

Compliance Strategies Evaluation Literature and Database Review

Final Report

May 2020

Sarah Dolfin, Nan Maxwell, Alix Gould-Werth, Armando Yañez, Jonah Deutsch, Libby Hendrix

Submitted to:

Chief Evaluation Office
U.S. Department of Labor
200 Constitution Avenue, NW, Room S2312
Washington, DC 20210
Project Officer: Jessica Lohmann
Contract Number: DOLQ129633249

Submitted by:

Mathematica
1100 1st Street, NE, 12th Floor
Washington, DC 20002-4221
Telephone: (202) 484-9220
Facsimile: (202) 863-1763
Project Director: Sarah Dolfin
Reference Number: 50519

DISCLAIMER

This report was prepared for the U.S. Department of Labor (DOL), Chief Evaluation Office by Mathematica Policy Research, under contract number DOLQ129633249. The views expressed are those of the authors and should not be attributed to DOL, nor does mention of trade names, commercial products, or organizations imply endorsement of same by the U.S. Government.

ACKNOWLEDGMENTS

The authors acknowledge several people who contributed to and supported this research. Karen Livingston in the Wage and Hour Division (WHD) and Deborah Martierrez, Sam Rowe, and Jessica Lohmann in the Chief Evaluation Office provided guidance and support throughout the project. Before she returned to WHD, Libby Hendrix worked closely with us as a consultant to conceptualize how strategies might be evaluated.

WHD staff including Karen Livingston, Brandon Brown, Michael Kravitz, Naixa Franquiz, Sara Johnson, and Dan Weeks provided insights and discussion of WHD compliance strategies as context for this report. Matthew Johnson provided very helpful feedback on the draft.

From Mathematica, Joshua Haimson reviewed the report and provided comments that greatly enhanced its quality. Sheena Flowers helped prepare it, and Patricia Ciaccio and Donna Verdier provided editorial assistance.

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

 CONTENTS

ABSTRACT	ix
EXECUTIVE SUMMARY	xi
I. INTRODUCTION.....	1
A. WHD uses evidence to promote compliance from many angles.....	2
1. WHD strategic priorities aim to maximize the impact of resources	3
2. Other strategies could be used to promote compliance	4
B. A conceptual framework guided the structure of the review	5
C. The review was designed to be broad.....	7
D. The organization of the report aligns with research questions.....	9
II. THEORIES OF EMPLOYER BEHAVIOR	11
A. Rational choice theories support the need for enforcement strategies.....	11
B. Social theories point to the potential of compliance assistance strategies	13
C. Behavioral theories suggest small changes in a compliance strategy can influence compliance	14
D. Summary	15
III. STRATEGIES FOR INFLUENCING EMPLOYER BEHAVIOR	17
A. Enforcement can create powerful incentives to comply with laws and regulations	17
B. Compliance assistance can provide guidance	19
C. Partnerships and collaborations might encourage compliance.....	20
D. Public awareness can build compliance.....	21
E. Summary	21
IV. METHODS AND DATA AVAILABLE FOR RESEARCH.....	23
A. Analytic methods use a variety of data sources to address a range of research questions	24
1. In-depth interviews with employers help determine why they made decisions	24
2. Case studies frequently describe employers' experiences with compliance	25
3. Descriptive quantitative approach shows compliance patterns	25
4. Quasi-experimental designs capture how strategies relate to compliance.....	26
5. Experiments capture compliance impacts of interventions.....	28

IV.	<i>(continued)</i>	
	B.	Available databases expand the scope of compliance research 31
	1.	Compliance data can provide key outcome measures 32
	2.	Industry- and business model-specific data can describe the business landscape 32
	3.	Economic and social context data can describe the local environment 34
	4.	Other compliance outcomes can describe related behaviors 35
	5.	State and local data may be valuable 35
	C.	Summary 35
V.		PROMISING DIRECTIONS FOR RESEARCH..... 37
	A.	Summary of review 37
	1.	What theories have been developed to predict employer compliance with laws and regulations? 37
	2.	What strategies have been found to be effective in addressing employer noncompliance and promoting employer compliance?..... 38
	3.	What methods and data can be brought to bear to assess employer compliance with WHD laws and regulations? 38
	B.	Promising directions for research 39
	1.	Gaps in knowledge about effectiveness of compliance strategies 39
	2.	Additional gaps in knowledge about behavioral interventions 42
		REFERENCES..... 45
		APPENDIXA-1

TABLES

IV.1	Research questions, methods, and data for employer compliance	23
------	---	----

FIGURES

I.1	A model for changing employer decision making and behavior	6
I.2	Conceptual model of potential spillover effects among employers.....	7

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

ABSTRACT

The U.S. Department of Labor (DOL)'s Chief Evaluation Office, in partnership with the Wage and Hour Division (WHD) contracted with Mathematica Policy Research to synthesize existing literature and data related to WHD compliance strategies. To ensure this work builds from existing knowledge, Mathematica reviewed documents, literature, and databases to answer the overarching research questions, "What is currently known about effective compliance strategies, and what are promising directions for research that could fill in gaps in this knowledge?" The review protocols made sure that a comprehensive set of materials were uncovered, and narrow inclusion criteria ensured that results would be specifically tailored to WHD's mission.

The literature review included theories and evidence of effectiveness for specific compliance strategies. It showed how rational choice, social, and behavioral theories provide useful ways to think about how employers make decisions about compliance. It also uncovered a plethora of research indicating that, in general, enforcement strategies (particularly investigations) and publicity (or public awareness) can improve employer compliance. A relatively small body of research shows support for compliance assistance strategies that increase employers' awareness about compliance, although little evidence exists on whether this awareness translates into increased compliance. Mixed evidence exists on the effects of partnerships and collaborations on compliance. Finally, natural field experiments of behavioral interventions have shown that small changes in materials or processes can increase compliance with laws and regulations. Because this research focused in a few regulatory areas—in particular, the Environmental Protection Agency, Occupational Safety and Health Administration, and tax regulations—results may be specific to those areas and may not always apply to compliance in WHD or other regulatory contexts.

The review also uncovered methods and databases that might be used to assess the effectiveness of WHD strategies and behavioral interventions in improving employer compliance. Typically, experiments have been used to study behavioral interventions, quasi-experimental designs to evaluate compliance strategies, and descriptive methods to understand patterns of compliance. Questions about prevailing compliance rates can be indirectly answered using proxy measures of violations inferred from people's reporting of wages and hours. Specialized databases can help address questions about the outcomes of compliance strategies in different industries and business models.

Finally, the review uncovered gaps in knowledge that might be suitable for research to build knowledge about the potential of WHD strategies or interventions to increase compliance. Knowledge gaps exist in understanding:

- The effectiveness of compliance assistance and partnerships and collaborations
- The factors associated with compliance when self-monitoring or third-party monitoring programs are implemented
- The effectiveness of strategies to achieve deterrence effects within specific industries
- How to increase compliance with laws and regulations that WHD enforces
- How behavioral interventions can be used to increase compliance among employers

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

EXECUTIVE SUMMARY

The statutes that the Wage and Hour Division (WHD) of the U.S. Department of Labor (DOL) enforces provide core protections to more than 143 million workers in more than 9.8 million establishments throughout the United States and its territories. The sheer scope of this responsibility calls for an evidence-based approach to compliance to help the agency monitor and evaluate whether its strategies effectively and efficiently increase compliance. As part of this effort, DOL’s Chief Evaluation Office (CEO), in partnership with WHD, contracted with Mathematica Policy Research to synthesize existing literature and data related to WHD compliance strategies. To ensure this work builds from the existing knowledge base on compliance, enforcement, and behavioral interventions, Mathematica conducted a review of academic and nonacademic literature and databases housed outside WHD to answer the overarching research questions, “What is currently known about effective compliance assistance strategies, and what are promising directions for research that could fill in gaps in this knowledge?”

The review uncovered a large set of literature and databases related to employer compliance with WHD laws and regulations. Of interest were studies that involved (1) an outcome (voluntary compliance for violators, deterrence for nonviolators, severity of violations), industry (hotel/motel, restaurants, construction, agriculture), or context of interest to WHD; (2) a strategy or factor that might affect employer behavior related to compliance; and (3) up-to-date information. Because the identified research largely focused on just a few regulatory areas—in particular, the Environmental Protection Agency, Occupational Safety and Health Administration, and tax regulations—results may be specific to those regulatory areas and may not always apply to compliance in WHD or other regulatory contexts.

A. Key findings about theories of employer behavior

The review identified three predominant theories of employer behavior—rational choice, social, and behavioral theories—that could offer useful ways for thinking about how employers make compliance decisions. Each theory highlights key factors that influence how employers make compliance decisions. When contemplating compliance strategies, WHD could consider accounting for and addressing these factors.

- **Theories grounded in rational choice highlight costs and benefits.** The perceived benefits and costs of noncompliance (including the certainty of detection, size of penalties, and damage to reputation) can affect employer choices that drive compliance behavior. Noncompliant employers may continually adjust their behavior to evade detection of violations; regulators may have to continually change tactics.
- **Social theories emphasize the importance of the larger social context in making decisions.** This larger social context can include the environment in which decisions are made, social norms and culture



Theories about employer behavior

Rational choice. Employers comply with laws and regulations when the costs of noncompliance outweigh its benefits.

Social. An employer’s decision to comply is driven by the context in which that decision is made.

Behavioral. People’s tendency to systematically miscalculate benefits and costs can produce misleading predictions from rational choice theories.

that set expectations about behaviors, perceptions about self or others, and ethical views about behaviors.

- **Behavioral theories address cognitive habits.** In certain situations, entities sometimes act in ways that appear to be inconsistent with predictions made from weighing the benefits and costs of the action. Such situations may arise with cognitive biases, when irrelevant or complex information is introduced, and when procrastination and loss aversion influence decision making.

Employer decisions can be considered through these theories, but a wider understanding of the potential effectiveness of a compliance strategy might also require a solid understanding of a given industry structure and business model. Specifically, some theories might be more relevant to specific situations, industries, or business models than others.

B. Key findings about strategies for influencing employer behavior

Our review uncovered notable patterns in the evidence of effectiveness of compliance strategies. It focused on four compliance strategies: enforcement, compliance assistance, partnerships and collaborations, and public awareness (see text box). Although studies, in general, examine the effectiveness of these as distinct strategies, they can overlap in their application. For example, compliance assistance can be delivered through partnerships, and both compliance assistance and collaborations can raise public awareness. The review showed the following for each strategy:

- **Enforcement.** A relatively large body of research shows that enforcement strategies, particularly investigations, can be effective in improving employer compliance with laws and regulations. However, evidence is mixed on whether investigations are effective without a credible threat of penalties.
- **Compliance assistance.** A relatively small body of research has examined strategies that provide employers with information to promote voluntary compliance. Although some evidence exists that public awareness or education efforts can increase knowledge about laws and regulations, little evidence exists on whether this knowledge translates to increased compliance.
- **Partnerships and collaborations.** Mixed evidence exists on the effectiveness of strategies in which stakeholders other than the employer and government, such as external monitors and social groups, attempt to influence compliance decisions of employers.
- **Public awareness.** Research shows that publicizing violations by specific employers is an effective complement to other enforcement approaches, amplifying their effects.



Compliance strategies

- **Enforcement.** Investigations, potentially followed by penalties or litigation
- **Compliance assistance.** Information and tools to promote voluntary compliance
- **Partnerships and collaborations.** Building employer relationships or engaging an organization to increase compliance
- **Public awareness.** Increasing knowledge of and media attention to labor standards laws

In addition, natural field experiments of behavioral interventions have shown that small changes in materials or processes can increase compliance with laws and regulations. Most studies have involved changes designed to increase individuals' compliance with regulations and requests. A few studies, however, have focused on employers' compliance with laws and regulations in the tax and health and safety areas. Most studies have shown that clear communication and references to social norms (in support of social theories) can increase compliance.

C. Key findings about methods and data available for research

Researchers typically use quantitative methods to address research questions about the outcomes of compliance strategies and behavioral interventions and qualitative methods to answer research questions about why and how employers comply with laws and regulations. Methods are tailored to the questions asked. In general, experiments are used to study behavioral interventions embedded in a compliance strategy but not to evaluate the general strategy, because random assignment usually is not feasible; regulatory agencies must consistently enforce laws and regulations, which prevents assignment to a control group that is not subject to regulations. Descriptive methods are well suited to understanding patterns of compliance, and quasi-experimental designs can frequently take advantage of changes in policies or activities to estimate impacts of compliance strategies. When employers' behaviors can be observed both before and after policy changes, fixed-effects models can be useful, and when groups of employers exist who are and are not subject to such changes, difference-in-differences models can be useful.

Several types of databases housed outside WHD might be useful in evaluating compliance strategies, depending on the research questions asked and the analytic method chosen. Questions about the impacts of WHD strategies on compliance rates cannot be answered solely using data on the nonrandom group of employers selected for investigations. Instead, they require data covering a population of employers (for direct measures of compliance) or individuals (for indirect measures of compliance). Questions about the outcomes of compliance strategies in industries and business models can draw on databases containing information on industry inputs, outputs, business closures, and worker demographics, all of which could identify competitive pressures driving employer behavior in those specific industries or for those specific business models. A multitude of different databases can be used to enhance analysis of WHD internal databases by providing variables to capture key contextual factors.

D. Promising directions for research

The review uncovered five gaps in knowledge about the effectiveness of compliance strategies. These gaps might be suitable for research that can build knowledge about the potential of WHD strategies or interventions to increase compliance. Specific knowledge gaps exist in understanding:

1. **The effectiveness of strategies including compliance assistance as well as partnerships and collaborations.** Little research exists on the effectiveness of these two strategies. Because WHD has adopted practices in each, additional research might evaluate specific versions of them.

2. **The factors associated with compliance when self-monitoring or third-party monitoring programs are implemented.** Mixed evidence exists on the effectiveness of self-monitoring programs, perhaps because some types of programs are effective and others are not. Existing research did not speak to the types and extent of efforts needed to maintain such programs. Therefore, research might focus on the factors associated with successful compliance and maintenance for specific types of programs.
3. **The effectiveness of tailoring strategies to specific industries and business models.** While research suggests that tailoring enforcement to specific industries and business models can be effective, little evidence exists about the effectiveness of similarly tailoring the use of other strategies such as partnerships and collaborations or compliance assistance. Research could examine the effects of using compliance assistance or partnership strategies in a way that leverages an industry's structure or business relationships.
4. **How to alter employer behaviors (not individual behaviors) to increase compliance with laws and regulations.** Research has focused on identifying interventions that influence individuals—rather than employers—to comply with laws and regulations. Research could investigate whether behavioral interventions that have been shown to be effective in influencing individual decision making are also effective in influencing employers.
5. **How behavioral interventions can be used to increase compliance among employers.** Much of the research on behavioral interventions has focused on small behavioral changes, yet WHD compliance efforts frequently use multi-pronged approaches. Research on studying bundles of behavioral components might provide insights about the effectiveness of different combinations of interventions.

I. INTRODUCTION

The mission of the Wage and Hour Division (WHD) of the U.S. Department of Labor (DOL) is to promote and achieve compliance with labor standards to protect and enhance the welfare of the nation's workforce. The statutes that WHD enforces to support these standards provide core protections to potentially more than 143 million workers in more than 9.8 million establishments throughout the United States and its territories (WHD website). Violations of the laws and regulations WHD enforces disproportionately affect workers who are members of vulnerable demographic groups, although they are also common among workers in the middle of the income distribution (Milkman 2014). Small employers are the most frequent violators of wage and hour violations; however, large corporations also commit such violations (Green 2017). Although it is challenging to estimate precise numbers of violations (Milkman 2014), both surveys of literature (McGrath 2005) and direct estimates suggest that violation rates might be high: about 1 in 20 workers in California and New York (Eastern Research Group 2014) and 1 in 4 urban, low-wage workers in Chicago, Los Angeles, and New York City experience violations each week (Bernhardt et al. 2009).

The sheer scope of WHD's responsibility calls for an evidence-based approach to compliance. Data, research, and evaluation inform WHD compliance strategies and help the agency effectively use resources to monitor and evaluate whether it applies its strategies effectively and efficiently. DOL's Chief Evaluation Office, in partnership with WHD, contracted with Mathematica Policy Research to conduct evaluation research on compliance strategies through the WHD Compliance Strategies Evaluation. The research will result in (1) a compliance evaluation study that will be designed and executed to assess the effectiveness of WHD compliance strategies and provide a continuous evaluation framework to support WHD's ongoing learning and improvement using a range of outcome measures; and (2) the design of a behavioral intervention related to WHD compliance assistance.

To ensure that the WHD Compliance Strategies Evaluation builds from the existing knowledge base on compliance, enforcement, and behavioral interventions, Mathematica (1) reviewed documents from and engaged in meetings with WHD, (2) conducted a review of relevant literature, and (3) conducted a review of relevant databases housed outside of WHD (called "external data" in this report). These activities were designed to answer the overarching research questions, "What is currently known about effective compliance strategies, and what are promising directions for research that could fill in gaps in this knowledge?"

This report summarizes the results of the review and provides insights about the factors and compliance strategies that might influence whether employers comply with laws and regulations. Strategies are defined as the approaches taken to change employer behavior to improve compliance, and they encompass a range of specific activities. An employer can be any kind of business, such as a firm, corporation, or establishment that is subject to WHD laws and regulations. Because the research we identified has largely focused on a few regulatory areas—in particular, the Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), and tax regulations—results may be specific to those regulatory areas and may not always apply to compliance in WHD or other regulatory contexts. The rest of this chapter provides a background on WHD compliance strategies; discusses the framework used to structure the literature and database review; describes the approach used to conduct the review,

including the specific research questions that guided the review; and provides a roadmap to the rest of the report.

A. WHD uses evidence to promote compliance from many angles

To set the stage for the study, we provide background on WHD’s compliance strategies and approaches to promoting compliance. This background helped to define the scope of the literature and data to be reviewed and is intended to provide a better understanding of the motivation for the study. The information presented in this section was gleaned from discussions with WHD leadership and staff, not from the literature and data review process.

For many years, WHD has used data and evidence to promote and secure compliance with the laws and regulations for which it is responsible. This evidence-based approach allows the agency to focus its resources on improving compliance in industries and among employers where the need may be greatest and where the impact may be broadest. By coupling external data with the agency’s administrative data, WHD could be better equipped to address compliance in high-violation industries and areas, and the agency’s compliance strategies may be more likely to increase compliance and reduce recidivism among employers. More importantly, however, these strategies may increase deterrence effects and promote sustained compliance in industries and among business models where problems exist.

WHD typically balances compliance strategies in a multi-pronged approach to securing compliance. Individual compliance strategies include:

- **Enforcement.** WHD’s agency-initiated investigations aim to detect, remedy, penalize, and deter violations, particularly in those industries and among those employers where WHD’s administrative data suggest a high incidence and greater severity of violations. These are industries that also employ large numbers of low-wage workers vulnerable to wage violations and often least likely to complain. Complaint-based investigations serve the individual making the complaint, as well as those employees who may be similarly affected. Both types of investigations use an array of tools to remedy violations, increase deterrence, and reduce recidivism. These tools may include litigation, back wage collection, penalties (civil monetary penalties), liquidated damages, revocation and debarment of contractors and certificate holders, and (as appropriate) the Fair Labor Standard Act’s (FLSA’s) “hot goods” authority.^{1,2}
- **Compliance assistance.** This strategy provides information through education and tools to promote voluntary compliance of employers.³ Information and tools might include materials



Compliance strategies

- Enforcement
 - Agency-initiated
 - Complaint-based
- Compliance assistance
- Partnerships and collaborations
- Public awareness

¹ See <https://www.dol.gov/agencies/whd/fact-sheets/44-flsa-visits-to-employers>.

² Under the “hot goods” provisions of the FLSA, DOL can seek a court order to prevent the interstate shipment of goods that were produced in violation of the minimum wage, overtime, or child labor provisions of the FLSA. The order can apply not only to the employer who produced the goods but to anyone in possession of the goods.

³ Many resources are available at <https://www.dol.gov/agencies/whd/employers>.

and events (such as industry meetings and webinars) to employers, including individual employers, attorneys, accountants, and employer associations. In 2010, WHD introduced the Community Outreach and Resource Planning Specialists (CORPS) position at the agency's local field office level to strengthen compliance assistance. CORPS engage and educate their local employer and employee communities.⁴ Through them, WHD has established many collaborative partnerships with industry leaders, business associations, government agencies, and to promote compliance. In addition, WHD uses new technologies, social media, and emerging digital platforms to extend the educational impact of its compliance assistance strategies.

- **Partnerships and collaborations.** WHD works with industry leaders; business associations; other federal, state, and local government agencies; and community-based organizations to leverage resources and broaden the impact of other strategies.
- **Public awareness.** WHD issues press releases to draw attention to labor standards laws and provide opportunities for employers to learn about compliance and the consequences of noncompliance.

1. WHD strategic priorities aim to maximize the impact of resources

WHD established annual operational and compliance performance outcomes in the early 1990s. Although specific goal statements have changed and measures have been refined, the agency's core priorities have remained fairly consistent throughout the agency's strategic and operational planning history. In general, two strategic outcomes have guided WHD's enforcement priorities:

1. Increased compliance through multi-pronged strategies in high-violation industries that employ low-wage workers most vulnerable to wage violations
2. Increased compliance through effective compliance assistance, strategies, tools, and resources

To support these strategic outcomes, the agency has undertaken planning and research and developed approaches for using compliance strategies. Specifically, the agency engages in:

- **Performance planning.** A formal planning process model—introduced in 1996—requires regional and district offices to develop annual operating plans that support the agency's major goals. To measure success against the performance plan goals, WHD began conducting investigations of a randomly selected sample of establishments in three priority industries. After baselines were established, WHD used strategies over two to three years and conducted subsequent random investigations to determine whether compliance in the industry had increased.
- **Evaluation studies.** Research in external data and evaluation of WHD planning and targeting criteria helped develop a priority list of low-wage industries to target for compliance. These studies laid the groundwork for a strategic enforcement approach that sought to maximize resources and broaden the impact of WHD strategies.

⁴ See <https://www.dol.gov/sites/dolgov/files/WHD/legacy/files/corpsFlyer.pdf>.

- **Strategic enforcement.** In fiscal year 2010, WHD reframed and refocused WHD's performance goals and objectives toward a more strategic enforcement program. This approach focused enforcement and outreach efforts in industries with evidence of high violations and low complaint rates, and encouraged strategies that accounted for the ways in which industry structures and business models influence compliance. It also increased the percentage of agency-initiated investigations with evidence demonstrating that agency-initiated cases had greater deterrent effects than complaint cases. Most recently, WHD has enhanced its data-driven enforcement planning so that it focuses on cross-regional initiatives within an industry and strategic enforcement initiatives in industries with structural opportunities to improve compliance systemically. This shift requires a change from the agency's geographic organizational structure to one that better mirrors how businesses operate in today's economy.
- **Compliance assistance.** Compliance assistance was added as a goal to the agency's performance plan in 2003 and led to the development of plans that set specific compliance assistance strategies milestones, including using technology to deliver information and educating the public on new laws and regulations. It also led to the (1) pilot incentive programs that encouraged employers to voluntarily work with WHD in compliance (self-audit programs, confidential consultation programs, and strategic partnerships with business associations and businesses); (2) evaluations of the compliance assistance programs (including web site, mailings, and seminars); and (3) development of the CORPS position described above.
- **Use of data.** Data on compliance assistance and investigations provide the basis for most of WHD's current performance metrics, although the agency also uses external data to analyze industries and make informed decisions on enforcement objectives.

Findings from our review of literature about theories of employer behavior, strategies for influencing compliance, and available research methods and data could potentially support and inform these activities.

2. Other strategies could be used to promote compliance

There are a number of strategies, not currently being used by WHD, which have been used in other contexts and may hold promise. For example, it may be important to consider the context of particular industries and business models and how they might influence the effectiveness of strategies for conducting strategic enforcement initiatives. A key finding from research such as studies conducted by David Weil and co-authors (Weil 2014, 2012, 2010, 2009, 2008, 2005, 1996; Ji and Weil 2015, 2009; Weil and Mallo 2007; Weil and Pyles 2005) and WHD experience is that industry structures and business models create incentives and opportunities for employers that can influence compliance. Understanding prevalent business models and the relationships between employers in an industry may be important in promoting compliance more effectively by allowing the agency to organize its activities around how industries are structured. Building this understanding requires new approaches and new data sources for determining compliance priorities and for estimating compliance impacts. Lessons from behavioral science and use of external data could inform compliance planning and execution. A key finding from behavioral science research (such as Kahneman 2011, Kahneman et al. 1991, and Richburg-Hayes et al. 2017) is that cognitive habits can affect compliance behaviors. Understanding these habits may be important in developing effective materials and

procedures for compliance strategies. External data sources offer information that correlates with industry behavior, describes relevant industry and economic trends, and signals changes in compliance.

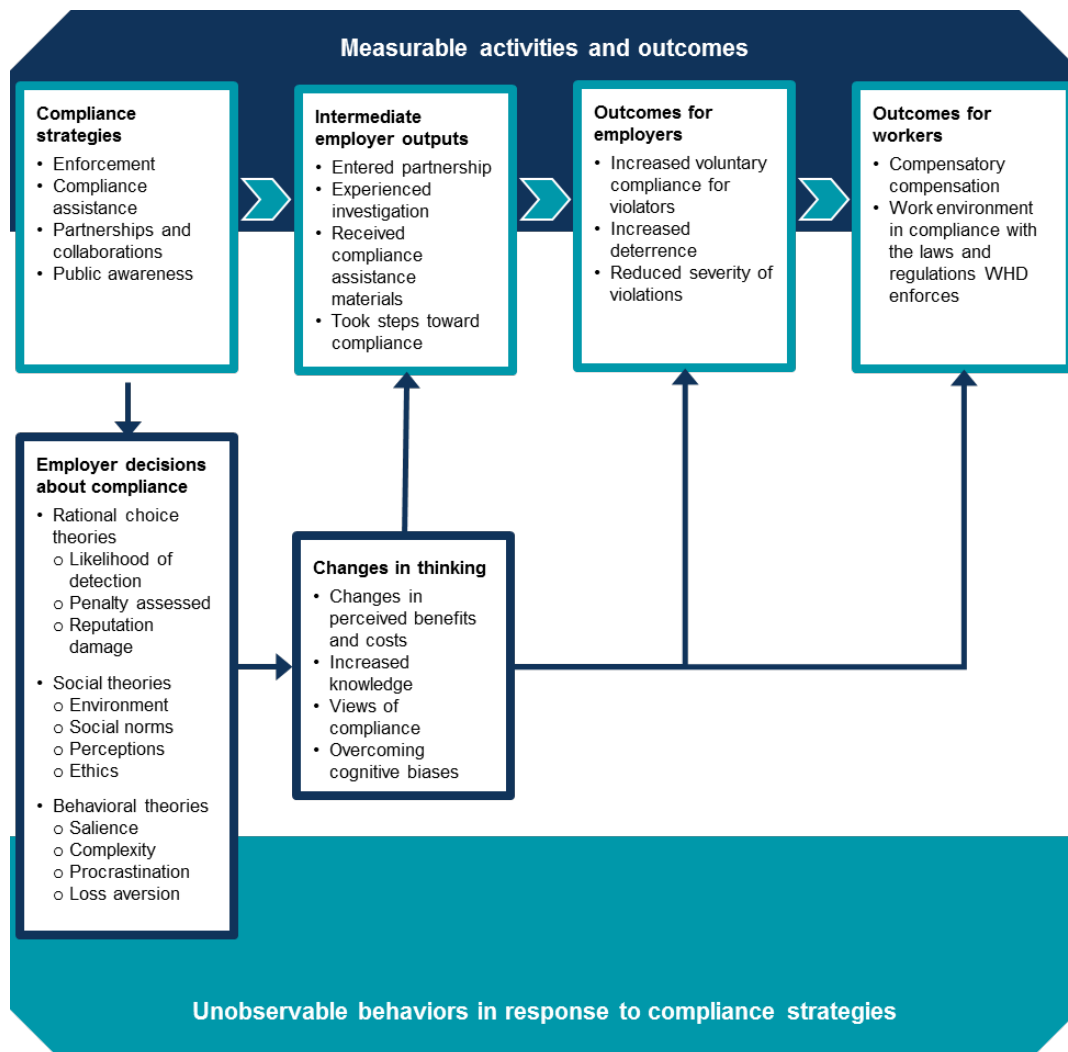
Another important consideration when assessing the outcomes of compliance strategies is understanding the factors related to employer behavior and industry structure that contribute to noncompliance. Research suggests that such factors can affect compliance behaviors. For example, Alm and McClellan (2012) found evidence of cognitive barriers to firms' tax compliance, including complexity of information; Johnson (2017b) found that the relationship of corporate entities influences the spillover effects of OSHA investigations. There is an increased prevalence of external data that can be explored for the potential to more efficiently direct resources to industries and employers that demonstrate continued noncompliance and determine whether the strategies used change employer behaviors. Potential uses for this data could include creating a mechanism to measure industry or geographic spillover effects following the use of compliance strategies or finding ways to better link strategies with the nature of violations and reasons for them.

To this end, this comprehensive review of regulatory and compliance evaluation literature summarizes what is known and identifies gaps in knowledge about effective compliance strategies. This review will help (1) provide insights into how businesses prioritize compliance decisions that affect their workers, and (2) inform WHD about how it can use those insights to better determine how to apply compliance strategies and to whom they should be directed.

B. A conceptual framework guided the structure of the review

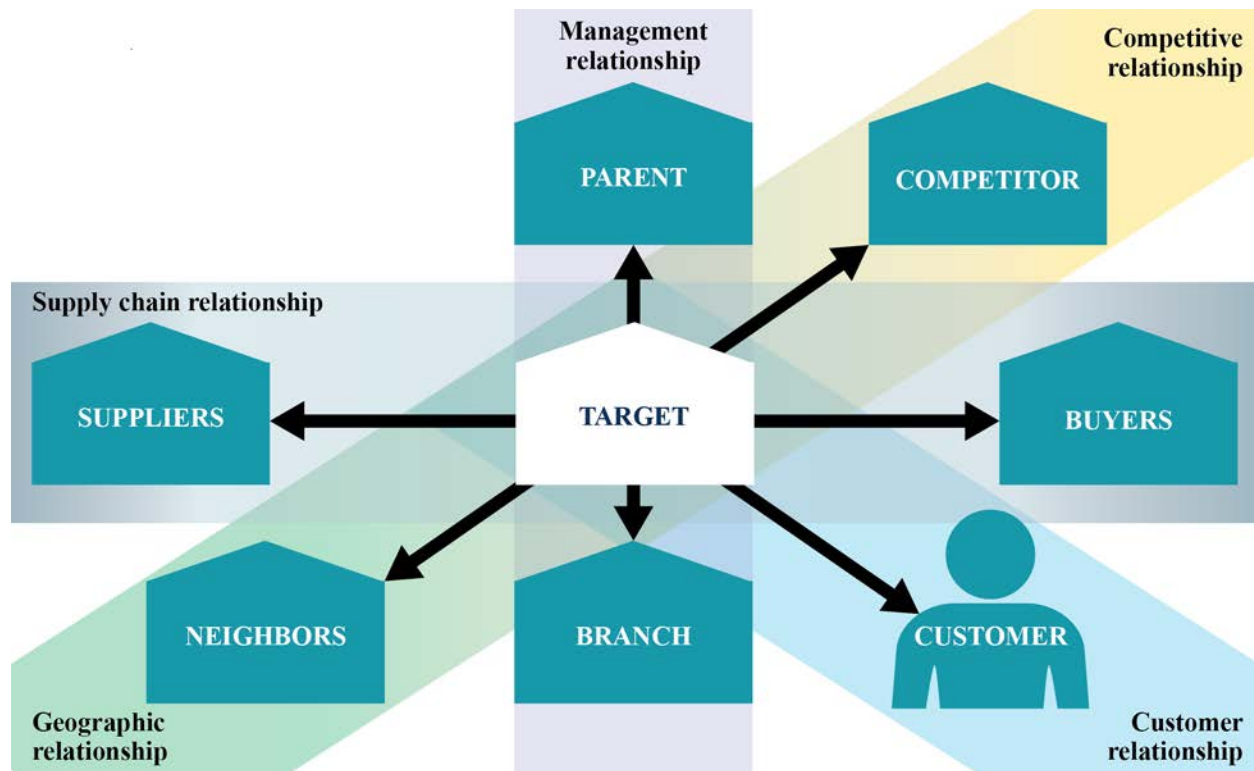
To determine the topics and bounds for the literature and external data review, we developed a framework to illustrate how we expect compliance strategies to bring about improved compliance based on a logic model of employer behavior. Figure I.1 illustrates how compliance strategies (first box in the top row) might affect how an employer makes decisions about compliance with WHD laws and regulations (the lower part of the diagram) and trigger behaviors—called outputs in the figure—and outcomes related to compliance, recidivism, violations (second and third boxes in the top row). In turn, employers' compliance means workers' pay and working conditions are consistent with laws and regulations (last box of top row).

Figure I.1. A model for changing employer decision making and behavior



WHD's compliance strategies may influence compliance beyond a targeted employer, however. A complementary conceptual model of employer relationships illustrates how an employer targeted for WHD compliance assistance or investigation (for example) might influence other employers through their links to them and their customers (Figure I.2). For example, compliance assistance strategies developed at the brand level may have spillover effects on that company's franchisees. Activities targeting one employer may spread along its supply chain. Strategies targeting one employer may affect others as competitors and neighboring employers exchange news. Press releases about violations found through WHD investigations might increase compliance by influencing customers to shop elsewhere. These spillover or deterrence effects of compliance strategies demonstrate how such strategies can be used to maximize the effectiveness of limited resources. Figure I.2 shows the range of potential relationships that may exist (although specific relationships might vary across industries and business models).

Figure I.2. Conceptual model of potential spillover effects among employers



C. The review was designed to be broad

The literature and database review drew on (1) the foundational knowledge about employer behaviors that WHD has experienced, and (2) the framework presented in Figures I.1 and I.2. We structured the literature and database review to identify and synthesize published and unpublished sources that can augment knowledge of how WHD, as one type of enforcement and regulatory agency, can enhance and develop compliance strategies to reflect deeper knowledge of the business environment in which they operate. We designed the review to address the following specific research questions:

1. What **theories** have been developed to predict employer compliance with laws and regulations (bottom row of Figure I.1)?
 - What factors are important to understand to change employer behavior and increase compliance, particularly in industries defined by complex and evolving business models (Figure II.2)?
 - What behavioral theories may be relevant when thinking about employer behavior related to compliance?
2. What **strategies** have been found to be effective in addressing employer noncompliance and promoting employer compliance (top row of Figure I.1)?
3. What **methods and data** can be brought to bear to assess employer compliance with WHD laws and regulations (that is, how do we measure the relationships shown in the top row of Figure I.1)?

- What methods have been used to assess the effectiveness of behavioral interventions?
- What methods have been used to estimate the effects of enforcement and regulatory programs?
- What data might be used to support the compliance evaluation or behavior intervention studies?

The broad nature of these questions required the review to cast a wide net to uncover a broad set of pertinent literature and databases, while, at the same time, to focus on providing WHD with knowledge specific enough to be useful. To achieve this balance, each review developed (1) inclusive search processes to ensure that appropriate studies and databases were uncovered, and (2) criteria for inclusion to ensure only relevant studies and databases were included in the review. The review developed summary information forms for literature and databases to create data sets of information. These data sets allowed researchers to sort relevant studies and data along a variety of dimensions and to identify and synthesize studies and data to address the specific research questions.

The literature review included two types of complementary searches. We used key words to search (1) databases such as Scopus, Business Source Complete, EconLit, and SocINDEX; (2) gray literature in the [Social Science Research Network](#); (3) websites of more than 40 organizations; and (4) a general Google search. We also conducted a snowball search that used the references of eligible studies as additional potential studies to review. To focus the review only on the studies that were most relevant, we developed four criteria for the studies identified to be included in the review:

1. **Does it consider an outcome, industry, or business model of interest?** Outcomes of interest include voluntary compliance for violators, deterrence of nonviolators, and severity of violations. Industries of interest include hotel/motel, restaurants, construction, and agriculture. Business models of interest include franchise, contracting/subcontracting, and supply chain.
2. **Does it consider a strategy or factor that might affect employer behavior related to compliance?** These include compliance assistance, partnerships and collaborations, public awareness, and enforcement.
3. **Is it relevant?** We bound the literature review in time (2003 or later) and place (United States or a location with a similar economic context). Seminal or highly informative studies were not so bounded.
4. **Does it fall outside the review's scope?** Studies considering drugs, health, and test development and editorials, letters, newspaper articles, and commentary were considered outside the review's scope.

The database review focused on national data external to WHD through searches for data housed in archival data centers and identified through Google searches. The search identified databases with relevant content, defined as meeting at least one of the following three criteria, with the content-relevant databases uncovered using the requirements in the text box:

1. **Does it contain contextual information?**

Contextual information includes prevailing economic or social conditions that exist when a strategy is implemented.

2. **Does it provide information about an outcome, industry, or business model of interest?**

Outcomes of interest for purposes of this review include voluntary compliance, deterrence, and severity of violations. Industries of interest include hotel/motel, restaurant, construction, and agriculture. Business models of interest include franchising, contracting/subcontracting, and supply chain.

3. **Does it contain information that can be used to describe employer behaviors?** Factors that would describe or affect employer behaviors concerning compliance are outlined in Figure I.1, “Employer decisions about compliance” box.

D. The organization of the report aligns with research questions

The following three chapters each present results of the review to answer one of the research questions. Chapter II answers the question, “What theories have been developed to predict employer compliance with laws and regulations?” Chapter III answers the question, “What strategies have been found to be effective in addressing employer noncompliance and promoting employer compliance?” Chapter IV answers the question, “What methods and data can be brought to bear to assess employer compliance with WHD laws and regulations?” The final chapter summarizes the findings from the review and discusses understudied areas for future research.

Databases must be:

- ✓ Time relevant (2003 or later)
- ✓ Place relevant (United States or subarea)
- ✓ Machine readable
- ✓ Available for use during study period
- ✓ Representative of a population

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

II. THEORIES OF EMPLOYER BEHAVIOR

One critical component of complying with laws and regulations is the factors that influence how employers make decisions about compliance (bottom panel of Figure I.1). It is this decision making that regulatory agencies such as WHD are trying to influence. Although WHD and researchers can observe, at least to some extent, the steps employers take toward becoming compliant (intermediate employer outputs box in the top panel) or whether they actually comply with laws and regulations (outcomes for employers or workers boxes in the top panel), they cannot easily observe how employers make compliance decisions. Even though researchers could, for example, interview people who make organizational decisions about compliance, those individuals may not be able to fully articulate all the factors that drive their decision making or describe how their decision translates into organizations' actions. Fortunately, a large body of theoretical social science research can be used to help identify factors that can influence employer decision-making about complying with laws and regulations. Some theories might have conflicting predictions (for example, cognitive biases in behavioral science can dominate rational choice calculations), and some might work together to predict behavior (for example, rational choice and social theories). Moreover, theories differ in the extent to which they are supported by evidence. Nevertheless, each theory can offer a useful framework or lens for thinking about employer behavior. Understanding factors that potentially influence employer behavior can help regulatory agencies determine which strategies might be most effective in changing behaviors to improve compliance.



Employer decisions about compliance

- Rational choice theories
 - Likelihood of detection
 - Penalty assessed
 - Reputation damage
- Social theories
 - Environment
 - Social norms
 - Perceptions
 - Ethics
- Behavioral theories
 - Salience
 - Complexity
 - Procrastination
 - Loss aversion

In this chapter, we answer the first research question: “What theories have been developed to predict employer compliance with laws and regulations?” The chapter describes the most prominent strands of theoretical research that have attempted to explain and predict patterns of employer decision making with respect to compliance with laws and regulations. Section A describes the research grounded in rational choice theories, Section B describes research based on social theories, and Section C describes research based in behavioral science.

A. Rational choice theories support the need for enforcement strategies

Theories grounded in rational choice argue that employers comply with laws and regulations when they believe the benefits of compliance outweigh the costs. Most compliance studies cite Becker's (1968) article on the economics of crime as the seminal work in this area. Becker argues that whether individuals comply with a law or regulation depends on their weighing of the benefits of noncompliance against the risk of penalty associated with the noncompliant behavior: when the benefits outweigh the risks, the potential offender violates the law. Ashenfelter and Smith (1979) and Chang and Ehrlich (1985) built on Becker's theory, using a profit-maximizing model of compliance to argue that government enforcement activities induce compliance, although not universally. As an extension, Kagan and Scholz (1984) describe corporations as

“amoral calculators” that neutrally weigh benefits and costs when making compliance decisions and follow the law only when the potential cost of penalties outweighs the financial gains associated with noncompliance.

Other work in this area, including empirical research testing aspects of this theory, adds nuances to the benefit and cost framework for decision making. For example:

- **Severity and certainty of penalties drive perceived cost of compliance.** Employers consider both the severity of the penalty for noncompliance and the certainty (probability) that the penalty will be levied for noncompliance (van Rooij and Fine 2017). A healthy debate about the relative weight of a penalty’s severity and certainty seems to suggest that the certainty of detection is more important than the severity of the penalty to employers when deciding to comply (Braithwaite and Makkai 1991; Makkai and Braithwaite 1994; Simpson et al. 2013).
- **Dynamic behaviors can affect the perceived certainty of detection.** A substantial game theoretic literature (Kreps 1996) notes that strategic actions make the certainty of the penalty a dynamic process. The employer changes behavior to reduce the probability of getting caught for violating laws and regulations based on the actions of regulatory agencies, and the regulator must react to such changes to maintain a given probability in detecting violators.
- **Penalties imposed on one employer can deter violations among other employers.** Investigations and penalties can deter violations of laws and regulations of the employer subject to them (“specific deterrence”). In addition, hearing about the investigation or penalty can deter violations among other employers (“general deterrence”). Research finds some support for the efficacy of both types of deterrence efforts by regulators, although the mechanism behind the effectiveness of general deterrence efforts is not clear (Braithwaite and Makkai 1991; Gray and Scholz 1991; Gray and Shadbegian 2005). Evidence suggests that, for compliant firms, general deterrence may primarily remind employers to check that they are in compliance and reassure them that costly efforts toward compliance are worthwhile (Thornton et al. 2005).
- **Damage to reputation is costly.** Other studies point out that, when violations are detected and made public, the costs of noncompliance include financial penalties and damage to the employer’s reputation. This negative effect on an employer’s reputation may decrease the number of customers, as well as the quality of work of employees who become demoralized by their employer’s noncompliance (Hiscox et al. 2011; Johnson 2018). However, the size of the effects may be determined by the nature of the reputation damage. For example, a code violation committed by a supplier or entity further down the supply chain may not have the same effect on a company’s reputation as that of a violation committed at a franchise location with the company name (Weil 2012).



Rational choice theories

Grounded in: Becker’s 1968 article on crime that applies rational decision making to compliance with laws and regulations.

Premise: Firms comply when they calculate that the costs of noncompliance outweigh the benefits.

Nuances: Calculations depend on severity and certainty of penalties, dynamic behaviors in response to regulators’ actions and deterrence efforts, and damage to reputation.

B. Social theories point to the potential of compliance assistance strategies

One body of literature, which we call social theories, examines the institutional and social factors that influence decision making. In contrast to rational choice theories, these “theories” are not based on a specific model or paradigm. Taken together, however, they emphasize how the larger social context in which decisions are made may be more important than the economic context in which calculations of benefits and costs drive behaviors. This larger social context can include the environment in which decisions are made, social norms and culture that set expectations about behaviors, perceptions about self or others, and ethical views about behaviors.

When applied to compliance, empirical research based in social theories suggests that:

- Organizational structures can influence decisions made about compliance.** Organizational processes and the roles of staff involved in decision-making can create organizational challenges in receiving information about compliance standards and implementing compliance behaviors (Sutton 1998). In addition, the internal resources and the level of exposure that decision makers have to the laws and regulations can affect the employer’s approach to compliance (Barnes and Burke 2006).
- Entities outside the organization and government can help shape compliance decisions.** For example, materials such as loss prevention manuals and conference presentations that are developed by parties not involved in compliance decisions can help shape how organizations perceive anti-discrimination law and the actions they take regarding compliance. A study based on observations and interviews found that Employment Practices Liability Insurance products and risk management services give employers a means to manage the risk of litigation can both promote compliance of employment practices with anti-discrimination laws, but also influence compliance efforts towards developing defenses against discrimination claims (Talesh 2015).
- Views of, perceptions of, and experiences with compliance may influence behaviors.** People’s past interactions with regulators contribute to their perception of regulators as a threat, ally, or obstacle to be overcome (Gray and Silbey 2014); this, in turn, might affect how compliance is approached. People’s self-perceptions may be inaccurate. Those who commit white-collar crimes, such as noncompliance, do not always view themselves as criminals or their acts as true crimes (Friedrichs 2009).
- Ethical views about compliance seem to influence behaviors.** When employers see compliance as a moral choice, or a fulfillment of a social contract, they are more likely to comply (Parker 2006). When employers see the law as merely symbolic, or “low-risk” in the sense that it is unlikely to be enforced, however, they skirt their obligation to comply (Calavita 1990).



Social theories

Grounded in: Sociology, political science, criminology, and legal scholarship emphasize the importance of the larger social context in decision making.

Premise: The social context in which decisions are made is more important than the economic context in influencing behaviors.

Nuances: The environment in which decisions are made, social norms, perceptions about self and others, and ethical views.

- **Social norms can pressure people to follow the crowd.** Information about the choices that others make can influence a given person's decision (Cialdini et al. 2006). Referencing social norms in a person's local area can enhance the impact of this information (Behavioural Insights Team 2012). People tend to follow social norms; sometimes, however, they are unaware of the norms, especially in compliance situations. "Responsive regulation" relies on strategies such as the use of publicity to underline the social unacceptability of a firm's conduct. This can be especially powerful when regulators cannot impose large enough fines to change a firm's attitude about compliance (Parker 2006).
- C. Behavioral theories suggest small changes in a compliance strategy can influence compliance

Behavioral science posits that entities sometimes act in ways that appear to be inconsistent with predictions made from weighing the benefits and costs of the action. Since it is not possible for people to carefully weigh the costs and benefits of every potential action, they rely on heuristics, or "rules of thumb." Thaler (1980) argues that our heuristics are often systematically biased and lead to sub-optimal decisions and actions. For example, people are often too sensitive to present costs and not sensitive enough to future benefits to make an optimal investment decision. In addition, they are influenced too heavily by default options, weigh potential losses in a way that is inconsistent with how they weigh potential gains, and may choose to make no decision at all when facing a decision requiring significant cognitive investment. Thaler's work started the field of behavioral science, which offers theories on people's thinking and cognitive processes and builds an understanding of why they do and do not comply with requests or with laws and regulations.

Behavioral interventions grounded in these theories offer a relatively new option for improving compliance by addressing cognitive biases that may prevent employers from engaging in desired compliance behaviors. These interventions often are embedded in existing systems or materials, and can involve relatively low-cost modifications to the content, presentation, and delivery of information. Although the context for behavior theories vary, theoretical and empirical research on different compliance problems focuses on the following common set of issues that affect how decisions are made:

- **The salience of the information presented determines whether it grabs attention.** People have a finite supply of attention, and they use cues and conscious and subconscious heuristics to decide which stimuli to notice (Kahneman 2011). This salience has implications for whether employers attend to compliance of regulations without being reminded and whether they respond to specific communications. Communications that do not trigger attention are less likely to register and inspire desired actions (Levin and Baker 2015).



Behavioral theories

Grounded in: Thaler's 1980 article that discusses how behaviors are systematically different from what economic theory predicts.

Premise: People's reliance on heuristics can lead to sub-optimal decisions and actions.

Nuances: Individuals' finite supply of attention (salience) and cognitive ability to deal with complexity, difficulty in dealing with painful tasks (procrastination), and aversion to losses all influence behavior.

- **Complexity of information can stop people from taking desired actions.** People also have a finite supply of cognitive ability to spend on tasks (Kahneman 2011). They economize on cognitive ability by choosing to undertake less cognitively challenging tasks. Therefore, complexity can affect whether someone attempts, understands, or completes a task. Because complex communications about regulations or compliance actions are not easily understood, their complexity could discourage people from trying to understand them (Johnson et al. 2012; Bettinger et al. 2009).
- **Procrastination is one way that people reduce mental effort.** People delay difficult or painful tasks, especially when the cost or effort associated with the task is felt much sooner than the benefit that comes from it (Laibson 1997; Ariely and Wertenbroch 2002). The combination of procrastination and inattention to deadlines can lead to failure to comply (Richburg-Hayes et al. 2017).
- **Loss aversion makes people place greater weight on losses than on gains.** People are more motivated to avoid losses than to realize gains (Kahneman et al. 1991), which can produce different choices with a different framing of options, even though the options are the same (Viscusi et al. 1987). This cognitive bias also contributes to related issues, such as a bias toward the status quo and selecting default options.

D. Summary

Each of the theories discussed in this chapter can help build an understanding and interpretation of employer decision making about complying with WHD laws and regulations and, as a result, could inform WHD's strategic planning and compliance assistance efforts.

- **Rational choice theories can inform WHD in weighing whether or not to engage in activities that could increase the perceived certainty of detection and severity of penalty.** Such activities could decrease noncompliance by increasing its perceived costs and decreasing its perceived benefits. There are several ways this could be done. For example, liquidated damages and civil monetary penalties could be used where appropriate to increase the cost of noncompliance. Other tools (such as litigation, debarment, "hot goods," and publicity) could be applied to increase the costs of noncompliance. These tools could have spillover effects and increase deterrence if employers see peers being held accountable for noncompliance and perceive a greater likelihood of their own noncompliance being detected and penalized. For deterrence effects to be most effective, penalties must be visible to other employers by information spread (for example) through publicity, media, or word of mouth.
- **Social theories indicate that using community-based entities to improve the perceptions about regulations might increase compliance.** These theories can inform WHD's thinking about strategies including compliance assistance. Targeting and educating stakeholders, including workers, business partners, and competitors could promote compliance. The diffusion of information about compliance in complex organizations could be facilitated by appropriately targeting guidance on laws and regulations to decision makers; entities acquainted with organizational structure (for example, employer associations, headquarters) might be able to help identify these individuals. The tone of materials and the inclusion of messages about the social contract could influence how employers respond.

- **Behavioral science suggests that small tweaks to existing materials or processes might overcome cognitive habits that can affect compliance behaviors.** Such findings can inform WHD's thinking about its interactions with the regulated community. In some cases, compliance with laws and regulations may not be in the employer's economic interest; behavioral interventions may not be able to surmount this hurdle to bring about employer compliance. Yet behavioral interventions might help employers who have determined that compliance is in their interest to overcome hurdles to learning about and attaining compliance. In addition, employers unaware of their obligations, perhaps due to complex contractual arrangements, could be informed of them through behavioral interventions.

In the next chapter, we explore in greater detail how these principles relate to compliance strategies, how those strategies have been evaluated in the field, and what the empirical evidence has shown.

III. STRATEGIES FOR INFLUENCING EMPLOYER BEHAVIOR

Laws and regulations govern a range of employer behaviors, from environmental protection to consumer health, from paying taxes to protecting the safety of workers. When working to increase compliance with these laws and regulations, government agencies typically use four types of strategies: (1) *enforcement* strategies uncover noncompliance with investigations and enforce consequences for it; (2) *compliance assistance* strategies provide employers with information through education and tools to promote the voluntary compliance of those employers, including individual employers, attorneys, accountants, and employer associations; (3) *partnerships and collaborations* aim to engage community associations, worker groups or groups of employers in compliance, using industry associations or a key player within an industry or business model; and (4) *public awareness* uses the press and other media to increase attention to labor standards laws and the consequences of an employer's noncompliance. Regulatory agencies can use strategies independently or deliberately use several approaches simultaneously. WHD's efforts in compliance assistance, partnerships and collaborations, and public awareness often overlap; compliance assistance can be delivered through partnerships, and both compliance assistance and collaborations can raise public awareness. The text box provides examples of specific actions regulatory agencies take under each strategy.



Compliance strategies

- **Enforcement.** Agency-initiated or complaint-based investigations, potentially followed by penalties and litigation
- **Compliance assistance.** Information and tools to promote voluntary compliance among employers, including individual employers, attorneys, accountants, and employer associations
- **Partnerships and collaborations.** Gaining cooperation of a key player; leveraging other government agencies, industry associations, media; establishing employer relationships
- **Public awareness.** Media attention to labor standards laws and employers' compliance

In this chapter, we answer the second research question: “What strategies have been found to be effective in addressing employer noncompliance and promoting employer compliance?” We do this by providing key evidence from the empirical literature about each strategy. We did not assess the strength or level of rigor of the evidence identified. Sections A through D discuss enforcement, compliance assistance, partnerships and collaborations, and public awareness. The final section discusses how the findings are relevant to WHD.

A. Enforcement can create powerful incentives to comply with laws and regulations

Enforcement strategies are consistent with rational choice theories of behavior. They attempt to increase the cost of noncompliance by increasing the likelihood of violation detection. When agencies like WHD use enforcement strategies, they conduct agency-initiated or complaint-based investigations, after which they may use such tools as penalties and litigation. The body of research on enforcement strategies suggests that they are effective in increasing compliance.

In general, research on specific enforcement tools falls into three categories—investigations, penalties and damages, and litigation—each of which we discuss in turn next.

1. **Investigations are often effective in increasing compliance.** A sizeable body of literature on compliance with OSHA as well as state regulatory departments demonstrates the effectiveness of investigations in increasing compliance. Studies show that (1) establishments inspected by OSHA experience a roughly 9 percent decline in rates of injuries that led to days away from work compared to a matched control group of establishments that were not inspected (Johnson et al. 2017b), an effect similar in size to that found on rates of injuries leading to workers' compensation claims found in a study of inspections by California's Division of Occupational Safety and Health (Levine et al. 2012); (2) inspections can have spillover effects on corporate siblings owned by the same firm (Johnson et al. 2017b); (3) OSHA inspections sometimes are effective (Gray et al. 2005, 1993, 1991); and (4) increased probability of discovering violations is associated with increased compliance, even though the average level of penalty is low (Jin and Lee 2014). However, firms may sometimes exploit regulatory system rules to avoid violations, as found in a study of water systems (Bennear et al. 2009). This evidence suggests that WHD investigations may be effective in increasing compliance through both direct and spillover effects.
2. **Penalties and damages could be a component of investigations' effectiveness.** Research evidence is mixed on whether investigations must be paired with penalties to affect compliance. Studies have shown that treble damages are associated with increased compliance with minimum wage laws, but other penalties (strengthened civil and criminal penalties and post-judgment penalties for failure to pay back wages when directed to do so) do not show an effect (Galvin 2016). Inconsistency in penalty enforcement likely diminishes the effects of penalties on compliance with minimum wage law (Galvin 2016), occupational health and safety (Gray and Mendeloff 2005), and environmental protection laws (Gray and Shimshack 2011; Shadbegian and Gray 2005; Gray and Deily 1996; Nadeau 1997). Moreover, fining plants for water pollution produces deterrence impacts on other plants in the same state; these impacts are almost as strong as the impact on the sanctioned plant (Shimshack and Ward 2005). This evidence suggests that increased costs or penalties for noncompliance, such as civil monetary penalties, might be critical components of the WHD investigation process.
3. **Litigation can create incentives to comply.** Research suggests that litigation and credible threats of litigation increase compliance with the Clean Air Act (Keohane et al. 2009) and might increase compliance with equal employment legislation (Wilhelm 2002; Hirsch 2009). This evidence suggests that litigation brought by WHD against noncompliant employers could promote widespread compliance, especially when visible to peer employers.

A substantial body of work by David Weil and coauthors (Weil 2014, 2012, 2010, 2009, 2008, 2005, 1996; Ji and Weil 2015, 2009; Weil and Mallo 2007; Weil and Pyles 2005) extends this research in a way that could be construed as blending social into rational choice theories. This work posits that enforcement tools may be most effective when a simple employer-employee relationship exists. When an employer is engaged in more multi-layered relationships—such as supply chain relationships, subcontracting, or franchising—compliance decisions become complex and affected by parties with broad economic influence, such as franchisors or lead distributors, that do not have a direct employment relationship with the worker affected by the violation (see Figure I.2). These complex economic and contractual relationships mean that those with the greatest ability to affect compliance systemically may not

be legally responsible for compliance decisions impacting employees. Therefore, regulatory agencies must carefully consider which compliance approach would encourage systemic compliance given how the industry is structured. For example, because a lead franchisor can exert influence over compliance for all franchisees, approaches that target the brand's reputation might be more effective than approaches that levy financial penalties on individual franchisees. When subcontracting is prevalent, the employment relationships that result may make it difficult to effectively target enforcement strategies and compliance assistance. In such cases, other strategies beside enforcement, such as compliance assistance, that involve stakeholders with industry familiarity might be especially effective.

B. Compliance assistance can provide guidance

Often, employers fail to comply because they do not understand the law or regulation they must comply with (Silberman 2016). Educating such employers through compliance assistance is a logical first step in implementing compliance practices. A very small number of studies provide support for the potential effectiveness of compliance assistance strategies. One study examined the EPA's regional compliance assistance efforts targeting hazardous waste generators using a cross-sectional model of Resource Conservation and Recovery Act violations to describe past engagement with a variety of compliance assistance activities. The model accounts for the possibility that compliance can affect the likelihood of inspection and vice versa. The study found that education is associated with increased compliance, especially among smaller firms. It also found that the effectiveness of compliance assistance can be enhanced when coupled with enforcement, though this finding applied only to small firms (Stafford 2012). Another study examined associations between attitudes about taxes and tax reporting from years of surveys of firms in multiple countries to investigate firms' "tax morale," or intrinsic propensity to pay taxes. The study found that tax morale can be enhanced more effectively by reducing barriers to compliance, including complexity, than by enforcement in the form of tax audits (Alm and McClellan 2012).

However, studies that call for increased education to improve compliance draw largely from observational data that do not demonstrate that education has an impact on compliance (Sneed et al. 2007; Evans et al. 2011). One body of research focuses on compliance with food safety regulations in the restaurant industry (Roberts et al. 2011; Niode et al. 2011; York et al. 2009; Choi et al. 2016); another focuses on compliance with labor laws and other regulations in agriculture (Roka et al. 2017); and a third focuses on partnering with labor organizations to educate employers and employees on labor laws (Fine and Gordon 2010). Unfortunately, these studies do not examine whether increases in education and concomitant increases in knowledge lead to changes in compliance. One study evaluated the perceived value of educational materials distributed about WHD's Child Labor Program (Eastern Research Group 2009); it found that few employers recalled receiving materials, but those who did thought they were helpful. Another described guidance provided through OSHA's On-Site Consultation (OSC) program, which allows employers to request visits from state OSC consultants for no-cost, confidential guidance on ways to avoid workplace injuries and illnesses and to improve their safety and health management systems (Juras et al. 2016). The authors found that information about the program increased requests from employers to participate but did not investigate whether participation increased compliance.

C. Partnerships and collaborations might encourage compliance

Consistent with social theories of behavior, which emphasize the institutional and social influences on decision making, partnership and collaboration strategies are grounded in the presumption that stakeholders other than the employer and government can influence compliance decisions. Fine and Gordon (2010) document three cases in which labor inspectorates give unions and worker centers formal roles in enforcement, although these approaches have not been rigorously evaluated using quantitative methods. Effective social pressures need not come only from state regulatory agencies; qualitative evidence suggests that pressure from social groups can influence employers to comply with environmental regulations and to go beyond compliance by improving performance above required levels (Kagan et al. 2003).

In addition, regulatory agencies sometimes work closely with stakeholders, such as industry associations and individual employers, to develop structures and processes that promote compliance—most prominently, self-monitoring programs. In recent decades, regulators have embraced these programs as a non-adversarial, resource-efficient way to enforce laws and regulations, although some advocates have raised concerns that these enforcement mechanisms represent a devolution of regulatory enforcement and fail to ensure compliance (Short and Toffel 2010). (While regulatory agencies also partner with government agencies, we did not identify research examining these efforts.) The U.S. Department of Agriculture, OSHA, and EPA have used self-monitoring programs as enforcement tools; however, the literature review uncovered quantitative evaluations of EPA self-monitoring initiatives only, and the evidence for approaches is mixed. A study using a difference-in-differences model found that when firms are required to review their own operating processes and develop individualized goals and procedures for risk reduction for toxic chemical release, they tend to release lower levels of toxic chemicals and increase participation in source reduction activities, compared to firms not subject to such requirements (Bennear 2007). As shown by a meta-analysis, the voluntary adoption of pollution prevention approaches, such as the EPA's Audit Policy, can be effective (Darnall and Sides 2008) but does not always improve compliance, as a fixed-effects analysis shows (Sam 2010). The Audit Policy offers incentives to employers who monitor their compliance with environmental requirements, voluntarily disclose information on violations they discover, and work quickly to come into compliance (Stretesky and Lynch 2009; Short and Toffel 2010, 2007). Studies using a matched comparison group design to examine whether voluntary disclosure under the program affected violations found that the regulatory environment influences the policy's effects: the policy is most effective when firms or their competitors are subject to strict enforcement. Moreover, firms with poor compliance history are less likely to uphold their commitment (Short and Toffel 2010). Moreover, a study using data on repeated cross-sections of firms found that facilities are more likely to self-report violations when they are more likely to receive inspections or compliance initiatives (Short and Toffel 2007). A key factor in considering such programs is the extent of maintenance required to sustain such efforts in the long term. However, the literature did not speak to the types and extent of efforts needed to maintain such programs.

Both self-monitoring (auditing by internal company staff) and third-party monitoring (auditing by external consultants or organizations not employed by company or involved in writing policy) are a key approach for improving working conditions in factories in global supply chains, with such efforts often complementing state regulatory efforts (Locke et al. 2007, Wells 2005). Such initiatives involve monitoring of firms in a supply chain for compliance with

corporate codes of conduct (O'Rourke 2006). Although research has shown that self-monitoring has not consistently improved worker rights and working conditions (Locke et al. 2009), it was shown to be effective in improving factory working conditions among suppliers to a global footwear brand when combined with other changes such as allowing suppliers to schedule their work, promoting health and safety, and addressing inequality in employment opportunities and promotion decisions (Locke et al. 2007). In contrast, studies show that monitoring by nongovernmental organizations or other third parties can be effective. The U.S.-Cambodia Bilateral Textile Trade Agreement, for example, increased compliance over regional competitors with trade-related incentives to work with factories found compliant by the International Labor Organization (Wells 2005, Kolben 2004, World Bank 2004). More generally, external monitoring is supported by research showing effectiveness with the participation of local stakeholders (O'Rourke 2006) and the promotion of collective bargaining rights (Rodríguez-Galavito 2005). Still, its effects may be limited by the monitoring capacity of third parties relative to the size of supply chains and its narrow use among premium branded retail goods (Wells 2007).

D. Public awareness can build compliance

Several publicity-based strategies have spurred compliance in targeted industries. First, publicizing violations, a strategy WHD uses, can be effective. Publicizing violations of a specific firm through press releases increases its occupational safety and health compliance (Johnson 2018), as well as compliance of peer firms (Johnson 2018; Thornton et al. 2005). The Toxic Release Inventory publicizing firms' releases of toxic chemicals has led to reductions in firm stock market value (Hamilton 1995). Mandatory information disclosure regulations can create institutional pressure that spurs improvement in environmental performance more among establishments located close to headquarters and in high-density areas (Doshi et al. 2013). Requiring water suppliers to notify customers of contaminant levels decreases violations (Benneer and Olmstead 2008). Second, ratings of firms' performance or quality can improve compliance. Publicly posted "hygiene grade card" policies have increased restaurant compliance (Jin and Leslie 2003; Wong et al. 2015) and decreased foodborne illness hospitalization (Jin and Leslie 2003; Simon et al. 2005). Government-mandated disclosure in some industries in which consumers have difficulty gauging product quality can improve the quality of products. For example, a study found that airlines reduced flight delays to improve on-time performance (Forbes et al. 2015). However, airlines in the study tended to reduce short flight delays rather than longer delays, showing the potential for firms to "game" the rating system. Third-party ratings of firms' degree of social responsibility can improve their environmental performance (Chatterji and Toffel 2010). In another example, firms on the EPA's "Clean Air Act Watch List" improved their compliance when the list became publicly available. This evidence suggests that current and perhaps novel, innovative publicity strategies used by WHD can be powerful tools for promoting compliance.

E. Summary

This review of research has drawn from literature on compliance efforts across a range of agencies. Although each regulatory agency operates in a unique context, their efforts might shed light on compliance strategies applicable to WHD. This review shows that investigations can be effective. Although the evidence is mixed on whether investigations can be effective when not paired with a credible threat of penalties or increased costs, it appears that enforcement is an

effective and important framework for spurring compliance. Publicity-based approaches also have worked as an effective complement to enforcement approaches by amplifying their effects through such actions as press releases (with potential reputation damage).

The literature also provides some insights on alternatives to traditional inspections, such as self- and third-party monitoring, publicity-based approaches, and behavioral interventions. Evidence from EPA regulations suggests that self- and third-party monitoring may be less effective than traditional enforcement, but can increase compliance in some cases.

IV. METHODS AND DATA AVAILABLE FOR RESEARCH

When evaluating employer compliance with laws and regulations, empirical researchers can use several common analytic methods. They can use (1) carefully documented case studies and in-depth interviews to shed light on how employers make decisions, (2) descriptive statistics to document the prevalence of violations, and (3) quasi-experimental approaches to test the effectiveness of an intervention or policy change. As Table IV.1 shows, the methods that researchers use depend on the research questions asked, with the data used consistent with the methods chosen.

Table IV.1. Research questions, methods, and data for employer compliance

Typical research questions	Analytic method	Data source
Why do employers make the choices they do? How do they interpret information about regulations and penalties? What factors influence how they think about compliance?	In-depth interviews	<ul style="list-style-type: none"> • Interview transcripts collected by study authors
What processes and actors affect compliance in an organization? How do organizations experience compliance efforts?	Case studies	<ul style="list-style-type: none"> • Observations conducted by study authors • Survey data collected by study authors • Documents and files connected to the case • Administrative data from the organization being studied
What are the patterns of compliance and violation? What violations are occurring? How many? How does this vary across employers?	Descriptive quantitative methods	<ul style="list-style-type: none"> • Survey data collected by study authors • Administrative data (including OSHA, WHD data) • Nationally representative data, such as from the Bureau of Labor Statistics, Current Population Survey (CPS)
How does an intervention or policy change affect compliance?	Quasi-experimental designs involving comparison groups <ul style="list-style-type: none"> • Fixed-effects • Difference-in-differences • Regression 	<ul style="list-style-type: none"> • Survey data collected by study authors • Nationally representative surveys, such as the Survey of Income and Program Participation (SIPP) or the CPS • Administrative data
How does an intervention affect compliance?	Experiments	<ul style="list-style-type: none"> • Survey data collected by study authors • Administrative data

This chapter discusses methods and data that might be used to fill some of the gaps in knowledge relevant to WHD's efforts to increase employer compliance with the laws and regulations it enforces by answering the research question: "What methods and data can be brought to bear to assess employer compliance with WHD laws and regulations?" Section A describes the analytic methods used in the literature to evaluate the effects of compliance strategies and behavioral interventions on compliance behaviors and outcomes; these are methods available to fill existing gaps in knowledge about compliance. Section B describes the databases available to help fill those gaps.

A. Analytic methods use a variety of data sources to address a range of research questions

This section describes each of the analytic methods used to evaluate the effectiveness of compliance strategies. It briefly touches on the associated data types as we discuss each analytic method, with Section B describing the strengths and limitations of data sources more fully.

1. In-depth interviews with employers help determine why they made decisions

Researchers who hope to understand how employers make decisions about their actions regarding compliance or violations often turn to in-depth interviews. These interviews tend to follow a loosely structured conversation guide and encourage employers to describe the choices they make in their own words. After the interviews are conducted, researchers use qualitative coding software or other tools to look for patterns and themes across interviews. In-depth interviews allow researchers to gain an understanding of why a small number of employers make the choices they do. They are the best way to gain a deep understanding of how people think about the choices they make.

Although in-depth interviews are important and useful for understanding the compliance choices employers make, they also have limitations. First, because data collection is intensive, in-depth interviews are conducted with small numbers of respondents. Our experience suggests that, in general, studies include interviews with at least 5 respondents, but coding data from more than 100 respondents is labor intensive. Because of the small sample size generally associated with this method, it typically cannot be used to understand broader patterns or generalize beyond a small group of employers. Second, because in-depth interviews tend to be conducted with employers only, they shed light on the perspective of only one type of actor involved in compliance processes. On their own, in-depth interviews cannot be used to evaluate interventions or policy changes, because of several limitations: (1) they include small samples sizes; (2) they may not include interviews with a separate group of non-affected employers who could provide a basis for comparison; and (3) reported outcomes may not be accurate, precise, or objective. However, they can inform the choices policymakers make about interventions to pursue and can help researchers understand potential mechanisms behind the patterns they observe.



Example of in-depth interviews

Study. “Explaining Corporate Environmental Performance: How Does Regulation Matter?” Robert A. Kagan and coauthors 2003.

Main research question. How and to what extent does regulation matter in shaping corporate behavior?

Data. In-depth interviews with employers.

Analytic methods. Qualitative and quantitative analysis.

Selected findings.

- Social license pressures and the character of corporate environmental management appear more influential than regulations in convincing some firms beyond compliance.
- Economic pressures limit how far even the most environmentally committed firm can go beyond its competitors in making environmental gains.

2. Case studies frequently describe employers' experiences with compliance

Researchers who hope to gain a deeper qualitative understanding of how an organization or community experiences compliance efforts use case studies. A case study involves a deep study of organizations: researchers may conduct ethnographic observations, collect survey data, interview stakeholders with different perspectives on the organization, and review documents and files. Sometimes, researchers compare several case studies to see patterns across organizations. Case studies allow researchers to gain a comprehensive sense of the many processes and actors that affect compliance in one organization or community.

Case studies are similar to qualitative interviews in that they allow for a deep understanding of processes occurring in a single organization or group of organizations, but they cannot be used to understand broader patterns or generalize beyond the organization or community studied. They cannot be used to evaluate interventions, although they can help researchers shed light on why interventions may or may not be effective in specific organizational contexts.

3. Descriptive quantitative approach shows compliance patterns

When researchers hope to better understand the compliance landscape, they turn to descriptive methods. For example, these methods can be used to show what violations are occurring, what compliance practices employers use, and how this changes over time or varies by industry, business structure, or type of workers. Descriptive quantitative studies often use observational and survey data collected by the study authors or administrative data provided by an agency, but sometimes also use existing data sets, such as the Survey of Income and Program Participation (SIPP) or the Current Population Survey (CPS). Descriptive quantitative methods are the best way to develop an understanding of patterns of compliance and violations across a large group of employers.



Example of case study

Study. “The Diffusion of Rights: From Law on the Books to Organizational Rights Practices.” Jeb Barnes and Thomas F. Burke 2006.

Research question. How does the Americans with Disabilities Act (ADA) promote changes in operating procedures in organizations?

Data. Interviews with individuals at six organizations.

Analytic methods. Qualitative analysis.

Selected findings.

- Differences in exposure to a law, combined with organizational attributes, influence how organizations understand legal requirements.
- Varying organizational responses to deterrence, mobilization, and change suggests that we must look beyond compliance and noncompliance when examining how laws affect society.

At the same time, descriptive quantitative methods have limitations. Although they paint a picture of the employment landscape as it is, they cannot provide information on why the conditions described arose: they do not shed light on employer decision making or answer causal questions. One prominent challenge faced when using descriptive methods to describe rates of compliance is the difficulty associated with collecting data that accurately reflect rates of violations. These challenges stem from an inability to survey workers and employers directly about the occurrence of violations, as they may not be aware when these violations occur; the many pieces of information needed to calculate violations, such as minimum wage or overtime violations; the selection bias associated with the collection of administrative data; and the difficulty of collecting information from the vulnerable workers who are overrepresented among the broader group of workers experiencing violations.⁵

4. Quasi-experimental designs capture how strategies relate to compliance

When researchers want to understand how an intervention affects an outcome, but random assignment to treatment and control groups is not feasible, they turn to quasi-experimental research designs (QEDs). Because experiments on compliance topics are difficult to conduct, QEDs, including those that use “natural experiments,” are common in the compliance literature. Studies that use QED methods typically pair information about when and where a policy change occurred with survey data already collected (such as data from the CPS or SIPP), monitoring data (such as emissions levels), or administrative data. To draw inferences about policy impacts, QED studies compare the entities affected by the policy change to a comparison group of similar entities that is not subject to the change and thus represents what might have happened to the affected group in its absence. When QEDs are conducted rigorously, they allow the researcher to identify how the intervention affects the outcomes of interest, although with less certainty than a rigorously conducted experiment. QEDs are the best way to determine causality when randomization is not possible but a comparison group can be identified.



Example of descriptive approach

Study. “Broken Laws, Unprotected Workers: Violations of Employment and Labor Laws in America’s Cities.” Annette Bernhardt and co-authors 2009.

Research question. How often do urban low-wage workers experience minimum wage, overtime, “off the clock,” and other violations? How does this vary by worker and job characteristics?

Data. Original data from a survey of 4,387 workers in Chicago, Los Angeles, and New York City.

Analytic methods. Tabulations of percentages of sample members reporting violations for the sample as a whole and by subgroups.

Selected findings.

- 26 percent of surveyed workers experienced a minimum wage violation in the week preceding survey response.
- Surveyed workers who worked at establishment with fewer than 100 employees were more likely to experience violations than those at larger establishments.
- Women were significantly more likely to experience violations than men.
- Frontline workers in low-wage industries in Chicago, Los Angeles, and New York City lose more than \$56.4 million per week due to violations.

⁵ For more on these measurement challenges, see Eastern Research Group 2014 and Milkman 2014.



Example of QED study

Study. “The Effect of Mandatory Seat Belt Laws on Seat Belt Use by Socioeconomic Position.” Sam Harper et al. 2014.

Research question. What is the impact of seat belt laws on seat belt use, and how does this impact vary across socioeconomic groups?

Data. U.S. Behavioral Risk Factor Surveillance System surveys (1984–2008).

Analytic methods. Difference-in-differences.

Selected findings.

- Although mandatory seat belt laws have an effect regardless of educational attainment, the effect is stronger for those with fewer years of education.
- The effect of laws with primary enforcement is larger for less educated populations.

In the compliance area, the two most common types of QEDs are fixed-effects and difference-in-differences models, although cross-sectional regression models are also used.⁶

Fixed-effects models⁷ take advantage of variation in time and location of policy adoption to draw conclusions about the effect of the policy. To use a fixed-effects model, policies must vary across time or locations, and researchers must have a data set that includes information on policy adoption at multiple times (usually by year) or across multiple units (usually locations or employers), whichever aligns with the type of variation in policies. A fixed-effects model examines changes in an outcome of interest (usually compliance) over time or by location before and after policy change. Its modeling allows the researcher to control for the characteristics of locations and changes across time (for example, the macroeconomic conditions) by netting out these “fixed” or unchanging characteristics. The result is that an estimation of the variation between the independent variable (the policy change) and the outcome of interest (compliance) that can be used as a causal relationship. A caveat is that these models cannot net out differences in unobserved characteristics that change over time or across locations. For example, if the unobserved degree of enforcement of a policy fluctuates before and after the policy change, that could affect whether the change appears to influence compliance.

Difference-in-differences models compare entities that adopt a policy change or receive an intervention with similar entities that do not. In some cases, differences in trends in outcomes between the two groups before and after the policy change can be attributable to the policy change. To effectively implement a difference-in-differences model, the entities that adopted the intervention or policy change must have a similar trend in the outcome before the adoption to the entities who were not adopters. In addition, researchers must be able to demonstrate their initial similarity and have outcome data for both sets of entities. If the researcher can establish similarity in pre-intervention changes; establish good reasons why, if adoption had not occurred, the similarity in trends would have continued; and establish that other changes concurrent with

⁶ Another type of QED used less frequently is a regression discontinuity (RD) design, which can be used when a policy is applied based on a “cutoff rule” (for instance, when a firm’s injury rate is above a certain threshold). The researcher exploits obtain quasi-experimental variation in the policy by comparing those just above and below the threshold. For example, Li and Singleton (2018) use an RD to evaluate the effects of OSHA’s Site Specific Targeting inspections.

⁷ For more information on conducting and interpreting fixed effects models, see Dranove (2012) or Angrist and Pischke (2009). Because few studies have taken an instrumental variable approach when examining compliance, and such studies are not directly applicable to WHD (for example, Henriques et al. 2013), we do not discuss this approach in the review.

the adoption could not have affected the outcome, then deviations from the trend after adoption can be considered the causal impact of the policy or intervention.

Cross-sectional regression models often are practical, but typically provide less rigorous evidence than fixed-effects and difference-in-differences models. Fixed-effects and difference-in-differences models can yield evidence about impacts because they control for potential unobservable characteristics related to the policy or intervention that could drive the outcome. In contrast, a cross-sectional regression model only controls for observable characteristics. A cross-sectional regression model investigates the relationship between outcomes and other factors; for example, using information among a set of employers about compliance outcomes, policy change, and control variables (such as industry, firm size, production, and geography). By controlling for the effects of observable factors among the entities that did and did not adopt the policy, the regression isolates the effect of the policy change. Because one must assume that no unobservable variable drove both the change in the policy and the change in the outcome—a fairly large assumption—a regression model is less rigorous than a fixed-effects or difference-in-differences model.

Like all research methods, QEDs have limitations. Some very rigorous QEDs allow the researchers to make causal inferences; in general, however, the evidence on impacts gathered through QEDs is treated as weaker than experimental evidence (for more on this, see Cook 2015). Furthermore, in the compliance area, it can be difficult to identify a case that satisfies all the necessary conditions. Finally, on their own, QEDs cannot shed light on *why* the intervention had the effects that it did (or failed to generate effects).

5. Experiments capture compliance impacts of interventions

Researchers use experiments to determine the causal impact of a specific intervention. Experimental research requires researchers to randomly assign study participants to a treatment group that receives the intervention or to a control group that does not. Random assignment helps ensure that members of the treatment and control groups, on average, have the same characteristics, both those that can be observed and those that are unobserved. This ability to isolate impacts is why experiments are considered the gold standard for establishing causality.

Despite the potential for RCT designs to be used effectively to provide rigorous causal evidence for evaluating regulatory programs and compliance interventions, an important challenge to using RCT designs in this context is that statutory constraints often limit agencies' ability to vary enforcement of laws and regulations. It may not be possible to enforce laws and regulations more strictly among one group of entities than another, although regulatory agencies could potentially



Example of an experiment

Study. “The Behaviorist as Tax Collector: Using Natural Field Experiments to Enhance Tax Compliance.” Michael Hallsworth et al. 2017.

Research question. Which behavioral interventions are effective at increasing income tax compliance?

Data. Administrative tax records.

Analytic methods. Regression analysis comparing multiple randomly assigned treatment and control groups.

Selected findings.

- Inserting social norm messages in reminder letters increases payment rates for overdue tax.
- No evidence that loss aversion is a factor.
- Descriptive norms are more effective than injunctive norms.

vary the scope of enforcement or use different combinations of strategies to allow their efforts to be evaluated using an experimental design. Largely due to this drawback, few studies have conducted experiments to test the effects of regulatory strategies, with one exception: WHD's past efforts in conducting reinvestigations of randomly selected sets of noncompliant employers used an experimental design to assess the effects of investigations.

While experimental designs may be challenging to use to evaluate broad programs, they are more commonly used in the evaluation of behavioral interventions designed to promote compliance or encourage certain actions. Such interventions are typically better suited to experimental evaluation as they more closely adhere to RCTs' underlying assumptions, with clearly defined, targeted, and controlled interventions. Tests of behavioral theories began with laboratory experiments, where many of the patterns inconsistent with rational choices were first detected. As the theories became more precise, predictions were generated about how people might make different decisions if choices were presented to them differently. Although some studies have continued to use laboratory settings to examine behaviors, findings from such studies do not always apply in real-world settings (Levitt and List 2007).

Natural field experiments of behavioral interventions began to test whether predictions from behavioral theories would be accurate in real-world settings. Some of the most well-known of these studies apply less directly to employer compliance with WHD laws and regulations because they involve situations in which people do not take up a benefit explicitly designed to enhance their well-being (for example, Benartzi and Thaler 2013; Bertrand et al. 2006; Kleven and Kopczuk 2011; Bettinger et al. 2012; Chetty and Saez 2009).

Of direct relevance to WHD are field experiments of behavioral interventions that focus on compliance. Some of the interventions support social theories in that they suggest that social norms influence behaviors. Many of these studies have involved tax compliance. Although most studies on tax compliance target individuals, a few focus on employers. For example, compliance rates increased for firms in Singapore when letters described the social norms of on-time payment (OECD 2017). As another example, honesty in reporting increased when U.S. government contractors were asked to sign a statement asserting that "all statements are true" at the *beginning* of a form reporting sales information (Congdon and Shankar 2015).

Research on behavioral interventions addressing an individual's tax compliance reinforce these studies. In a review of 15 experiments that used behavioral interventions (mainly social norms communicated in standard letters to individuals) to increase tax compliance, seven studies found statistically significant impacts of the modified letters compared to standard reminder letters (Hallsworth 2014). The Behavioural Insights Team of the Cabinet Office in the United Kingdom conducted eight behavioral interventions targeting tax compliance that involved similar modifications of reminder letters (Behavioural Insights Team 2012). Some of these experiments focused on social norms; others, however, involved different behavioral insights such as salience, procrastination, complexity (tasks involving high cognitive burden), personalization (using real names and information specific to the recipient rather than generic titles and general information), and reciprocity (emphasizing services provided). In general, they found positive impacts of these modified messages on compliance behaviors when compared with standard reminders. Finally, two randomized controlled trials of social norm interventions found that reminder letters that emphasized social norms significantly accelerated the collection of tax

revenue, compared to standard letters (Hallsworth et al. 2017; see the text box on the preceding page).

Experiments of behavioral interventions also have been conducted on OSHA's enforcement of safety and health regulations. Chojnacki and colleagues (2017) found that a behavioral intervention that targeted employers who were cited for violations improved compliance with citations. The intervention included several communications designed to prompt employers to expect the coming citation, distill key information, provide concrete action steps, and remind them to act via postcard and telephone call. Juras and colleagues (2015) found that sending letters to establishments with high injury rates increased use of OSHA's on-site consultation program.

In designing these behavioral intervention experiments, four key design considerations emerge for structuring an experiment:

1. **Intervention materials and delivery mechanisms must be defined clearly.** Experiments for behavioral interventions all used some direct communication to the targeted population, including letters, emails, telephone calls (including robocalls), and text messages. In some cases, the behavioral intervention modified an existing communication; in other cases, it took the form of a new communication (for example, Chojnacki and colleagues [2017] used a new handout at the end of an inspection, a new cover letter sent within an existing citation package, and new postcards and telephone calls). Evaluating these interventions is feasible because they target a population for which contact information is already available, are inexpensive, can be automated, have different variants that can be randomly assigned to different groups of study subjects, and take advantage of existing mechanisms that people are accustomed to using for acquiring relevant information.
2. **Interventions must attempt to influence unobserved decision or behavior.** Behavioral interventions often are designed to encourage specific behaviors that may be unobservable. Chojnacki and colleagues (2017) described getting employers to open, read, and understand their citations, and then to decide on a response to the citation without procrastinating. Congdon and Shankar (2015) wanted employers to honestly report sales. Such behaviors, like those in the bottom row of Figure I.1, cannot be directly observed but are key mechanisms by which the intervention is intended to affect outcomes.
3. **Data must capture either intermediate or final outcomes.** In general, behavioral intervention experiments focus on the final outcome they are designed to address so that the ultimate value of the intervention can be judged. For example, the tax compliance interventions target reported income (the basis for the tax in question) or taxes paid, and the child support interventions examined whether a parent made a payment and the payment amount (Richburg-Hayes et al. 2017).

Researchers can learn about the mechanism through which an intervention worked by collecting data on, and examining, intermediate outcomes (illustrated in Figure I.1). The interventions in Chojnacki and colleagues (2017) were designed to encourage employers to respond to citations, under the hypothesis that a response would lead to the resolution of the citation. The intervention was not designed to increase resolution of citations among employers who were already responding on time. These hypotheses could be directly tested

by capturing and analyzing the intermediate outcome of responding to an OSHA citation and the final outcome of resolving the citation.

4. **A feasible level of random assignment must be selected.** Sometimes it is not feasible to randomly assign targeted individuals or employers, so the level of random assignment must occur at a different level. For example, Chojnacki and colleagues (2017) randomly assigned OSHA offices into treatment and control groups. Although such designs have less statistical precision than direct random assignment of employers or individuals, treatment and control groups are still comparable.

B. Available databases expand the scope of compliance research

To design an analysis of compliance strategies that WHD has conducted, the availability of appropriate data is critical in determining the feasibility of the study and the types of research questions that can be answered. In the literature evaluating employer compliance with laws and regulations, studies typically used data that included information on both strategies and compliance outcomes. These data often were in administrative databases. In some studies, however, researchers were able to combine these administrative data with data on employer characteristics or on the economic or social context in which the strategy was applied to expand the range of research questions considered. For example, to examine the effect of franchising on employer compliance with labor standards regulations, Weil (2010) identified the size and ownership status of investigated franchise restaurant outlets in the Wage and Hour Investigative Support and Reporting Database (WHISARD), using two sources of business data (FRANdata and Dun & Bradstreet), and added local demographic information from the 2000 U.S. Census matched to employer zip codes to control for differences across types of neighborhoods.

The expansion of the volume and types of available data in recent years presents an opportunity for WHD to integrate external data with its administrative data to explore new research questions using new methods. WHD administrative data, including WHISARD, contain information on initiatives and investigations. The strengths of these data are their completeness, accuracy, and uniqueness in containing information on these topics. Alone, these data can reveal patterns of violations among investigated entities. When integrated with external data, they can be used to address research questions of interest, including the effectiveness of WHD efforts and risk factors associated with violations.

We identified external databases that could be used for research questions related to compliance strategies and outcomes. Although many state-level databases exist, we focused on national-level databases because they carry greater potential to examine compliance within a broader context. These databases provide information on employer behavior related to compliance, or factors that may relate to employer behavior or the effectiveness of interventions: industry or business model of interest, economic and social context, and other compliance outcomes. For each type of information, we next discuss the types of databases we identified that met the inclusion criteria (see Chapter I) and how the information could be used. Table I in the appendix presents a detailed summary of findings on the external data that could be used.

1. Compliance data can provide key outcome measures

Measures of compliance are fundamental to any analysis of research questions about compliance. Compliance measures can reflect compliance of employers or compliance status of individual workers' pay with WHD laws and regulations. WHISARD is the key source for information related to employer compliance with WHD, but it does not cover a representative population and thus cannot be used to construct violation prevalence measures. Although we did not identify information on employer compliance with WHD contained in external data sets, we did find information related to individual compliance. The CPS is a large, nationally representative random sample of people containing information on their wages, earnings, and hours of work. CPS data can be used to construct proxy measures of minimum wage and overtime violation prevalence, as WHD has done in the past. Other nationally representative databases, like SIPP, could serve the same purpose; however, SIPP contains a much smaller sample size than the CPS and would provide less precise measures. Therefore, the CPS offers a practical approach for creating such measures to examine both the direct and spillover effects of strategies on compliance across industries and geographic areas. The main limitation, however, is that these measures may not be accurate, because we can only infer violations from self-reports of wage rates, earnings, and hours worked.

2. Industry- and business model-specific data can describe the business landscape

One of WHD's key aims in studying the outcomes of its compliance strategies is to learn how it can use industry structure and business model information in designing and applying those strategies effectively. To address research questions about efforts specific to industries and business models, data on them are needed. We identified databases on each of WHD's priority industries and business models that could be used to describe industry landscape and cost and competition pressures. Those factors may influence employer behavior, the effectiveness of interventions, or the channels by which spillover effects travel, and should be accounted for when examining the outcomes of strategies. The databases also could be used to help identify segments of an industry that are the most at risk for compliance issues by revealing characteristics associated with noncompliance or severity of violations, potentially helping WHD to target its investigations. We discuss potentially relevant databases on industries and business models in turn next.

a. Data on select industries

Agriculture. We identified several data sets related to the agricultural industry. Data sets such as the Farm Income and Wealth Statistics, Agricultural Productivity in the U.S., and the USDA National Agricultural Statistics Service contain performance, productivity, and growth measures. These measures could reveal geographic areas and crops in which there might be competitive pressure on costs that could affect compliance directly—or indirectly by effects on parts of an entity's supply chain. Other data sets, such as the National Agricultural Workers Survey and Agriculture National Agricultural Statistics Service, provide information on demographics, employment, and health for crop workers, which could reveal geographic areas and crops that employ more vulnerable workers at risk for violations. Data on numbers of visas issued by the Office of Foreign Labor Certification containing H-visa data could help identify geographic areas that employ many foreign workers and could have Migrant and Seasonal Agricultural Worker Protection Act (MSPA) and visa compliance issues. Although unauthorized workers may not be represented in these data, it may be possible to shed some light on WHD

violations. State, local agency, and county data could have additional information on licensing, certification, housing, and pesticide usage that could help identify geographic areas with large agricultural sectors and potential for housing violations under MSPA. Moreover, individual farm labor contractors who have received federal certificates to perform farm labor contracting activities may be identified in the MSPA Registered Farm Labor Contractor Listings. We could investigate these data more thoroughly, given a specific agricultural crop of interest.

Construction. We identified several data sets containing information on the construction industry. The U.S. Census Bureau maintains numerous publicly available data sets related to construction, including information on building permits; residential construction and sales; construction spending and prices indexes; and employment, job creation, separations, turnover, and average monthly earnings. USAspending provides information on construction projects by agency, such as the Department of Housing and Urban Development, as well as by award type and geographic location. A proprietary data set, Construction Market Data, contains construction market information, such as units and value, an expansion index on whether a location's construction volume is expected to expand or shrink in the upcoming 12 months, and information on upcoming bids for projects at the federal, state, and local levels. Information on construction projects by location could reveal areas where there might be competitive pressure that could affect compliance among firms bidding for construction projects.

Hotels. Most databases relating to hotels were only available through purchase. We identified hotel construction and conversion pipeline information in Lodging Econometrics; hotel counts, occupancy, and rating in geographic areas in Delta Check; and information on performance, occupancy, average daily rate, and revenue per available room in STR Global, CHD Expert, and CBRE Hotels. This information could reveal financial pressures related to industry structure that influence employer decision making.

Restaurants. Databases relating to restaurants also were typically only available through purchase. Data sets such as Restaurant data, Chain Store Guide Restaurant Franchisee PREMIER, and CHD Expert, when merged with WHISARD, could potentially identify details of the industry segments of investigated entities, as well as geographic areas or industry segments experiencing expansion or contraction in sales or businesses opening or closing (and, thus, competitive pressures). State and local data can be sources of restaurant inspection data, reflecting violations of food handling practices and health codes.

b. Data on select business models

Contracting/subcontracting. Several databases provide information on contracts and subcontracts (including the Federal Procurement Data System, System for Award Management (SAM), Entity Management Extracts Public Data Package, and USAspending). SAM also provides information on parties excluded from receiving federal contracts. However, this information is limited to federal projects. Information about active non-federal contractors, including list of licenses, permit dates, insurance and bond information, tends to be maintained at the state and local level, and can be found through searching the catalog at <http://www.data.gov>. An exception in the agriculture industry is the federal MSPA Registered Farm Labor Contractor Listings data, which lists individual farm labor contractors who have received federal certificates to perform farm labor contracting activities.

Franchising. We identified several national databases that focused on franchising business models for restaurants and hotels. Together they include information on brand, industry and sector, year of establishment, number of operating units and employees, and estimates of start-up expenses and average unit revenue. These databases, including FRANdata, Franchisor Database, and WorldFranchising, tend to be proprietary. However, since 2007, the publicly available Economic Census has also included information on franchise businesses. These data, when merged with WHISARD, could identify franchise status and relationships of establishments. Depending on companies investigated, we could take this analysis a step further by obtaining maps of locations of franchisees from the company, such as those found on [RREMC Restaurants](#)' and [WK Restaurant Group's](#) websites, which could be useful in a data visualization tool.

Supply chain. Although the review uncovered databases on industries in which the supply chain model is heavily used (for example, agriculture), it did not identify databases with information on supply chain relationships. A search for such information could begin at a more disaggregated, targeted level; for example, a search for data on agricultural supply chain relationships could start with local agencies or trade or crop organizations or publications.

3. Economic and social context data can describe the local environment

Economic and social factors can influence the effects of compliance strategies or employers' decision making processes. These types of data could be used in several ways. They can help us understand pressures among workers and employers in industry and local areas that we need to account for when analyzing and interpreting effects of strategies. These data can also help us identify vulnerable populations at risk for violations, such as low-wage earners who might be reluctant to lodge a complaint with WHD. WHD may be interested in evaluating strategies in industries and local areas in which these workers are concentrated. Furthermore, these data could relate to reactions to publicity about violations and how those reactions might spread. For example, local areas with a large share of employment in an industry may be especially attuned to news about that industry. Much data on individuals and employers is readily publicly available. More narrowly focused context data covering specific narrowly-defined industries, states, or metropolitan areas may be identified through more targeted searches.

National data. National databases are typically publicly available and based on Census or Bureau of Labor Statistics data. Information such as employment and earnings, found in the CPS, SIPP, and American Community Survey (ACS), can help reflect levels of labor supply and demand. Many other potentially useful individual-level characteristics can be found in national data sets, including demographics in the CPS and the General Social Survey (GSS); mental and physical health in the Americans' Changing Lives survey; food security, assets, health insurance, and child care in the SIPP and American Housing Survey; and attitudes in GSS.

Many data sets contain national information about employers. There is information on the number of establishments, employment, and payroll in Community Business Patterns, Business Dynamics Statistics, Statistics of U.S. Businesses, Quarterly Census of Employment and Wages and Business Employment Dynamics; employment flows in Quarterly Workforce Indicators; projected occupational employment growth in Projections Central; sales and revenue in the Economic Census; corporate hierarchy information in Dun & Bradstreet; and economic and

demographic characteristics of business owners in the Survey of Business Owners and Self-Employed Persons.

4. Other compliance outcomes can describe related behaviors

Other data sources could shed light on employers' decision making in the framework above. Employer compliance with laws and regulations in areas outside of WHD may reflect employer thinking about compliance in general. This information could reveal geographic areas or industry segments with compliance problems, or it could identify employers at risk for WHD noncompliance. Employee Benefits Security Administration (EBSA), Environmental Protection Agency (EPA), Food and Drug Administration (FDA), Mine Health and Safety Administration (MSHA), and OSHA inspections and compliance information, as well as Office of Federal Contract Compliance Programs (OFCCP) compliance evaluations and investigations, reveal where certain other types of compliance issues have been detected. Similarly, information on litigation brought against employers, such as offense and sentencing characteristics, could shed light on compliance problems in general. Data sets containing litigation information include offense and sentencing characteristics for organizations sentenced in federal district courts, Equal Employment Opportunity Commission Enforcement and Litigation Statistics, and nonmerger enforcement actions brought by the Federal Trade Commission. As with WHISARD, however, these data are based on nonrandom samples, so they cannot provide prevalence measures.

5. State and local data may be valuable

Although our review did not search systematically for data available from states and metropolitan areas, relevant data exists at these levels of aggregation. Such data may include all the types of information that we searched for: employer compliance behavior, industry and business model information, economic and social context, and other compliance outcomes. However, these databases may not be very useful unless the research focuses narrowly on a specific geographic area. For example, some states and metropolitan areas have business licensing and registration information that could allow us to observe business openings and closings, as well as compliance with other regulations. These include the restaurant liquor license information available from the Texas Alcohol and Beverage Commission, California Department of Alcoholic Beverage Control, and the New York Liquor Authority. Some cities and states maintain data related to business models, such as franchises and concessions that use city property (as in New York City), and active contractors and licenses (as in Illinois, Washington state, Louisville, Kentucky, and others). Some state government agencies, such as the State of California Economic Development Department, maintain state-level labor market data. More and other types of data may be available to address specific research questions for specific geographic areas of interest. For example, the Unregulated Work Survey in Chicago, New York City, Los Angeles includes information on documented and undocumented foreign workers, hours, wages, and whether received documentation from their employer listing their pay and tax deductions in the last pay period.

C. Summary

This chapter has identified a number of designs, data, and analytic methods that have been used to evaluate the effects of compliance strategies and behavioral interventions on compliance behaviors and outcomes. The methods and data could be used to fill some gaps in knowledge

related to WHD's efforts to increase employer compliance with the laws and regulations it enforces.

Five broad analytic designs common to this literature can be used to address a variety of research questions. In-depth interviews with employers and case studies can provide insights into the reasons driving employers' decisions about compliance to help researchers understand potential mechanisms behind compliance patterns they observe. Case studies can describe employers' experiences with compliance to allow deepen our understanding of processes occurring within a small number of organizations, though not necessarily more generally, and why interventions may or may not be effective in such contexts. Descriptive quantitative methods examining compliance outcomes can help illustrate compliance patterns, although they cannot provide information on why those patterns occurred. Several types of QEDs can assess whether an intervention caused an outcome; these include fixed effects models, difference-in-differences models, and cross-sectional regression models. RCTs can provide rigorous evidence of the causal impacts of compliance-related interventions or policy changes.

A variety of types of data sources are available to examine patterns related to compliance outcomes and context. Data on compliance with WHD can provide key outcome measures, but only a handful of datasets provide such information, notably WHISARD. Industry- and business model-specific data can describe the business landscape; numerous datasets were identified related to the industries of restaurants, hotels, construction, and agriculture, and to the franchising business model, though few datasets related to the contracting and supply chain business models were found. Many national-level datasets containing economic and social context data on individuals and employers can describe the local environment. Data on outcomes related to compliance with other laws and regulations outside of WHD can describe related behaviors. Finally, relevant state and local data sources may exist to examine research questions about specific geographic areas.

V. PROMISING DIRECTIONS FOR RESEARCH

This review serves as a foundation for research on compliance strategies in WHD. It discusses theories that might influence employer compliance decision making and behaviors and evidence of effectiveness on a variety of compliance strategies. This information can help inform WHD's compliance approaches. The review also presents data and analytic methods that have been—or could be—used in studying research questions related to employer compliance with laws and regulations, as well as databases available to address such questions.

The information in the review can be used to identify areas with gaps in knowledge about compliance strategies. These gaps can serve as a focal point for research that increases general knowledge about the effectiveness of compliance strategies and specific knowledge about the effectiveness of the strategies that WHD uses. In this chapter, we summarize the knowledge gained through the review (Section A) and describe unanswered questions that could guide research on compliance (Section B).

A. Summary of review

The review was designed to answer the overarching questions, “What is currently known about effective compliance assistance strategies, and what are promising directions for research to identify effective compliance strategies that have the potential to improve current strategies consistent with WHD's strategic priorities?” To meet this goal, we addressed three specific research questions about theories, strategies, and methods and data. In this section, we summarize findings that answer those questions and describe their relevance to WHD. One general limitation of the findings from the literature review is that research has largely focused on just a few regulatory areas—in particular, EPA, OSHA, and tax regulations. This focus might mean that results are specific to those regulatory areas and may not always apply to compliance in WHD or other regulatory contexts.

1. What theories have been developed to predict employer compliance with laws and regulations?

Rational choice, social, and behavioral theories are three predominant theories of employer behavior that could offer useful ways for thinking about how employers make decisions about compliance. These theories each highlight key factors that might influence employer decision making, and WHD could consider these factors when enhancing its compliance strategies. Rational choice theories describe how the perceived benefits and costs of noncompliance (including the perceived certainty of detection, size of penalties, and damage to reputation) affect employer choices. When applied to compliance with laws and regulations, this means that noncompliant employers may continually adjust their behavior to evade being detected of violations (for example), which forces the regulator to continually change tactics to maintain a constancy in the probability of identifying violators. Social theories explain how the larger social context in which decisions are made can influence decision making more than economic calculations of benefits and costs. When applied to compliance with laws and regulations, this means that organizational structures (for example) can affect how compliance information is received and acted upon. Finally, behavioral theory shows how systematic miscalculations or cognitive biases such as salience, complexity, procrastination, and loss aversion can influence decision making and distort benefit-cost analyses. When applied to compliance with laws and

regulations, this means that enforcement strategies that increase the cost of noncompliance might be more effective when embedded in simple messages that emphasize the probability of being caught (for example).

Some theories may be more relevant to specific industries than others. A comprehensive understanding of a given industry may strengthen the ability to apply theories to predict employer compliance. For example, social theories might be more relevant in explaining behaviors of employers operating in industries with complex business relationships because of the social dynamics and economic factors involved in the relationships. Rational choice theories might be more relevant in industries in which a simple direct employer-employee relationship exists because that relationship often is more economic than social.

2. What strategies have been found to be effective in addressing employer noncompliance and promoting employer compliance?

A sizeable body of research suggests that enforcement strategies, including investigations and the threat of penalties and damages, can improve employer compliance with laws and regulations. Public awareness can be effective as well. Publicity about violations has been shown to have both direct impacts on the noncompliant employer and spillover effects on other employers. Ratings of firms' performance can also improve their compliance.

Research suggests that other strategies might be less successful. Compliance assistance can increase knowledge about employers' obligations, but there is little evidence about whether this increased knowledge leads to increased compliance. Mixed evidence exists about the effects of various partnership and collaboration strategies. Self-monitoring programs have been found most effective when firms or their competitors are subject to strict enforcement, but are not always effective (for example, for firms with poor compliance history). Internal (within firm) monitoring has been found to be effective when combined with other changes such as allowing suppliers to better schedule their work, promoting health and safety, and addressing inequality in employment opportunities and promotion decisions. Monitoring by third parties can be effective when combined with incentives (such as the trade-related incentives that are part of the U.S.-Cambodia Bilateral Textile Trade Agreement).

3. What methods and data can be brought to bear to assess employer compliance with WHD laws and regulations?

The nature of the research question determines which analytic methods are used to assess employer compliance. Experiments have been used primarily to study behavioral interventions involving minor adjustments to messaging and procedures, largely because statutory constraints often limit ability to vary enforcement of laws and regulations, which precludes their use in determining impacts of general compliance strategies. QEDs often are the more appropriate strategy for evaluating the effects of compliance strategies, because researchers can sometimes take advantage of changes in policies or activities to assess their impact before and after changes occurred. Descriptive methods are well suited to helping researchers understand patterns of compliance, and qualitative methods can help researchers answer research questions on why and how employers comply.

Several types of external databases might be useful for evaluating compliance strategies. Although external data do not exist that can provide direct measures of compliance, external data can provide proxy measures of minimum wage and overtime violations by inferring compliance rates from individuals' reporting of wage and hours. External data on specific industries or general business models might be useful in addressing questions about the outcomes of compliance strategies in a specific context, however. Databases are available for use in the WHD priority industries of agriculture, construction, hotels, and restaurants. A few databases are available for WHD priority business models of contracting/subcontracting and franchising; we did not identify any such databases on supply chains.

B. Promising directions for research

The review uncovered several gaps in knowledge about the effectiveness of strategies to increase compliance with the laws and regulations that WHD enforces. Although much of the existing research has focused on compliance in areas other than worker's wages and hours, these gaps highlight the areas that need additional research that can build knowledge about WHD strategies or behavioral interventions that could increase compliance.

This section describes these gaps. The discussion also includes examples of ways in which research could evaluate the effectiveness of a specific compliance strategy or a behavioral intervention within a strategy, as well as examples of ways in which research could assess behavioral interventions to promote employer compliance.

1. Gaps in knowledge about effectiveness of compliance strategies

Three areas in the research on the effectiveness of compliance strategies have received relatively little attention. Research in these areas could provide WHD with an opportunity to advance knowledge about the effectiveness of some of its strategies or some of the approaches that it uses within each strategy. Specific knowledge gaps exist in understanding:

- a. **The effectiveness of strategies including compliance assistance as well as partnerships and collaborations.** Little research exists on the effects of these two strategies on compliance with laws and regulations. Because WHD has adopted many of these strategies, and because they have the potential to reach a larger population of employers than enforcement, research on their effectiveness could be particularly valuable. Research on the WHD strategies employed in each of these areas can offer opportunities to expand WHD's knowledge of the effectiveness of its particular strategy and general knowledge in an understudied area. Specific strategies to investigate might include modernized approaches to compliance assistance; opinion letters (a strategy that was used infrequently for several years) to share guidance; compliance assistance and partnerships, including identifying the conditions or in what combinations they can work most effectively; and strategic partnerships with business associations, businesses, government agencies, and employee advocacy groups.

One way research could build an understanding of the promise of such strategies is to examine their outcomes and impacts. This type of research requires identifying changes in strategies over time or differences in strategies across geographic areas or types of employers to provide a basis for estimating outcomes and impacts. To obtain rigorous evidence on impacts of strategies, rather than on outcomes associated with them, the

outcomes would need to be measured across a population, rather than among a sample of employers selected for investigations. Some investigations of random samples of employers that WHD has conducted in the past (and housed in WHISARD) could provide outcomes representative of a population, but such samples may be too small to provide adequate statistical power for such analysis. CPS violation measures could be used rather than WHISARD employer compliance measures to study impacts, but the cost of this approach would be precision in the measurement of outcomes. Examples of such research include:

- Assessing compliance outcomes associated with different compliance strategies by comparing compliance outcomes across district office jurisdictions in which different approaches have been taken. If relevant WHD data are available, this research could compare effects of compliance assistance activities with the effects of compliance assistance paired with other compliance strategies such as partnerships. A central challenge to this design, however, is that individual district offices may have used methods that they believed are most effective in their local areas, which means that the selection of activities and strategies might be correlated with the environment. Related to this, the offices may have targeted entities for strategies that they believed would be most receptive to the strategy. Such selection problems would tend to overstate the effectiveness of such methods.
- Assessing the compliance outcomes associated with WHD's approaches to providing guidance by examining the relationship between measures of such guidance and compliance rates over time. For example, one measure could be the frequency of issuing opinion letters. In this example, research could investigate whether time periods of increased frequency are followed by time periods with increased compliance, or whether regions with higher frequency show increases in compliance. A central challenge to this approach is that the approach to providing guidance may have been developed in response to compliance problems perceived by WHD (for example, low compliance rates) or be correlated with other factors occurring at the same time (such as changes in other WHD procedures). Under such circumstances, it could be difficult to cleanly distinguish the effects of the guidance from other factors.
- Comparing compliance outcomes associated with one strategy implemented in different conditions, or associated with different combinations of strategies. This approach could start with an outcomes analysis, such as those described in the bullets above, but conducted separately for different samples of establishments, such as those sharing similar economic and industry conditions, employer characteristics, or engagement with combinations of strategies. Such a design shares the challenges of the analyses described above.

Research on the effectiveness of compliance assistance, partnerships and collaborations, and public awareness strategies might also examine whether specific behavioral interventions embedded in the strategy might increase compliance. Examples of such interventions might include changes to the content or delivery of compliance assistance information, the audience that CORPS targets for outreach, or the method of publicizing violations.

- b. **The factors associated with compliance when self-monitoring or third-party monitoring is implemented.** Evidence on the effectiveness of self-monitoring programs is mixed, suggesting that their impacts might depend on the specific type of self-monitoring approach used or the conditions under which the programs are executed. Such conditions might include industry or employer characteristics (for example, larger establishments may have more resources to invest in such efforts). Research could assess the outcomes and impacts of self- or third-party monitoring among employers if programs have changed, or if the nature of such monitoring varies across geographic areas or types of employers. Research could also focus on the factors associated with successful long-term maintenance of such programs. Examples of such research include:
- Examining whether changes in self-monitoring resources made available to employers were associated with changes in compliance outcomes over time (potentially over the long term). This research has the advantage of exploiting variation over time in the self-monitoring strategy, a naturally occurring phenomenon. Its central limitation is that other factors affecting compliance may have been changing at the same time, making it difficult to isolate the effect of the self-monitoring resources.
 - Investigating whether compliance (potentially including long-term compliance) among employers offered the option of participating in self-monitoring programs differed from compliance among similar employers who were not offered the option. This approach could be constructed as a rigorous QED, but would face the challenge of identifying a comparison group with similar levels of and trends in compliance before the offer. Without evidence of such initial equivalence, researchers cannot determine whether the estimated effect of the program can be attributed to its offer or the initial differences between groups.
- c. **The effectiveness of strategies to deter violations within industries.** In industries in which employers have complex business relationships (such as long supply chains, contracting/subcontracting, or franchising), an entity such as a franchisor might be held responsible for compliance but not be directly engaged in the employer-employee relationship of the franchisee and her employees. Under such conditions, research shows that tailoring compliance strategies and tools to specific industry and business models can be effective. This tailoring requires an understanding of that environment, however, including the nature of the business relationships between employers and the obligations of each regarding compliance. Because WHD places a high priority on using industry and business model data to broaden the impact of compliance strategies, gaining insights into the effectiveness of these multi-pronged approaches might greatly expand WHD's knowledge in a critical area.

Research has only explored tailoring of enforcement strategies; it has not explored tailoring of other strategies (such as compliance assistance). Therefore, examining the effectiveness of strategies other than enforcement may be a fruitful direction for research. For example, past research has shown that publicity about violations can increase compliance, with direct effects on the targeted firm and spillover effects to other firms. Future research could examine the direct and spillover effects of publicity that brings transparency to an industry's structure or prevalent business model as it relates to compliance. The design of such research would depend on how WHD has applied public awareness strategies. For example,

research might compare compliance measures (for example, compliance rates, recidivism, severity of violations) for targeted firms and the industry as a whole before and after strategies were adopted. This comparison captures both direct and spillover effects associated with the strategy. A challenge to this approach would be concurrent trends within the industry that affect compliance (for example, changes in consumer demand), which would make it difficult to isolate the effect of the strategy. This challenge might be addressed by comparing findings to an industry with a similar structure but without adoption of the strategy, but the comparison industry would need to have similar economic trends and characteristics for the comparison to be valid.

Another possible direction for research on tailoring strategies involves investigating the characteristics of employers, industries, and business models that are associated with the severity of violations or with recidivism. If conducted within a specific industry or business model (such as franchises), such research on risk factors could provide insights about how WHD could tailor its use of specific compliance strategies within the industry or business model to efficiently target entities that are most likely to have severe or repeated violations. As one option, research in this vein could rely solely on external data to uncover factors correlated with noncompliance within a population of employers. For example, it could look at associations between external data on local economic conditions, business models, and contextual characteristics within an industry and indirect proxy measures of compliance in the CPS. Alternatively, it could integrate industry and business model information from WHISARD and external data to uncover factors correlated with noncompliance within a sample of employers selected for investigations. Although using the selected sample of employers in WHISARD limits the generalizability of findings, measures of violations in WHISARD are more precise than the proxy measures inferred from the CPS, and some measures of factors potentially correlated with noncompliance might not exist outside of WHISARD.

2. Additional gaps in knowledge about behavioral interventions

Our review identified two additional understudied areas in which behavioral interventions and research on them might be valuable to WHD. Specific knowledge gaps exist in understanding:

- a. **How to alter employer behavior, as opposed to individual behavior, to increase compliance with laws and regulations.** Research has focused on examining factors that influence decisions made by individuals on their own behalf—rather than firms or individuals acting on behalf of their firms—with respect to complying with laws and regulations. It is not clear, however, whether interventions that effectively increase individuals' compliance with laws and regulations are also effective for firms. A suggestive exception is a study finding that considerations of “tax morale” or intrinsic propensity to pay taxes apply to firms as well as individuals, and can be enhanced more effectively by reducing barriers to compliance, including complexity, than by enforcement in the form of tax audits (Alm and McClellan 2012). Social theories suggest that the organizational context in which decisions are made might affect decision making. Research could investigate whether behavioral interventions that are effective in influencing individual decision making are also effective in influencing firms. For example, research has shown that referencing local social norms encourages individuals to take desired actions. A behavioral intervention could

examine whether using norms as moral persuasion in compliance assistance materials increases firms' compliance. An example might be to include in such materials the estimated proportion of investigated firms in an industry that were found to be noncompliant (similar to information dissemination in the hotel industry).

b. **How behavioral interventions can be used to increase compliance among employers.**

Much of the research on behavioral interventions has focused on getting individuals to return forms or attend meetings, a consequence of studying small behavioral tweaks. However, WHD engages with employers more through investigations and district office outreach than through pointed efforts such as mailings. Research on behavioral interventions that include multiple components might provide insights about the effectiveness of different combinations of interventions. Such research might be structured to test in what way many small changes within a single strategy might combine to increase compliance. For example, the impact of emphasizing the high compliance rate of employers in an industry throughout compliance assistance materials provided by district offices might be greater than the incremental impact of just a few mentions of norms because of the consistency of the messaging. Alternatively, the impact of such messaging might be more effective in particular strategies; for example, when it is integrated into a new public awareness or voluntary compliance campaign rather than into a campaign to develop partnerships.

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

REFERENCES

- Adalja, Aaron, and Erik Lichtenberg. "Produce Growers' Cost of Complying with the Food Safety Modernization Act." *Food Policy*, vol. 74, 2018, pp. 23–38. Available at <https://www.sciencedirect.com/science/article/pii/S0306919216304651>. Accessed March 14, 2018.
- Alm, James and Chandler McClellan. "Rethinking the Research Paradigms for Analyzing Tax Compliance Behavior." Tulane economics working paper, no. 1211, 2012. Available at <http://repec.tulane.edu/RePEc/pdf/tul1211.pdf>. Accessed October 9, 2018.
- Angrist, Joshua, and Jörn-Steffen Pischke. *Mostly Harmless Econometrics: An Empiricist's Companion*. New Haven, CT: Princeton University Press, 2009.
- Ariely, Dan, and Klaus Wertenbroch. "Procrastination, Deadlines, and Performance: Self-Control by Precommitment." *Psychological Science*, vol. 13, no. 3, 2002, pp. 219–224. Available at <http://journals.sagepub.com/doi/pdf/10.1111/1467-9280.00441>. Accessed March 14, 2018.
- Ashenfelter, Orley, and Robert S. Smith. "Compliance with the Minimum Wage Law." *Journal of Political Economy*, vol. 87, no. 2, 1979, pp. 333–350. Available at <https://www.journals.uchicago.edu/doi/abs/10.1086/260759>. Accessed March 14, 2018.
- Barnes, Jeb, and Thomas F. Burke. "The Diffusion of Rights: From Law on the Books to Organizational Rights Practices." *Law & Society Review*, vol. 40, no. 3, 2006, pp. 493–524. Available at <https://pdfs.semanticscholar.org/2497/1717a32657f6ff3f1387f91dacc99876b695.pdf>. Accessed March 14, 2018.
- Becker, Gary S. "Crime and Punishment: An Economic Approach." Pages 169–217 in *The Economic Dimensions of Crime*, edited by Nigel G. Fielding, Alan Clarke, and Robert Witt. London: Palgrave Macmillan, 1968. Available at <https://www.journals.uchicago.edu/doi/pdfplus/10.1086/259394>. Accessed March 14, 2018.
- Behavioural Insights Team. "Applying Behavioural Insights to Reduce Fraud, Error and Debt." London: Cabinet Office, 2012. Available at http://38r8om2xjhhl25mw24492dir.wpengine.netdna-cdn.com/wp-content/uploads/2015/07/BIT_FraudErrorDebt_accessible.pdf. Accessed March 14, 2018.
- Benartzi, S., and R. H. Thaler. "Behavioral Economics and the Retirement Savings Crisis." *Science*, vol. 339, no. 6124, 2013, pp. 1152–1153. Available at <http://science.sciencemag.org/content/339/6124/1152>. Accessed March 14, 2018.
- Benbear, Lori S. "Are Management-based Regulations Effective? Evidence from State Pollution Prevention Programs." *Journal of Policy Analysis and Management*, vol. 26, no. 2, 2007, pp. 327–348. Available at <https://onlinelibrary.wiley.com/doi/pdf/10.1002/pam.20250>. Accessed March 14, 2018.

- Benbear, Lori S., and Sheila M. Olmstead. "The Impacts of the 'Right to Know': Information Disclosure and the Violation of Drinking Water Standards." *Journal of Environmental Economics and Management*, vol. 56, no. 2, 2008, pp. 117–130. Available at <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.1003.5163&rep=rep1&type=pdf>. Accessed March 14, 2018.
- Benbear, Lori S., Katrina K. Jessoe, and Sheila M. Olmstead. "Sampling Out: Regulatory Avoidance and the Total Coliform Rule." *Environmental Science and Technology*, vol. 43, no. 14, 2009, pp. 5176–5182. Available at <https://pubs.acs.org/doi/pdf/10.1021/es803115k>. Accessed October 9, 2019.
- Bernhardt, Annette, Ruth Milkman, Nik Theodore, Douglas D. Heckathorn, Mirabai Auer, James DeFilippis, Ana L. González, Victor Narro, and Jason Perelshteyn. "Broken Laws, Unprotected Workers: Violations of Employment and Labor Laws in America's Cities." Los Angeles, CA: UCLA Institute for Research on Labor and Employment, 2009. Available at <https://escholarship.org/uc/item/1vn389nh>. Accessed April 19, 2018.
- Bertrand, Marianne, Sendhil Mullainathan, and Eldar Shafir. "Behavioral Economics and Marketing in Aid of Decision Making among the Poor." *Journal of Public Policy & Marketing*, vol. 25, no. 1, 2006, pp. 8–23. Available at <https://dash.harvard.edu/bitstream/handle/1/2962609/behavioral%20economics%20and%20marketing.pdf>. Accessed March 14, 2018.
- Bettinger, Eric P., Bridget T. Long, Philip Oreopoulos, and Lisa Sanbonmatsu. "The Role of Application Assistance and Information in College Decisions: Results from the H&R Block FAFSA Experiment." *Quarterly Journal of Economics*, vol. 127, no. 3, 2012, pp. 1205–1242. Available at <https://cepa.stanford.edu/content/role-application-assistance-and-information-college-decisions-results-hr-block-fafsa-experiment>. Accessed March 14, 2018.
- . "The Role of Simplification and Information in College Decisions: Results from the H&R Block FAFSA Experiment," NBER working paper no. 15361. Cambridge, MA: National Bureau of Economic Research, 2009. Available at <http://www.nber.org/papers/w15361>. Accessed March 14, 2018.
- Braithwaite, John, and Toni Makkai. "Testing an Expected Utility Model of Corporate Deterrence." *Law and Society Review*, 1991, pp. 7–40. Available at <https://www.jstor.org/stable/3053888?seq=1>. Accessed March 14, 2018.
- Calavita, Kitty. "Employer Sanctions Violations: Toward a Dialectical Model of White-Collar Crime." *Law & Society Review*, vol. 24, no. 4, January 1990, pp. 1041–1069. Available at https://www.researchgate.net/publication/272593736_Employer_Sanctions_Violations_Toward_a_Dialectical_Model_of_White-Collar_Crime. Accessed April 17, 2018.
- Cartwright, Nancy and Angus Deaton, A. "Understanding and Misunderstanding Randomized Controlled Trials." Working Paper. Centre for Humanities Engaging Science and Society (CHESS), Durham, 2016. Available at <http://dro.dur.ac.uk/19954/1/19954.pdf>. Accessed October 9, 2018.

- Chang, Yang-Ming and Isaac Ehrlich. "On the Economics of Compliance with the Minimum Wage Law." *Journal of Political Economy*, vol. 93, no. 1, 1985, pp. 84-91. Available at <https://www.k-state.edu/economics/staff/websites/chang/publications/JPE-1985%20Minimum%20Wage%20Law.pdf>. Accessed October 9, 2018.
- Chatterji, Aaron K., and Michael W. Toffel. "How Firms Respond to Being Rated." *Strategic Management Journal*, vol. 31, no. 9, 2010, pp. 917-945. Available at <https://onlinelibrary.wiley.com/doi/abs/10.1002/smj.840>. Accessed April 17, 2018.
- Chetty, Raj, and Emmanuel Saez. "Teaching the Tax Code: Earnings Responses to an Experiment with EITC Claimants," NBER working paper no. 14836. Cambridge, MA: National Bureau of Economic Research, 2009. Available at <http://elsa.berkeley.edu/~saez/chetty-saez09eitc.pdf>. Accessed March 14, 2018.
- Choi, Jihee, Hillary Norwood, Soobin Seo, Sujata A. Sirsat, and Jack Neal. "Evaluation of Food Safety Related Behaviors of Retail and Food Service Employees while Handling Fresh and Fresh-Cut Leafy Greens." *Food Control*, vol. 67, 2016, pp. 199-208. Available at <https://www.sciencedirect.com/science/article/pii/S0956713516300901>. Accessed March 14, 2018.
- Chojnacki, Greg, Jonah Deutsch, Amin, Samia, Irma Perez-Johnson, Matthew Darling, and Jaclyn Lefkowitz. "Using Behavioral Insights to Help Employers Resolve OSHA Citations: Trial Design and Findings." Washington, DC: Mathematica Policy Research, May 2017. Available at <https://www.mathematica.org/our-publications-and-findings/publications/using-behavioral-insights-to-help-employers-resolve-osha-citations-trial-design-and-findings>. Accessed March 14, 2018.
- Chouinard, Jill Anne, Ayesha S. Boyce, Juanita Hicks, Jennie Jones, Justin Long, Robyn Pitts, and Myrah Stockdale. "Navigating Theory and Practice through Evaluation Fieldwork: Experiences of Novice Evaluation Practitioners." *American Journal of Evaluation*, vol. 38, no. 4, 2017, pp. 493-506. Available at <http://journals.sagepub.com/doi/full/10.1177/1098214016667582>. Accessed October 9, 2018.
- Cialdini, Robert B., Linda J. Demaine, Brad J. Sagarin, Daniel W. Barrett, Kelton Rhoads, and Patricia L. Winter. "Managing Social Norms for Persuasive Impact." *Social Influence*, vol. 1, no. 1, 2006, pp. 3-15. Available at <https://www.fs.usda.gov/treearch/pubs/45277>. Accessed March 14, 2018.
- Congdon, William J., and Maya Shankar. "The White House Social & Behavioral Sciences Team: Lessons Learned from Year One." *Behavioral Science & Policy*, vol. 1, no. 2, December 2015, pp. 77-86. Available at https://muse.jhu.edu/article/615100?casa_token=XVj43QSp6s8AAAAA:sshOuxeSFyVQrfBnpVYXgpV4Pa-TmRFweJpkqz9wTtkOFaC5uH-oWdH7tVEZp0BZ7i3gIaPz. Accessed March 14, 2018.

- Cook, Thomas D. "Quasi-experimental Design." In *Wiley Encyclopedia of Management*, edited by C. L. Cooper, P. C. Flood and Y. Freney. Hoboken, NJ: John Wiley and Sons, 2015. Available at <http://onlinelibrary.wiley.com/doi/10.1002/9781118785317.weom110227/full>. Accessed March 14, 2018.
- Darnall, Nicole and Stephen Sides. "Assessing the Performance of Voluntary Environmental Programs: Does Certification Matter?" *Policy Studies Journal*, vol. 36, no. 1, 2008, pp. 95-117. Available at https://www.researchgate.net/publication/228264006_Assessing_the_Performance_of_Voluntary_Environmental_Programs_Does_Certification_Matter. Accessed October 10, 2018.
- Doshi, Anil R., Glen W. S. Dowell, and Michael W. Toffel. "How Firms Respond to Mandatory Information Disclosure." *Strategic Management Journal*, vol. 34, no. 10, 2013, pp. 1209-1231. Available at <https://onlinelibrary.wiley.com/doi/abs/10.1002/smj.2055?globalMessage=0>. Accessed April 17, 2018.
- Dranove, David. "Practical Regression: Fixed Effects Models." Technical note, Kellogg School of Management, Northwestern University, 2012. Available at <https://www.kellogg.northwestern.edu/kellogg-case-publishing/case-search/case-detail.aspx?caseid={0115004A-7DBB-4D4D-91EC-4F0472572421}>. Accessed October 10, 2018.
- Eastern Research Group, Inc. "Evaluation of DOL's Wage and Hour Division Child Labor Program Final Report." Lexington, MA: U.S. Department of Labor, 2009. Available at <https://www.dol.gov/whd/resources/evaluations/ChildLaborEvalFinalReport.pdf>. Accessed March 14, 2018.
- . "The Social and Economic Effects of Wage Violations: Estimates for California and New York." Final Report for U.S. Department of Labor. Lexington, MA, 2014. <https://www.dol.gov/asp/evaluation/completed-studies/wageviolationsreportdecember2014.pdf>. Accessed March 14, 2018.
- Epstein, Deborah, Lisa A. Goodman, and Cris Sullivan. "Beyond the RCT: Integrating Rigor and Relevance to Evaluate the Outcomes of Domestic Violence Programs." *American Journal of Evaluation*, vol. 39, no. 1, 2018, pp. 58-70. Available at <https://scholarship.law.georgetown.edu/facpub/2047>. Accessed October 9, 2018.
- Evans, Mary F., Lirong Liu, and Sarah L. Stafford. "Do Environmental Audits Improve Long-Term Compliance? Evidence from Manufacturing Facilities in Michigan." *Journal of Regulatory Economics*, vol. 40, no. 3, 2011, pp. 279-302. Available at http://scholarship.claremont.edu/cgi/viewcontent.cgi?article=1506&context=cmc_fac_pub. Accessed March 14, 2018.
- Fine, Janice, and Jennifer Gordon. "Strengthening Labor Standards Enforcement through Partnerships with Workers' Organizations." *Politics & Society*, vol. 38, no. 4, 2010, pp. 552-585. Available at <http://journals.sagepub.com/doi/pdf/10.1177/0032329210381240>. Accessed March 14, 2018.

- Forbes, Silke J., Mara Lederman, and Trevor Tombe. "Quality Disclosure Programs and Internal Organizational Practices: Evidence from Airline Flight Delays." *American Economic Journal: Microeconomics*, vol. 7, no. 2, 2015, pp. 1–26. Available at <https://pubs.aeaweb.org/doi/pdfplus/10.1257/mic.20130164>. Accessed October 9, 2018.
- Friedrichs, David O. *Trusted Criminals: White Collar Crime in Contemporary Society*. Belmont, CA: Wadsworth Cengage Learning, 2009.
- Galvin, Daniel J. "Deterring Wage Theft: Alt-Labor, State Politics, and the Policy Determinants of Minimum Wage Compliance." *Perspectives on Politics*, vol. 14, no. 2, 2016, pp. 324–350. Available at <https://www.scholars.northwestern.edu/en/publications/deterring-wage-theft-alt-labor-state-politics-and-the-policy-dete>. Accessed March 14, 2018.
- Gray, Garry C., and Susan S. Silbey. "Governing Inside the Organization: Interpreting Regulation and Compliance." *American Journal of Sociology*, vol. 120, no. 1, 2014, pp. 96–145. Available at <https://www.journals.uchicago.edu/doi/abs/10.1086/677187?mobileUi=0&>. Accessed March 14, 2018.
- Gray, Wayne B., and Mary E. Deily. "Compliance and Enforcement: Air Pollution Regulation in the US Steel Industry." *Journal of Environmental Economics and Management*, vol. 31, no. 1, 1996, pp. 96–111. Available at <https://www.sciencedirect.com/science/article/pii/S0095069696900340>. Accessed March 14, 2018.
- Gray, Wayne B., and John M. Mendeloff. "The Declining Effects of OSHA Inspections on Manufacturing Injuries, 1979–1998." *ILR Review*, vol. 58, no. 4, 2005, pp. 571–587. Available at <http://journals.sagepub.com/doi/pdf/10.1177/001979390505800403>. Accessed March 14, 2018.
- Gray, Wayne B., and John T. Scholz. "Does Regulatory Enforcement Work? A Panel Analysis of OSHA Enforcement." *Law & Society Review*, vol. 287, no. 1, 1993, pp. 177–214. Available at <http://www.jstor.org/stable/3053754>. Accessed March 14, 2018.
- . "Analyzing the Equity and Efficiency of OSHA Enforcement." *Law & Policy*, vol. 13, no. 3, 1991, pp. 185–214. Available at <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1467-9930.1991.tb00066.x>. Accessed April 17, 2018.
- Gray, Wayne B., and Ronald J. Shadbegian. "When and Why Do Plants Comply? Paper Mills in the 1980s." *Law & Policy*, vol. 27, no. 2, 2005, pp. 238–261. Available at <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1467-9930.2005.00199.x>. Accessed April 17, 2018.
- Gray, Wayne B., and Jay P. Shimshack. "The Effectiveness of Environmental Monitoring and Enforcement: A Review of the Empirical Evidence." *Review of Environmental Economics and Policy*, vol. 5, no. 1, 2011, pp. 3–24. Available at <https://academic.oup.com/reep/article-abstract/5/1/3/1567608>. Accessed March 14, 2018.

- Green, Andrew. "Hours Off the Clock." Cornell University ILR School, Labor Dynamics Institute, 2017. Available at <https://digitalcommons.ilr.cornell.edu/ldi/42/>. Accessed April 19, 2018.
- Hallsworth, Michael. "The Use of Field Experiments to Increase Tax Compliance." *Oxford Review of Economic Policy*, vol. 30, no. 4, 2014, pp. 658–679. Available at <https://pdfs.semanticscholar.org/b22c/a105f9c54486041b11cd73f0d7529f880c15.pdf>. Accessed March 14, 2018.
- Hallsworth, Michael, John A. List, Robert D. Metcalfe, and Ivo Vlaev. "The Behavioralist as Tax Collector: Using Natural Field Experiments to Enhance Tax Compliance." *Journal of Public Economics*, vol. 148, April 2017, pp. 14–31. Available at <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.462.9215&rep=rep1&type=pdf>. Accessed March 14, 2018.
- Hamilton, James T. "Pollution as News: Media and Stock Market Reactions to the Toxics Release Inventory Data." *Journal of Environmental Economics and Management*, vol. 28, no. 1, January 1995, pp. 98–113. Available at <https://www.sciencedirect.com/science/article/pii/S0095069685710078>. Accessed April 17, 2018.
- Harper, Sam, Erin C. Strumpf, Scott Burris, George D. Smith, and John Lynch. "The Effect of Mandatory Seat Belt Laws on Seat Belt Use by Socioeconomic Position." *Journal of Policy Analysis and Management*, vol. 33, no. 1, 2014, pp. 141–161. Available at <https://www.jstor.org/stable/24033299?seq=1>. Accessed March 14, 2018.
- Henriques, Irene, Bryan W. Husted, and Ivan Montiel. "Spillover Effects of Voluntary Environmental Programs on Greenhouse Gas Emissions: Lessons from Mexico." *Journal of Policy Analysis and Management*, vol. 32, no. 2, 2013, pp. 296–322. Available at https://www.researchgate.net/publication/262766855_Spillover_Effects_of_Voluntary_Environmental_Programs_on_Greenhouse_Gas_Emissions_Lessons_from_Mexico. Accessed October 10, 2018.
- Hirsh, C. E. "The Strength of Weak Enforcement: The Impact of Discrimination Charges, Legal Environments, and Organizational Conditions on Workplace Segregation." *American Sociological Review*, vol. 74, no. 2, 2009, pp. 245–271. Available at <https://www.jstor.org/stable/27736060?seq=1>. Accessed March 14, 2018.
- Hiscox, Michael J., Michael Broukhim, Claire S. Litwin, and Andrea Woloski. "Consumer Demand for Fair Labor Standards: Evidence from a Field Experiment on eBay." Cambridge, MA, 2011. Available at <https://ssrn.com/abstract=1811788>. Accessed April 19, 2018.
- Ji, Min Woong, and David Weil. "Does Ownership Structure Influence Regulatory Behavior? The Impact of Franchising on Labor Standards Compliance" (working paper, Boston University, 2009). Available at <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.212.3486&rep=rep1&type=pdf>. Accessed March 14, 2018.

- . “The Impact of Franchising on Labor Standards Compliance.” *ILR Review*, vol. 68, no. 5, 2015, pp. 977–1006. Available at <http://journals.sagepub.com/doi/full/10.1177/0019793915586384>. Accessed March 14, 2018.
- Jin, Ginger Z., and Jungmin Lee. “Inspection Technology, Detection, and Compliance: Evidence from Florida Restaurant Inspections.” *Rand Journal of Economics*, vol. 45, no. 4, 2014, pp. 885–917. Available at <https://pdfs.semanticscholar.org/b186/4090867270bd24a9d214517de721b754dd2b.pdf>. Accessed March 14, 2018.
- Jin, Ginger Z., and Phillip Leslie. “The Effect of Information on Product Quality: Evidence from Restaurant Hygiene Grade Cards.” *Quarterly Journal of Economics*, vol. 118, no. 2, 2003, pp. 409–451. Available at <https://drum.lib.umd.edu/bitstream/handle/1903/6635/restaurant-hygiene.pdf?sequence=1&isAllowed=y>. Accessed March 14, 2018.
- Johnson, Eric J., Suzanne B. Shu, Benedict G. Dellaert, Craig Fox, Daniel G. Goldstein, Gerald Häubl, Richard P. Larrick, John W. Payne, Ellen Peters, and David Schkade. “Beyond Nudges: Tools of a Choice Architecture.” *Marketing Letters*, vol. 23, no. 2, 2012, pp. 487–504. Available at <https://ojs.unbc.ca/index.php/design/article/download/1264/1080>. Accessed March 14, 2018.
- Johnson, Matthew S. “Regulation by Shaming: Direct and Spillover Effects of Publicizing Violations of Workplace Safety and Health Laws.” Durham, NC: Duke University, 2018. Available at <https://drive.google.com/file/d/1HcKpGXZuFWNNLa1YTI0A4Hte1BiJabT-/view>. Accessed April 12, 2018.
- Johnson, Matthew S., David I. Levine, and Michael W. Toffel. “Improving Regulatory Effectiveness through Better Targeting: Evidence from OSHA.” Durham, NC: Duke University, 2017a. Available at <https://irle.berkeley.edu/improving-regulatory-effectiveness-through-better-targeting-evidence-from-osha/>. Accessed March 14, 2018.
- . “Organizational and Geographic Spillover Effects of Regulatory Inspections: Evidence from OSHA.” DOL Scholars Final Report, 2017b. Available at <https://www.dol.gov/asp/evaluation/completed-studies/2016-2017-Scholars-Program/Organizational-and-Geographic-Spillover-Effects-of-Regulatory-Inspections-Evidence-from-OSHA.pdf>. Accessed March 14, 2018.
- Juras, Randall, Peter Honnelf, Jacob Klerman, Amy Minzner, and Meghan Shea. “Evaluation of the OSHA On-site Consultation Program (OSC): The Effect of High-Rate Letters on OSC Requests.” Bethesda, MD: Abt Associates, 2015. Available at https://www.dol.gov/asp/evaluation/completed-studies/OSC-HRL_Report_Final.pdf. Accessed April 16, 2018.
- Juras, Randall, Amy Minzner, Jacob Klerman, Peter Honnelf, and Lauren Dunton. “The Effect of Marketing on Demand for OSHA’s On-site Consultation Program.” Bethesda, MD: Abt Associates, 2016. Available at https://www.dol.gov/asp/evaluation/completed-studies/OSC_Marketing_Report.pdf. Accessed April 17, 2018.

- Kagan, Robert A., Neil Gunningham, and Dorothy Thornton. “Explaining Corporate Environmental Performance: How does Regulation Matter?” *Law & Society Review*, vol. 37, no. 1, 2003, pp. 51–90. Available at <http://onlinelibrary.wiley.com/doi/10.1111/1540-5893.3701002/full>. Accessed March 14, 2018.
- Kagan, Robert A., and John T. Scholz. “The ‘Criminology of the Corporation’ and Regulatory Enforcement Strategies.” Pages 67–95 in *Enforcing Regulation*, edited by K. O. Hawkins and J. M. Thomas. Boston: Kluwer-Nijhoff, 1984. Available at https://www.researchgate.net/publication/289982560_The_Criminology_of_the_Corporation_and_Regulatory_Enforcement_Strategies. Accessed March 14, 2018.
- Kahneman, Daniel. *Thinking, Fast and Slow*. New York: Farrar, Straus and Giroux, 2011.
- Kahneman, Daniel, Jack L. Knetsch, and Richard H. Thaler. “Anomalies: The Endowment Effect, Loss Aversion, and Status Quo Bias.” *Journal of Economic Perspectives*, vol. 5, no. 1, 1991, pp. 193–206. Available at <http://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.5.1.193>. Accessed March 14, 2018.
- Keohane, Nathaniel O., Erin T. Mansur, and Andrey Voynov. “Averting Regulatory Enforcement: Evidence from New Source Review.” *Journal of Economics & Management Strategy*, vol. 18, no. 1, 2009, pp. 75–104. Available at http://tuck-fac-cen.dartmouth.edu/images/uploads/faculty/erin-mansur/keohane_mansur_voynov_nsr.pdf. Accessed March 14, 2018.
- Kleven, Henrik J., and Wojciech Kopczuk. “Transfer Program Complexity and the Take-Up of Social Benefits.” *American Economic Journal: Economic Policy*, vol. 3, no. 1, 2011, pp. 54–90. Available at <https://www.jstor.org/stable/41238085?seq=1>. Accessed March 14, 2018.
- Kolben, Kevin. “Trade, Monitoring, and the ILO: Working to Improve Conditions in Cambodia’s Garment Factories.” *Yale Human Rights and Development Journal*, vol. 7, no. 1, 2004, article 3. Available at <http://digitalcommons.law.yale.edu/yhrdlj/vol7/iss1/3>. Accessed April 20, 2018.
- Kreps, David M. “Corporate Culture and Economic Theory.” Pages 221–275 in *Firms, Organizations and Contracts*, edited by Peter J. Buckley and Jonathan Michie. New York: Oxford University Press, 1996.
- Laibson, David. “Golden Eggs and Hyperbolic Discounting.” *Quarterly Journal of Economics*, vol. 112, no. 2, 1997, pp. 443–478. Available at https://dash.harvard.edu/bitstream/handle/1/4481499/Laibson_GoldenEggs.pdf?sequence%253D2. Accessed March 14, 2018.
- Levin, Daniel, and Lewis Baker. “Change Blindness and Inattentional Blindness.” In *The Handbook of Attention*, edited by Jonathan Fawcett, Evan Risko, and Alan Kingstone. Cambridge, MA: MIT Press, 2015.

- Levine, David I., Michael W. Toffel, and Matthew S. Johnson, “Randomized Government Safety Inspections Reduce Worker Injuries with No Detectable Job Loss,” *Science*, vol. 336, no. 6083, 2012, pp. 907–911. Available at <http://science.sciencemag.org/content/336/6083/907>. Accessed October 10, 2018.
- Levitt, Steven D., and John A. List. “What Do Laboratory Experiments Measuring Social Preferences Reveal about the Real World?” *Journal of Economic Perspectives*, vol. 21, no. 2, 2007, pp. 153–174. Available at <http://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.21.2.153>. Accessed March 14, 2018. Accessed March 14, 2018.
- Li, Ling, and Perry Singleton. “The Effect of Workplace Inspections on Worker Safety” (working paper, Center for Policy Research, Syracuse University, 2018). Available at http://www.pdsingleton.com/inspsafety_li_singleton.pdf. Accessed April 16, 2018.
- Locke, Richard M., Fei Qin, and Alberto Brause. “Does Monitoring Improve Labor Standards? Lessons from Nike.” *International Labor Relations Review*, vol. 61, no. 1, 2007, pp. 3–31. Available at <http://journals.sagepub.com/doi/pdf/10.1177/001979390706100101>. Accessed April 20, 2018.
- Locke, Richard, Matthew Amengual, and Akshay Mangla. “Virtue Out of Necessity? Compliance, Commitment, and the Improvement of Labor Conditions in Global Supply Chains.” *Politics & Society*, vol. 37, no. 3, 2009, pp. 319–351. Available at <http://journals.sagepub.com/doi/pdf/10.1177/0032329209338922>. Accessed April 20, 2018.
- McGrath, Siobhan. “A Survey of Literature Estimating the Prevalence of Employment and Labor Law Violations in the U.S.” Brennan Center for Justice, New York University School of Law, 2015. Available at http://www.brennancenter.org/sites/default/files/legacy/d/download_file_8418.pdf. Accessed October 9, 2018.
- Makkai, Toni, and John Braithwaite. “The Dialectics of Corporate Deterrence.” *Journal of Research in Crime and Delinquency*, vol. 31, no. 4, 1994, pp. 347–373. Available at <http://journals.sagepub.com/doi/pdf/10.1177/0022427894031004001>. Accessed March 14, 2018.
- Milkman, Ruth. “Estimating the Prevalence of Workplace Violations.” Working Paper of the Employment Instability, Family Well-being, and Social Policy Network (EINet) Measurement Group. Chicago: University of Chicago School of Social Service Administration, 2014. Available at https://cpb-us-w2.wpmucdn.com/voices.uchicago.edu/dist/5/1068/files/2018/05/einet_papers_milkman-wjqn5.pdf. Accessed March 14, 2018.
- Nadeau, Louis W. “EPA Effectiveness at Reducing the Duration of Plant-Level Noncompliance.” *Journal of Environmental Economics and Management*, vol. 34, no. 1, 1997, pp. 54–78. Available at <https://www.sciencedirect.com/science/article/pii/S0095069697910032>. Accessed March 14, 2018.

- Niode, Omar, Christine Bruhn, and Amarat H. Simonne. "Insight into Asian and Hispanic Restaurant Manager Needs for Safe Food Handling." *Food Control*, vol. 22, no. 1, 2011, pp. 34–42. Available at <https://www.sciencedirect.com/science/article/pii/S0956713510001738>. Accessed March 14, 2018.
- OECD (Organization for Economic Cooperation and Development). "Encouraging On-time Payment of Levies." In *Behavioural Insights and Public Policy: Lessons from Around the World*. Paris: OECD Publishing, 2017. Available at <http://dx.doi.org/10.1787/9789264270480-en>. Accessed March 14, 2018.
- O'Rourke, Dara. "Multi-Stakeholder Regulation: Privatizing or Socializing Global Labor Standards?" *World Development*, vol. 34, no. 5, 2006, pp. 899–918. Available at <https://www.sciencedirect.com/science/article/pii/S0305750X06000295>. Accessed April 20, 2018.
- Parker, Christine. "The 'Compliance' Trap: The Moral Message in Responsive Regulatory Enforcement." *Law & Society Review*, vol. 40, no. 3, 2006, pp. 591–622. Available at <http://onlinelibrary.wiley.com/doi/10.1111/j.1540-5893.2006.00274.x/full>. Accessed March 14, 2018.
- Richburg-Hayes, Lashawn, Caitlin Anzelone, and Nadine Dechausay. *Nudging Change in Human Services: Final Report of the Behavioral Interventions to Advance Self-Sufficiency (BIAS) Project*. Washington, DC: US Department of Health and Human Services, Office of Planning, Research and Evaluation, 2017. Available at https://www.acf.hhs.gov/sites/default/files/opre/bias_final_full_report_rev4_15_14.pdf. Accessed March 14, 2018.
- Roberts, Kevin, Junehee Kwon, Carol Shanklin, Pei Liu, and Wen-Shen Yen. "Food Safety Practices Lacking in Independent Ethnic Restaurants." *Journal of Culinary Science & Technology*, vol. 9, no. 1, 2011, pp. 1–16. Available at <http://krex.k-state.edu/dspace/bitstream/handle/2097/8045/RobertsJCST2011.pdf?sequence=1>. Accessed March 14, 2018.
- Rodríguez-Garavito, César A. "Global Governance and Labor Rights: Codes of Conduct and Anti-Sweatshop Struggles in Global Apparel Factories in Mexico and Guatemala." *Politics & Society*, vol. 33, no. 2, 2005, pp. 203–333. Available at <http://journals.sagepub.com/doi/pdf/10.1177/0032329205275191>. Accessed April 20, 2018.
- Roka, Fritz M., Carlene A. Thissen, Paul F. Monaghan, Maria C. Morera, Sebastian Galindo-Gonzalez, and Jose A. Tovar-Aguilar. "Lessons Learned Developing an Extension-Based Training Program for Farm Labor Supervisors." *Journal of Extension*, vol. 55, no. 4, 2017, p. n4. Available at <https://eric.ed.gov/?id=EJ1153025>. Accessed March 14, 2018.

- Sam, Abdoul G. “Impact of Government-Sponsored Pollution Prevention Practices on Environmental Compliance and Enforcement: Evidence from a Sample of US Manufacturing Facilities.” *Journal of Regulatory Economics*, vol. 37, no. 3, 2010, pp. 266–286. Available at https://ageconsearch.umn.edu/bitstream/49306/2/Sam_aaea_2009.pdf. Accessed March 14, 2018.
- Shadbegian, Ronald J. and Wayne B. Gray. “Pollution Abatement Expenditures and Plant-Level Productivity: A Production Function Approach.” *Ecological Economics*, vol. 54, no. 2–3, 2005, pp. 196–208. Available at https://www.epa.gov/sites/production/files/2014-12/documents/pollution_abatement_expenditures_and_plant-level.pdf. Accessed March 14, 2018.
- Shimshack, Jay P. and Michael B. Ward. “Regulator Reputation, Enforcement, and Environmental Compliance.” *Journal of Environmental Economics and Management*, vol. 50, no. 3, 2005, pp. 519–540. Available at <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.403.5074&rep=rep1&type=pdf>. Accessed March 14, 2018.
- Short, Jodi L., and Michael W. Toffel. “Making Self-Regulation More than Merely Symbolic: The Critical Role of the Legal Environment.” *Administrative Science Quarterly*, vol. 55, no. 3, 2010, pp. 361–396. Available at <http://journals.sagepub.com/doi/pdf/10.2189/asqu.2010.55.3.361>. Accessed March 14, 2018.
- . “Coerced Confessions: Self-Policing in the Shadow of the Regulator.” *Journal of Law, Economics, & Organization*, vol. 24, no. 1, 2007, pp. 45–71. Available at https://repository.uchastings.edu/cgi/viewcontent.cgi?article=2190&context=faculty_scholarship. Accessed March 14, 2018.
- Silberman, C. L. “Avoiding Lawsuits for Wage and Hour Violations.” *Journal of Medical Practice Management: MPM*, vol. 31, no. 5, 2016, pp. 270–272. Available at <http://europepmc.org/abstract/med/27249874>. Accessed March 14, 2018.
- Simon, Paul A., Phillip Leslie, Grace Run, and Ginger Z. Jin. “Impact of Restaurant Hygiene Grade Cards on Foodborne-Disease Hospitalizations in Los Angeles County.” *Journal of Environmental Health*, vol. 67, no. 7, 2005, pp. 32–36. Available at <https://drum.lib.umd.edu/bitstream/handle/1903/6641/Mar%2005%20JEH%20Feature.pdf?sequence=1>. Accessed March 14, 2018.
- Simpson, Sally S., Carole Gibbs, Melissa Rorie, Lee A. Slocum, Mark A. Cohen, and Michael Vandenberg. “An Empirical Assessment of Corporate Environmental Crime-Control Strategies.” *Journal of Criminal Law and Criminology*, vol. 103, no. 1, 2013, pp. 231–278. Available at <https://scholarlycommons.law.northwestern.edu/cgi/viewcontent.cgi?referer=https://scholar.google.com/&httpsredir=1&article=1004&context=jclc>. Accessed March 14, 2018.

- Sneed, Jeannie, Catherine H. Strohbehn, and Shirley A. Gilmore. "Impact of Mentoring on Food Safety Practices and HACCP Implementation in Iowa Assisted-Living Facilities." *Topics in Clinical Nutrition*, vol. 22, no. 2, 2007, pp. 162–174. Available at https://journals.lww.com/topicsinclinicalnutrition/Abstract/2007/04000/Impact_of_Mentoring_on_Food_Safety_Practices_and.8.aspx. Accessed March 14, 2018.
- Stafford, Sarah. "Do Carrots Work? Examining the Effectiveness of EPA's Compliance Assistance Program." *Journal of Policy Analysis and Management*, vol. 31, no. 3, 2012, pp. 533–555. Available at <https://onlinelibrary.wiley.com/doi/epdf/10.1002/pam.21633>. Accessed October 9, 2018.
- Stretesky, Paul B., and Michael J. Lynch. "Does Self-Policing Reduce Chemical Emissions?" *Social Science Journal*, vol. 46, no. 3, 2009, pp. 459–473. Available at <https://www.sciencedirect.com/science/article/pii/S0362331909000238>. Accessed March 14, 2018.
- Sutton, Stephen. "Predicting and Explaining Intentions and Behavior: How Well Are We Doing?" *Journal of Applied Social Psychology*, vol. 28, no. 15, 1998, pp. 1317–1338. Available at <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1559-1816.1998.tb01679.x>. Accessed March 14, 2018.
- Talesh, Shauhin. "Legal Intermediaries: How Insurance Companies Construct the Meaning of Compliance with Antidiscrimination Laws." *Law & Policy*, vol. 37, no. 3, 2015, pp. 209–239. Available at <https://pdfs.semanticscholar.org/9235/00081625ad89ebfc8549f21bac652770752d.pdf>. Accessed March 14, 2018.
- Thaler, Richard. "Toward a Positive Theory of Consumer Choice." *Journal of Economic Behavior and Organization*, vol. 1, no. 1, 1980, pp. 39–60. Available at <http://www.eief.it/butler/files/2009/11/thaler80.pdf>. Accessed October 10, 2018.
- Thornton, Dorothy, Neil A. Gunningham, and Robert A. Kagan. "General Deterrence and Corporate Environmental Behavior." *Law & Policy*, vol. 27, no. 2, 2005, pp. 262–288. Available at <https://cloudfront.escholarship.org/dist/prd/content/qt4t7862s1/qt4t7862s1.pdf>. Accessed March 14, 2018.
- van Rooij, Benjamin, and Adam Fine. "How to Punish a Corporation: Insights from Social and Behavioral Science." Program on Corporate Compliance and Enforcement, New York University School of Law, 2017. Available at https://wp.nyu.edu/compliance_enforcement/2017/09/01/how-to-punish-a-corporation-insights-from-social-and-behavioral-science/. Accessed March 14, 2018.
- Viscusi, W. K., Wesley A. Magat, and Joel Huber. "An Investigation of the Rationality of Consumer Valuations of Multiple Health Risks." *RAND Journal of Economics*, vol. 18, no. 4, 1987, pp. 465–479. Available at <http://discoverarchive.vanderbilt.edu/bitstream/handle/1803/6944/Investigation%20of%20the%20Rationality.pdf?sequence=1&isAllowed=y>. Accessed March 14, 2018.

- Weil, David. "A Strategic Approach to Labour Inspection." *International Labour Review*, vol. 147, no. 4, 2008, pp. 349–375. Available at <http://onlinelibrary.wiley.com/doi/10.1111/j.1564-913X.2008.00040.x/full>. Accessed March 14, 2018.
- . *Examining the Underpinnings of Labor Standards Compliance in Low Wage Industries: Final Report*. Report to the Russell Sage Foundation, 2012. Available at <http://www.russellsage.org/sites/all/files/Weil.Final%20Report%202012.pdf>. Accessed October 9, 2018.
- . *The Fissured Workplace: Why Work Became So Bad for So Many and What Can Be Done to Improve It*. Cambridge, MA: Harvard University Press, 2014.
- . "If OSHA Is So Bad, Why Is Compliance So Good?" *RAND Journal of Economics*, vol. 27, no. 3, 1996, pp. 618–640. Available at <http://www.fissuredworkplace.net/assets/Weil.If-OSHA-So-Bad.RAND.1996.pdf>. Accessed March 14, 2018.
- . "Improving Workplace Conditions through Strategic Enforcement." Boston University School of Management Research Paper No. 2010-20, 2010. Available at <https://www.dol.gov/whd/resources/strategicEnforcement.pdf>. Accessed March 14, 2018.
- . "Public Enforcement/Private Monitoring: Evaluating a New Approach to Regulating the Minimum Wage." *ILR Review*, vol. 58, no. 2, 2005, pp. 238–257. Available at <http://journals.sagepub.com/doi/pdf/10.1177/001979390505800204>. Accessed March 14, 2018.
- . "Rethinking the Regulation of Vulnerable Work in the USA: A Sector-based Approach." *Journal of Industrial Relations*, vol. 51, no. 3, 2009, pp. 411–430. Available at <http://journals.sagepub.com/doi/pdf/10.1177/0022185609104842>. Accessed March 14, 2018.
- Weil, David, and Carlos Mallo. "Regulating Labour Standards via Supply Chains: Combining Public/Private Interventions to Improve Workplace Compliance." *British Journal of Industrial Relations*, vol. 45, no. 4, 2007, pp. 791–814. Available at http://www.fissuredworkplace.net/assets/Weil_Mallo.Regulating-Supply-Chains.BJIR.2007.pdf. Accessed March 14, 2018.
- Weil, David, and Amanda Pyles. "Why Complain? Complaints, Compliance, and the Problem of Enforcement in the U.S. Workplace." *Comparative Labor Law & Policy Journal*, vol. 27, no. 59, 2005–2006, pp. 59–513. Available at <https://heinonline.org/HOL/LandingPage?handle=hein.journals/cllpj27&div=12&id=&page> 59. Accessed April 19, 2018.

- Wells, Don. “Best Practice in the Regulation of International Labor Standards: Lessons of the US-Cambodia Textile Agreement.” *Comparative Labor Law and Policy Journal*, vol. 27, 2005, pp. 357–376. Available at https://www.researchgate.net/publication/228176587_%27Best_Practice%27_in_the_Regulation_of_International_Labor_Standards_Lessons_of_the_US-Cambodia_Textile_Agreement?enrichId=rgreq-dcac7f01b19865a8d45483d7b2fa87af-XXX&enrichSource=Y292ZXJQYWdlOzIyODE3NjU4NztBUzoxNDA2NjA5NzE2NzU2NDIAMTQxMDU0NzU5NzQxOQ%3D%3D&el=1_x_2&_esc=publicationCoverPdf. Accessed April 20, 2018.
- Wells, Don. “Too Weak for the Job: Corporate Codes of Conduct, Non-Governmental Organizations and the Regulation of International Labour Standards.” *Global Social Policy*, vol. 7, no. 1, 2007, pp. 51–74. Available at <http://journals.sagepub.com/doi/pdf/10.1177/1468018107073911>. Accessed April 20, 2018.
- WHD (Wage and Hour Division). “Resources for Workers.” Available at <https://www.dol.gov/whd/workers.htm>. Accessed March 14, 2018.
- Wilhelm, Sarah A. “The Impact of Equal Employment Opportunity Commission Enforcement on the Wages of Black and White Women, 1988–1996.” *Review of Black Political Economy*, vol. 30, no. 2, 2002, pp. 25–51. Available at <http://journals.sagepub.com/doi/full/10.1007/BF02717311>. Accessed March 14, 2018.
- Wong, Melissa R., Wendy McKelvey, Kazuhiko Ito, Corinne Schiff, J. B. Jacobson, and Daniel Kass. “Impact of a Letter-Grade Program on Restaurant Sanitary Conditions and Diner Behavior in New York City.” *American Journal of Public Health*, vol. 105, no. 3, 2015, pp. e81–e87. Available at https://www.researchgate.net/publication/271219465_Impact_of_a_Letter-Grade_Program_on_Restaurant_Sanitary_Conditions_and_Diner_Behavior_in_New_York_City. Accessed March 14, 2018.
- World Bank. “Cambodia—Corporate Social Responsibility and the Apparel Sector: Buyer Survey Results (Khmer).” Foreign Investment Advisory Service (FIAS) occasional paper. Washington, DC: World Bank, December 2004. <http://documents.worldbank.org/curated/en/975851468212977673/Cambodia-Corporate-social-responsibility-and-the-apparel-sector-buyer-survey-results>. Accessed April 20, 2018.
- York, Valerie K., Laura A. Brannon, Carol W. Shanklin, Kevin R. Roberts, Betsy B. Barrett, and Amber D. Howells. “Intervention Improves Restaurant Employees’ Food Safety Compliance Rates.” *International Journal of Contemporary Hospitality Management*, vol. 21, no. 4, 2009, pp. 459–478. Available at <http://krex.k-state.edu/dspace/bitstream/handle/2097/1918/robertsijchm2009.pdf?sequence=1>. Accessed March 14, 2018.

APPENDIX

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

This report synthesized existing research and available data to determine promising directions for identifying effective compliance strategies and improving current strategies, consistent with the strategic priorities of the U.S. Department of Labor’s Wage and Hour Division (WHD). As part of this effort, Mathematica searched for relevant databases housed outside WHD that could be used to help answer research questions on employer behavior or the effectiveness of WHD compliance strategies. Databases had to meet five criteria to be included in the review: They had to be (1) time relevant (2009 or later), (2) place relevant (within the United States), (3) machine readable, (4) available for use during the study period, and (5) representative of a population. In addition, they had to contain one of three types of relevant information: (1) information that could be used to describe employer behaviors, including compliance with or violations of laws and regulations administered by federal agencies; (2) information about an industry or business model of interest, including the four candidate industries (agriculture, construction, hotels, and restaurants) and three candidate business models (franchise, contracting/subcontracting, and supply chain); or (3) contextual information, including economic or social conditions.

This appendix presents a list of the eligible databases we identified. Table A displays information about each database in columns, including the information contained in it, the unit of observation for the record contained in it, the collection method (administrative or survey), the frequency of data collection, and a URL through which the description and/or data may be accessed; it also indicates whether a cost is associated with its procurement. “Source of data” indicates the ultimate source from which the data is drawn, if relevant. “Largest geographic area” refers to the largest geographic classification that the data covers; typically, smaller geographic classifications are available as well. “Coverage” indicates the population that the sample in the database represents.

The databases are grouped into panels in accordance with the three types of relevant information they contain. The databases in Panel I can be used to describe employer behaviors; those in Panel II can be used to describe characteristics of industries of interest to WHD (agriculture, construction, hotels, and restaurants); those in Panel III can be used to provide information on business models; and those in Panel IV can be used to provide information about the context in which the business is operating. Panel V presents some examples of state and local databases that were uncovered through the national-level search.

The table is intended to provide a reference for the discussion of findings from the database review in Chapter IV, Section B.

Table A. Summary of databases identified

Database	Specific information included	Unit of observation	Cost	Source of data	Collection method	Available geographic area	Frequency	Coverage ^c	URL
I. Databases describing employer behaviors									
Employee Benefits Security Administration (EBSA) Enforcement Data	Information on closed cases resulting in penalty assessments by EBSA since 2000. Focuses on deficient filers and non-filers	Employer	No	EBSA	Administrative	National	Quarterly	Case closures with penalty assessments	https://enforcedata.dol.gov/homePage.php
Enforcement and Compliance History Online (ECHO)	Information for facilities regulated by the Environmental Protection Agency (EPA): permits, inspection and compliance evaluation dates and findings, violations of environmental regulations, enforcement actions, and penalties	Employer	No	EPA	Administrative	National	Weekly	EPA-regulated facilities	https://echo.epa.gov/resources/echo-data/about-the-data
Envirofacts	Provides information about the environment including, brownfields, greenhouse gasses, air, water, radiation, facilities, and compliance	Varies	No	EPA	Administrative	National	Varies	Varies	https://www3.epa.gov/enviro/
Equal Employment Opportunity Commission (EEOC) enforcement and litigation statistics	Annual information for charge receipts and resolutions filed under each statute enforced by EEOC, by state	Charge of employment discrimination	No	Primary	Administrative	National	Annually	Charges of employment discrimination and resolutions	https://www.eeoc.gov/eeoc/statistics/enforcement/index.cfm
Food and Drug Administration (FDA) Inspection Classification Database	Provides information on employers' compliance with FDA regulated laws, and the current status of conducted inspections as of the most recent date provided in the report. Classifications are reported as: No Action Indicated (NAI), Voluntary Action Indicated (VAI), Official Action Indicated (OAI) for each project area within an inspection	Employer	No	FDA	Administrative	National	Monthly	Inspected establishments	https://www.accessdata.fda.gov/scripts/inspsearch/
Mine Safety and Health Administration (MSHA) Enforcement Data	Provides information on the mining industry including information on mines, mine operators, inspections, violations, and accidents	Establishment	No	MSHA	Administrative	National	Weekly	U.S. mining industry	https://enforcedata.dol.gov/homePage.php

Database	Specific information included	Unit of observation	Cost	Source of data	Collection method	Available geographic area	Frequency	Coverage ^c	URL
Occupational Safety and Health Administration (OSHA) inspection data	Information for establishments inspected on site by OSHA: industry, address, number of employees, union status, ownership; length of inspection; number of violations, penalty amount, citation, cited standard, issue date; event date, event description, degree of injury, nature of injury, and the occupation, age, and sex of the injured worker	Employer	No	Primary	Administrative	National	Daily	Inspected establishments	https://www.osha.gov/oshstats/index.html
Office of Federal Contract Compliance Programs (OFCCP) Closed Compliance Evaluations	Provides information on closed compliance investigations conducted on companies that have been provided government contracts by the OFCCP since 2004	Employer	No	OFCCP	Administrative	National	Not available	Companies with government contracts	https://catalog.data.gov/dataset/ofccp-closed-compliance-evaluations
OFCCP Compliance Evaluation and Complaint Investigation	Provides information on closed compliance evaluations and investigations conducted by OFCCP over the last five years	Employer	No	OFCCP	Administrative	National	Monthly	Complaint investigations and compliance evaluations	https://enforcedata.dol.gov/homePage.php
openFDA - Foods	Provides information on food recalls submitted to the FDA from 2004 to present. Recalls are classified as defective or potentially harmful. Enforcement reports provide information on the actions taken in connection with FDA regulatory activities	Employer	No	FDA recall enterprise system	Administrative	National	Weekly	FDA regulated employers	https://open.fda.gov/apis/food/

Database	Specific information included	Unit of observation	Cost	Source of data	Collection method	Available geographic area	Frequency	Coverage ^c	URL
Organizations Convicted in Federal Criminal Courts	Information for organizations sentenced in federal district courts in 2016: primary offense type, pecuniary offense loss and gain, dates of disposition and sentencing, method of determination of guilt, number of counts pled and charged, and dates and types of sentencing and restitution; and defendant ownership structure, number of owners and employees, highest level of corporate knowledge of the criminal offense, highest level of corporate indictment and conviction for participation in the criminal offense, annual revenue, equity and financial status, whether it was a criminal organization, duration of criminal activity, and risk to national security	Employer	No	United States Sentencing Commission	Administrative	National	Annually	Federal cases involving organizations	https://doi.org/10.3886/ICPSR36980.v1
USDA Food Safety and Inspection Service (FSIS)–FSIS Data Roundup	Data on USDA activities and information about regulated establishments. Activities include inspections and enforcements such as recalls. Information about regulated establishments includes domestic establishments and import facilities as well as pathogen information	Employer	No	USDA	Administrative	National	Varies	USDA	https://www.fsis.usda.gov/wps/portal/fsis/topics/data-collection-and-reports/fsis-data-analysis-and-reporting/fsis-data/data-collection
II. Databases on industries									
Agriculture									
Agricultural Productivity in the United States	Periods of information (through 2015) on farm livestock, crop, and other outputs; capital, labor, and intermediate inputs; and total productivity and price indices, by state	Varies (including establishment)	No	NASS, ERS, BEA, BLS, ARMS, NIPA, Energy Information Administration	Both	National	Annually	Farms	https://www.ers.usda.gov/data-products/agricultural-productivity-in-the-us/

Database	Specific information included	Unit of observation	Cost	Source of data	Collection method	Available geographic area	Frequency	Coverage ^c	URL
Agricultural Research Service programs data	Multiple datasets provide information on nutrition, food safety/quality; animal production and protection; crop production and protection; and natural resources and sustainable agricultural systems	Varies (including establishment and crop)	No	Varies; open data	Both	National	Varies	Agricultural industry	https://www.ars.usda.gov/research/datasets/
Agricultural Trade Multipliers	Annual estimates of employment and output effects of trade in farm and food products on the U.S. economy	Commodity	No	BEA	Survey	National	Annually	Agricultural exports	https://www.ers.usda.gov/data-products/agricultural-trade-multipliers/
Census of Agriculture	Count taken every five years of U.S. farms and ranches, and characteristics of their operators	Employer	No	NASS	Survey	National	Every five years	Agricultural employers	https://www.agcensus.usda.gov/Publications/ and https://quickstats.nass.usda.gov/
Farm Income and Wealth Statistics	Annual economic performance of farm sector and farm businesses, including farm income forecast, cash receipts and value of production, and production expenses, by state and commodity	Farm	No	NASS	Survey	National	Annually	Farm sector	https://www.ers.usda.gov/data-products/farm-income-and-wealth-statistics/
Migrant and Seasonal Agricultural Protection Act (MSPA) Registered Farm Labor Contractor Listing	List of farm labor contractors who have obtained a federal certificate to perform farm labor contracting activities. The list contains the name and physical address of all current certificate holders, as well as the expiration date and the certificate number generated by the Wage and Hour Division	Employer	No	WHD	Administrative	National	Quarterly	Farm labor contractors	https://www.dol.gov/whd/regs/statutes/FLCList.htm
National Agricultural Workers Survey	Information by two-year periods for U.S. crop workers on demographic, employment, and health characteristics	Individual	No	DOL	Survey	National	Bi-annually	Crop workers	https://www.doleta.gov/naws/

Database	Specific information included	Unit of observation	Cost	Source of data	Collection method	Available geographic area	Frequency	Coverage ^c	URL
U.S. Department of Agriculture National Agricultural Statistics Service	Survey information, by region, state, and county, for agriculture businesses on crop totals and yields; economic characteristics, including expenses, assets, income, and prices; demographics of farm workers; environmental characteristics, including chemical usage; livestock; and research, science, and technology	Employer	No	Primary	Survey	National	Survey	Agricultural establishments	https://www.nass.usda.gov/Data_and_Statistics/index.php
Construction									
Construction Market Data	Information, by state and construction type, on U.S. construction units and value, and an expansion index on whether a location's construction volume is expected to expand or shrink in the upcoming 12 months	Project	Yes	NA	NA	International – U.S. & Canada	NA	Construction projects	http://www.cmdgroup.com/
U.S. Census Bureau data on construction	Monthly information on Building Permits, by region, state, county, and MSA; New Residential Construction and sales, by region; Construction Spending; and Construction Price Indexes. Quarterly Workforce Indicators information on employment, job creation, separations, turnover, average monthly earnings. Annual information on Characteristics of New Housing	Varies (including construction units)	No	Primary	Survey	National	Monthly	Construction projects	https://www.census.gov/econ/construction.html
Hotels									
CBRE Hotels financial benchmarking reports	Quarterly information for U.S. hotels on revenue, expenses, and profit, by property type, geographic location, rate, and size categories; and conference center measures, nationally and by 55 major markets	Employer	Yes	NA	NA	International - 55 major U.S. markets	NA	Hotels	https://pip.cbrehotels.com/

Database	Specific information included	Unit of observation	Cost	Source of data	Collection method	Available geographic area	Frequency	Coverage ^c	URL
Delta Check	Information for U.S. hotels: company name, address, contact information, room count, rating, and amenities	Employer	Yes	NA	NA	International – U.S. States	NA	Hotels	http://www.delta-check.com/en/worldwide-international-global-databases/
Lodging Econometrics	Information for U.S. hotel construction projects, including project stage, developer name, market, chain scale, and franchise company; and for existing hotels, including market, hotel address, chain scale, room count, franchise company, brand, year built, ownership group, and management company, by state	Employer	Yes	NA	NA	National	NA	Hotel Construction projects	http://www.lodgingeconometrics.com/about-us/
STR Global	Information for North American hotels on performance, occupancy, average daily rate, revenue per available room, supply, demand, industry forecasts, profitability, and segmentation	Employer	Yes	Primary	Survey	Select MSAs	NA	Hotel owners and operators	https://www.strglobal.com/products
Restaurants									
CHD Expert	Monthly information, by state and zip code, for full and limited service restaurants on contact details, menu type or limited service segment, years in business, annual sales, annual food and beverage purchases, independent or chain units, number of employees, average check, and website	Employer	Yes	Primary	Survey	National	Monthly	Accommodation/ Food Service businesses	https://www.chd-expert.com/products/foodservice-data/databases/commercial/restaurant-database/

Database	Specific information included	Unit of observation	Cost	Source of data	Collection method	Available geographic area	Frequency	Coverage ^c	URL
Chain Store Guide Restaurant Franchisee PREMIER database	Information for chain restaurants, franchisors, and franchisees, by state, city, and zip code: contact information, two years' sales and unit history, growth percentages, number of units owned and franchised, number of employees, menu type, percent alcohol and Internet sales (where applicable), and type of food service venue	Employer	Yes	Primary	Survey	National	NA	Restaurant franchises and franchise owners	https://www.chainstoreguide.com/
Restaurant data	Information for independent and chain restaurants, by state, zip code, and 25 MSAs, on per-person average check, geography, and alcohol service of headquarters of multiunit and multiconcept chains; new restaurant openings; openings, moves, and closures to the neighborhood level; and service style, cuisine, size, sales, and employee count	Employer	Yes	Primary	Survey	National	Weekly	Restaurants	http://restaurantdata.com/

III. Databases on business models

Contracting/subcontracting

Federal Procurement Data System	Provides information that can be used for geographical analysis, market analysis, and analysis of the impact of the congressional and presidential initiatives in socio-economic areas such as small businesses, and can be used for measuring and assessing the impact of Federal acquisition policy and management improvement	Employer	No	Government agencies	Administrative	National	NA	Contracts whose estimated value is \$10,000 +	https://www.fpds.gov/fpdsng/cms/index.php/en/
---------------------------------	--	----------	----	---------------------	----------------	----------	----	---	---

Database	Specific information included	Unit of observation	Cost	Source of data	Collection method	Available geographic area	Frequency	Coverage ^c	URL
System for Award Management (SAM): Exclusions Extract Data Package	Monthly updated list of entities that are ineligible for federal contracts, certain subcontracts, and certain types of federal financial and nonfinancial assistance and benefits, by state, zip code, and congressional district	Employer	No	Primary	Administrative	National	Daily	Entities ineligible for government contracts	https://sam.gov/SAM/
Entity Management Extracts Public Data Package	Entity registration data for those registered to do business with the federal government, including entity type, business type, and industry	Employer	No	Primary	Administrative	National	Monthly	Entities registered to do business with the federal government	https://sam.gov/SAM/
USAspending	Annual list of federal contract awards and information on recipient type and award amount, by federal agency, state, county, zip code congressional district, and industry	Employer	No	FPDS-NG, FABS, FFATAFSRS, SAM	Administrative	National	Daily or quarterly depending on source	Government spending	https://www.usaspending.gov/#/

Franchising

Economic Census	(see Section IV below)								
FRANdata	Information for more than 15,000 past and present franchise companies on FRANdata Unique Numbering System, brand name and name of franchisor, business description, website, year franchising started, industry and sector, investors and affiliate companies, number of existing units, projected new franchised units to be opened, unit type and square footage, estimate of start-up expenses, average unit revenue estimates, and list of executive management team	Employer	Yes	Primary	Administrative	National	Quarterly	Franchises companies	http://www.frandata.com/

Database	Specific information included	Unit of observation	Cost	Source of data	Collection method	Available geographic area	Frequency	Coverage ^c	URL
Franchisor Database	Monthly information for all active franchise businesses in the United States and Canada: profile, primary contact, email address, operating units, and business activity (food and services, lodging, retail, or service)	Employer	Yes	Primary	Survey	National	Daily	Franchisors	http://www.franchisordatabase.com/
WorldFranchising	Information for over 4,000 North American franchisors on total investment, total operating units, year established, fees, average number of employees, net worth, and terms of contract	Employer	Yes	NA	NA	International	NA	Franchises	http://www.worldfranchising.com
IV. Databases providing contextual information									
American Community Survey (ACS)	Annual information for the U.S. population on economic and demographic characteristics, benefit receipt, and health insurance coverage	Individual	No	Primary	Survey	National	Annual	Population in housing units	https://www.census.gov/programs-surveys/acs/
American Housing Survey	Biennial housing information for the U.S. population, including housing costs, remodeling and repair frequency, reasons for moving, food insecurity, and health and safety hazards in the home, as well as special topical modules	Individual	No	Census Bureau	Survey	National	Biennially	Population in housing units	https://www.census.gov/programs-surveys/ahs.html
Americans' Changing Lives	Waves of information for the U.S. population in middle and late life on economic, sociological, psychological, mental and physical health, and demographic characteristics	Individual	No	ICPSR	Survey	National	1986, 1989, 1994, 2002, 2011	Population households 25 and older	https://www.icpsr.umich.edu/icpsrweb/ICPSR/studies/4690#

Database	Specific information included	Unit of observation	Cost	Source of data	Collection method	Available geographic area	Frequency	Coverage ^c	URL
Business Dynamics Statistics	Annual information drawn from the Longitudinal Business Database (LBD) census of business establishments and firms in all industries in the United States, covering employment, job expansions and contractions, number of establishments, establishment openings and closings, and number of startups and shutdowns	Employer	No	LBD	Survey	National	Annually	U.S. economy	https://www.census.gov/programs-surveys/bds.html
Business Employment Dynamics	Information from the Quarterly Census of Employment (QCEW) and Wages on gross job gains and losses	Employer	No	QCEW	Survey	National	Quarterly	U.S. labor market	https://www.bls.gov/bdm/
County Business Patterns	Provides information on the number of establishments, employment during the week of March 12, first quarter payroll, and annual payroll. In addition, the record layouts and the references for industry and geographies are available within their year	Employer	No	U.S. Census	Survey	National	Yearly	Businesses with paid employees	https://www.census.gov/programs-surveys/cbp/data/datasets.html
Current Population Survey (CPS)	Monthly information for the U.S. population, including labor force status, work status, earnings, job status, hours worked, class of worker, industry, geographic variables, and demographic characteristics, as well as special annual topical modules	Individual	No	Primary	Survey	National	Monthly	U.S. Population in households	https://www.census.gov/programs-surveys/cps.html
Dun & Bradstreet	Information for over 285 million U.S. commercial entities on corporate hierarchies; number of subsidiaries, divisions, and branches; establishment size; and geocodes	Employer	Yes	Primary	Survey	International	Daily	Commercial entities	https://www.dnb.com/about-us/our-data.html

Database	Specific information included	Unit of observation	Cost	Source of data	Collection method	Available geographic area	Frequency	Coverage ^c	URL
Economic Census	Information collected every five years (last in 2012) for the population of businesses in the United States, covering value of sales, shipments, receipts, revenue, primary business activity, total number of employees, total annual payroll, and total first-quarter payroll. Since 2007, includes the number of franchisee- and franchisor-owned businesses in each industry, and total employment, annual payroll, and sales of these businesses	Employer	No	Primary	Survey	National	Every five years	U.S. businesses	https://www.census.gov/programs-surveys/economic-census/about.html
General Social Survey	Annual information for the U.S. population on attitudes and demographic characteristics	Individual	No	Primary	Survey	National	Annually	All adult noninstitutionalized English and Spanish speaking individuals in the U.S.	https://doi.org/10.3886/ICPSR36319.v2
Local Area Unemployment Statistics	Monthly and annual employment, unemployment, and labor force data for the U.S. population, by census region and division, state, county, and MSA of residence	Individual	No	CPS, CES program, state UI systems, ACS	Both	National but can only extract for one state at a time	Annually	U.S. civilian labor force	https://www.bls.gov/lau/lausad.htm
Occupational Employment Statistics	Annual employment and wage statistics for over 800 occupations, by state, MSA, and specific industries	Occupation	No	Primary	Survey	National	Semiannually	Nonfarm establishments	https://data.bls.gov/oes/#/home
Projections Central	Short- and long-term projections of occupational employment growth, by state	Occupation	No	QCEW/CES; CES, LAUS, Railroad Data, BEA Agriculture, and Census	Survey	National	NA	Covered employment and wages	http://www.projectionscentral.com/Home/Index
Quarterly Census of Employment and Wages	Quarterly count of employment and wages for U.S. employers, together accounting for more than 95 percent of U.S. jobs, by state, county, MSA, and industry	Employer	No	State UI Quarterly Contributions Reports and Primary data collection efforts	Both	National	Annually	U.S. jobs	https://www.bls.gov/cew/home.htm

Database	Specific information included	Unit of observation	Cost	Source of data	Collection method	Available geographic area	Frequency	Coverage ^c	URL
Quarterly Workforce Indicators (QWI)	Quarterly indicators covering employment, job creation, earnings, and other measures of employment flows from Business Dynamics Statistics microdata at Longitudinal Employer-Household Dynamics matched employer-employee data	Employer-individual	No	LEHD ^a	Both	National (beta), state	Quarterly	UI-covered employment ^b	https://lehd.ces.census.gov/data/#qwi
Statistics of U.S. Businesses	Annual information on number of firms, number of establishments, employment, annual payroll for most U.S. establishments, by geographic area, industry, and enterprise size of employment	Employer	No	U.S. Census	Survey	National	Annual	U.S. firms, establishments, and employment	https://www.census.gov/data/datasets/2015/econ/susb/2015-susb.html
Survey of Business Owners and Self-Employed Persons	Information on U.S. employer and nonemployer firms collected every five years as part of the Economic Census, including economic characteristics of businesses (family owned, source of start-up capital, home-based, percent of total sales reported) and demographic characteristics of business owners, by state, county, MSA, industry, and size of firm	Employer	No	Primary	Survey	National	Most recent is 2012	U.S. business owners	https://www.census.gov/programs-surveys/sbo.html
Survey of Income and Program Participation	Waves of information for the U.S. population on economic and demographic characteristics, program participation, health insurance, and child care	Individual	No	Primary	Survey	National	Every four years	Sample of U.S. households	https://www.census.gov/programs-surveys/sipp/about.html
Unregulated Work Survey 2008	Survey information for documented and undocumented workers in low-wage industries and occupations in Chicago, Los Angeles, and New York City, covering hours, wages, documentation received from employer, and demographic characteristics	Individual	No	Primary	Survey	Cities of Chicago, Los Angeles, and New York	2008	Low wage workers in selected cities	https://nelp.org/wp-content/uploads/2015/03/Fact-Sheet-Immigration-Status-Pay-Documentation.pdf

Database	Specific information included	Unit of observation	Cost	Source of data	Collection method	Available geographic area	Frequency	Coverage ^c	URL
V. Illustrative state and local databases									
California Department of Alcoholic Beverage Control	List of alcoholic beverage licenses and permits issued in California	Employer	No	Primary	Administrative	California	Varies	Businesses with liquor licenses	https://www.abc.ca.gov/licensing/license-lookup/
Department of Business Affairs and Consumer Protection in the City of Chicago	Information on business licenses issued in Chicago, Illinois, including business type and license type, approval status, and date issued	Employer	No	Primary	Administrative	City of Chicago	Daily	Business licenses	https://data.cityofchicago.org/Community-Economic-Development/Business-Licenses/r5kz-chrr
New York State Liquor Authority	Quarterly list of all active licensees in New York State	Employer	No	New York Licensing Bureau	Administrative	New York State	Quarterly	Active liquor licenses	https://data.ny.gov/Economic-Development/Liquor-Authority-Quarterly-List-of-Active-Licenses/hrvs-fxs2
State of California (CA) Employment Development Department, State Labor Market Information	Information on labor force, industries, occupations, employment projections, and wages in California, by county, MSA, local workforce development area, and regional planning unit	Individual	Yes	Labor Market Information Division	NA	State of California	Annually	CA Labor force	http://www.labormarketinfo.edd.ca.gov/
State of Washington, Labor and Industries Contractor License and Registration Data	Information on business licenses issued in Washington State, including business type and contractor license type, start and end date, and status	Employer	No	Primary	Administrative	State of Washington	Daily	Business licenses	https://data.wa.gov/Labor/L-I-Contractor-License-Data-General/m8qx-ubtq
Texas Alcohol and Beverage Commission	List of food and beverage certificates issued in Texas	Employer	No	Primary	Administrative	State of Texas	NA	Food and beverage certificates	https://www.tabc.texas.gov/public_information/listing_by_class.asp

^a LEHD data are based on a combination of Unemployment Insurance administrative earnings data and Quarterly Census of Employment and Wages (QCEW) survey data with Census Bureau survey and administrative data on individuals.

^b UI-covered employment represents over 95% of private, state and local, and federal government wage and salary civilian jobs in the United States. Examples of jobs that are not covered by UI include some agricultural jobs, railroad employment, self-employment, and others that vary by state. Federal employment is not included in regular QWI data.

^c An employer is defined as a single account in a given state's unemployment wage reporting system. An enterprise is defined as a business that may have multiple establishments in multiple industries. An establishment is defined as a physical location at which business is done.

ARMS = Agricultural Resource Management Survey, BEA = Bureau of Economic Analysis, BLS = Bureau of Labor Statistics, CES = Current Employment Statistics; DOL = Department of Labor, ERS = Economic Research Service, FABS = Federal Assistance Broker Submission System, FFATAFSRS = Federal Funding Accountability and Transparency Act Federal Funding Subaward Reporting System, FPDS-NG = Federal Procurement Data System Next Generation, ICPSR = Inter-university Consortium for Political and Social Research, LAUS = Local Area Unemployment Statistics, LBD = Longitudinal Business Database, MSA = metropolitan statistical area; NA = not available, NASS = National Agricultural Statistics Service, NIPA = National Income and Product Accounts, UI = unemployment insurance; U.S. = United States, WHD = Wage and Hour Division.

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

Mathematica

Princeton, NJ • Ann Arbor, MI • Cambridge, MA

Chicago, IL • Oakland, CA • Seattle, WA

Tucson, AZ • Woodlawn, MD • Washington, DC

EDI Global, a Mathematica Company

Bukoba, Tanzania • High Wycombe, United Kingdom



mathematica.org