have their incomes raised, but the job loss falls most heavily on teenagers – because they are the least skilled, and employers substitute towards other low-skilled workers – incomes could be rising among those for whom $\Delta H/\Delta I$ is positive, and falling among those for whom $\Delta H/\Delta I$ is negative, making it more likely that higher minimum wages deliver health gains and other beneficial outcomes.¹²

There are other reasons that, for some behaviors, for some individuals, or over some income ranges, $\Delta H/\Delta I$ could be negative – aside from income increasing risky behavior for teenagers. As noted already, in some circumstances higher incomes could lead to increased consumption of less healthy foods, or of other unhealthy goods like alcohol or tobacco (Buszkiewicz et al., 2021; Kenkel et al., 2014).¹³ Or the effects could be in some cases be in the opposite direction, depending on either income effects on different types of consumption, or – as discussed more below – the time intensiveness of different goods and services (like restaurant meals vs. home-cooked meals).

Minimum wages can also affect H through channels other than income. Some studies discuss the

¹² Formally, if we define $(\Delta H/\Delta I)_A$ as the effect of I on H for adults, and similarly $(\Delta H/\Delta I)_T$ as the effect for teenagers, and $(\Delta H/\Delta I)_A > 0$ while $(\Delta H/\Delta I)_T < 0$, then if the minimum wage raises incomes for adults and lowers income for teenagers, we would see increases in H .

¹³ Huang et al. (2021) also suggest a possible influence on smoking via minimum wages changing employment and hence the influence of indoor smoking bans.

potential effects of minimum wages on own health or on children's health and human capital via minimum wages raising the opportunity cost of leisure (or causing job loss) and hence affecting the allocation of time (e.g., Horn et al., 2017).¹⁴ Time can be an input to the production of one's own health (Grossman, 1972), the production of children's human capital and health (Leibowitz, 2003), or the provision of health care to family members (Majid et al., 2016). Again, these effects may vary depending on income, or the characteristics of who is affected, making the predicted effects of higher minimum wages ambiguous. Some papers also point to possible links between wages, job opportunities, and other uses of time, including teen childbearing (Bullinger, 2017) and crime (e.g., Agan and Makowsky, forthcoming).¹⁵ Another channel considered that is related to family structure is how minimum wages can affect the attractiveness of potential marriage partners and hence influence family structure (Emory et al., 2022).

Some studies note the direct link between jobs, income, and access to health care (e.g., Van Dyke et al., 2018), possibly via changes in health insurance, if the minimum wage reduces fringe benefits offered by firms (Marks, 2011). A few studies note that income changes can affect access to government benefits, including nutrition assistance or public health insurance (e.g., Chapman et al., 2021). Other less direct links from minimum wages to health that have been considered include the impact of minimum wages on goods prices (such as fast food), which could in turn affect diet (Cotti and Tefft, 2013), and even higher minimum wages affecting hygiene at restaurants, via staffing changes (Chakrabarti et al., 2021).

There is also reference in this new literature to non-pecuniary effects of income that can in turn affect health, via reducing emotional stress, financial stress, job satisfaction, etc., which can improve mental health (e.g., Lebihan, 2022; Dow et al., 2020), weight (Conklin et al., 2016), treatment of children (e.g., Raissian and Bullinger, 2017), and even decisions about when to marry (Karney et al., 2022). A few studies even refer to changes in mental health from changes in relative income (e.g., Chen, 2021). Many of these studies also recognize that job loss from higher minimum wages can have the opposite effects.

¹⁴ Clemens (2021) notes that changes in the minimum wage can affect scheduling and increase work effort, both of which can affect the allocation of time (and effort) to children, and discusses some evidence on the latter margin.

¹⁵ Mitre-Becerril and Chalfin (2021) also suggest that minimum wages, via employment changes, can affect crime via changes in social ties.

The preceding discussion helps clarify that even if income increases health, and even if a higher minimum wage increases average income, the effects on health and health-related behaviors are ambiguous, and effects may differ across different dimensions of behavior, and for different groups. There is no substitute for looking carefully at the emerging (and extensive) body of evidence on the effects of minimum wages on a wide variety of health-related behaviors and outcomes. The framework discussed above can also potentially help us interpret some of the conflicting evidence on different dimensions of health and health-related behaviors.

Minimum Wage Effects vs. Income and Employment Effects

As the preceding discussion makes clear, as does the review of papers that follows, this literature and my review and assessment of it focuses on the reduced-form effects of minimum wages. Clearly – building on the more traditional labor economics literature – we can view the two principal effects of the minimum wage as increasing income for many workers, and likely decreasing it for some, and as reducing employment for some workers. There are extensive literatures on the effects of income and employment on health, which are not included in this survey.

As examples, studies of the effects of income try to garner evidence from exogenous variation in income, such as evidence from lottery winners in Singapore (Kim and Koh, 2021), from the Supplemental Nutrition Program for Women, Infants, and Children (WIC) in the United States (Figlio et al., 2009), from variation in child tax benefits in Canada (Milligan and Stabile, 2011), and from variation in the Earned Income Tax Credit (EITC) in the United States (Braga et al., 2020; Hoynes et al., 2015). Similarly, there is an extensive literature on employment and health, for example deriving evidence from mass layoffs (Sullivan and von Wachter, 2009) or the business cycle (Ruhm, 2000; Miller et al. 2009). Given that different policies (or other sources of income gains) can affect employment and hours differently, it is more fruitful to study the effects of these policies on health, rather than try to draw general conclusions about how income affects health, independently of changes in employment or hours.¹⁶

¹⁶ Allegretto and Nadler (2020) argue that evidence from policy-induced variation in income can confound effects of income with effects on employment (e.g., from increased generosity of the EITC), and suggest that studies of “income changes in isolation of employment” have tended to find little evidence of health benefits. This criticism seems a little

Studies Included in Survey

I initially identified papers by searching on Google Scholar. I searched on “minimum wage” combined with either “health,” “suicide,” “drunk driving,” or “crime.” I identified all potentially relevant papers on the first 20 search pages. (There was rarely a relevant paper after more than a few search pages.)¹⁷ I also kept track of new papers on the topic identified via Google Scholar Alerts and the Economics Research Network. Finally, I identified all papers cited in these papers that had not otherwise been detected (of which there were very few) and added a few other recent papers identified by others who read a draft of this paper. I decided to exclude unpublished papers (I include forthcoming/“published on line early” papers), in part because only a select subset of these might appear in the searches I did (such as those by authors with access to prominent working paper series).¹⁸ I also excluded U.S. time-series studies (Chressanthi and Grimes, 1990; Hashimoto, 1987), given the focus of nearly all U.S. minimum wage research in recent decades on regional variation that can provide more convincing identification than time-series variation;¹⁹ and I exclude evidence from calibrated models (Braun, 2019). These search methods and criteria resulted in 63 papers covered in this survey.

The vast majority of studies are for the United States. These generally cover the last two decades. For the U.S. studies, the average starting year for the data used is 1998 (median 1997), and the average ending year is 2013 (median 2014). These studies cover a period of larger minimum wage increases than

mislplaced, because any change in income – whether or not from a policy explicitly intended to affect labor supply, like the EITC – can affect labor supply decisions.

¹⁷ This search was done mid-2020. As explained next, I tracked newer papers differently.

¹⁸ In addition, many of the papers I cover are in medical journals, for which early versions/working papers are often not circulated, so I did not want to introduce a “bias” in the representation of literature across fields by including more unpublished papers in disciplines where papers circulate prior to publication. I did check with authors as of the end of January 2023, to see whether unpublished papers I had identified had been published.

The unpublished papers I identified but did not include, with a brief summary of their conclusions, are: Allegretto and Nadler (2020), who report little evidence in the United States of health effects of minimum wages on groups likely to be affected, except increased binge drinking among men and decreased binge drinking among women; Mizushima and Noguchi (2021), who report lower suicide in Japan after increases in local minimum wages, concentrated among groups with higher exposure; Clemens et al. (2018), who report reductions in employer health insurance from higher minimum wages, among those most affected by minimum wages; and Liu et al. (2023), who report that higher minimum wages in China worsen most health outcomes they measure. Thus, the omitted papers are mixed with respect to their conclusions, with one generally finding no effects of minimum wages, one finding beneficial effects, and two finding adverse effects (one on health insurance).

¹⁹ However, I do include one time-series study for Hong Kong – a case, like many, where there is not regional minimum wage variation.

the period emphasized in the New Minimum Wage Research, which focused on employment effects and generally relied on data from the late 1980s and early 1990s. On the other hand, it largely excludes some very large minimum wage increases in the latter part of the 2010s (e.g., the California minimum wage rising from \$10 in 2016 to \$15.50 in 2023, or a similar large increase in New York City from \$9 in 2016 to \$15 in 2023). This is relevant for thinking about estimated magnitudes that I report. Most of the studies report results in terms of elasticities, but these can imply larger absolute effects as minimum wages go higher. In addition, the elasticities could grow at higher minimum wages, as the larger number of affected workers reduces the ability of employers to adjust along margins other than employment.²⁰

What Does the Research Literature Say and How Convincing is the Evidence?

I now describe the research papers, summarize the results, and assess how convincing the evidence is. There is an earlier meta-analysis that has more limited goals (largely focused on summary measures of effect sizes) and covers only earlier papers (Leigh et al., 2019).²¹ This meta-analysis concludes that minimum wages reduce smoking, have no statistically significant impact on most other health behaviors or outcomes, and that there is no significant evidence that minimum wages harm health. Aside from covering far more and more recent studies, I focus much more on assessments and interpretations of studies.

That said, I agree with criteria that Leigh et al. use to classify higher-quality studies. These include: well-defined treatment (likely affected) and control (unaffected) groups; longitudinal/panel data to help rule out confounding influences; and falsification tests showing no impact on groups unlikely to be affected.²² I do invoke other considerations. Importantly, some studies focus on workers only (or labor force participants). Studies that condition on employment can be problematic because job loss from minimum wages may be a potential trigger of adverse health effects, so that conditioning on employment may overstate the beneficial effects of minimum wages, or equivalently understate the negative effects. This

²⁰ Clemens and Strain (2021) study this question in the context of employment effects and find some evidence of nonlinear (increasing) disemployment effects.

²¹ This meta-analysis is based on 33 studies. A large number of the papers I survey were published later – nearly half in 2020 or later (including forthcoming papers).

²² We have to be a bit cautious in assuming that health effects should be apparent only for those directly affected by minimum wage increases by virtue of being low-wage or low-skilled, because higher-wage and more-skilled workers could see wage increases because of spillover effects from minimum wages, possibly from labor-labor substitution (e.g., Clemens et al., 2021; Gopalan et al., 2021).

argument about conditioning is sometimes, but not always, based on the position – contradicted by most evidence – that minimum wages do not reduce employment. At best, one could argue that the evidence on employment effects is unclear, in which case one still should not potentially bias the results in favor of beneficial effects of minimum wages by conditioning on employment.²³ I consider, in the context of specific studies, whether conditioning on employment is likely problematic.²⁴

Another consideration is whether studies that find evidence of better health outcomes – such as better infant health (Wehby et al., 2020) or fewer suicides (Dow et al., 2020) – can also establish evidence of increased income from work (while still being cognizant that conditioning on employment may obscure adverse effects). Unfortunately, in some cases the available data do not cover both the health-related behaviors or outcomes and labor market information (which is true of the two papers just cited).

More generally, some studies consider multiple behaviors or outcomes. This prompts the question of whether there is corroborating evidence across outcomes that makes the evidence on the key outcomes considered more plausible. For example, Leigh and Du (2018) show that higher minimum wages reduce work absences, and also improve self-reported health. In contrast, when effects vary across behaviors or outcomes in a way that is hard to understand or contradictory, the results are less likely to be causal (although it is possible that future work will provide an explanation of results that appear contradictory).

Below, I provide and discuss a separate table for each set of behaviors or outcomes. For each study, the table provides a summary and more details on the findings. I list the data set used and the country or countries covered, and briefly explain the research design. Then, in the last two columns, I provide my

²³ Of course, per the discussion in the prior section, this prediction about the direction of bias may not always hold – such as in the case where higher incomes lead to less healthy choices. Regardless, we get the best estimates of the overall impact of minimum wages by studying workers and non-workers.

²⁴ Note that I do not fault papers for not using the new methods recently developed for difference-in-differences models (addressing potential biases in two-way fixed effects estimates). See, e.g., the discussion in Wooldridge (2021). First, these methods are so new that it would not be expected that most of the papers surveyed would use these methods. Second, the studies of minimum wages are using a continuous treatment variable. Third, in my view many panel data analyses look at empirical issues – albeit less formally – that this new literature raises, such as whether there are prior trends that differ in states where minimum wages increased, or whether the effects of minimum wages grow over time. Fourth, my sense is that few empirical applications using these methods have indicated substantive biases, and this is less likely when (per the prior point) researchers consider variation in treatment effects, pre-trends, etc. (For examples of recent minimum wage studies indicating absence of substantive biases, see Agarwal et al. (2022), using the methods of Chaisemartin and d’Haultfoeuille (forthcoming), and Fone et al. (2013) – a paper discussed below on minimum wages and crime.)

assessment of the evidence. I first list what I view as the important strengths or weaknesses of the evidence, and then a simple summary assessment: “convincing,” “somewhat convincing,” or “less convincing.” Obviously, readers might identify different strengths or weaknesses of the studies, although I have tried to be comprehensive regarding core issues on which policy researchers evaluate the credibility of evidence in terms of identifying a causal effect of minimum wages.

My classification is based in part on the number of strengths and the number of weaknesses, but also puts more weight on certain study features. For example, I particularly assess studies more negatively when they find positive effects but condition on employment (looking at workers only), which shuts down a potentially strong negative impact of the minimum wage, and when they do not show that results are stronger for more- vs. less-affected groups of workers. Of course, readers may differ with my summary assessments. Nonetheless, I find it useful to provide a brief assessment so that one can look across the studies on the set of behaviors or outcomes covered in a table to try to form an overall assessment of the evidence showing either positive effects, mixed/no effects, or negative effects.

Adult and Teen Health

The studies on adult and teen health are described in Table 1. Table 1 and the following tables are quite comprehensive, so I do not discuss every paper individually in the text. Rather, I discuss the set of papers grouped by categories and findings, and I then discuss some specific papers to illustrate particular issues, including key considerations in assessing the strength of a study’s evidence, and to highlight the more convincing studies and why they are convincing.

There are 13 studies of adult and teen health. Of these seven report positive impacts. Four report positive impacts on self-reported health (sometimes also including mental health). This evidence comes from China (Chen, 2021), European countries (Lebihan, 2022), the United Kingdom (Lenhart, 2017b), and Hong Kong (Wong and Ye, 2015). One reports lower mortality in OECD countries (Lenhart, 2017b), and another reports lower heart disease death rates in the United States (Van Dyke, et al., 2018). And finally, one reports lower work absenteeism, also associated with improved self-reported health (Leigh and Du, 2018). One concern regarding the findings on teen and adult health is whether it is plausible that effects

emerge quickly, such as in the findings of Van Dyke et al. (2018) on heart disease deaths.

Among the papers finding positive effects on adult or teen health, the Leigh and Du (2018) study finding reducing work absenteeism is quite compelling. It presents evidence from a difference-in-differences and triple-differences design, showing that the reduction in absenteeism occurs for less-educated workers more likely to be affected by minimum wage increases, but not for more-educated workers unlikely to be affected. It also shows evidence on a mechanism that should drive the results – that the absenteeism reductions are associated with improvements in self-reported health.

Most of the remaining studies – which focus more directly on health measures – have substantial weaknesses. One important weakness is conditioning on employment (studying workers only) or on being in the labor force. As noted above, given that the adverse effect of minimum wages on health could stem from job loss, omitting large numbers of the non-employed can essentially “shut down” this adverse channel and create bias towards finding positive health impacts of minimum wages. My assessment of the Chen (2021) paper, for China, is more mixed. It has a strong research design comparing the more vs. less affected, but it looks at workers only. And the Wong and He (2015) paper on Hong Kong does not show a differential effect for those above and below the minimum wage that was imposed, suggesting the effect may be spurious. Overall, the evidence from the studies finding positive impacts on adult or teen health is at best moderately convincing, with a number of the studies less convincing.

The smaller number of studies reporting mixed evidence or no effects provide more convincing evidence. Three of the four studies focus on people likely to be affected, and two also show an absence of evidence of impacts for those less likely to be affected. However, there are some other issues (including conditioning on employment) that lead me to categorize two of these four studies as only somewhat convincing. I categorize the Averett et al. (2017) study as convincing because it shows that the different health effects it finds align with employment effects, and shows no effects for a “placebo” group (older, more-educated workers) unlikely to be affected by the minimum wage. The one exception that I find less convincing is Narain and Zimmerman (2019), which has a number of weaknesses, including one unique to this study regarding using average wages of low-wage workers to scale the minimum wage variable, even

though these averages can be affected by minimum wages.

Finally, two studies that report adverse health effects – one in relation to health (Horn et al., 2017), and one in relation to obesity/BMI (Buszkiewicz et al. (2021) – also find mixed evidence on other health outcomes). These two studies have some strengths, like good research designs comparing results for more- vs. less-affected people, but also some weaknesses – mainly conditioning on working or being in the labor force. Note that, in the case of these studies, this conditioning may be less critical, because if it creates a bias towards finding positive health effects, the bias is less likely to explain the adverse effects. However, we have to be cautious about this inference because more income can sometimes lead to adverse health effects from, e.g., consuming less healthy foods. Overall, I find the Horn et al. (2017) study convincing because it, too, shows results for a difference-in-differences and triple-difference design, and also reports many robustness analyses.

Viewed overall, the evidence of no effects or mixed effects of minimum wages on teen and adult health is generally stronger – in the sense of providing evidence more credibly linked to causal effects of minimum wages – although there are some relatively convincing studies that find positive effects. Three considerations seem important in trying to draw summary conclusions. First, health is multi-dimensional, and studies of different health measures need not point in the same direction. Second, nearly all of the studies are subject to some potential criticisms. And third, the fact that a weakness can be identified in a study does not necessarily mean the study's conclusion is wrong; for example, bias against finding negative effects does not mean that evidence of positive effects is spurious. Nonetheless, one can conclude from Table 1 that there is not a strong research basis for concluding that minimum wages improve teen or adult health, given that there is some convincing evidence of both mixed effects and of adverse effects.

Infant and Child Health

There are far fewer studies of the effects of minimum wages on infant and child health. On a priori grounds, I find evidence that minimum wages have positive effects on infant health, in particular, more plausible – at least insofar as researchers are studying effects in relatively short panels – because higher income during pregnancy and early childhood may have a relatively immediate impact. In addition,

potential adverse effects from loss of health insurance are less likely given Medicaid and CHIP coverage. Perhaps reflecting this, Table 2 shows that, of the three studies on infant and child health, two (Komro et al., 2016; Wehby et al., 2020) find positive impacts – both on birthweights, and the former also on post-neonatal mortality. (Webby et al. report, but do not emphasize, some negative effects for single mothers.) I regard the Komro et al. study as less convincing, most importantly because it fails to compare effects for more- vs. less-affected groups. In contrast, I find the Wehby et al. (2020) paper convincing because it shows results for less-educated but not more-educated mothers, presents robustness analyses, and reports that the effects are contemporaneous but not lagged – as we would expect in a study of birthweight. Majid et al. (2016) report adverse effects on height for weight of children under age 5. An important distinction is that this study covers developing countries. It has a number of strengths, including a good number of results (but not all) indicating the effects are more present for those more affected. The study conditions on father’s employment, but this would most likely create a bias against a negative effect (by shutting down the adverse effect of fathers’ job loss), and hence seems unlikely to undermine the result.²⁵

Overall, the evidence on the effects of minimum wages on infant and child health is mixed. However, although there is a limited amount of evidence, it leans towards positive impacts – and the adverse evidence is at this point limited to developing countries.

Diet and Obesity

There are nine studies that focus on diet and obesity.²⁶ I do not categorize any of these as “convincing,” based on the criteria I use and that I have illustrated by example in the preceding discussion. As shown in Table 3, none of these papers point clearly to adverse effects, while they are split between

²⁵ This is one of two studies of lower-income countries (the other is Ponce et al., 2018). More evidence from these countries would clearly be invaluable, since there are much larger shares of workers potentially affected by minimum wages, although also complications from large informal sectors. (For a review of evidence on employment effects of minimum wages in developing countries, see Neumark and Corella, 2021.)

²⁶ The paper by Andreyeva and Ukert (2018) is broad, also including some analysis of risky behavior and other dimensions of health. But it has relatively more focus on diet. Still, if one is weighing the evidence from papers on health effects, or on risky behavior, this paper should also be considered. To make this easier, the tables on these dimensions of behavior (Tables 1 and 8) also note the evidence from this paper. I do the same for other papers that span behaviors or outcomes in more than one table, although I include the paper in the table corresponding to its main focus, and generally draw my conclusions based on these main foci.

positive findings (four studies), and mixed findings/no evidence of an effect (five studies).²⁷ Across the studies finding positive effects, the benefits include healthier diet (Clark et al., 2020; Palazzolo and Pattabhiramaiah, 2021) as well as lower obesity (indirect evidence, from Meltzer and Chen, 2011), as well as reduced stunting (in developing countries, in Ponce et al., 2018). The Palazzolo and Pattabhiramaiah (2021) and Ponce et al. (2018) papers are more convincing; despite some weaknesses, they have the basic ingredients of what is needed for a causal analysis – both a panel data approach, and comparisons between those more and less affected.

Among the five studies reporting mixed findings or no evidence of effects, I am critical of how compelling the evidence is in three of them. One exception is Chapman’s (2021) small-scale study of the effects of a higher minimum wage in Minneapolis. The other is Cotti and Tefft (2013), who ask a different and narrower question relative to the literature simply estimating the effects of minimum wages on health outcomes – in particular, whether changes in minimum wages, via their effect on fast-food prices, affect obesity or being overweight. They find no effect. The earlier Meltzer and Chen (2011) paper – in the top panel of the table – tries to draw a link between the minimum wage and obesity via fast-food prices, interpreting the relationship between the declining real value of the minimum wage and higher obesity as coming via effects in lowering fast-food prices, based on calibration using other evidence on minimum wages and fast-food prices. But this evidence is only indirect, in contrast to Cotti and Tefft.

On balance, then, much of the evidence on the effects of minimum wages on diet and weight is flawed. But the smaller set of studies with more convincing evidence points to either beneficial effects or no clear conclusion; there is no evidence of adverse effects.

Mental Health

Table 4 covers the evidence from four studies focusing on the effects of minimum wages on mental health.²⁸ Three of these four studies point to beneficial effects on mental health, but two of these studies do

²⁷ The Palazzolo and Pattabhiramaiah (2021) study could be classified as mixed. But its findings on low-income households are more positive, and it is these households that are most likely potentially affected by minimum wages.

²⁸ There are a few papers in Table 1 that, while focusing on physical health, also report some evidence on mental health (Chen, 2021; Maxwell et al., 2022; Horn et al., 2017). As noted before, these studies also appear briefly at the bottom of the table for mental health.

not appear to be very convincing. Indeed, I do not classify any of the studies that focus on mental health as convincing, although as the bottom of the table indicates, I do find the evidence in Horn et al. (2017) of better mental health for women to be convincing (for the same reasons discussed in regard to Table 1). In particular, Kuroki (2021) and Reeves et al. (2017) both study workers only, eliminating the potential effects of job loss. Kronenberg et al. (2017) and Reeves et al. (2017) both study the impact of the imposition of the new national minimum wage in the United Kingdom. The former find no impact, while the latter find beneficial effects. However, Kronenberg et al. document that the results and even samples in Reeves et al. appear unreplicable, and that a re-analysis supports their conclusion of no impact. In addition to these studies focused on mental health, other papers cited in the bottom panel of the paper cite evidence on effects of minimum wages on mental health as part of their analyses. Two of these provide evidence of benefits that is at least somewhat convincing (Chen, 2021; Horn et al., 2017) and two provide evidence of no impact (Maxwell et al., 2022; Schneider et al., 2022).²⁹

Overall, there is no evidence of adverse effects of minimum wages on mental health. The better evidence is somewhat split between finding some evidence of beneficial effects or finding no impact, although more studies point to beneficial effects.

Suicide

It might seem a stretch to think that minimum wages have a detectable effect on suicides.³⁰ But the existence of at least some evidence that higher minimum wages improve mental health lends at least some plausibility to the hypothesis that minimum wages reduce suicides. Indeed, the four studies summarized in Table 5 all point in this direction. Moreover, two of the studies (Dow et al., 2020; Kaufman et al., 2020) are fairly compelling. The Dow et al. study is motivated directly by the work of Case and Deaton (2015, 2017) documenting the rise in “deaths of despair” – from alcohol, drugs, and suicide – among less-educated

²⁹ When we consider evidence from other countries, especially, it is possible that differences in context (e.g., the health care system) help explain differences in behaviors or outcomes. The same could be true of differences across time, given that policy can change (see the discussion of how minimum wages might differentially affect health insurance in the post-ACA period). There is probably as yet not enough work for similar outcomes in different places or time periods to draw any firm generalizations about context-specific differences in results.

³⁰ And to be perfectly frank, that was my initial reaction when I encountered the studies of this question in isolation.

Americans.³¹ It has many good features, including providing some evidence of stronger impacts on those with less education who are more likely to be affected by minimum wages. However, it is perhaps curious that these effects appear only for women. And Dow et al. over-interpret the falsification test for cancer deaths for those with a high school education or less – which shows effects very close to significant at the 5% level, and with perhaps less evidence of pre-trends than the suicide evidence. I still assess this study as “convincing,” albeit with these reservations. The other two studies (Gertner et al., 2019; Rath et al., 2022) are a good deal less convincing, especially the latter study (for Hong Kong) using an interrupted time-series design in a period when other changes that affect suicides may have occurred contemporaneously (in particular, the Hong Kong protest movement). Still the absence of any mixed evidence or evidence showing adverse effects, coupled with two studies with more compelling evidence, indicate that at this point the research supports the conclusion that higher minimum wages reduce suicides.

Family Structure and Children

The studies summarized in Table 6 cover a number of dimensions of effects of minimum wages on family structure and children, including treatment of children, time spent with children and other indicators of investment in children, adolescent births, behavior of parents, and family structure (fathers living with children, and marriage/divorce). These studies seem somewhat natural to group together, although we need to be cautious about drawing an overall conclusion when minimum wages can affect these varying dimensions of behavior differently.

There are four studies that point to positive effects of minimum wages on behaviors or outcomes likely to benefit children directly or indirectly. Three pertain to the treatment of children or time with children, and one to adolescent births. The Bullinger (2017) paper claiming that higher minimum wages reduce adolescent births has some positive features, such as not controlling for the poverty rate, but it does not address trends carefully, and the trends appear important. Two studies (Gearhart, forthcoming; Morrissey, forthcoming) point to higher minimum wages increasing time spent with children. These studies

³¹ Case and Deaton (2023) cite work by Montez et al. (2020) suggesting that more liberal laws, including higher minimum wages, have positive effects on life expectancy (and vice versa). However, Montez et al. study the effects only of an index of laws, and provide no specific evidence on minimum wages.

have some strengths and some weaknesses – the former associated with comparisons for those more vs. less affected. Interestingly, the evidence in these studies could arise from disemployment effects of minimum wages, or an income effect via the partner (consistent with the effect in Gearhart et al. (forthcoming) arising for married women only). This highlights the potentially complicated ways that minimum wages can affect health and behavior. One study I assess as less convincing claims that higher minimum wages reduce maltreatment of children (Raissian and Bullinger, 2017).

Four studies report either mixed evidence or no effects. Karney et al. (2022) suggest that higher minimum wages lead to later marriage, and less divorce, but use a non-standard detrending procedure that is hard to interpret. And although the paper claims that the combined impact of these two effects is positive, that is not clear; for example, it could imply more childbirths out of wedlock. Emory et al. (2020) suggest that higher minimum wages lead fathers whose earnings depend on the minimum wage to live with their children, although their model is unconventional in using random rather than fixed state effects.³²

Only one study points to adverse effects – on children’s cognitive ability as measured by test scores (Regmi, 2020). This study is the only one in this table that I classify as “convincing,” based on its distinguishing effects on those more likely or less likely to be affected by a higher minimum wage and presenting many robustness analyses. It contrasts with the two studies indicating minimum wages increase time with children, although both of these studies find effects arising only for subsets of parents.

Overall, perhaps reflecting the greater varieties of behavior covered, the evidence on the effects of minimum wages on family structure and behavior is mixed. There is reasonably convincing evidence that mothers spend more time with children after minimum wage increases, but the most compelling evidence points to adverse effects on children’s test scores. And there may be a positive impact on father’s living with children, although there is only one study, and it has potential flaws. Importantly, though, except for the study on test scores, there is very little evidence pointing towards adverse effects.

Risky Behavior

³² The authors have indicated to me, in email communications, that the minimum wage effects were of similar magnitude but weaker statistically with fixed state effects.

Table 7 covers research on risky, unhealthy behavior – mainly drinking and smoking (and alcohol-related driving deaths). This evidence points to adverse effects of minimum wages, with one exception (Sabia et al., 2019). Evidence of minimum wages increasing risky behavior is perhaps not too surprising, given the extra income earned by many – often young – workers (and possibly less time at work for others). Adams et al. (2012) points to increased alcohol-related deaths among teenagers but not adults, with teenagers more likely to be affected by minimum wages (and probably more likely to engage in risky behavior). Hoke and Cotti (2016) report related evidence for binge drinking among 14-18 year-olds, although the data they use do not permit comparisons for older people less likely to be affected by minimum wages (although the results are driven by males). Sabia et al. (2019), however, argue that the Adams et al. results do not hold up for a longer sample period covering more minimum wage variation.

Huang et al. (2021) present strong evidence that higher minimum wages increase smoking and reduce smoking cessation, including evidence that the effects arise for those more affected by minimum wages. (This contrasts with the more limited results on smoking in the Reeves et al. (2017) study, which focuses more on mental health and is covered in Table 4.) Among the studies on risky behaviors, the Huang et al. study is the only one I deem “convincing,” based on comparing outcomes for those more vs. less likely to be affected, robustness analyses, showing results with and without conditioning on employment, and controlling carefully for other policies.

Overall, the evidence on drinking and smoking (and driving drunk) points in the direction of higher minimum wages increasing risky, unhealthy behaviors, although there is some evidence to the contrary.

Crime

The effects of minimum wages on crime are perhaps furthest away from the other health and health-related behaviors I consider in this paper. However, criminal behavior is often studied along with other risky behaviors, in part because it reflects behavioral choices that have adverse consequences.³³ Much of the earlier discussion of how minimum wages can affect non-economic behaviors or outcomes pertains

³³ For example, Gruber’s (2001) edited book on risky behavior among youths covers smoking, traffic safety, sexual activity, suicide, marijuana use, drinking, dropping out, and diet.

to choices about crime as well – in particular how minimum wages can affect time allocation, employment, idleness, etc. There are other considerations in the economics of crime, as the decision is often posed as comparing the economic gains from legal work vs. crime, which can be influenced by the minimum wage via both higher potential labor market earnings but also potentially greater difficulty finding a job.

The evidence, summarized in Table 8, is all over the map, with studies that present convincing evidence indicating that higher minimum wages reduce crime (Agan and Makowsky, forthcoming – who focus only on recidivism; Hansen and Machin, 2002), that there is no impact (Mitre-Becerril and Chalfin, 2021), and that they increase crime (Beauchamp and Chan, 2014; Fone et al., 2023).³⁴ Part of what can make evidence on minimum wage effects on crime more convincing is – as with other outcomes – comparisons of groups more affected and less affected by the minimum wage. The studies finding adverse effects of the minimum wage are more convincing on this dimension (although Hansen and Machin, who find crime reductions, compare areas with lower and higher shares of low-wage workers at the time of the introduction of the new minimum wage in the United Kingdom).

More specific to the study of crime is comparing results for crime likely to provide income, vs. other crimes. For example, it seems far more likely that the former would be influenced by minimum wages than would violent crime. One of the studies finding that higher minimum wages reduce crime – actually, recidivism – reports evidence of larger effects on crime related to income but not violent crime (Agan and Makowsky, forthcoming). But so does one of the studies finding that minimum wages increase crime (Fone et al., 2023). I classify the studies by Mitre-Becerril and Chalfin (2021) and Fone et al. (2023) as “convincing,” for careful attention to potential counterfactuals, comparisons (in the latter paper) between more- and less-affected groups, robustness analyses, and more.

Overall, then, while the research on the effects of the minimum wage on crime presents some of the most credible evidence (I assess only one of the six studies in Table 8 as less convincing), the evidence is

³⁴ It is surprising that, in Agan and Makowsky (forthcoming), the same research design, looking at different data, shows positive employment effects for those likely to have a criminal record (less-educated blacks, and those ineligible to vote – although the latter could reflect undocumented workers working informally). However, I focus on the evidence on health and related behaviors in my assessments of the evidence.

conflicting. Thus, at this juncture it is difficult to draw a conclusion one way or the other.

Mechanisms that Can Affect Health

Finally, I turn to a fairly large number of studies that consider indirect ways that minimum wages could affect health. Most of these studies focus on access to health insurance or health care, either estimating how minimum wages affect whether people have (usually employer-provided) health insurance (e.g., Kuroki, 2022; Marks, 2011), or whether minimum wages alter self-reported unmet medical needs or access measured other ways (Sabia and Nielsen, 2015). Other studies consider alternative mechanisms, including job fatalities (Merrill-Francis et al., 2022), restaurant hygiene (Chakrabarti et al., 2021), and “gym time” (Lenhart, 2019).

The papers on health insurance present conflicting evidence. Kuroki (2022) finds that the uninsured rate decreases with a higher minimum wage, with the nuance that this occurs after the ACA Medicaid expansions (in states where those occurred); the presumed mechanism is that with these expansions in place, fewer people lost Medicaid when their earnings rose. In contrast, Clemens and Wither (forthcoming) report evidence from earlier years (the Great Recession period) that in states with low Medicaid thresholds, higher minimum wages pushed families off of Medicaid, presumably owing to higher earnings. Dworsky et al. (2022) find related results – with strong evidence that employer-provided insurance declines, and less clear evidence that overall coverage is unchanged because of increased public coverage.³⁵ Another study (Sabia and Nielsen, 2015), which also has features that make it somewhat convincing, finds no effect on private health insurance (or unmet medical needs). Simon and Kaestner (2004) reach the same conclusion about employer-provided health insurance. However, Marks (2011) argues that these studies may be flawed by not distinguishing which employers can vary health insurance benefits among employees. She finds that among employers not constrained by non-discrimination laws (regarding benefits), minimum wages lower employer-provided health insurance. And for unconstrained firms, the reductions in insurance are concentrated among low-wage workers in low-wage industries – industries in which most workers are low-

³⁵ They find this evidence in the last few years of their sample (2012-2015) but suggest it may be related to changes in CPS questions.

wage and hence benefits were more likely to be reduced for everyone at a firm.

Among the studies of unmet medical needs, two (McCarrier et al., 2010, 2011) have rather serious limitations that lead me to categorize them as less convincing. In contrast, the Sabia and Neilsen (2015) study, which finds no impact of minimum wages, is more convincing.

The study of job fatalities finding no impact (Merrill-Francis et al., 2022) is not compelling; most notably, perhaps, conditioning on industry of employment can mask changes in the composition of jobs that affect aggregate workplace injuries. In contrast, two studies of alternative mechanisms that could reduce health are quite convincing, including evidence that the Seattle minimum wage increased restaurant hygiene violations (Chakrabarti et al., 2021), and that higher minimum wages reduce exercise and personal health time (Lenhart, 2019), although it is unclear why the latter effects appear to arise with a lag of two or more years.

All of the studies (three) that I categorize as “convincing” find negative effects – Chakrabarti et al. (2021) on restaurant hygiene, Clemens and Wither (forthcoming) on Medicaid participation, and Marks (2011) on employer-provided health insurance. The reasons differ across the studies (see the table), but include comparisons between those more vs. less affected, robustness analyses, and other features.

Overall, I view the evidence as leaning towards higher minimum wages influencing the behaviors or outcomes studied in ways that might reduce health, although the evidence is not unidirectional, and the magnitudes of the ultimate impacts on health are unclear. The best evidence appears to suggest that higher minimum wages reduce employer-provided health insurance and perhaps insurance overall, although in more-recent years there may be mitigation of this effect owing to Medicaid expansions (and the ACA more generally, although that has not been studied). Moreover, the impact of potential insurance changes would be clearer if we also saw that higher minimum wages increase unmet medical needs. Two other studies, however, point to other avenues by which minimum wages could adversely affect health. The effect via restaurant hygiene may be negligible; this evidence may simply speak more to how minimum wages affected staffing in Seattle restaurants. The effects via exercise may be more pronounced, however, and tie into the larger literature on work and health (e.g., Ruhm, 2005).

Summary and Conclusions

The research and policy debate about minimum wages has in recent years moved beyond effects on jobs and incomes, to consider more broadly how minimum wages affect peoples' well-being. Most notably, a large body of research, in many disciplines, has begun to consider evidence on how minimum wages affect health and health-related behaviors. As suggested by the Grossman (1972) model and other considerations, predictions are ambiguous – both because of the potentially offsetting effects of job loss vs. higher income, and because the effects via higher income can vary across outcomes and groups.

I have surveyed research covering nine categories of health and health-related behaviors, trying to glean what conclusions emerge from this research literature, and how strong the evidence is. I summarize the conclusions in two ways. First, Table 10 summarizes the findings from the more detailed tables discussed earlier, covering all of the studies and giving some weight to those I classify as “somewhat convincing.” Read this way, the evidence, even focusing on the more-compelling studies (which I do), is decidedly mixed. The evidence on overall physical health points in conflicting directions, and may lean towards adverse effects, possibly a reflection, in part, of the conflicting influences of minimum wages on factors that can affect health (related to how higher income is spent). In particular, research on the effects of minimum wages on diet and obesity sometimes points to beneficial effects, while other evidence indicates that higher minimum wages increase smoking and drinking and reduce exercise (and possibly hygiene). In contrast, there is rather strong evidence that higher minimum wages reduce suicides, perhaps partly consistent with the evidence on effects on other measures of mental health/depression being either positive or mixed.

Going a little farther afield, research on minimum wage effects on family structure and children indicates that mothers spend more time with children, provides no clear indication of changes in treatment of children, but point to declines in children's test scores – clearly a mixed picture. There are many good studies of the effects of minimum wages on crime, but the conclusions are mixed. Turning to channels of influence on health (most notably, health insurance), the stronger evidence points to declines in employer-provided health insurance, and other adverse effects on potential influences on health, but there is no clear

evidence of effects on unmet medical needs.

Next, Table 11 covers only those studies classified as “convincing.” This leads to similar conclusions to Table 10, but more focused. The other thing to note, though, is that this table includes only 14 of the 63 papers surveyed – an issue I return to below.

Overall, the mixed conclusions on how minimum wages affect health and related behaviors undermines the evidence base for concluding that the minimum wage is an effective means of improving health. That conclusion appears misplaced because effects on physical health are mixed and include some findings of adverse effects. And there is clearer evidence of adverse effects on some dimensions of health, like smoking. On the other hand, the evidence on mental health leans more positive, with mixed evidence indicating either positive effects or no effect, but none indicating negative impacts. Finally, if one places a high emphasis on suicides – a reasonable view – then minimum wages could be deemed beneficial, although we should ask whether there are more direct and cost-effective methods to achieve the same goal. And I think it is still fair to say that this suicide result is surprising and additional research would be valuable, especially research that identifies the mechanisms that could explain this result.

This survey also points to lessons for research. More than three-quarters of the studies of the effects of minimum wages on health and related behaviors fall well short of the rigor that characterizes the more recent – and best – research in labor economics on the employment effects of minimum wages.³⁶ This is perhaps understandable, given that the latter builds on many decades of prior research, uses rich data, and comes out of a field with a strong emphasis on causal inference and credible research designs. Given the potential shortcomings along these lines in a good deal of the research on minimum wage effects on health and related behaviors, one could take a more skeptical view of the findings in this literature, because there are some potentially valid criticisms of a large number of the studies. But that would discount a lot of evidence, and of course there is no reason to believe that the potential criticism of each paper accounts for the findings; establishing that takes a lot more work.

³⁶ This greater rigor has not led to widespread agreement about the conclusions. Nonetheless see, for example: Baskaya and Rubinstein (2015); Card and Krueger (1994); Clemens and Wither (2019); Dube et al. (2010); Neumark et al. (2014); Thompson (2009); and Jha et al. (2022).

Nonetheless, it seems likely that more rigorous types of evaluations will come to the research on minimum wages and health – and indeed there are already examples, like Dow et al.’s (2020) work on suicides. More constructively, based on my review of the evidence, I would encourage future researchers studying the effects of minimum wages on health and related behaviors to prioritize the following – to the greatest extent allowed by the data (and to develop new data sources that enable them to go further):

- Sharp focus on groups likely to be affected by minimum wage
- Comparing results for groups/agents more vs. less likely to be affected
- Robustness analyses
- Testing whether results align across different related outcomes
- Assessing evidence on mechanisms that might underlie the effects on health or health-related behavior
- Attention to policy controls, and policy context that might influence the results
- Avoidance of conditioning on variables potentially affected by minimum wages
- Consideration of prior trends that could influence estimates
- Thinking about the potential dynamics (i.e., immediate vs. longer-term) of effects for different outcomes.

This is not an exhaustive list. But I think it is a useful list of “best practices” for increasing the rigor of research on how minimum wages influence health and health-related behaviors.

Whether bringing more rigor to research on minimum wages and health leads to less ambiguous conclusions, or just reinforces the potentially conflicting effects predicted by theoretical modeling of how minimum wages can affect health, as well as the conflicting evidence in the existing research covered in this survey – remains to be seen. However, it seems clear that in light of both the conflicting evidence to date, and the lack of a large number of rigorous studies, policy conclusions that minimum wages improve health are unwarranted.

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Table 1: Findings on Adult and Teen Health

Conclusion	Data	Research design	Strengths and weaknesses	Evidence?
Positive effects of minimum wage				
<p>Self-reported health and maybe mental health of workers improves, but no change in healthy behaviors</p> <p>Details: Higher minimum wage improves self-reported health and reduces presence of health conditions (overweight, illness last 2 weeks, hospitalized last year – but none of the latter are significant); significant effects lowering physical pain and emotional problems). No change in health behaviors (smoking, drinking, regular exercise). Larger role for rural hukuo workers and those 35 and older. Most results include the employed only, but self-report results similar including the unemployed (other non-employed not included). Shows effects stronger for groups whose wages are most affected. However, wages pushed up nearly as much for those earning up to 2 times minimum wage, but no health effect for them. Manufacturing has the highest share of low-wage workers, but no significant health effects in that sector.</p> <p>Chen (2021)</p>	<p>2014 and 2016 China Labor Force Dynamic Survey (CLDS), sample of low-skilled workers, China</p>	<p>DD for low-skilled workers. Does third difference relative to unaffected placebo group (farming and self-employed).</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Estimates for low-skilled workers, and DDD design using farm and self-employed workers as unaffected group --Numerous robustness analyses <p>Weaknesses</p> <ul style="list-style-type: none"> --Results do not align well for lowest-wage vs. second lowest-wage group (wages increase for latter, but no health effects) --Results not present for industry with largest share of low-wage workers (manufacturing) --Focusing on workers only can create bias against finding negative effect 	<p>Somewhat convincing</p>
<p>Absenteeism due to own illness falls, and seems associated with improved self-reported health</p> <p>Details: Higher minimum wage reduces absences due to own illness, but not others' (like child). \$1 increase in real minimum wage lowers absence by 19% in DD and 32% in DDD estimates. Strongest for those not employed year-round. Not due to labor supply, but to improved self-reported health for less-educated workers.</p> <p>Leigh and Du (2018)</p>	<p>PSID 1997-2013, US</p>	<p>DD and DDD comparing low vs. high education, and comparisons based on wages relative to minimum wage</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Effects for less-educated, and DDD design using two more-educated groups --Comparisons based on wages relative to minimum wage --Explores pathways to show that effects associated with improved self-reported health <p>Weaknesses</p> <ul style="list-style-type: none"> --Effects limited to workers, but can only define absenteeism for them 	<p>Convincing</p>
<p>Increased self-reported health, satisfaction, and happiness of workers</p> <p>Details: Higher minimum wage increases self-reported health (and income security), life satisfaction, and happiness. Beneficial effects driven to some extent by employed workers and appear for less educated.</p> <p>Lebihan (2022)</p>	<p>European Social Survey, 2001/2 to 2016/17, Europe (17 countries)</p>	<p>Panel analysis using variation in minimum wages across European countries over time. Uses micro data to identify those more likely to be affected. 18-64, no more than high school degree. Panel data with country and year fixed effects and linear time trends). Controls for other policies, including related to health.</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Focuses on less-educated, and comparison with more-educated, and effects larger for poorer countries. --Many robustness analyses <p>Weaknesses</p> <ul style="list-style-type: none"> --Conditioning on being in labor force biases against finding negative effect (and results driven by employed workers) --Controlling for unemployment rate when estimating for 18-64 year-olds (rather than narrow age group) may overcontrol --Results sensitive to country trends --Heterogeneity analysis does not make clear that effects larger where expected (yes for education, but not poorer countries) 	<p>Somewhat convincing</p>
<p>Improved health of workers</p> <p>Details: Improved self-reported health status and health conditions; changes in health behaviors, leisure expenditures, and financial stress help explain improvements.</p> <p>Lenhart (2017a)</p>	<p>BPHS 1994-2003, UK</p>	<p>Studies introduction of new national minimum wage in UK. Focus on low-wage workers likely affected by new minimum wage, as well as response about whether one was directly affected (unique to BHPS). Placebo analysis of higher earners unlikely to be affected.</p>	<p>Weaknesses</p> <ul style="list-style-type: none"> --Conditioning on workers biases against finding negative effects (claims no impact, but only shows results for hours and income, not employment) 	<p>Less convincing</p>

Conclusion	Data	Research design	Strengths and weaknesses	Evidence?
<p>Lower mortality</p> <p>Details: Lower mortality rates and number of deaths due to outcomes more prevalent for low SES people; evidence on channels (lower poverty, tobacco consumption, and unmet medical needs, more doctor consults). 10% increase in minimum wage increases life expectancy by .44 years. Reduces deaths per 100,000 by 21.95 (on mean of about 1,140). Impacts found in lower-income but not higher-income countries. Also, sharp tobacco reductions.</p> <p>Lenhart (2017b)</p>	<p>OECD Database 1980-2010, Europe (24 countries)</p>	<p>Panel data, year, and country fixed effects, controls for age structure, health care spending, and more.</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Examines channels of effects --Shows effects stronger for lower-income countries <p>Weaknesses</p> <ul style="list-style-type: none"> --Over long period other policies can change, and no accounting for them --Similar findings for tax rates suggest results spurious --No focus on those more likely affected --Do life expectancy figures reflect future effects of contemporaneous policies? 	<p>Less convincing</p>
<p>Reduced heart disease death rates</p> <p>Details: Reduced heart disease death rates for 35-64 year-olds. \$1 increase in minimum wage lowers heart disease death rate by 3.5%. Effects appear larger for states with more minimum wage workers, but authors caution confidence interval is large.</p> <p>Van Dyke et al. (2018)</p>	<p>CDC Wonder, 1980-2015, US</p>	<p>Models controlling for state, year, and state linear trends. Controls for unemployment, income, poverty rate, demographics. Over 65 placebo sample shows no significant effect.</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Compares to older group less likely to be affected <p>Weaknesses</p> <ul style="list-style-type: none"> --Effects for this age group may be implausible, without focus on more affected --Short-term effects on heart disease may be implausible --Controlling for poverty may overcontrol --Unable to look at lower-skilled, more-affected workers --Only reports results with state-specific trends --Only uses difference between state and federal minimum wage, which ignores federal minimum wage variation below the state minimum wage 	<p>Less convincing</p>
<p>Improved physical and psychological quality of life</p> <p>Details: In 2011 minimum wage went from voluntary and narrow to broad and compulsory. Most domains of quality of life, including physical and psychological health, increased.</p> <p>Wong and Ye (2015)</p>	<p>Survey of households with potentially affected workers (unclear) 8-12 months before and 6-8 months after new minimum wage, Hong Kong.</p>	<p>Before and after analysis of affected households.</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Compares those above and below minimum wage <p>Weaknesses</p> <ul style="list-style-type: none"> --No control group of unaffected --No attention to other changes over time --Effects similar for those above and below minimum wage --High attrition rate, although attriters similar on most observables 	<p>Less convincing</p>
Mixed findings/no evidence of effects of minimum wage				
<p>Mixed evidence on health of working teenagers</p> <p>Details: Improved self-reported health for white women; worse health for Hispanic men. Focus on teenagers only, and two education groups. Better health for white women but not white men or Hispanic women (groups for whom wages increased); decline in health for Hispanic men (no wage effect, but employment declined).</p> <p>Averett et al. (2017)</p>	<p>CPS 1996-2014, US</p>	<p>Panel data analysis. No state-specific time trends because argued to reduce identifying variation. Control for other policies: TANF, ACA health care expansions. Show effects on hourly earnings, and some disemployment for white and Hispanic men. Wages increased for white men, and white and Hispanic women, but not black men, Hispanic men, or black women. Estimate models for slightly older and more-educated group (not specified) and find no effects.</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Shows that positive/negative health effects align with group not experiencing/experiencing employment declines --Shows no effects for older, more-educated workers less likely to be affected <p>Weaknesses</p> <ul style="list-style-type: none"> --Conditioning on working teenagers for estimating health effects could create bias against negative effects, but less problematic for teenagers who likely do not pay for health insurance or get it from work 	<p>Convincing</p>

Conclusion	Data	Research design	Strengths and weaknesses	Evidence?
<p>No impact on health of Hispanic women</p> <p>Details: No changes in self-reported health status, access to care, or use of preventive care, among low-educated Hispanic women.</p> <p>Averett et al. (2018)</p>	BRFSS and CPS, 1994-2015, US	Panel data analysis, including controls for individual characteristics, union coverage in the state, the unemployment and poverty rates, and other state policies. Results sometimes significant in particular specifications, but not consistent. Given many regressions and specification, does multiple hypothesis testing and finds no significant effects (but uses conservative Bonferroni method).	<p>Strengths</p> <p>--Analyzes similar questions in two data sets</p> <p>Weaknesses</p> <p>--Controlling for poverty rate may shut down channel of adverse effect</p> <p>--Conditioning on employment may create bias against finding negative effects</p> <p>--Does not explore sensitivity to trends</p>	Somewhat convincing
<p>No effects on self-reported physical or mental health</p> <p>Details: Increases in UK minimum wage had insignificant effects on mental or physical health. Signs vary, so not just a question of precision.</p> <p>Maxwell et al. (2022)</p>	UK Household Longitudinal Study (Understanding Society), UK	DD models using 2016-18 minimum wage increases. Uses detailed hourly wage information to identify affected workers. Conditions on workers. Ages 25-65. Treatment group is affected, control group (base case) is up to 120% above new minimum wage. Robust to variations in these definitions. Analyses for each year of increases. Establishes positive wage effects. Some evidence of differential prior trends, more so for mental health.	<p>Strengths</p> <p>--Shows impact for affected and not affected workers</p> <p>Weaknesses</p> <p>--Conditioning on working biases against negative effect</p> <p>--Potentially different prior trends in mental health</p>	Somewhat convincing
<p>Mixed results on worker (labor force) health</p> <p>Details: Minimum wage increases positively associated with access to care for some groups, negatively associated with access to care for other groups. Results for dietary quality mixed across groups. Results for health outcomes mixed across groups. Results overall point to reduced noninsurance or missed care due to cost. No effects on other health behaviors or outcomes.</p> <p>Narain and Zimmerman (2019)</p>	BRFSS 1993-2014, ages 21-64, US	Panel data approach. Rich policy controls. State and year fixed effects. Exclude some workers and non-employed (out of labor force). Limits to those with low education. Uses minimum wage divided by low-skilled average wage.	<p>Weaknesses</p> <p>--Problematic to divide minimum wage by average wage for two low-skilled occupations in two different periods, with some years after minimum wage increases, since minimum wage affects the averages</p> <p>--Excluding some non-employed can bias against finding negative effects</p> <p>--No comparison to less-affected group (like high-education)</p> <p>--Hard to interpret varying effects across groups</p>	Less convincing
Negative effects of minimum wage				
<p>Higher obesity/BMI, but a good deal of mixed evidence for other health outcomes, for working-age adults</p> <p>Details: No associations between current minimum wage and health; two-year lags associated with higher obesity and elevated BMI, especially for male and non-white or Hispanic adults. But some evidence of beneficial effects for some groups (self-reported health and hypertension for whites, non-Hispanics). Described as “mostly null results,” but the results that hold in the aggregate (rather than subgroups) – with 2-year lags – are higher obesity and elevated BMI. And in subgroup analyses for multiple outcomes, more evidence of adverse effects.</p> <p>Buszkiewicz et al. (2021)</p>	NHIS, 2008-2015 (restricted access), US	DDD, less-educated (HS or less vs. college-educated or more) 25-64 year-olds, with some policy controls. Some models with state linear trends. Multiple comparisons. Notes that estimates could be attenuated because many with high school education or less earn well above the minimum wage. Adjusts for multiple testing (false discovery rate). Lagged effects seem more appropriate for obesity.	<p>Strengths</p> <p>--DDD design to isolate effects on less-educated relative to more-educated</p> <p>--Robustness analyses</p> <p>Weaknesses</p> <p>--Large age range may include workers unlikely to be affected, even if low-education</p>	Somewhat convincing

Conclusion	Data	Research design	Strengths and weaknesses	Evidence?
<p>Health of workers (labor force) declines, mixed evidence for women</p> <p>Details: For low-skilled men, health declines, concentrated among unemployed; for women, worse general health and better mental health</p> <p>Horn et al. (2017)</p>	<p>BRFSS, 1993-2014, US</p>	<p>DD and DDD approach. Focus on less-skilled workers (without a college degree), 18-54. (No wage information to condition on, but that would condition on employment.) Fixed effects by state and year, and state trends. Use 2 placebo groups (70+ without college degree, and prime age (same as analysis sample) with college degree. Results robust to excluding trends. Results for placebos do not always show zeros, but do not show same results as for less educated.</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Focuses on less-educated vs. more-educated or older --Many robustness analyses <p>Weaknesses</p> <ul style="list-style-type: none"> --Excluding those not in labor force or long-term unemployed can bias against finding negative effects, but that cannot explain negative findings for general health --“Placebo” tests do not always indicate zero effects 	<p>Convincing</p>
Evidence from studies in other tables that focus on other dimensions of health (see other tables for full description)				
<p>Improved self-reported health for non-whites, females, married; Andreyeva and Ukert (2018)</p>				<p>Less convincing</p>

Table 2: Findings on Infant and Child Health

Conclusion	Data	Research design	Strengths and weaknesses	Evidence?
Positive effects of minimum wages				
<p>Lower incidence of low birthweight and post-neonatal deaths</p> <p>Details: \$1 increase in minimum wage lowers low birth weight births by 1-2% and post-neonatal mortality by 4%</p> <p>Komro et al. (2016)</p>	<p>National Vitality Statistics, 1980-2011, US</p>	<p>DD with state and year fixed effects. Some state-level controls, including poverty rate. Low birthweight result not robust to using lagged minimum wage, but lagged minimum wage could matter more for birthweight given 9 months gestation. Data monthly, so should have month fixed effects.</p>	<p>Weaknesses</p> <ul style="list-style-type: none"> --Including control for poverty rate overcontrols --No comparison/isolation for more vs. less affected --Fixed time effects do not correspond to frequency of the data. 	<p>Less convincing</p>
<p>Increases birthweight</p> <p>Details: Small but statistically significant increase in birthweight driven by increased fetal growth. \$1 increase in minimum wage during the year before birth boosts birthweight by 2 grams (.06%) among low-educated mothers, which authors characterize as small. Largest for young, married mothers. Claims does not occur through channels of smoking or prenatal care. (But prenatal care visits positive and significant without state trends.) Some evidence of adverse effects for single mothers.</p> <p>Wehby et al. (2020)</p>	<p>Vital Statistics Natality Files, 1989-2012, US</p>	<p>DD with state, year, and month fixed effects, focusing on less educated. Individual-level and state policy controls. Add 2 and 3 year lagged minimum wage variables, which presumably should not matter since effect is in utero, which is confirmed and is compelling evidence. Robust to including state trends. Falsification test using college educated. Also distinguishes people based on hours exposure to higher wage.</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Evidence of contemporaneous effects only and not lag is in this case compelling --Documents effects of less-educated, but not for more-educated --Robustness analyses 	<p>Convincing</p>
Mixed findings/no evidence of effects of minimum wage				
<p>Reduces height for age for children under 5 years old overall, but effects vary by regions</p> <p>Details: Adverse effects on height for age for children under 5 years old, for minimum wage in year of child's birth. 1% increase in minimum wage reduces height for age z scores by .1%. Effects for parents doing manual work. Negative effects in poorest countries and South Asia, positive effects in Latin America. Positive effects for parents in skilled sector. Estimate stronger for poorest quintile (on-line appendix). Estimate not stronger for less-educated parents, except in within-family design. And overall, cannot reject null of no effect. Results vary, generally consistent with adverse effect, but many not significant.</p> <p>Majid et al. (2016)</p>	<p>Demographic and Household Surveys, 1999-2013, 49 developing countries</p>	<p>Panel data analysis with country and year of birth fixed effects (although language unclear and refers to time trends). Individual controls (wealth, but not income). Also, mother fixed effects design (not clear what this addresses with policy variation). Restricts to those working in the formal sector only, non-public. Restricts to residents of urban areas, and mothers living with partners.</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Many different runs for groups more or less affected, potentially, and some consistent with effects where we would expect them more (but not always, and not shown which groups have pay more affected by minimum wages) --Many robustness analyses <p>Weaknesses</p> <ul style="list-style-type: none"> --Conditioning on father's employment in formal sector creates bias against negative effect --Difficult to interpret some of the variation in effects --Restricted sample for unclear reasons 	<p>Somewhat convincing</p>

Table 3: Findings on Diet and Obesity

Conclusion	Data	Research design	Strengths and weaknesses	Evidence?
Positive effects of minimum wage				
<p>Increases fruit and vegetable consumption and reduces obesity.</p> <p>Details: .12 elasticity of fruit and vegetable consumption with respect to minimum wage. Obesity declines. Estimates for less educated indicate no effect.</p> <p>Clark et al. (2020)</p>	BFRSS 1990-2017, US	DD and DDD with state and year fixed effects, and sometimes state-by-year fixed effects (since minimum wage varies monthly). Compares workers in low- vs. higher-income families. Repeated cross-sections require conditioning on employment. BFRSS does not include wages, so classifying more vs. less affected uses household income categories, which fails to account for hours and other workers in household. No effect for analysis of those with high school education or less, and no comparison to more educated (although authors assert DDD based on household income suffices). Estimates condition on employment (presumably to make sense of household income categories). Obesity measures not subjected to anything but core analysis.	<p>Strengths</p> <p>--Compares more vs. less affected based on household income</p> <p>--Robustness analyses</p> <p>Weaknesses</p> <p>--Classification of affected based on household income categories, not wages, can be very inaccurate (does not account for hours or other workers)</p> <p>--Omits DDD for less- vs. more-educated</p> <p>--Conditioning on employment (to classify by household income) creates bias against negative effect</p> <p>--Obesity analysis not subjected to as many analyses to establish causal interpretation</p>	Less convincing
<p>Lower BMI</p> <p>Details: Higher minimum wage reduces BMI. Larger effects at higher BMI. Calibration exercise consistent with this occurring via fast-food prices.</p> <p>Meltzer and Chen (2011)</p>	1984-2006 BRFSS, noninstitutional population, US	Panel data analysis with fixed state and year effects, and other controls, including income. Exploits state and federal minimum wage variation but role of declining real minimum wage is large. State trends (results robust).	<p>Strengths</p> <p>--Robustness analyses</p> <p>Weaknesses</p> <p>--Effects not stronger for most affected (low education and income); although study posits channel via fast-food consumption, which could make focus on more affected less important, the direct evidence is just the relationship between minimum wages and obesity</p> <p>--Link to fast-food prices is only indirect, via calibration, but not central to minimum wage effects on obesity</p>	Less convincing
<p>Increased calories, and increased nutritional content for low-income households</p> <p>Details: Households earning the minimum wage increase their calories purchased when minimum wage increases (elasticity = .4), primarily among households purchasing the least food initially (for which elasticity is larger). On average nutritional content does not increase, but it does for low-income households. Diet of higher-income households (based on pre-treatment calories consumed) worsens.</p> <p>Palazzolo and Pattabhiramaiah (2021)</p>	Nielsen Homescan panel data set 2007-2016, and proprietary data on content of nutrition labels, US	Compare response of purchases in lower-income vs. higher-income households, and households that purchased fewer vs. more calories. Use state and local minimum wage variation. DD and DDD research design. DDD design allows area-by-period fixed effects. Also do comparisons just on low-income households in treated and non-treated areas. Results robust to controlling for other policies (including SNAP and EITC receipt).	<p>Strengths</p> <p>--DDD design with comparisons between more- vs. less-affected households</p> <p>--Many robustness analyses</p> <p>Weaknesses</p> <p>--Uses household income to classify treated and control groups, which is endogenous</p> <p>--Conditioning on employment (although with low bar – 25% of time in panel) may create bias against finding negative effects</p>	Somewhat convincing

Conclusion	Data	Research design	Strengths and weaknesses	Evidence?
<p>Reduced stunting and anthropometric failure</p> <p>Details: Reduced stunting and anthropometric failure; no effect on underweight or wasting. Slightly larger effects for poorest households, non-agricultural/non-professional work.</p> <p>Ponce et al. (2018)</p>	<p>Demographic and Health Surveys 2003-2012, 23 Low- and Middle-Income Countries</p>	<p>DD with country and time fixed effects. Controls for child and parent characteristics and household wealth, and aggregated factors including health spending, urbanization, fertility, income, environment, and more. Tries to identify subsample of poorest households in which mother or partner working in non-agricultural sector, to isolate formal sector (not well, as authors admit).</p>	<p>Strengths</p> <p>--Assesses results for poorer (more-affected) subsample</p> <p>Weaknesses</p> <p>--Classification of more affected conditions on employment of at least one adult, which is endogenous --No attempt to show absence of results for unaffected, but unaffected share may be low in countries studied, and estimates larger for more-affected subsample</p>	<p>Somewhat convincing</p>
Mixed findings/no evidence of effects of minimum wage				
<p>Increases obesity and worsens diet, but improved self-reported health</p> <p>Details: Higher minimum wage increases probability of obesity and decreases fruit and vegetable intake; decreases days with functional limitations; no impact on health care access; results on weight and diet driven by older, married whites; improved self-reported health driven by non-whites, female, married. \$1 increase in minimum wage increases obesity by 1% and reduces daily fruit and vegetable servings by 2%. Increased smoking initiation for male, under 30, single, white. Fewer days with mental health problems among single women with HS degree (more educated, in their sample). Suggest less educated (LTHS) and women should be affected more. Presents many more subgroup analyses but does not really tie differences in results to more vs. less affected, except more binge drinking and risky drinking levels for those with less than a high school degree. Increased BMI for married and middle aged seems unlikely to be minimum wage effect.</p> <p>Andreyeva and Ukert (2018)</p>	<p>BRFSS 1993-2015, US</p>	<p>DD. Focus on broad subgroup (21-64, in labor force). Many individual-level controls, and ACA Medicaid expansions. Focus on those with high school degree or less. Looks at many subgroups, including varying by income levels.</p>	<p>Strengths</p> <p>--Many robustness analyses</p> <p>Weaknesses</p> <p>--No attempt to isolate effects for those more likely to be affected vs. those less affected, and some results appear for those less likely to be affected --Hard to make sense out of the subgroup results --In some analyses, condition on income, which is endogenous --Restricting to labor force can create bias against negative effect</p>	<p>Less convincing</p>
<p>No impact on dietary intake</p> <p>Details: Although wages increased more in Minneapolis after minimum wage ordinance implemented (but no difference in effects on household income, measured in categories), no detected change in daily consumption of fruit and vegetables, whole grain rich foods, or food high in added sugars.</p> <p>Chapman et al. (2021)</p>	<p>Collected data in two waves, from low-wage workers, about 300 in each city, US</p>	<p>DD to compare people working initially in Minneapolis, vs. Raleigh, NC, and Minneapolis minimum wage increase.</p>	<p>Strengths</p> <p>--Focus on low-wage workers appropriate</p> <p>Weaknesses</p> <p>--Small sample and high attrition rate (30% in 1 year) --Could be difficult to assess changes in household income because categories used</p>	<p>Somewhat convincing</p>
<p>Mixed evidence on effects on overweight/obese across low- vs. middle-income countries</p> <p>Details: Overweight/obesity prevalence when minimum wage was higher was higher in low-income countries with higher minimum wage, but lower in middle-income countries. Study of women only. 1% increase in minimum wage increases overweight/obesity prevalence by .1 and .03 percentage point in low-income countries, reduces them by .01 and .03 percentage point in middle-income countries.</p> <p>Conklin et al. (2016)</p>	<p>Demographic and Health Survey (DHS) of young and adult women in 27 countries, 2004-2006, aged 24-49, Low- and Middle-Income countries</p>	<p>Cross-sectional analysis of 27 countries with controls for individual and country confounders.</p>	<p>Weaknesses</p> <p>--Cross-sectional design, and data set has more years, which authors excluded, and could have done longitudinal estimation --Unclear who affected workers are because many workers are in informal sector --Younger ages excluded, but they may be most affected by minimum wage</p>	<p>Less convincing</p>

Conclusion	Data	Research design	Strengths and weaknesses	Evidence?
<p>Lowers underweight and increases obesity (smaller effect)</p> <p>Details: Higher minimum wage reduced underweight prevalence in women, effect grew over time. Higher minimum wage increased obesity, but effect did not grow over time. Effect on reducing underweight larger on average.</p> <p>Conklin et al. (2018)</p>	<p>Demographic and Health Survey (DHS) of adult non-pregnant women in 24 low-income countries, 2000-2014, 24 Low-Income countries.</p>	<p>Longitudinal analysis at country level, with individual and country controls, including health spending. Estimated with country random effects and linear time trends.</p>	<p>Weaknesses</p> <p>--Closer to cross-sectional design, with random rather than fixed country effects and linear time trends</p> <p>--Limited measurements on outcomes</p>	<p>Less convincing</p>
<p>No effect of minimum wage, via impact on fast-food prices, on obesity or overweight prevalence</p> <p>Details: No effect of fast-food prices on obesity or overweight prevalence, using minimum wage as IV for fast-food prices. No reduced-form effect of minimum wage.</p> <p>Cotti and Tefft (2013)</p>	<p>BRFSS 1990-2008, excluding pregnant women, other sources of price data, US</p>	<p>IV for fast-food prices with minimum wage. Conditions on income and employment so effect on price is isolated. Controls for other policies (food stamps participation, food sales taxes), year and county fixed effects, and county trends. Estimates results for full sample and younger, less-educated, low-income.</p>	<p>Strengths</p> <p>--Carefully done, with attention to endogeneity</p> <p>--May be no need here to focus on those most affected by minimum wages, since others consume fast food, but lower-income households may be more directly affected because of greater sensitivity to price or greater fast-food consumption; shows same results for younger, less-educated, low-income</p> <p>Weaknesses</p> <p>--Conditioning on income isolates price effect, which rules out income effects, which may be particularly relevant for interpretation of reduced-form estimates (less focused on price impacts)</p> <p>--All models include county trends</p>	<p>Somewhat convincing</p>

Table 4: Findings on Mental Health

Conclusion	Data	Research design	Strengths and weaknesses	Evidence?
Positive effects of minimum wage				
<p>Lower distress and depression symptoms</p> <p>Details: minimum wage increases associated with modest reductions in distress and depression symptoms. Results driven by males (many results for females in same direction but smaller and insignificant). Results robust for DD and DDD.</p> <p>Bai and Viall (2023)</p>	<p>Canadian National Population Health Survey 1994-2011, Canada</p>	<p>Individual level data covering 9 years. Individual and year fixed effects (individual largely absorbs region), aggregate economic controls, and individual-level controls including baseline mental health vulnerabilities. Also, DDD relative to more educated (more than HS education). Omits those who switch provinces. Restricts to those in the labor force.</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Shows effects arise for more-affected relative to less-affected group --Robustness analyses <p>Weaknesses</p> <ul style="list-style-type: none"> --Controls for unemployment rate, but not just for the less-educated for whom effects estimated --Restricting to labor force can bias against finding negative effects 	<p>Somewhat convincing</p>
<p>Decline in extreme distress and bad mental health</p> <p>Details: 10% increase in minimum wage associated with .4-.5 percentage point decline in likelihood of extreme distress, for those with no postsecondary education. Results driven by male sample. Also, reductions in bad mental health days (for men).</p> <p>Kuroki (2021)</p>	<p>BRFSS 2011-2019, US</p>	<p>Panel data estimator with fixed state and year effects. Low education, low income, ages 25-54. Controls for other individual characteristics and policies, but also poverty rate. Event-study type regressions also. Looks at “placebo” sample with at least some college education. Restricted to workers.</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Compares less-educated to more-educated group --Attention to parallel trends, and comparison to those with more education <p>Weaknesses</p> <ul style="list-style-type: none"> --Conditioning on poverty rate and on income overcontrols --Restricting to workers creates bias against finding negative effect --Virtually nothing significant in event studies for two outcomes 	<p>Less convincing</p>
<p>Lowered depressive symptoms</p> <p>Details: Introduction of national minimum wage reduced depressive symptoms; no impact on health behaviors. Effect attributable in part to lower financial stress.</p> <p>Reeves et al. (2017)</p>	<p>BHPS 1998-1999, UK</p>	<p>DD. Compares changes for recipients of minimum wage and low-wage but unaffected workers, or workers where firms did not increase minimum wage. Excludes 18-21 (lower minimum wage). Controls for worker and job characteristics, and individual fixed effects. Corroborated by evidence of reduced financial strain. Attention to prior trends. Excludes non-workers. No evidence of employment effects (but misses hiring changes).</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Compares affected to unaffected workers --Ties results to reduced financial stress --Robustness analyses <p>Weaknesses</p> <ul style="list-style-type: none"> --Focus on workers can create bias against negative effect --Results and samples appear non-replicable (see Kronenberg et al., 2017) 	<p>Less convincing</p>
Mixed findings/no evidence of effects of minimum wage				
<p>No impact on mental health</p> <p>Details: Introduction of national minimum wage had no impact on mental health.</p> <p>Kronenberg et al. (2017)</p>	<p>BHPS 1997-2000, including health questionnaire covering mental health, UK</p>	<p>Study introduction of new national minimum wage, effects on low-wage workers. Controls for worker and job characteristics, and individual fixed effects. Treatment group is those affected by minimum wage, control group is new minimum wage to 40% above. Second version based on question of whether wage increased to comply with new minimum wage (omitting those with very high wages). Much larger sample than Reeves et al. (2017), even for same years. Treatment and control groups defined differently, but authors say they cannot replicate their groups, come up with far more observations, and still find no impact of the minimum wage.</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Good research design with alternative treatment and control groups --Robustness analyses <p>Weaknesses</p> <ul style="list-style-type: none"> --Focus on workers can create bias against negative effect 	<p>Somewhat convincing</p>

Conclusion	Data	Research design	Strengths and weaknesses	Evidence?
Evidence from studies in other tables that focus on other dimensions of health (see other tables for full description)				
Fewer days with mental health problems among single women with HS degree (more educated, in their sample); Andreyeva and Ukert (2018)				Less convincing
Reduces emotional problems; Chen (2021)				Somewhat convincing
No effect on mental health; Maxwell et al. (2022)				Somewhat convincing
Better mental health for women, no impact for men; Horn et al. (2017)				Convincing
No impacts on mothers' stress or depression; Schneider et al. (2022)				Somewhat convincing

Table 5: Findings on Suicide

Conclusion	Data	Research design	Strengths and weaknesses	Evidence?
Positive effects of minimum wage				
<p>No effects on drug or alcohol-related mortality but decline in non-drug suicides.</p> <p>Details: 10% minimum wage increase reduces suicides of low-educated adults by 2.7%. Discontinuous drop in event-study estimates. Stronger results for women (not clear evidence, and not significant for men in event study). Effects not higher for minorities, despite higher exposure to minimum wage.</p> <p>Dow et al. (2020)</p>	<p>CDC Multiple Causes of Death, 1999-2017; CPS data to identify those more affected, US</p>	<p>State panel data; geocoded cause of death data from CDC. Event study models around time of minimum wage increases, and standard DD, including comparisons with more-educated people less likely to be affected, and cancer deaths. (Shows similar results for EITC.)</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Shows effect stronger for those more exposed to minimum wage (and differently, for those more exposed to EITC) --Test for parallel trends --Analysis of placebos --Robustness analyses <p>Weaknesses</p> <ul style="list-style-type: none"> -- Falsification test for cancer deaths is quite consistent with an effect on cancer (which would almost surely be spurious) 	<p>Somewhat convincing</p>
<p>Fewer suicides</p> <p>Details: \$1 increase in real minimum wage reduces annual state suicide rate by 1.9% (8,000 annually, on a national basis)</p> <p>Gertner et al. (2019)</p>	<p>2006-2016 CDC Web-based Injury Statistics Query and Reporting System, 2006-2016, US</p>	<p>Panel data with fixed year and state effects. Aggregate economic and health policy controls.</p>	<p>Weaknesses</p> <ul style="list-style-type: none"> --No effort to show effects stronger for those more affected by minimum wage --No focus on pre-trends, breaks in data (event study) 	<p>Less convincing</p>
<p>Fewer suicides</p> <p>Details: \$1 increase in minimum wage reduces suicides by 3.4% to 5.9%, statistically significant. 16-64 year-olds with high school education or less. Effects larger when unemployment rate higher. No effect for college educated.</p> <p>Kaufman et al. (2020)</p>	<p>National Vital Statistics, Bureau of Labor Statistics Local Area Unemployment Statistics, and Current Population Survey, 1990-2015, US</p>	<p>DD (really DDD), using low-educated as treatment group and high-educated as control, all for 18-64 year-olds. Controls for other policies, and unemployment rate.</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Focuses on less-educated more likely affected by minimum wage, in comparison to more-educated <p>Weaknesses</p> <ul style="list-style-type: none"> --No analysis of whether effects stronger for younger people more likely affected by minimum wage; likely that many fewer in older age ranges are affected --Unemployment rate may overcontrol given that outcomes are for 16-64 year-olds --Hard to interpret minimum wage effect differences at different unemployment rates, if unemployment rate is control 	<p>Somewhat convincing</p>
<p>Fewer suicides</p> <p>Details: Decrease in suicide rates of 25-64 men (15.8% decrease in monthly rate). Small increase in suicide rates of younger men (15-24).</p> <p>Rath et al. (2022)</p>	<p>Hong Kong Census and Statistics Department data, 2006-2016, Hong Kong</p>	<p>Interrupted time-series design. Introduction of minimum wage in 2011, \$3.61 US. 300,000 potential direct beneficiaries, plus indirect. One survey pointed to 30% increase in average hourly wage of low-income workers. Includes linear time trend. Controls for GDP growth and, in some cases, unemployment rate. No effect for accidents (not clear that is a placebo, since accidents occur at work).</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Robustness analyses <p>Weaknesses</p> <ul style="list-style-type: none"> --Time-series break clear, but also pre- and post-Great Recession --Suggest increase for young men may have been from protest movement beginning 2014, highlighting problem with research design --Challenges of interrupted time-series design --No assessment for more vs. less affected groups. 	<p>Less convincing</p>

Table 6: Findings on Family Structure and Children

Conclusion	Data	Research design	Strengths and weaknesses	Evidence?
Positive effects of minimum wage				
<p>Fewer adolescent births</p> <p>Details: Lower adolescent birth rates. \$1 higher minimum wage reduces adolescent births by 2%, driven by non-Hispanic whites and Hispanics.</p> <p>Bullinger (2017)</p>	Vital statistics data, 2003-2014, US	DD for change in real minimum wage, with state and year fixed effects and state-specific nonlinear time trends. Controls for demographics, policy variation (including family planning). Controls for unemployment rate but results not sensitive. No effect for 30-54 year-olds.	<p>Strength</p> <p>--Careful choices of controls (like family planning)</p> <p>Weaknesses</p> <p>--Time-series pattern might raise doubts; trend decline started in 2009 and continued to 2015, but federal minimum wage increased only until 2009</p> <p>--Placebo group likely too old to pick up other influences on births</p>	Somewhat convincing
<p>Increased maternal time with children</p> <p>Details: Positive effect on time low-educated mothers spend on primary childcare and enriching time; no effect among fathers. Largest effect for black mothers. Single mothers' time investment not affected. Effects concentrated among lowest-educated mothers. Most of gain is in enriching activities (10 out of 12 additional minutes of primary childcare time increase, from \$1 increase in minimum wage).</p> <p>Gearhart et al. (forthcoming)</p>	ATUS, 2003-2019, US	Standard panel data analysis, focus on less educated. Controls for economic conditions (results insensitive).	<p>Strengths</p> <p>--Shows effects concentrated among less-educated mothers ore likely affected</p> <p>Weaknesses</p> <p>--Patterns of reductions in work time across mothers by education and race do not line up very well with patterns of increases in time with children</p>	Somewhat convincing
<p>More time with children</p> <p>Details: \$1 increase in minimum wage associated with small increase (2.6%) in likelihood parents spend time caring for or helping with children on weekends, and more (2%) total time with children. Effects larger for mothers, especially non-employed. Unmarried and minority parents had 55% increase in activities related to child health. Mothers had 8% increase in child education-related activities. Effects concentrated among those with children 6-15. Some patterns unexpected – opposite effect for less-educated, and no effect for those in low-wage occupations.</p> <p>Morrissey (forthcoming)</p>	ATUS 2003-2018, US	Panel analysis. Controls for employment of person and spouse (if present), and EITC. DDD based on comparisons for less-educated vs. more-educated, and also in occupations more vs. less affected by minimum wage.	<p>Strengths</p> <p>--Analysis based on comparisons with more-educated and in occupations less likely affected by minimum wage</p> <p>Weaknesses</p> <p>--Controls for employment create shut down one channel of minimum wage effects</p> <p>--Some effects appear for non-employed, which could reflect greater resources of partner, or more time at home if non-employment caused by minimum wage; not pinned down and not a clear consistent pattern</p> <p>--Other patterns suggest effects may not be due to minimum wage</p>	Somewhat convincing
<p>Less child maltreatment and neglect</p> <p>Details: Higher minimum wage reduces child maltreatment. \$1 minimum wage increase lowers child neglect reports by 9.6%, for young and school-age children. Overall report rate also declines and other specific measures decline (not significantly). Results similar for federal and state minimum wage.</p> <p>Raissian and Bullinger (2017)</p>	National Child Abuse and Neglect Data System: Child File, 2004-2013, US	State panel data analysis. Controls for state policy, and aggregate unemployment rate. State and quarter fixed effects, and state linear trends.	<p>Weaknesses</p> <p>--Only reports models with trends included</p> <p>--No analysis of more- vs. less-affected groups</p> <p>--Unclear how authors estimate model for states where federal minimum wage prevails, with quarter effects¹</p>	Less convincing

Conclusion	Data	Research design	Strengths and weaknesses	Evidence?
Mixed findings/no evidence of effects of minimum wage				
<p>Less child maltreatment on one dimension, but not others</p> <p>Details: Higher minimum wage reduces child maltreatment self-reported by mothers (neglect). Effects generally significant only for children aged 3 or lower. No impact for many other child treatment measures (physical assault of children, psychological aggression, etc., or work-related stress), although similar result for material hardship measure.</p> <p>Ash et al. (forthcoming)</p>	<p>Fragile Families and Child Wellbeing Study, 1998-2000 Cohort, 2001-2010, US</p>	<p>Panel data analysis of mothers. Focus on single mothers (at start of panel) whose incomes are more sensitive to minimum wage. Controls for demographic characteristics and mother's household income. Controls for other state policies. No year controls (fixed effects or otherwise).</p>	<p>Strengths</p> <p>--Focus on group likely strongly affected (single mothers)</p> <p>Weaknesses</p> <p>--No year controls for common trends/changes --Controlling for household income shuts down effects via income, making interpretation unclear</p>	<p>Less convincing</p>
<p>Mixed and conflicting effects on father living with children</p> <p>Details: No impact overall on fathers living with children, but more positive when only fathers' earnings depended on minimum wage, negative effect when only mothers' earnings did, and no effect when both did.</p> <p>Emory et al. (2020)</p>	<p>CPS, 2007-2014, low-income families, US</p>	<p>Panel data analysis with fixed year effects but random state effects; authors report that Hausman test indicated little difference with state fixed effects (and authors reported to me that estimated minimum wage effects similar). Controls for detailed individual and state characteristics prior to minimum wage (to avoid effects of minimum wage). No relationship for placebo observations less likely to be affected by minimum wage. Imputation of characteristics of non-resident parent characteristics</p>	<p>Strengths</p> <p>--Shows evidence of no result for those with earnings unlikely to be affected --Careful use of controls --Confirms that minimum wage effects on earnings arise where expected</p> <p>Weaknesses</p> <p>--Absence of state fixed effects</p>	<p>Somewhat convincing</p>
<p>Later marriage, less divorce</p> <p>Details: \$1 increase in minimum wage predicts 3-6% decline in marriage entry and 7-15% reduction in divorce. First effect about 4 times as large in absolute terms.</p> <p>Karney et al. (2022)</p>	<p>CPS, ACS, 2004-2015, US</p>	<p>DD. Detrend all data, using only observations before each state's minimum wage increase, which implies detrending based on different years for different states. Then second trend after first minimum wage change. Use state means for married, divorced, etc., for households with at least one low-wage member.</p>	<p>Strengths</p> <p>--Focus on those more likely to be affected by minimum wage</p> <p>Weaknesses</p> <p>--Odd detrending procedure --Interpretation as strengthening low-income families is unclear; suppose later marriage implies more out-of-wedlock births? --No analysis of placebos, such as effects for higher earners --Conditioning on employment can bias estimates</p>	<p>Less convincing</p>
<p>Less aggression by parents, fewer behavioral problems for older children, more neglect of older children</p> <p>Details: Higher <i>local</i> minimum wage reduces spanking by mothers and fathers, and physical and psychological aggression by mothers. Evidence of reduced employment of mothers, and changes in weekend shifts that vary with ages of children. No evidence of effects on positive parenting behaviors. Older children exhibit fewer externalizing behavior problems when minimum wage increases. Higher minimum wage associated with more neglect of older children. Some results not robust to including city fixed effects and aggression results change sign and become positive. No or negative effect on household income, so attribute impacts to time allocation. No impacts on mothers' stress or depression.</p> <p>Schneider et al. (2022)</p>	<p>Fragile Families and Child Well-Being Study, 1998-2010, US</p>	<p>Panel data. Limit to low-education mothers. Demographic, labor market, and policy controls. City and year fixed effects, and includes city unemployment rate. Lagged dependent variable models, which differs from most literature. Comparison of some results for higher-education mothers.</p>	<p>Strengths</p> <p>--Some comparisons with higher-education mothers less likely affected</p> <p>Weaknesses</p> <p>--Use of lagged dependent variables with fixed effects creates bias; only limited results shown without these --Does not effectively sort out the conflicting results and specifications.</p>	<p>Somewhat convincing</p>

Conclusion	Data	Research design	Strengths and weaknesses	Evidence?
Negative effects of minimum wage				
<p>Lower test scores</p> <p>Details: Higher minimum wage reduces test scores of low SES children, with no effect on high SES children. \$1 minimum wage increase reduces math and reading scores by .1 to .19 standard deviations. Other evidence of deterioration in home environment. Stronger evidence for boys and whites.</p> <p>Regmi (2020)</p>	<p>NLSY79, including Child and Young Adult data, 1986-2008, US</p>	<p>Child fixed effects model for children with low-education mothers (which should eliminate need for state fixed effects). No significant effect on children with more-educated mothers. Also uses treatment group based on low parent earnings in previous year, with similar finding. Negative effects on home environment for those with low-education parents, but not high-education parents (less eating with child, less encouragement to pursue hobbies). Attention to pre-trends. Robust to state trends. Similar results using within-commuting zone variation.</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Robustness analyses --Distinguishes effects for those more vs. less likely to be affected, in two ways <p>Weaknesses</p> <ul style="list-style-type: none"> --Analysis based on low earnings conditions on employment, missing hiring changes; but creates bias against negative effect and cannot explain results 	<p>Convincing</p>

¹ I have asked the authors but received no response.

Table 7: Findings on Risky Behavior

Conclusion	Data	Research design	Strengths and weaknesses	Evidence?
Mixed findings/no evidence of effects of minimum wage				
<p>No increase in alcohol consumption; no impact on binge drinking</p> <p>Details: Evidence from Adams et al. does not hold up when data set expanded to longer period (1991-2013, vs. 1998-2006, with more minimum wage increases, and other analyses show no increase in alcohol consumption from higher income, and even modest declines. Also, no impact on binge drinking or self-reported drunk driving. Positive wage effects, negative employment effects, but no evidence of positive earnings effects.</p> <p>Sabia et al. (2019)</p>	<p>FARS of the NHTSA 1991-2013, CPS ORG 1991-2013, YRBSS and BRFSS (years vary by state), US</p>	<p>Controls for other policies (beer taxes, minimum blood-alcohol concentration (BAC) thresholds). (Same analysis as Adams, which this paper re-evaluates, but longer sample period, more outcomes. No third difference for drinking measures.)</p>	<p>Strengths</p> <p>--Robustness analyses</p> <p>Weaknesses</p> <p>--No third difference for drinking measures to compare more vs. less affected --Age-specific unemployment rate may overcontrol</p>	<p>Somewhat convincing</p>
Negative effects of minimum wage				
<p>More alcohol-related traffic deaths for teenagers</p> <p>Details: Higher minimum wage increases alcohol-related traffic deaths among teenagers (but not adults). 10% increase in minimum wage increases fatal driving accidents of 16-20 year-olds by 5-10%.</p> <p>Adams et al. (2012)</p>	<p>FARS of the NHTSA 1998-2006, US</p>	<p>DDD (informal): no effect for 26 and over. No prior trend diffs for 16-20 for states raising minimum wage vs. not. Controls for other policies (beer taxes, minimum blood-alcohol concentration (BAC) thresholds), and age-specific unemployment rate.</p>	<p>Strengths</p> <p>--Robustness analyses --Comparison to those less likely to be affected --Careful controls for other policies</p> <p>Weaknesses</p> <p>--Per Sabia et al. (2019), effect does not hold up over longer period with more minimum wage variation; Great Recession period in Sabia et al. paper could be influential --Age-specific unemployment rate may overcontrol</p>	<p>Somewhat convincing</p>
<p>More binge drinking</p> <p>Details: Minimum wage increases associated with more binge drinking. \$1 increase increases binge drinking by 9%. Effects driven by males.</p> <p>Hoke and Cotti (2016)</p>	<p>YRBS, 1991-2011, children 14-18, US</p>	<p>Standard panel data design. Detailed individual and policy controls, but not age-specific unemployment rate control. Controls for other risky behaviors (smoking and drinking). Binge drinkers 14 times more likely to drive drunk. Teenagers drive drunk a lot. Adds to Adams et al. by studying drinking directly.</p>	<p>Strengths</p> <p>--Robustness analyses --Shows results driven by males, who binge drink more</p> <p>Weaknesses</p> <p>--Weak test to ask if effects stronger where more teens work – results suggestive but not conclusive --Other risky behavior controls may overcontrol (but results insensitive to exclusion)</p>	<p>Somewhat convincing</p>
<p>More smoking and less smoking cessation</p> <p>Details: Increase in minimum wage raises prevalence of smoking and reduces smoking cessation among low-skilled workers. \$1 increase raises smoking by 2.3% and reduces cessation by 13.7%. Effects smaller for all low-skilled adults (owing to larger share out of labor force); not significant for smoking, but still significant for cessation. Latter effect larger for women, whites, and younger. (Much larger for younger workers, but less precise and not significant.) Rise in smoking driven by lower cessation (not more initiation). Suggestive evidence that increased income helps explain more smoking.</p> <p>Huang et al. (2021)</p>	<p>CPS Tobacco Use Supplement, 1998-2015, US</p>	<p>Standard panel data design. Robust to including/excluding state trends. Results robust doing DDD with high-education control group. Controls for state cigarette taxes and other policies important; effect small and insignificant without them. Analyses for employed only, and for all low-skilled.</p>	<p>Strengths</p> <p>--Comparison to those less likely to be affected --Results conditional on employment, and unconditional --Robustness analyses --Careful controls for other policies</p>	<p>Convincing</p>
Evidence from studies in other tables that focus on other dimensions of health (see other tables for full description)				
<p>More binge drinking; Andreyeva and Ukert (2018)</p>				<p>Less convincing</p>
<p>No effect on smoking; Reeves et al. (2017)</p>				<p>Less convincing</p>

Table 8: Findings on Crime

Conclusion	Data	Research design	Strengths and weaknesses	Evidence?
Positive effects of minimum wage				
<p>Lower recidivism for property and drug crimes</p> <p>Details: Higher minimum wage reduces recidivism for property and drug crimes, but not violent crimes, consistent with impact on revenue generating crime. 50-cent minimum wage increase reduces 3-year recidivism by 2.15%, from property and drug crimes. 3-year elasticity = -0.25 to -0.28.</p> <p>Agan and Makowsky (forthcoming)</p>	<p>NCRP 2000-2014, most states; November CPS 2004-2016, CPS ORG 1990-2009, US</p>	<p>DD. Detailed individual and state controls (including other policies). Not as clear a DDD is possible, unless we think there are released groups for whom minimum wage not very relevant. But effects not different for those with more vs. less education (HS vs < HS). Future minimum wage changes do not matter, helping rule out spurious effects. Similar results for federal variation in minimum wage. Evidence for property/drug but not violent crimes is a reasonable DDD.</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Finds effects for crimes for which effects of income more likely --Attention to sources of spurious effects --Robustness analyses <p>Weaknesses</p> <ul style="list-style-type: none"> --Difficult to identify unaffected group 	<p>Somewhat convincing</p>
<p>Reduction in property-related crime</p> <p>Details: Higher living wages reduced property-related crimes but not non-property crimes. Burglary and motor vehicle theft elasticities about -0.15.</p> <p>Fernandez et al. (2014)</p>	<p>UCR by city, 1990-2010, US</p>	<p>DD for cities adopting and not adopting living wages, with state controls. Uses variation within cities with formal living wage campaign, like Adams and Neumark (2005)</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Strong identification strategy comparing cities with living wage adoption to cities with formal but unsuccessful campaigns, and crimes more vs. less likely affected <p>Weaknesses</p> <ul style="list-style-type: none"> --Pays no attention to distinction between narrow contractor-only living wage laws and business assistance living wage laws, despite citing research that shows contractor-only laws have little effect on economic outcomes because they are so narrow --Results may be partly dependent on city trends; Table 5a (failed and derailed campaigns) does not show results without them; and trends appear important 	<p>Less convincing</p>
<p>Less crime</p> <p>Details: Crime fell more in areas with more low-wage workers before introduction of new national minimum wage</p> <p>Hansen and Machin (2002)</p>	<p>LFS at police force area level, April 1998-2000 (minimum wage introduced in 1999), UK</p>	<p>DD design, effects of introduction of national minimum wage in areas with varying share of low-wage workers (beneath new minimum wage). Area controls including unemployment rate. Non-violent and violent crime; hypothesis is that first should be affected. Verifies that wage effect bigger in more-affected areas (but not by much – only 17 pence).</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Use of variation in share affected by new minimum wage --Attention to pre-trends <p>Weaknesses</p> <ul style="list-style-type: none"> --Control for area unemployment rate (not prime age) is problematic, since this may control for effect on employment and only isolate the wage effect; but including this does not strengthen the effect. --Effects as large for violent crime, which could be failure of placebo test 	<p>Somewhat convincing</p>
Mixed findings/no evidence of effects of minimum wage				
<p>No effect on violent or property crimes; large increase in nonresidential burglaries</p> <p>Details: Little evidence of change in violent or most property crimes, although “dramatic” increase in nonresidential burglaries. No clear evidence of effects among particular sub-groups. Lack of any effect for violent crime may be good placebo. Also, evidence of increase in non-residential burglaries in analyses of other cities; interpreted as non-negative effect, but that is not so clear. Authors do not find negative tradeoffs in other crimes, and for San Francisco they also find increase in aggregate property crimes.</p> <p>Mitre-Becerril and Chalfin (2021)</p>	<p>UCR and ACS, 2010-2017, US</p>	<p>Synthetic DD estimator. Donors without state or local minimum wage. Some analyses with more restricted donor pool. Lots of evidence of robust result. Also, DD for county excluding Seattle, and metro area excluding Seattle; no evidence of corresponding effects, except perhaps (but weaker) for commercial burglaries. But not a good placebo since crime can occur in other areas.</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Careful synthetic control analysis --Many robustness analyses --Effects for other cities 	<p>Convincing</p>

Conclusion	Data	Research design	Strengths and weaknesses	Evidence?
Negative effects of minimum wage				
<p>More non-violent and violent crime</p> <p>Details: Higher minimum wage increases both non-violent and violent crime (coupled with evidence on employment/full-time/idle status, showing increased idleness and decreased employment); self-reported crime. One of the few papers to look at directly affected workers, which in employment literature is critical.</p> <p>Beauchamp and Chan (2014)</p>	<p>NLSY 97, 1997-2010, US</p>	<p>Estimate effect on those bound by a minimum wage increase (based on minimum wage increase and their prior wage). Include year effects and state effects in some specifications, and distinguish also low-wage workers generally, and whether the minimum wage changed (so identify effect from low-wage worker being bound by change). Individual controls, including main effects in "bound" variable. Because of research design, conditions on prior employment (to define who is bound).</p>	<p>Strengths</p> <p>--Focus on affected workers</p> <p>Weaknesses</p> <p>--Conditioning on prior employment may generate bias against negative effect, but would only reinforce findings; however, effects could differ for the non-employed</p> <p>--No attention to leads/pre-trends</p>	<p>Somewhat convincing</p>
<p>More property crimes</p> <p>Details: No evidence of crime reduction from higher minimum wage; instead, evidence that higher minimum wage increases property crime among 16-24 year-olds (elasticity = .2 to .3), and for those for whom minimum wage binds. No impact for violent crimes (placebo). NLSY data suggest increased property crime among those affected by minimum wage. Also, positive effect on crime for financial/business assistance living wage laws.</p> <p>Fone et al. (2023)</p>	<p>1998-2016 UCR, NIBRS, and NLSY, US</p>	<p>Panel and longitudinal data. Focus on younger, low-skilled workers for whom minimum wages are most likely to bind. Attention to trends, etc., and falsification tests for less-affected groups.</p>	<p>Strengths</p> <p>--Focus on affected workers for whom minimum wage binds, and comparisons to less-affected groups</p> <p>--Appropriate treatment of living wage laws (focus on business assistance laws)</p> <p>--Effects strongest for most relevant crime related to income (larceny), and petty crime (vandalism potentially associated with idleness)</p> <p>--Robust to new approaches to bias in two-way fixed effects models</p> <p>Weaknesses</p> <p>--Conditioning on prior employment may generate bias against negative effect, but would only reinforce findings; but effects could differ for the non-employed</p>	<p>Convincing</p>

Table 9: Findings on Mechanisms that Can Affect Health

Conclusion	Data	Research design	Strengths and weaknesses	Evidence?
Positive effects of minimum wage				
<p>Lower uninsurance rate</p> <p>Details: Uninsured rate decreases with higher minimum wage, for minimum wage hikes that occurred post-ACA. Medicaid expansions seem to mitigate the effect of minimum wage on uninsured rate for low-income households (via higher earnings, for example).</p> <p>Kuroki (2022)</p>	<p>2008-2018 Small Area Health Insurance Estimates (by income category), US</p>	<p>DD, event studies. Also DDD using highest-income group as control. Controls for income, poverty rates, and unemployment rates. Uninsured rate declines more when minimum wage goes up in non-expansion states, probably because higher earnings do not do as much to make workers ineligible in expansion states.</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Careful consideration of role of ACA Medicaid expansions --Attention to pre-trends/event study --Comparisons with less-affected groups <p>Weaknesses</p> <ul style="list-style-type: none"> --Controls for labor market conditions may overcontrol --In event studies, effects nearly as large up to 250% of poverty line, but somewhat larger for 0-138% of poverty line; in regressions, significant effects are above 200% of poverty line, raising questions about causal interpretation, although author suggest this may be because lower-income families rely on Medicaid 	<p>Somewhat convincing</p>
<p>Reduced likelihood of unmet medical needs</p> <p>Details: Higher minimum wages associated with reduced odds of reporting unmet medical need. Not associated with uninsurance.</p> <p>McCarrier et al. (2011)</p>	<p>BRFSS, 1996-2007, US</p>	<p>Pooled cross-sections with controls for individual (including employment), county, and state factors (including poverty rate and health and other policy variables). 18-64 year-olds. State fixed effects but time trends, not year fixed effects. Low education, but no placebo for higher education. Conditions on working or unemployed less than one year.</p>	<p>Weaknesses</p> <ul style="list-style-type: none"> --No focus on more- vs. less-affected workers --Removing those not employed and controlling for employment creates bias against finding negative impact --Conditioning on poverty rate may overcontrol --Not correct panel data analysis (no year fixed effects) 	<p>Less convincing</p>
Mixed findings/no evidence of effects of minimum wage				
<p>Lower employer-sponsored health insurance, but no effect on overall coverage</p> <p>Details: \$1 increase in minimum wages reduces probability of coverage by .99 percentage point in families below 300% of the federal poverty line. Reductions for both workers and dependents. No effect on overall coverage, likely because of expanded Medicaid coverage, although latter effects less robust (possibly due to changes in survey questions).</p> <p>Dworsky et al. (2022)</p>	<p>CPS 2005-2016, US</p>	<p>Panel data with fixed state and year effects. Controls for public health insurance expansions using simulated instruments. Estimates substitution towards Medicaid. Focus on families below 300% of federal poverty line, working age adults, at least one worker in previous calendar year.</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Careful accounting for (and study of) public health insurance --Many robustness analyses <p>Weaknesses</p> <ul style="list-style-type: none"> --Conditioning on employment in previous calendar year could understate effects, but authors report no employment effect --Families below 300% of poverty line may be too broad, but some results similar using 200% threshold --No placebo analysis 	<p>Somewhat convincing</p>
<p>No relationship of minimum wage with insurance status or unmet medical needs</p> <p>Details: No evidence of cross-sectional relationships.</p> <p>McCarrier et al. (2010)</p>	<p>BRFSS 2004, US</p>	<p>Cross-sectional analysis with multiple controls for individual (including employment), county, and state factors. Restricted to lower education. But no placebo analysis for more educated.</p>	<p>Weaknesses</p> <ul style="list-style-type: none"> --Cross-sectional and hence not causal (acknowledged by authors) --No focus on more- vs. less-affected workers --Conditioning on labor market characteristics implies adverse effects could be understated; similar problem from conditioning on employment (although includes unemployed, and not clear whether all non-participants excluded) 	<p>Less convincing</p>
<p>No relationship with job fatalities</p> <p>Details: No significant relation between higher state minimum wages and fatal occupational injuries in pooled cross-sections.</p> <p>Merrill-Francis et al. (2022)</p>	<p>Census of Fatal Occupational Injuries, 2003-2017, US</p>	<p>Panel data analysis, but omits state effects and year effects (only year trends); attributes decision to high collinearity. Controls for state factors, including poverty rate, and broad industry composition. Injuries could decline due to lower employment or hours (but conditions on these); could increase due to less investment in safety.</p>	<p>Weaknesses</p> <ul style="list-style-type: none"> --Conditioning on poverty rate may condition on hours and employment and hence mask effect (could mask positive effect if lower employment reduces injuries) --Controlling for industry mix has same problem – could control for lower employment in risky industries --No state or year fixed effects 	<p>Less convincing</p>

<p>No reduction in unmet medical care needs or private health insurance</p> <p>Details: No evidence that higher minimum wages reduced health insecurity (unmet medical care needs, private health insurance), among the working age (16-64) or among workers. Mixed evidence on exit from or exit into public health insurance.</p> <p>Sabia and Nielsen (2015)</p>	<p>SIPP covering 1996-2007, US</p>	<p>Panel data with fixed state and year effects. Controls for individual characteristics, prime-age male unemployment rate and average wage, and state policies. Some models with state trends, and some models for transitions. Contrast between more and less affected (education, age, race). Also analyzes effect on other economic outcomes.</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Careful panel data analysis including looking at transitions --Robustness analyses --Contrast between more and less affected. <p>Weaknesses</p> <ul style="list-style-type: none"> --Fails to consider constrained vs. unconstrained employers (Marks, 2011) --Effect on unmet medical need sometimes positive for older and more-skilled group 	<p>Somewhat convincing</p>
<p>No effect on employer health insurance coverage for low-skilled workers</p> <p>Details: No effect on employer health insurance coverage for low-skilled workers. Spurious evidence of positive effects using data before 1986, with no state minimum wage variation (and no year fixed effects); effects same for “unaffected” group. In later period with state variation, no effect. Similar results with NLSY79.</p> <p>Simon and Kaestner (2004)</p>	<p>CPS, NLSY 1979-2000, US</p>	<p>DD analysis, state and year fixed effects, controls for individual characteristics and state economic conditions. Results for groups likely affected, and not affected (age and education), confirmed in effects on wages. Some models without year fixed effects.</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Contrast between more and less affected. --Shows parallel results for wages <p>Weaknesses</p> <ul style="list-style-type: none"> --Fails to consider constrained vs. unconstrained employers (Marks, 2011) 	<p>Somewhat convincing</p>
<p>Negative effects of minimum wage</p>				
<p>Increased hygiene violations in restaurants</p> <p>Details: Minimum wage increase in Seattle increased hygiene violations in Seattle vs. Bellevue (control). 25-cent increase raises total and less severe violations by 8%. Results appear driven by employment reductions.</p> <p>Chakrabarti et al. (2021)</p>	<p>2012-2016 data on inspections from King County Food Inspection Reporting System, US</p>	<p>DD between city raising minimum wage and city not raising minimum wage, including with establishment fixed effects. Control city similar on many dimensions, same county, same inspection criteria, etc. Event study, attention to pre-trends. Similar results with alternative control city (NY). Notes that no tip credit in WA state implies higher minimum wage for restaurant workers has large impact on cash wages.</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Good DD design --Robustness analyses, including alternative control group <p>Weaknesses</p> <ul style="list-style-type: none"> --Analysis predates ACA, which can reduce impact of passing Medicaid eligibility thresholds 	<p>Convincing</p>
<p>Decline in Medicaid participation</p> <p>Details: Income increases push some workers beyond eligibility for Medicaid, reducing Medicaid eligibility and hence participation. Declines in Medicaid not associated with transitions to other health insurance (uninsurance increases).</p> <p>Clemens and Wither (forthcoming)</p>	<p>2008, 2004, 2001, and 1996 SIPP panels, US</p>	<p>Estimates changes in response to 2009 federal minimum wage increase. Analysis restricted to low-wage workers 55 and under (to avoid Medicaid eligibility based on disability). States affected in this period had low Medicaid eligibility thresholds; effects larger (moderately) in earlier periods. Robust to inclusion of proxies for Great Recession severity. Effect similar (stronger) not conditioning on employment post-minimum wage increase.</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Results similar conditioning on transitions in periods for similar types of workers in same (low threshold) states in other periods --Robustness analyses 	<p>Convincing</p>
<p>Less exercise and personal health time</p> <p>Details: Higher minimum wage reduces exercise and total personal health time. \$1 increase reduces these by 13 and 20 minutes, respectively (out of about 1 hour and 2 hours, respectively). Decline fully reallocated towards leisure time. Driven by employed males. Effects on weekdays, not weekends, consistent with them occurring for working people. Time partly devoted to socializing, which could be enabled by higher earnings (but also watching television). Increased leisure time could improve mental health.</p> <p>Lenhart (2019)</p>	<p>ATUS 2003-2017, US</p>	<p>DD models. Confirmed by two DDD models. Focus on low-educated, 18-64. Also looks at time on education, work, and child-care. Controls for individual characteristics and other policies. Considers state trends (not sensitive). Does DDD for retired (seems less compelling), and more educated.</p>	<p>Strengths</p> <ul style="list-style-type: none"> --Good DD and DDD design that compares effects for more- and less-affected groups --Robustness analyses <p>Weaknesses</p> <ul style="list-style-type: none"> --Puzzling that effects occur with 2-3 year lag; inconsistent with author’s motivation to study time use to detect effects on healthy behavior early, whereas health effects can be slower to emerge 	<p>Somewhat convincing</p>

<p>Lowers employer-provided health insurance</p> <p>Details: Lowers employer-provided health insurance for firms not constrained by IRS benefit non-discrimination laws (smaller firms); no effect on other firms. For unconstrained firms, reductions in health insurance concentrated on low-skilled workers and is predominantly in low-skill industries. Results paralleled in likelihood that worker pays part of the cost of health insurance. Similar results for relative minimum wage measure.</p> <p>Marks (2011)</p>	<p>March CPS 1988-1993 and 1998-2005, US</p>	<p>DD with individual controls, state and year fixed effects. Non-discrimination laws only affect firms that self-insure, proxied by large firms (more than 500), based on other data. Implies that for some firms, higher-wage workers are invalid control. Interaction between minimum wage and low education indicators, and estimates separately for large and small firms. Conditions on working, which makes sense to study employer-provided health insurance.</p>	<p>Strengths</p> <p>--Careful distinction between affected and unaffected firms due to policy</p> <p>Weaknesses</p> <p>--Medicaid could pick up some of the decline in employer-provided health insurance. Per other work, more likely post-ACA in expansion states, so unlikely a problem for this study, but result could be a little less important contemporaneously.</p>	<p>Convincing</p>
<p>Evidence from studies in other tables that focus on other dimensions of health (see other tables for full description)</p>				
<p>No impact on health care access of Hispanic women; Averett et al. (2018)</p>				<p>Somewhat convincing</p>

Table 10: Summary Table on Minimum Wage Effects

Behaviors/Outcomes	Research findings/assessment	More likely direction of effect
Adult and Teen Health	Stronger evidence of mixed results or adverse effects	Mixed/Adverse
Infant and Child Health	Evidence mixed, but leans towards positive effects	Beneficial
Diet and Obesity	Evidence of both positive and null effects	Beneficial/Mixed
Depression and Mental Health	Evidence of both positive and null effects	Beneficial/Mixed
Suicide	All studies, some of which are convincing, point to fewer suicides	Beneficial
Family Structure and Children	More time of mothers with children	Beneficial
	More compelling evidence on treatment of children is mixed	Mixed
	More likely fathers live with children, but evidence less compelling	Beneficial
	Lower test scores for children	Adverse
Risky Behavior	Contradictory evidence on drinking and drunk driving fatalities, but more evidence of adverse effects	Adverse
	More smoking	Adverse
Crime	Compelling evidence of effects in different directions	?
Mechanisms that Can Affect Health	More compelling evidence points to declines in health insurance, perhaps mitigated by ACA in recent years	Adverse
	No effect on unmet medical needs	No impact
	Exercise, restaurant hygiene	Adverse

Table 11: Summary Table on Minimum Wage Effects based on Studies Classified as “Convincing”

Behaviors/Outcomes	Research findings/assessment	More likely direction of effect
Adult and Teen Health	Lower absenteeism; mixed evidence on health of working teenagers; lower worker health	Mixed
Infant and Child Health	Increased birthweight	Beneficial
Diet and Obesity	None classified as “convincing”	?
Depression and Mental Health	Better mental health for women	Beneficial
Suicide	Fewer suicides	Beneficial
Family Structure and Children	Lower test scores for children	Adverse
Risky Behavior	More smoking	Adverse
Crime	No effects; increases in property crimes	Mixed; adverse
Mechanisms that Can Affect Health	Worse restaurant hygiene; lower Medicaid participation; less employer-provided health insurance	Adverse