ILRReview

Volume 67
Supplement

Article 9

May 2014

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Abstract
The adoption by the Department of Labor (DOL) of new Strategic Goals in 2010 represented an important turning point in its history. In a more thoroughgoing fashion than ever before, DOL has embraced the principle that outcomes and impacts, not outputs, are the criteria by which its worker protection efforts should be judged. The Department's recently adopted New Approach specifies that rigorous data analysis and program evaluation, informed by social scientific research methods, are now the preferred metrics for quantifying the Department's effects on the regulated community. Notably absent from the Agency's public documentation, however, is any detailed evaluation of the role of information technology in supporting its enforcement agenda. In this article, the author seeks to fill this void by describing how a comprehensive reevaluation of DOL's data infrastructure and IT capabilities could further the principles embodied in the New Approach. She proposes four criteria – quality, scope, accessibility, and interconnectivity – for assessing the performance of each regulatory IT system; enumerates ways in which each criterion can be observed and measured; identifies ways in which DOL's current data systems fall short; and suggests promising avenues for reform. The author also highlights important barriers that impede systemic IT change and suggests ways in which they might be overcome.

Keywords
evaluating IT performance

Cover Page Footnote
I am indebted to the personnel at OSHA, MSHA, WHD, and BLS for providing me with the data and insights upon which the article is based, and to Dick Craswell and Eric Frumin for detailed comments on the manuscript. Many thanks to Kristen Altenburger, Nate Atkinson, Brian Karfunkel, and Ted Westling for excellent research assistance.

PUTTING DATA TO WORK FOR WORKERS: THE ROLE OF INFORMATION TECHNOLOGY IN U.S. WORKER PROTECTION AGENCIES

ALISON D. MORANTZ*

The adoption by the Department of Labor (DOL) of new Strategic Goals in 2010 represented an important turning point in its history. In a more thoroughgoing fashion than ever before, DOL has embraced the principle that outcomes and impacts, not outputs, are the criteria by which its worker protection efforts should be judged. The Department's recently adopted New Approach specifies that rigorous data analysis and program evaluation, informed by social scientific research methods, are now the preferred metrics for quantifying the Department's effects on the regulated community. Notably absent from the Agency's public documentation, however, is any detailed evaluation of the role of information technology in supporting its enforcement agenda. In this article, the author seeks to fill this void by describing how a comprehensive reevaluation of DOL's data infrastructure and IT capabilities could further the principles embodied in the New Approach. She proposes four criteria—quality, scope, accessibility, and interconnectivity—for assessing the performance of each regulatory IT system; enumerates ways in which each criterion can be observed and measured; identifies ways in which DOL's current data systems fall short; and suggests promising avenues for reform. The author also highlights important barriers that impede systemic IT change and suggests ways in which they might be overcome.

In an era of declining union representation and growing employer violations of worker rights, some observers have argued that what is needed from labor scholars is "less imagination and more practicality" (Jacoby 1994: 227). Matt Finkin has called for "practicable, even if modest, remedial means more or less ready on hand" to improve compliance with legal workplace standards (2002: 75). Echoing this sentiment, the economist David Weil has argued on pragmatic grounds that "[r]ather than focusing all energy and political capital on passing [new] legislative initiatives, which could take years to implement, a new Congress or entering administration should

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ILRReview, 67(Supplement) 2014. © by Cornell University.
Print 0019-7939/Online 2162-271X/00/6703 $05.00

bring to its regulatory agencies a clear and coherent plan for enforcing and implementing existing laws and regulations in order to achieve a focused set of public aims" (2007: 125). Particularly in an age of heightened political polarization, in which progressive labor legislation rarely wins enough bipartisan support to become law, stepping up the enforcement of existing labor laws may be one of the few practicable means available to combat workplace abuses.

As if in recognition of this reality, the Department of Labor (DOL) 2011-16 "Strategic Plan" places particular emphasis on the role of strategic enforcement. The Strategic Plan carefully distinguishes "output measures"—including how many investigations a worker protection agency conducts, how long each inspection lasts, how many citations issue, and so forth—from "outcome measures," defined as the "effect of the agencies' activities on the day-to-day lives of working families [including] their wages, working hours, benefits, work-life balance, workplace safety and health" (DOL 2010b: 10). A cornerstone of the Strategic Plan is its commitment to prioritizing outcome measures over output measures when evaluating the Department's effectiveness (ibid.). In particular, DOL has championed the use of "rigorous program evaluation" to determine whether its agencies' activities are tangibly improving working conditions (ibid.: 87).

The notion that an enforcement agency's effectiveness should be judged by its impact on intended beneficiaries, not by the scope of its inspection activity, is not novel. Virtually all empirical scholarship on the effectiveness of government regulation begins with this premise (Weil 2001; Gray and Mendeloff 2005; Bradburry 2006; Morantz 2009). At least since the passage of the Clinton-era Government Performance and Results Act of 1993 (GPRA),[1] Congress has stressed the value of objective, systematic program evaluation, and DOL has periodically subjected its own programs to rigorous, outcomes-oriented evaluation.[2]

Nevertheless, DOL's Strategic Plan represents a more thoroughgoing embrace of the idea that impacts, not outputs, are the criteria by which the efficacy of its worker protection programs is to be judged. One of DOL's key policy documents, "A New Approach to Measuring the Performance of Department of Labor Worker Protection Agencies" (the New Approach), endorses "statistical techniques of random sampling and stratified random sampling and the application of social science research methods to collect and analyze performance data" so credible statistical inferences can be drawn (DOL 2010a: 6, 9–12). In his first term, President Obama created a

[1]Pub. L. No. 103-62, 107 Stat. 285.

[2]In the late 1990s and early 2000s, for example, an innovative program pioneered by DOL's Wage and Hour Division combined private market leverage and public enforcement of monitoring arrangements to combat exploitative labor practices in the sweatshop industries of New York City and Southern California (Weil 2010: 27). The agency subsequently conducted random, investigation-based surveys to assess the efficacy of the program, the effects of which were statistically quantified and reported in a series of papers by Weil (2005) and Weil and Mallo (2007).

new departmental position, the Chief Evaluation Officer (CEO), tasked with "implement[ing], manag[ing], and coordinat[ing] robust and systematic evaluations of program strategies, outcomes, and measures of performance across the Department" (DOL 2010b: 84, 93). The CEO has asked contractors to convene technical working groups, including academics and other outside experts, to evaluate each evaluation study's methodology, technical feasibility, and social scientific validity.[3]

Given DOL's highly visible emphasis on empirical analysis and the use of social scientific research methods, it is striking how little attention its public documents have devoted to the configuration of regulatory data systems and, more broadly, the role of information technology (IT) in improving the enforcement of protective labor laws.[4] The New Approach does not discuss the role of IT at all. The Strategic Plan contains a general pronouncement that DOL is "commit[ted] to an infrastructure that better supports internal information sharing" (DOL 2010b: 102); alludes to several transparency-enhancing initiatives such as the launch of an online Enforcement Database (ibid.); describes the role of the Department's Chief Financial Officer in ensuring the accuracy of online financial data (ibid.: 103); and notes that the Office of Information and Technology Management (OITM) was recently transferred to the Office of the Assistant Secretary for Administration and Management (OASAM). The Strategic Plan also enumerates several of OASAM's accomplishments, including the creation of a productivity tool to provide an enterprise-wide platform for online meetings and collaborations, the deployment of video webcasting, and the establishment of a "shared information environment" for the Department's "customers" (ibid.). Yet these documents contain few granular insights on the role that IT currently plays, or might play, in furthering the department's strategic goals.

The objective of this article is to describe how a comprehensive reevaluation of DOL's data infrastructure could support the enforcement agenda embodied in the New Approach. In so doing, I hope to offer a practicable, close-at-hand approach to enhancing workers' rights that has thus far received little scholarly attention. The recommendations presented in this article draw on a series of research studies that my research team and I have conducted using data from the Occupational Safety and Health Administration (OSHA), Mine Safety and Health Administration (MSHA), and Bureau of Labor Statistics (BLS); my participation as an outside expert in technical working groups that pertain to the activities of OSHA, MSHA, and the Wage and Hour Division (WHD); and conversations with political appointees and career bureaucrats at all four agencies.

[3]Telephone interview with Celeste Richie, DOL Chief Evaluation Office, Office of the Assistant Secretary for Policy, March 13, 2012.

[4]Frequently throughout this article, I use the term "IT" broadly to encompass not just the technologies used to obtain, store, and transmit information but also the quality, scope, accessibility, and interconnectivity of the data collected by DOL's constituent worker protection agencies.

Four Criteria for Evaluating IT Performance in DOL's Worker Protection Agencies

This section proposes four criteria—data quality, scope, accessibility, and interconnectivity—that might be used to assess the performance of data systems relied upon by DOL's worker protection agencies. At the outset, two important caveats are in order. First, the specific examples cited throughout this discussion pertain exclusively to BLS and DOL's three principal worker protection agencies: OSHA, MSHA, and WHD. These agencies are at the center of the analysis because I have become reasonably, if not intimately, familiar with significant portions of their respective enterprise databases. Although some of the criteria (and solutions) proposed here might apply equally to the Department's other worker protection agencies,[5] consideration of that question is beyond the scope of this article.

Second, I do not include transparency among my four proposed criteria, for two reasons. First, this criterion is already reflected in DOL's Strategic Plan (DOL 2010b: 102–3), and the Department has already sought to improve "transparency to the public" by enhancing web-based access to its enforcement data. Second, although transparency has been deployed successfully in some settings to improve regulatory compliance (Fung, Graham, and Weil 2007), maximizing public availability of DOL enforcement data will not necessarily improve DOL's capacity to target egregious labor law violators.[6] For these reasons, I confine my focus to four criteria that relate more directly (and instrumentally) to the task of channeling inspection resources where they are needed most.

Quality

It is hard to imagine a less controversial criterion for evaluating a database than the accuracy, consistency, and completeness of the information that it contains. Given the New Approach's emphasis on measuring the impacts (as opposed to the outputs) of DOL enforcement activity, systematic evaluation of DOL's data quality is especially vital. No matter how methodologically rigorous a program evaluation's design, it will produce an incomplete, and potentially misleading, picture of the agency's impact if the data upon which it relies are inaccurate, internally inconsistent, or incomplete.

[5]DOL's other three worker protection agencies are the Employee Benefits Security Administration (EBSA), the Office of Federal Contract Compliance Programs (OFCCP), and the Office of Labor-Management Standards (OLMS); each agency's respective mission is summarized briefly in the New Approach (DOL 2010a: 2).

[6]For example, if data released to the public in raw form contains data-entry errors and/or internal inconsistencies, its release could undermine rather than enhance public faith in government. If staff must respond to public inquiries about such deficiencies, they will have less time to devote to enforcement activity. Transparency could also conceivably detract from enforcement efforts if employers can observe algorithms being used for targeting purposes, insofar as some firms might strategically underreport injuries to minimize the likelihood of regulatory scrutiny.

Addressing shortcomings in data quality in an organization as large and compartmentalized as DOL is an enormously complex endeavor. Since problems can arise from a variety of heterogeneous sources, correcting them typically requires a multipronged strategy. An effective solution may require an admixture of operational changes, retooling of user interfaces, deployment of new technologies, modification of data collection practices, and creation of new data-sharing agreements.

Evaluation of DOL's data quality is further complicated by the fact that the Department's worker protection agencies receive information from two very different sources. First, some DOL agencies, including MSHA and BLS, collect extensive data from employers. The Federal Coal Mine Safety and Health Act of 1969 (the Coal Act) requires every U.S. mine to provide quarterly reports on the total number of injuries and fatalities that occurred during the previous quarter.[7] Since MSHA's formation in 1978, the agency has collected and preserved this employer-provided information in its regulatory database. As part of the OSHA Data Initiative (ODI) program begun in the mid-1990s, OSHA also collects total injury tabulations from employers in high-hazard, non-construction industries (Economic Research Group 2009: 1). Although BLS also collects data from U.S. employers—such as data on occupational injuries, employee compensation and benefits, and costs of employment—it encompasses only those firms selected for inclusion in a (stratified) random sample frame.[8] Despite these data sets' heterogeneous coverage and content, they all share a reliance on employers' self-reports.

The second primary source of data is DOL's field enforcement personnel. OSHA, MSHA, and WHD inspectors record their findings in a wide variety of media, including word-processing files, spreadsheets, stand-alone databases, enterprise databases, and paper notebooks.[9] Some of these records may be kept in the field office close to where the inspection took place, some may be housed in a centralized (nationwide) database, and some may be stored in several locations. Furthermore, some information is entered directly into the enterprise database, while other types of information are

[7]Record-keeping and reporting requirements are specified in §§ 111(a) and 111(b) of the original 1969 Act and §§ 103(d), 103(h), and 103(j) of the law as amended in 2006 (by the MINER Act) (30 U.S.C. §§ 813(d), (h), and (j)). MSHA's regulations that require quarterly reporting are specified in 30 C.F.R. § 50. "Accident" is defined in the original 1969 law and the current, amended law in § 3(k) as including "a mine explosion, mine ignition, mine fire, or mine inundation, or injury to, or death of, any person." That definition is expanded upon in 30 C.F.R. § 50.2, which also defines occupational injuries and illnesses not necessarily associated with accidents. Although the Act does not specifically require reporting of non-accident-related illnesses, regulations group accident, occupational injury, and occupational illness reporting under 30 C.F.R. § 50.20.

[8]Examples of employer surveys conducted by BLS include the Survey of Occupational Injuries and Illnesses (http://www.bls.gov/respondents/iif/important.htm), the National Compensation Survey (http://www.bls.gov/ncs/home.htm), and the Labor Productivity and Costs surveys (http://www.bls.gov/lpc/home.htm).

[9]Many MSHA inspectors, for example, handwrite inspection notes on tri-fold paper (McAteer et al. 2011: 83).

first recorded in temporary media (such as paper notes) and are only later entered into a computer system.[10]

Some qualitative shortcomings of DOL's enforcement data can be detected simply by scrutinizing each database's contents. For example, data that are improperly entered or formatted (e.g., recording the time an accident occurred as 80:0[11] or coding a state abbreviation as OQ[12] or XX[13]); inconsistently entered or formatted (such as Los Angeles appearing as LOS ANGELES, Los Angeles, and Los Angels[14]); nonresponsive (e.g., West Palm Beach listed as a "state"[15]); missing;[16] inherently nonsensical or implausible (for example, a regular inspection that lasts over 10 years[17]); internally contradictory (such as an inspection that began on March 9, 1992, reportedly ending on March 4, 1992[18]); rarely updated;[19] or coded inconsistently over time[20] can, at least in principle, be uncovered through careful analysis of the database. Such errors are virtually inevitable in any enterprise database that relies on many individuals to input data on an ongoing basis yet lacks robust mechanisms for error checking and data cleaning. The enterprise databases relied upon by MSHA, OSHA, and WHD are no exception to this rule; all three suffer from some combination of these flaws.

Yet some data quality problems cannot be readily detected through mere inspection and analysis. Data that are facially plausible yet incorrect because

[10]For example, MSHA's internal review notes that inspectors filled out air sample record cards that were later manually entered into the air sample database by lab personnel (MSHA 2012b: 31).

[11]MSHA abatement extension data, violation number 7008412.

[12]See the mailing state field in the OSHA inspection file, e.g., activity number 2102457.

[13]See the mailing state field in the OSHA inspection file, e.g., activity number 304954894.

[14]See, e.g., WHISARD Case-IDs 1569054, 1508320, and 1121077. Inconsistent legal names and addresses are commonplace in the WHISARD and OSHA inspections databases. Sometimes inconsistencies can be uncovered through visual inspection or the use of a relatively simple matching algorithm. In other cases, however, it can be very difficult to determine whether separate records are referring to the same legal entity and/or inspection.

[15]See the establishment mailing address's state field in the OSHA inspection data, activity no. 13412929.

[16]For example, the owner type field is missing 21.69% of the time in the OSHA inspection data, and the total miner experience field is missing 20.97% of the time in the MSHA accidents data.

[17]See MSHA inspection with event number 4288531, which began on November 19, 1988, and ended on March 30, 1999.

[18]See MSHA inspection with event number 5878806.

[19]For example, although MSHA's field inspectors are supposed to record the name of the employee (if any) whom miners designate as their "safety and health representative" on the Mine Information Form (MIF), the field is rarely updated and is believed to be so unreliable that MSHA neither provides the information to the public nor uses it for internal analytic purposes. The only time that the agency uses the field is when it sends bills and invoices to a mine operator; if a mine safety representative is listed in the record, then he or she receives an extra copy. Telephone interview with Mary Nettles, MSHA, March 15, 2012.

[20]Before 2005, MSHA used a two-digit number to record inspection type for metal/nonmetal mines, and a three-character string to designate the same information for coal mines. In 2005, the agency unified its coding system by creating a new, three-character alphanumeric code for all mines. However, the old and new coding systems are incompatible and cannot be reconciled because some individual codes in the old system correspond to multiple codes in the new system and vice versa. Therefore, one cannot (for example) comprehensively track the prevalence of different inspection types over time.

of data-entry errors (for example, a mine that produces 150,000 tons of coal yet is incorrectly coded as producing 50,000) may escape detection unless the database contains built-in mechanisms that red-flag suspicious data and trigger case-by-case investigation. (And even then, subtle errors may never come to light.) Mistakes of this sort not only bias regression coefficients but also compromise data quality by increasing the "noise-to-signal ratio" associated with their estimation. If standard errors become sufficiently inflated by faulty data, policymakers may fail to reject the null hypothesis that a given intervention has no effect, even though the null would be rejected with more accurate data. Yet if they are randomly distributed and relatively rare, such errors are unlikely to taint the overall validity of the database.

More pernicious than such garden-variety errors are systematic flaws that may severely bias a database's substantive content. For example, reliance on self-reported employer data renders MSHA, OSHA, and BLS uniquely vulnerable to reporting bias. If employers can save costs or evade regulatory scrutiny by declining to report adverse events (such as workplace accidents and fatalities), DOL's statistics on the frequency of workplace injuries will be pervasively biased downward. Such concerns are more than theoretical. Several recent empirical articles lend credence to the view that the nonfatal injury statistics collected by both MSHA (for the mining sector) and BLS (for other industries) are vulnerable to underreporting (Leigh, Marcin, and Miller 2004; Boden and Ozonoff 2008; Morantz 2013). The United Mine Workers' analysis of the events leading up to the collapse of the Upper Big Branch Mine on April 5, 2010, provides a particularly vivid portrait of the way that one nonunionized mine controller, Massey Energy, used various tactics—including double bookkeeping, a bonus structure that incentivized managers to underreport injuries, and outright intimidation—to ensure that many injuries never came to light (McAteer et al. 2011: 100–102; UMWA 2011: 73–80).

In light of the diverse array of data quality problems that afflict DOL's enterprise databases and the heterogeneous mechanisms that produce them, any effective strategy must be multipronged. First, after determining the prevalence of garden-variety data entry problems (such as missing, illogical, contradictory, inconsistent, and incomplete data fields) in its enterprise database, each worker protection agency should design technological solutions to minimize them. To the greatest extent possible, each agency should "hardwire" algorithms into each application that minimize the likelihood of entering erroneous data into the system in the first place. Fortunately, the private sector has developed a number of technological solutions that could be readily adapted for use in DOL's enterprise databases. Simple adjustments to user interfaces that minimize data-entry errors at the outset are commonplace in web-based commercial applications but are hardly ever employed by DOL's worker protection agencies. These include replacing "free-text" fields with pull-down menus for fields (like U.S. state) that can take on only a finite number of values; requiring especially critical fields (such as passwords) to be initially entered twice; cross-checking free-text

fields against independent data sources to confirm their accuracy (such as cross-checking addresses against those listed in the U.S. Postal Service's database); auto-populating basic information (such as name and mailing address) throughout an entire record instead of making users retype it multiple times; and requiring all vital fields in a given screen to be completed before the user can advance to the next screen.

In addition, DOL should design algorithms that red-flag inconsistent, implausible, or mutually contradictory information after the data have been entered. For example, if an inspector inputs an inspection start date that postdates the same inspection's end date or inputs a start date for a post-accident investigation that occurs before the accident date, the algorithm should automatically flag the inconsistency and require the inspector to correct it before closing out the file. If an inspector inputs data whose validity is technically possible but highly improbable—such as a mine producing 100 tons of coal per hour worked when mean and median productivity are only 3.95 tons and 2.8 tons per hour worked, respectively[21]—the algorithm should red-flag the suspicious information and require the inspector to confirm it before proceeding further. Similarly, an algorithm could be designed that cross-checks certain data fields in one DOL agency's enterprise database against the same fields in other agencies' databases, to ensure that information for any given employer is reported consistently across all DOL systems.

Each agency also should adopt a long-term strategic plan for the storage and preservation of historical data. Without such an approach, whenever data is migrated from an obsolete enterprise database to a new one, precious historical data on regulatory enforcement might become degraded or even permanently lost. For example, when MSHA migrated its data to a new enterprise database in 2001, all historical information on which U.S. mines were unionized (from the 1970s through the 1990s) was lost,[22] thereby preventing scholars from comparing trends among union and nonunion mines in the decade after the agency's formation (Morantz 2013). Especially given the emphasis in the Government Performance and Results Act Modernization Act (GPRAMA)[23] on ensuring that agencies can chart trends over time, preserving the long-term accuracy and integrity of each worker protection agency's data, even as the agencies periodically upgrade their IT infrastructure, is vital.

Different tactics are required to combat systematic underreporting. DOL has recently begun to grapple with the underreporting problem and to explore possible ways to address it. For example, the OSHA Data Initiative

[21]See, e.g., mine #4608795, which supposedly produced 1,900 tons of coal in the fourth quarter of 2001, when the mine's (sole) employee worked only 19 hours; and mine #1518923, which supposedly produced 300 tons of coal in the fourth quarter of 2009, despite employing only three people, who worked just one hour apiece.

[22]Telephone conversation with MSHA's George Fesak, Director of Program Evaluation and Information Resources, on August 14, 2008.

[23]Pub. L. No. 111-352, 124 Stat. 3866 § 6 (2011), 31 U.S.C. § 1121.

Collection Quality Control program, begun in 1995 and continued for approximately a decade thereafter, audited injury and illness records of all employers included in OSHA's ODI database (Economic Research Group 2009). More recently, in 2009, OSHA piloted a national emphasis program with essentially the same purpose (i.e., inspecting the accuracy of injury and illness data reported by ODI-reportable firms) (OSHA 2009). In 2010, DOL's Chief Evaluation Office funded a comprehensive evaluation "[t]o determine the accuracy and completeness of nonfatal injury and illness reporting in the mining industry," slated for completion in 2012 (CEO 2012). Typically in such contexts, underreporting has been detected by auditing stratified random samples of affected populations (as in OSHA's ODI auditing program), establishments whose reported injury rates fall below industry norms (as in OSHA's national emphasis program), or firms whose "OSHA-recordable injury rate" (as reported to either BLS or MSHA) differs markedly from its reported workers' compensation claims (e.g., Boden and Ozonoff 2008).

Although such techniques can be useful in detecting noncompliance, DOL should also explore alternative methods of ferreting out employer underreporting. For example, MSHA and BLS could use statistical modeling techniques to examine the distributions of reported injuries across the regulated community and audit establishments that differ significantly from the norm in ways that suggest underreporting. For example, some prior scholarship rests on the assumption that certain types of injuries—especially minor and non-traumatic injuries—are very easy to underreport (Morantz and Mas 2008; Morantz 2013). If this assumption is correct, then one might expect establishments whose reported injuries consist almost exclusively of traumatic and fatal injuries to be more likely culprits than otherwise similar establishments that report a wider range of traumatic, non-traumatic, minor, and fatal injuries.

BLS could also explore new ways to obtain information directly from workers. Although in theory employees can file complaints with DOL while keeping their identities confidential from their employers,[24] in practice, they may do so rarely for fear of retaliation. For example, although serious safety hazards were commonplace at Upper Big Branch prior to its explosion on April 5, 2010, MSHA received just one underground hazard complaint in the five years leading up to the disaster (UMWA 2011: 78). DOL's Strategic Plan acknowledges this problem and describes nascent efforts by both MSHA and WHD to reach out "to the most vulnerable workers who are least likely to complain yet work in the highest risk industries" and to "gauge workers' perceptions of their *voice in the workplace* . . . [including] whether

[24]Workers can file an anonymous complaint by phone (OSHA, MSHA, and WHD), online (OSHA and MSHA only), or by fax (OSHA only). Each agency has a website detailing how workers and third parties can file complaints. See http://www.osha.gov/as/opa/worker/complain.html (OSHA), http://www.msha.gov/codeaphone/codeaphonenew.htm (MSHA), and http://www.dol.gov/wecanhelp/howtofilecomplaint.htm (WHD).

workers can report violations without fear of reprisal" (DOL 2010b: 55). As part of such initiatives, DOL could pilot new techniques for surveying workers that ensure that no respondent can be identified, even indirectly, and singled out for retaliation. As the Strategic Plan notes in passing, worker- and community-based organizations might also help improve the accuracy of injury data by identifying likely violations (ibid.: 99). To strengthen such efforts, Congress should pass more robust whistleblower protections than currently exist.[25] One could even envision a system similar to that provided under the False Claims Act,[26] in which a worker who reports systematic underreporting of injuries to one of DOL's worker protection agencies would receive a small percentage of the penalties that the firm subsequently pays to DOL.

In short, upgrading data quality is precisely the sort of management challenge that is "cross-cutting in nature."[27] Not only can small errors have cumulatively large impacts on worker protection agencies' capacity to carry out their respective missions, but they can also undermine efforts to share information across agencies. It is heartening that several DOL initiatives intended to target underreporting are already under way. However, given the intricate and multifaceted nature of the problem, DOL should consider a Department-wide approach in which data experts from all agencies would share information about common problems and potential solutions. Such discussions might also help pave the way for collaborative enforcement among DOL's worker protection agencies, which the Strategic Plan identifies as an effective way to "leverage limited resources and ensure compliance throughout the workplace" (DOL 2010b: 99).

Scope

The crux of the regulatory challenge is to make the most of scarce regulatory resources by identifying the worst offenders. The more information a worker protection agency obtains on each regulated firm—including highly detailed and granular information on its legal structure, operating characteristics, revenue flow, workforce, employment practices, and so forth—the greater its capacity to "target the most egregious and persistent violators" (DOL 2010b: 99). Yet because collecting additional data can be costly (for both DOL and the employers it regulates), deciding how much information to collect involves difficult policy trade-offs.

[25]For a summary of current whistleblower protections, see http://www.whistleblowers.gov/. After the explosion at Upper Big Branch Mine, new legislation was proposed to strengthen whistleblower protections for U.S. miners. The Miner Safety and Health Act of 2010, H.R. 5663, for example, proposed (unsuccessfully) to "codify regulations that give workers the right to refuse to do hazardous work . . . clarif[y] that employees cannot be discriminated against for reporting unsafe conditions and [bring] the procedures for investigating and adjudicating discrimination complaints into line with other safety, health and whistleblower laws" (Williams 2010).

[26]31 U.S.C. §§ 3729–3733.

[27]The phrase is borrowed from GPRAMA § 3, 31 U.S.C. § 1115(a)(6) (2010).

Data that are, or could be, recorded directly by an agency's staff are both (relatively) easy to obtain and vital in order to track the agency's own progress. At a minimum, each agency should be able to track its inspectorate's activities at the inspection level (including inspection date, type, duration, inspector ID, etc.); the citation/violation level (including the code section violated, the frequency or magnitude of the violation, whether the violation was corrected, etc.); and the penalty level (including initial penalty amount, final penalty amount, when the penalty was paid in full, etc.). The richer the information that can be observed at each level, the more granular the insights that can be obtained regarding the relationship between enforcement activity and workplace impacts. Although differing somewhat in their accessibility to outside researchers,[28] all three of DOL's primary worker protection agencies—MSHA, OSHA, and WHD—track and record their inspection activities at these three levels.

A common shortcoming of these databases, however, is the difficulty of tracking contested violations and penalties through mediation, administrative appeals, and/or court litigation. Although it is often possible to extract very basic information, such as whether a citation was contested in the first place, it is rarely possible to track the full appeals process.[29] Since a backlog in administrative appeals can significantly affect the efficiency of worker protection agencies as well as employers' incentives to comply with the law,[30] enhancing DOL's capacity to track conferences and administrative appeals would greatly improve its ability to track the efficiency of its operations.

Some idiosyncratic shortcomings (and interagency discrepancies) in the scope of data collected cannot be readily explained by the agencies' respective statutory mandates. For example, OSHA's enterprise database subdivides inspection hours into several smaller categories (such as travel time, hours spent on-site, hours off-site completing paperwork, etc.), whereas MSHA distinguishes only between "on-site" and "total" inspection hours. Similarly, although both WHD and OSHA track whether an establishment's

[28]Although DOL's publicly accessible web page includes regulatory data sets for MSHA and OSHA that can be analyzed at all three levels, the web-accessible version of the WHD data set can be analyzed only at the penalty level. In order to obtain a more comprehensive version that can be analyzed at all three levels, researchers generally must file a formal Freedom of Information Act request with WHD.

[29]For example, it is often difficult (if not impossible) to assemble a chronology of the assessment process, or to determine from the database alone whether a settlement conference occurred, when an administrative hearing was scheduled to take place, how long the hearing lasted, and precisely how the judge's determination affected the originally imposed citation or fine.

[30]For example, the preliminary report by MSHA on the Upper Big Branch disaster states that "[o]ne tactic used by mines with troubling safety records to avoid potential pattern of violation status is contesting large numbers of their significant and substantial citations. Because MSHA uses only final orders to establish a pattern of violations, and the average contested citation takes over 500 days to adjudicate due largely to a 16,000 case backlog at the independent Federal Mine Safety and Health Review Commission (FMSHRC), contesting large numbers of significant and substantial violations enables operators with troubling safety records to avoid potential pattern of violation status. In fact, the Upper Big Branch Mine contested the majority of its serious violation citations that form the basis of the pattern of violation status determination. In 2007 alone, the mine contested 97% of its significant and substantial violations" (MSHA 2012a: 7).

workers are represented by a union, MSHA does not.[31] Also unlike OSHA, MSHA does not record whether workers exercised their statutory right to accompany the inspector during his/her tour of the establishment (the "walkaround right").[32] The absence of information in MSHA's database on union status or exercise of the walkaround right is especially consequential because this information sheds light on employees' "voice in the workplace" or lack thereof (DOL 2010b: 55). Since reaching out to "the most vulnerable workers who are least likely to complain" is one of DOL's strategic goals, the Department should consider collecting these and other related fields[33] to obtain important clues regarding workers' capacity to exercise their collective "voice" regarding health, safety, and working conditions.

DOL should also consider collecting new data fields that would provide important clues about workers' and managers' incentives to report injuries. First, knowing whether an employer offers health insurance coverage (and if so, whether all employees or just managers are eligible) would help OSHA and MSHA discern whether injured workers have viable treatment options outside the workers' compensation system. Second, "behavior-based safety" (BBS) programs that reward managers and/or workers for reporting zero injuries—and/or impose a penalty or other form of progressive discipline on workers who report injuries—have become commonplace. Critics in the United States and abroad have alleged that such programs encourage underreporting (Howe 1998; Gerke 2010). Inclusion of a field indicating whether or not the employer uses either (or both) BBS incentive structures could help DOL understand the institutional constraints that affect the compliance of regulated firms.

Another pervasive shortcoming of DOL's data infrastructure is that it often provides little insight into the entity or entities that actually control the enterprise and its workforce. The "fissuring" of the employment relationship—whereby employers have increasingly "contracted out, outsourced, subcontracted, and devolved many functions that once were done in house"—has become commonplace in many industries, especially those that employ low-wage and unskilled workers (Weil 2010: 9–10). Workplace fissuring, combined with the frequent opacity of corporate ownership structures, can prevent DOL from discerning the true "regulated entities" toward which its worker protection agencies should direct enforcement efforts.

[31]WHD reportedly records whether workers are covered by a collective bargaining agreement, although the field is not available on its public-access website. (Phone conversation with WHD official on March 19, 2012.) MSHA lost the union field in 2001 when the data were migrated to the Mine Information System (MIS). (Phone conversation with MSHA's George Fesak, Director of Program Evaluation and Information Resources, on August 14, 2008.)

[32]The walkaround right is enumerated in 30 U.S.C. § 813(f) (with respect to MSHA) and 29 U.S.C. § 657(e) (with respect to OSHA).

[33]Ideally, the database would also specify 1) the name of the union for unionized establishments and 2) if the walkaround right is exercised, whether the worker who accompanied the inspector was a union representative, another union official, a designated MSHA representative, or "other."

Such concerns are especially acute with respect to immigrant workers, a disproportionate number of whom suffer workplaces abuses. A 2009 study of low-wage workers in Chicago, Los Angeles, and New York City found that foreign-born workers—who worked predominantly in fissured industries[34] such as restaurants and hotels, domestic labor, garment manufacturing, warehousing, and private security—were much more likely than their U.S.-born counterparts to experience wage theft. Immigrants with limited English proficiency and/or unauthorized work status were especially vulnerable to minimum wage violations (Bernhardt et al. 2009: 5). Most empirical scholarship also suggests that the foreign-born are more likely than other workers to be injured on the job.[35]

Although it would be desirable from a policy perspective to learn more about immigrant workers' unique vulnerabilities to workplace abuses, virtually no data collected by OSHA, WHD, or MSHA contain information on employees' country of birth, English proficiency, or work authorization status.[36] The only exception is OSHA's regulatory data set on workplace fatalities, which contains special information (gleaned from the Immigrant Language Questionnaire, or IMMLANG form) on foreign-born and Hispanic workers killed on the job. The database records country of birth and language proficiency for these workers, although not their work authorization status.[37] This pattern is not unique to DOL; the reporting of information on race and ethnicity is generally voluntary (American Public Health Association 2005). To be sure, collecting detailed personal information from immigrant workers can expose them to special risks. Undocumented workers whose immigration status is disclosed to federal and state authorities may be entitled to lesser remedies than U.S.-born workers and run the risk of deportation if their status comes to light.[38]

The challenge for BLS is to obtain more granular information on immigrant workers while finding ways to credibly allay their (legitimate) fears of retaliation and deportation. DOL and the Department of Homeland Security (DHS) signed a memorandum of understanding (MOU) in 2011 committing both agencies to limited information sharing. The goal of the

[34]For a book-length description and analysis of workplace fissuring, see Weil (2014).

[35]For a literature review summarizing research on the risks faced by immigrant workers, see Orrenius and Zavodny (2012).

[36]E-mail correspondence with Dave Schmidt, Occupational Safety and Health Administration, U.S. Department of Labor, June 13, 2013; telephone conference with Ray Honeycutt, Wage and Hour Division, U.S. Department of Labor, June 12, 2013; e-mail correspondence with Chad Hancher, Mining Safety and Health Administration, U.S. Department of Labor, June 12, 2013.

[37]E-mail correspondence with Dave Schmidt, Occupational Safety and Health Administration, U.S. Department of Labor, June 12, 2013.

[38]In *Hoffman Plastic Compounds, Inc. v. NLRB (Hoffman Plastics)*, the U.S. Supreme Court limited the scope of remedies available to an undocumented worker who was laid off in retaliation for union organizing activity. To date, DOL has declined to similarly limit the scope of remedies available under the labor laws that it enforces (WHD 2008). However, immigrant workers who pursue legal recourse against their employers for wage theft may risk deportation by U.S. Immigration and Customs Enforcement (ICE) if their work status comes to light in the course of the investigation.

MOU is to prevent DHS's Immigration and Customs Enforcement (ICE) unit from investigating workplaces involved in active labor disputes, so that it does not chill immigrant workers from enforcing their legal rights.[39] It remains to be seen whether the MOU will secure sufficient cooperation from both agencies to achieve its intended goals. Meanwhile, in highly fissured industries such as fast food and retail trade, DOL's worker protection agencies may find it more effective to focus their enforcement efforts at the brand or major retailer level instead of analyzing each individual establishment's compliance record in isolation.[40] Similarly, the capacity to identify franchised establishments within a large fast-food chain may enable DOL agencies to better predict the likelihood of violations.[41]

To further these interrelated strategic priorities, DOL should require regulated firms to disclose more information about their ownership structure and management characteristics. For example, MSHA could require mine operators to indicate whether the identified "controller" is a subsidiary of a larger firm, the name of its corporate parent, whether the controller is leasing out its mining rights to another company, names of any contractors that have performed work in the previous quarter, and approximate hours worked by each contractor. OSHA could similarly require firms in other industries to provide information on their ownership (subsidiary status, franchising agreements, identity of franchisor, corporate parent, etc.), use of subcontractors (especially in industries like construction), and management structure (whether the owner has hired another firm to operate the establishment). Although WHD traditionally has confined the scope of its regulatory scrutiny to the statutory employer, as defined in Section 3(d) of the Fair Labor Standards Act,[42] augmenting its enterprise database to include information on industry structure—such as an enterprise's suppliers, contractors, and customers—could enable it to leverage its enforcement activities in the multifaceted manner envisioned in the New Approach (Weil 2010: 83). Although DOL may never fully unravel the intricacies of corporate ownership and control in every inspected establishment, adding a handful of well-chosen fields to its enterprise databases would provide a far more nuanced portrait of the regulated community than currently exists.

Finally, DOL should obtain periodic "snapshots" of critical policy outcomes that each of its worker protection agencies is striving to improve. Relevant information can be gleaned from randomized investigations whose purpose is not merely to cite violations but also to generate statistically valid estimates of regulatory compliance within a given group of regulated entities. Although it has not yet been implemented, DOL has already championed such an approach, defending the "displace[ment of] resources now

[39]For a description of the MOU, see http://www.nilc.org/document.html?id=358 (accessed June 7, 2013). For a link to the MOU, see www.dol.gov/asp/media/reports/DHS-DOL-MOU.pdf (accessed June 7, 2013).

[40]See, for example, Weil (2010: 75–95).

[41]See, for example, Ji and Weil (2009).

[42]29 U.S.C. § 201 et seq.

dedicated to targeted investigations to randomized investigations" on the ground that unless such a diversion takes place, "agencies have no evidence-driven methods for evaluating the success of their strategies or their targeting methods" (DOL 2010a: 12).

OSHA and MSHA differ from WHD in one critical regard: their goal is not merely to improve compliance with the law but also thereby to reduce workplace injuries and fatalities. Statutory and regulatory requirements mandate that every U.S. mine report all injuries and fatalities to MSHA on a quarterly basis,[43] and thus the agency itself possesses all the data elements required to track safety and health trends. This is not the case for OSHA; it is BLS, not OSHA, that samples most U.S. establishments to derive statistically valid estimates of nonfatal injury and illness rates across all sectors.[44] This is ironic since the information reported to BLS is typically copied from a log of "OSHA-recordable" injuries and illnesses that each workplace is required to maintain and update.[45] The problem is that OSHA itself has not always consistently recorded data from the injury logs that it reviews during site inspections.[46] Nor can OSHA access BLS's injury and illness data at the establishment level.[47]

In effect, then, OSHA is significantly constrained in its capacity to utilize establishment-level data for enforcement purposes, making it more difficult for the agency (and for outside researchers) to analyze the agency's impact on the regulated community.[48] The ODI survey is an important first step. Not only does OSHA use its ODI data for targeting purposes, but it also makes it freely accessible to the public at the establishment level. However, the ODI survey contains only summary tabulations, with no breakdowns by the type or cause of injury, limiting the uses to which the data can be put. Moreover, the initiative encompasses only a fraction of the regulated community under OSHA's purview and provides no insight at all into the construction industry.

Although broadening the scope of the ODI data collection would greatly enhance OSHA's targeting capacity (and facilitate much more detailed empirical research on OSHA's impact), the agency's determinations regarding the scope of data collected cannot be made in a vacuum. The Paperwork

[43]30 U.S.C. §§ 813(d), (h), and (j); 30 CFR 50.

[44]Fatal occupational injuries are handled differently. The Census of Fatal Occupational Injuries (CFOI), also housed at BLS, is not an employer survey but a true census. The information is gleaned from a wide variety of data sources on all U.S. establishments (see http://www.bls.gov/iif/oshcfoi1.htm).

[45]29 USC § 657(c); telephone interview with Dave Schmidt, OSHA Office of Statistical Analysis, March 13, 2012.

[46]Telephone interview with Dave Schmidt, OSHA Office of Statistical Analysis, March 13, 2012.

[47]Confidential Information Protection and Statistical Efficiency Act of 2002 (CIPSEA), Pub. L. No. 107-347, 116 Stat. 2962 (2002).

[48]Most scholarship in this area has tried to identify OSHA's impact by trying to link variations across time and across states in the frequency or costliness of OSHA inspections to trends in reported injury rates, or assembled samples of establishments (primarily large firms) that are included for two consecutive years in BLS's survey. See, for example, Viscusi (1979); Bartel and Thomas (1985); Ruser and Smith (1991); Gray and Mendeloff (2005); and Morantz (2009).

Reduction Act of 1995 (PRA)[49] holds each agency accountable for "reducing the burden of federal paperwork requirements" on the public, including the community of regulated employers (OCIO 2012). The PRA establishes a multistage process whereby requests for additional information collection must be announced for public comment in the *Federal Register*, reviewed by the Office of the Chief Information Officer (OCIO), and approved by the Office of Management and Budget (OMB).

To its credit, in an effort to broaden the scope and granularity of its ODI database, OSHA held informal stakeholder meetings in 2010 and drafted a notice of proposed rulemaking (NPRM) in May, 2013, to "expand [its] legal authority to collect and make available injury and illness information."[50] Part of the impetus for the NPRM was the agency's inability to timely access detailed injury information from ODI survey respondents, a limitation that prevents the agency from "identify[ing] specific types of hazards or problems in a given establishment" (OSHA 2010: 24507). Among the changes OSHA proposed for inclusion in the NPRM was the expansion of the recordkeeping system to include "data from every employer under OSHA jurisdiction." As of June, 2013, the draft NPRM was under review at the Office of Management and Budget.[51]

As noted at the outset, collecting additional data can be costly, and therefore in choosing which (if any) additional fields to collect, DOL must balance the potential benefits to be gained against the costs (to both the agency and the regulated community) of providing more information. Yet DOL need not adopt all the reforms described here in order to significantly enhance its enforcement capacity. Simple technological innovations, such as greater reliance on electronic reporting, could substantially lower the costs of data collection and alleviate the burden on employers. Moreover, if collecting detailed data from all establishments in certain industries were deemed prohibitively expensive, the agency could collect data from a representative sample of establishments in a manner roughly analogous to that used by BLS.

In sum, given the ambitious goals outlined in the New Approach (and Strategic Plan), this is an especially opportune moment for DOL to consider augmenting the scope of the data it collects. Although such an expansion may impose additional costs on both the regulated community and OSHA, learning more about the hazards facing U.S. workers would dramatically improve DOL's ability to engage in strategic targeting and the research community's capacity to link enforcement outputs to outcomes.

Accessibility

Even if DOL remedies current deficiencies in data quality and enlarges the scope of the data it collects, such reforms may have only modest impacts

[49] 44 U.S.C. 3506.

[50] See Department of Labor (2012a).

[51] Telephone conference with Dave Schmidt, OSHA Office of Statistical Analysis, June 11, 2013.

unless critical information is readily accessible to personnel and stakeholders who need it, when they need it, in contextually appropriate media and formats.

The first group of IT users for whom timely data accessibility should be a top priority is DOL's field inspectors, supervisors, and national office staff. Timely data accessibility affects each agency's capacity to select when and where to conduct inspections; to thoroughly inspect establishments that are selected; and to ensure that follow-up steps—such as remedial measures, heightened regulatory scrutiny, and so forth—are carried out. Impediments to or delays in data accessibility can significantly impede the inspectorate's capacity to do its job.

MSHA's internal review, describing the events leading up to the Upper Big Branch Mine explosion, is replete with instances of such deficiencies. For example, because of MSHA's antiquated system for tracking methane liberation, "only 22% of the TL [total methane liberation] values in the enterprise database during the first quarter of fiscal 2010 accurately reflected the latest air sample analysis results for methane-liberation mines inspected" in the local office (MSHA 2012b: 32). As a result, many "gassy" (highly combustible) mines were not inspected with the required frequency. The month before the explosion, an inspector failed to take an air sample at one of three mine entry points because he relied on an outdated ventilation map that did not identify it as a location where sampling was required (ibid.: 15). Moreover, because documents related to a 2004 methane inundation at the mine were not maintained, MSHA staff reviewing a new ventilation plan in 2009 were unaware of—and therefore took no steps to mitigate—the potential for methane inundations (ibid.: 3).

At WHD, analogous data accessibility problems can arise from the separation of authority (and IT systems) between the agency's inspectorate and the regional solicitors who litigate contested penalties. After a case is transferred to a regional solicitor's office, there is no automatic tracking mechanism to ensure that WHD is informed of its ultimate resolution. Critical record-keeping fields (such as the final penalty amount paid) are not reflected in WHD's database unless and until the regional solicitor in charge of the case manually transmits them to WHD and WHD staff in turn update the relevant fields. As a consequence, WHD personnel cannot consistently rely on their enterprise database to contain the most up-to-date information on the final resolution and dollar amount of contested penalties.[52]

Inaccessibility of data can likewise impede OSHA's inspectorate. For example, through a long-term contract with Dun & Bradstreet, OSHA has access to a comprehensive listing of corporate Dun & Bradstreet numbers, unique company-specific identifiers, for inspected firms. Yet these numbers are not available to inspectors in the field, which makes it much more difficult for them to understand the corporate ownership structure of an inspected establishment or determine whether it falls under the same corporate

[52]Telephone interview with Brandon Brown, WHD, March, 12, 2012.

umbrella as other inspected establishments. Without timely access to this information, inspectors may inadvertently fail to levy appropriate penalties for "repeat" violators.[53]

To avert such problems, DOL should develop IT systems that make data available to its field inspectors, supervisory personnel, and central office staff in as close to "real time" as possible. Stand-alone systems, such as the one MSHA has used to generate mine air sample analysis reports, should be eliminated (MSHA 2012b: 32).

A fully integrated enterprise database can help eliminate errors, standardize calculations, and facilitate continuous monitoring so that supervisory personnel can be alerted automatically when enhanced inspection scrutiny is required. Particularly in technologically complex sectors, in which one establishment can generate hundreds of pages of regulatory paperwork, DOL not only should store all critical documents in a searchable electronic database but should also consider equipping its inspectors with portable, handheld devices that would enable them to access documents readily on-site (McAteer et al. 2011: 83).

The second group of users for whom timely data accessibility is an important policy priority is the academic research community. DOL's increasing "rel[iance] on statistical sampling techniques and social science research methods" to evaluate the impact of its worker protection agencies goes hand in hand with its goal of "building partnerships with the academic community and other outside parties to leverage private-sector research activities" (DOL 2010a: 13, 84).

The relative accessibility of DOL microdata, generally required for studies that seek to link outputs to impacts, varies among worker protection agencies. All three agencies make substantial portions of their enforcement microdata available on a public-access website.[54] Although these data sets may be sufficient for many research purposes, they do not incorporate all the granular data fields that each agency collects. Researchers wishing to obtain the complete data sets must request them on an individual basis from agency personnel. Norms vary with regard to whether one is required to file paperwork under the Freedom of Information Act (FOIA), as does the speed with which requests are processed.[55]

Another important problem is the inaccessibility of establishment-level data on safety and health outcomes. As noted earlier, data on the mining industry is unique in that researchers can readily access quarterly data on

[53]Telephone interview with Dave Schmidt, OSHA Office of Statistical Analysis, June 10, 2013.

[54]In April 2010, all three agencies placed substantial portions of their data online at http://ogesdw.dol.gov/search.

[55]WHD and OSHA generally require outsiders to submit a formal FOIA request to obtain the complete data set, whereas MSHA infrequently imposes such a requirement. The turnaround time for each request depends on the size and complexity of the request, as well as staff workloads. My research team was generally able to obtain complete data sets from WHD and MSHA within two calendar weeks of the date of the request. OSHA is typically able to process and complete data requests within about a month. Telephone conference with Dave Schmidt, OSHA Office of Statistical Analysis, June 10, 2013.

inspections, injuries, and fatalities at the mine level. For all other industries, however, the only way for eligible researchers to access microdata on fatal and nonfatal occupational injuries is to submit a formal application to BLS. The decision of whether to accept the proposal rests with the Bureau's commissioner, and even if the proposal is accepted, the microdata are available for analysis only at the BLS's Washington, D.C., headquarters under strict confidentiality protections (BLS 2011; de Wolf 2012).

BLS should do more to make its injury and illness data available to the research community. It may be difficult to relax the confidentiality restrictions on establishment-level data, which flow from several statutory sources, the most consequential of which is the Confidential Information Protection and Statistical Efficiency Act of 2002 (CIPSEA).[56] CIPSEA applies to data that are collected for exclusively statistical purposes under a pledge of confidentiality, and since BLS collects nonfatal injury data for exclusively statistical purposes, it clearly falls within CIPSEA's scope. Nevertheless, BLS might partner with the Census Bureau to make its microdata available to qualified researchers at the Census Bureau's fourteen regional Research Data Centers (CRDCs), secure research facilities that also house confidential data.[57]

Finally, DOL should enhance the accessibility of critical information to the immigrant worker community. The DOL website does offer Spanish, Portuguese, and Polish translations of a few important written materials, such as an OSHA poster called "It's Your Right to Know" informing workers of their rights and responsibilities.[58] Yet OSHA does not require employers to display the poster in any foreign languages, even if most workers have limited English proficiency.[59] Nor does DOL offer a Spanish-language version of its complete website. Making information more accessible to immigrants is an important first step in giving them a greater voice in the workplace. It might also encourage foreign-born workers to disclose more details about their personal backgrounds and working conditions, which could help DOL tailor its enforcement strategies to their unique circumstances.

In sum, DOL should make the data that its worker protection agencies and BLS collect more accessible to those who need it most. Most critically, improving the inspectorate's timely access to data will enable DOL to

[56]Pub. L. No. 107-347, 116 Stat. 2962. BLS's website (2011) also states, "Depending on the data involved, other laws, such as the Privacy Act, the Trades Secret Act, and the Workforce Investment Act, also may be applicable."

[57]For a description of the Census Bureau's RDCs, see http://www.census.gov/ces/rdcresearch/ (accessed on June 6, 2013).

[58]See http://www.osha.gov/Publications/osha3167.pdf (Spanish-language poster, accessed on June 7, 2013), http://www.osha.gov/Publications/3347-polish.pdf (Polish-language poster, accessed on June 7, 2013), and http://www.osha.gov/Publications/portuguese-law-poster.pdf (Portuguese-language poster, accessed on June 7, 2013).

[59]See an opinion letter from Richard E. Fairfax, Director of DOL Directorate of Enforcement Programs, to Ms. Lissa J. Magana, dated November 12, 2004, accessed at http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=24996 (June 7, 2013).

identify more high-risk workplaces, conduct more thorough inspections, and better enforce corrective actions. In addition, DOL should improve the research community's access to establishment-level data and foreign-born workers' access to information in their native languages.

Data Interconnectivity

The fourth and final criterion for evaluating IT performance is interconnectivity—that is, the extent to which a worker protection agency can not only integrate all the information it collects but also link its own data to that of other state and federal agencies. The former goal—integrating data within an agency—is not trivial. Stand-alone databases that require agency staff to straddle multiple applications and engage in redundant data entry deplete scarce agency resources.

The Strategic Plan further commits the Department as a whole to "an infrastructure that better supports internal information sharing" (DOL 2010b: 102) and to "further reducing the information technology silos that have developed over a number of years" (ibid.: 103). More broadly, DOL has declared its intention to "[i]mplement collaborative enforcement strategies with other DOL, federal, state, and local agencies to leverage limited resources and ensure compliance throughout the workplace" (ibid.: 99).

The potential advantages of information sharing are enormous. If DOL's worker protection agencies can observe not merely the results of the Department's own inspections but also information from other federal and state agencies about the characteristics, inspection records, and working conditions of the same establishments, they can develop far more sophisticated strategies and algorithms for identifying high-risk employers. For example, if employers that engage in wage theft are also more likely to violate OSHA regulations (an empirically testable hypothesis), both agencies could deploy their resources more effectively by pooling inspection data. Similarly, if employers that misclassify employees as independent contractors to evade compliance with the Fair Labor Standards Act are also more likely to misclassify workers for state and federal tax reporting purposes, then WHD would profit from information-sharing agreements with the Internal Revenue Service and state tax authorities.

Achieving true data interconnectivity—even within the DOL—poses formidable challenges. DOL's description of its own data as encompassing a number of "information technology silos" (DOL 2010b: 103) is not overstated. The databases were designed independently, encompass different fields, use different naming and formatting conventions, rely on different user interfaces, and are upgraded on different schedules. Despite these obstacles, DOL has facilitated limited collaboration and data sharing with outside agencies to further discrete regulatory goals. In September of 2011, for example, the Secretary of Labor and the Commissioner of Internal Revenue signed a memorandum of understanding to further a "joint initiative to improve compliance with laws and regulations administered by the IRS and

DOL . . . through enhanced information sharing and other collaboration."[60] More or less contemporaneously, DOL signed similar memoranda of understanding with state labor departments intended to jointly combat worker misclassification; by February of 2012, twelve such state-federal partnerships had been formed (DOL 2012b). Meanwhile, as part of a National Emphasis Program designed to reduce workers' exposure to hazardous chemicals, OSHA plans to use information gleaned from the Environmental Protection Agency's Program 3 Risk Management Plans for targeting purposes (OSHA 2011). Although such initiatives are promising, it remains to be seen whether they will pave the way for more expansive forms of collaboration.

As an important step toward integrating data systems across DOL, it would be useful for the Department to catalog and juxtapose the methods that each of its worker protection agencies uses to identify, characterize, and track inspected employers. The critical, and as yet unanswered, question is whether these fields can be matched across agencies in a sufficiently reliable manner to ensure that the same employer is being identified across time and databases. To determine the accuracy with which these employers can be matched across all worker protection agencies, DOL could conduct a pilot study by drawing a sample of observations from each of its enterprise databases (most likely among large companies that are inspected frequently). If employers cannot be reliably tracked using existing data fields, DOL should consider the feasibility of adopting the same (unique) employer identifier—such as Federal Tax Identification Number, also known as Employer Identification Number (EIN)—consistently throughout the Department. Here again, DOL should establish a permanent, Department-wide working group of data experts from each of its worker protection agencies whose joint mission would be to oversee the pilot study and, over the long term, to improve data interconnectivity across the Department.

Concluding Thoughts on the Promise and Pitfalls of IT Reform

With the adoption of its new Strategic Plan, DOL committed itself to meaningful accountability in the form of empirically based, methodologically rigorous analysis of its effects on the regulated community. The New Approach goes even further than GPRAMA in its emphasis on measuring industry-wide impacts of the Department's enforcement activity. The array of reforms undertaken to date—such as the formation of a Chief Evaluation Office, sponsorship of numerous program evaluations, and formation of collaborative partnerships with other federal and state agencies—appears to reflect the Department's seriousness of purpose in crafting a strategic, data-driven regulatory agenda.

Yet in the words of one DOL employee, "Our enterprise database just wasn't designed to do all of the things we are trying to make it do now. We

[60]Accessed at http://www.dol.gov/whd/workers/MOU/irs.pdf (May 2013).

are just keeping the old car running."[61] DOL's Strategic Plan, conspicuously silent on the question of whether the IT infrastructures relied upon by DOL's worker protection agencies are capable of performing the tasks that the New Approach will demand of them, provides little solace. This article seeks to fill this void by proposing four criteria whereby DOL's "IT readiness" might be judged, offering a few preliminary observations about DOL's performance along each dimension, and suggesting a variety of concrete reforms.

Besides the technical and political constraints alluded to earlier, it is important to recognize some of the difficult challenges that DOL is likely to face in implementing comprehensive IT reform. First, there is likely to be some friction between the goal of enhancing the surveillance capacity of DOL's worker protection agencies and the goal of preserving the privacy and/or confidentiality of regulated entities and their employees. The impulse to grant both employers and employees a certain protected sphere of autonomous conduct that the government may not scrutinize and/or render publicly visible without clear statutory authorization finds expression in such statutes as the Uniform Trade Secrets Acts[62] codified into law by 46 out of 50 states (ULC 2012), the Privacy Act of 1974,[63] the Confidential Information Protection and Statistical Efficiency Act of 2002,[64] the Paperwork Reduction Act of 1995,[65] and the Health Insurance Portability and Accountability Act of 1996,[66] among others. DOL must navigate this statutory thicket carefully to ensure that it complies with current statutory requirements (or that appropriate amendments are passed).

Second, there are few successful models for the formation of durable collaborative partnerships between DOL's worker protection agencies and other agencies. The degree of information sharing and data interconnectivity envisioned here goes well beyond anything that DOL has previously attempted, and some prior efforts have ended in failure. For example, a pioneering effort by OSHA in the 1990s to collaborate with state workers' compensation agencies to target high-risk workplaces was successfully blocked by the U.S. Chamber of Commerce shortly after its inception.[67] Building sufficient legitimacy, momentum, and infrastructure to foster long-term collaborations poses daunting challenges. DOL should look to other agencies for models of how successful information-sharing collaborations have been nurtured and sustained.

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[61] Telephone interview with DOL employee who requested confidentiality, March 12, 2012.

[62] 14 U.L.A. 542.

[63] 5 U.S.C. § 552(a).

[64] Pub. L. No. 107-347, 116 Stat. 2962.

[65] 44 U.S.C. § 3501.

[66] Pub. L. No. 104-191, 100 Stat. 2548.

[67] For a brief description of OSHA's original initiative as well as the "Maine 200 Program" on which it was based, see DOL (1997). In *Chamber of Commerce of U.S. v. U.S. Dept. of Labor*, 174 F.3d 206 (C.A.D.C. 1999), the Court of Appeals for the D.C. Circuit held that since the program's directives were substantive rules, OSHA had violated the Administrative Procedure Act by issuing them without adhering to the Act's notice-and-comment rulemaking requirements.

Third, DOL's attempts to surveil employers with increasing precision and clarity will surely be met by new, creative attempts by employers to evade regulatory scrutiny. For example, as discussed earlier, complex forms of corporate reorganization can be used as a shield to obscure the true underlying relationships between an enterprise's day-to-day management, operational control, and financial structure. Given its limited budget, it will be difficult for DOL to uncover all the legal (and economic) intricacies of the regulated community. Instead of trying to confront this problem in isolation, DOL should consult with other agencies that face similar problems and reach out to stakeholders (especially in highly fissured industries) to devise a coordinated approach that anticipates and tries to mitigate such information asymmetries.

The competitive bidding process—which GPRAMA seeks to strengthen[68]—may undermine DOL's efforts to craft long-term solutions to its evolving IT needs. In order to upgrade its enterprise database, a worker protection agency will typically put the contract out for bid, and the successful bidder will be asked to make needed improvements. In theory, competitive bidding is a reasonable way to ensure that the job is performed in a cost-effective manner. In practice, however, agency problems can arise due to differences in the agency's and contractor's objectives. The agency's goal is to obtain a system tailor-made to its unique operational needs that possesses the simplicity to minimize time spent on data entry and access, the flexibility to take on additional functionality as its needs to evolve, the interconnectivity to link easily with other systems, and the capacity to seamlessly incorporate and preserve data from obsolete systems. The contractor's goal, in contrast, is to finish the job in an acceptable manner at the lowest possible cost. The difference between an excellent, well-designed, durable IT system and a "good enough for now" IT system may not become apparent to the agency's staff until months, if not years, after the contractor has finished the job.

At the very least, DOL should build explicit performance measures into all its IT contracts, including proof that data from legacy systems has been fully migrated to the new system and a practical demonstration of how additional functionality can be added, and should require that all the benchmarks be met before performance is deemed complete. DOL should also explore alternative methods, including possible deviations from competitive bidding, to incentivize IT contractors not merely to meet the agency's short-term needs but to design durable, capacious, user-friendly systems that will optimize each agency's long-term ability to carry out its core functions.

A final obstacle to a strategic, data-driven enforcement agenda is the difficulty of credibly evaluating the impacts of new programs. Program evaluation is a fundamental building block of strategic enforcement; DOL cannot learn from its mistakes unless it can reliably distinguish successful programs

[68]Section 5 of the Act cites "procurement and acquisition management" as a priority goal. In testimony before the U.S. Senate Budget Committee, the GAO interpreted the provision as discouraging the allocation of federal money to noncompetitive contracts in order to reap greater cost savings (GAO 2011).

from well-intentioned failures. Yet top agency officials have little to gain from program evaluation. Those who feel they already know which programs are "working" may be reluctant to siphon off money from other activities to confirm what they feel they already know. They may fear that outside evaluators will fail to grasp the real-world constraints that their inspectors are facing. And even if studies are conducted in a credible fashion, there is always the risk that an evaluation will reveal a popular program to be ineffective, an outcome that reflects poorly on the agency.

DOL's establishment of a CEO charged with the task of overseeing evaluations and endowed with the resources to fund them is an important first step. Yet ensuring that contractors perform rigorous, cost-effective program evaluations is no simple task. The "Beltway bandits" that bid on DOL projects often lack detailed familiarity with any given agency's operations, let alone the particular programs that are to be evaluated. Nor do private consulting firms necessarily have a long-term stake in whether the program evaluation yields insights of lasting value to the agency. It is important for contractors to conduct studies without interference from agency heads, yet if they are too far removed from the agency being evaluated, they may never obtain enough familiarity with its day-to-day operations or practical constraints to obtain useful insights.

One promising solution would be for more evaluation studies to be performed by social scientists whose incentives are more closely aligned with those of the agency. Academic researchers with expertise in enforcement issues and training in social scientific research methods may conduct program evaluations at relatively low cost in order to further discrete public policy goals, generate publishable research findings, and enhance their status within the academy. They are more likely than private contractors to have a long-term stake in the outcome of evaluation studies and to understand their relevance to the agency's overarching goals. It is no accident that the individual who laid much of the intellectual groundwork for the Strategic Plan, including its emphasis on program evaluation, is a prominent labor economist who spent years researching labor law enforcement before becoming a DOL contractor.[69]

DOL can and should do more to encourage academics with pertinent expertise to conduct rigorous program evaluation. In addition to creating more opportunities for information sharing (through workshops, conferences, and the like), DOL should strive to eliminate bureaucratic requirements that could delay or preclude contractors' eventual publication of their findings in peer-reviewed academic journals. To ensure that outside experts learn about new evaluation studies with enough advance notice to submit timely bids, the CEO could generate a list-serve that automatically notifies academic experts of forthcoming requests for proposals.

The barriers to optimizing DOL's IT infrastructure are formidable and complex. Yet the adoption of the New Approach makes the second decade

[69]See Weil (2010: iv).

of the 21st century a particularly advantageous moment for the Department to confront them. The decline of the labor movement and concomitant rise in workplace fissuring have heightened the need for practical, even if incremental, solutions to protect workers' rights. Fostering better data collection, deployment of information technology, and strategic information sharing among worker protection agencies is a vital yet largely untapped means to improve workers' welfare. As I have argued here, bringing its strategic goals to fruition in the Information Age will require DOL to put its data to work more effectively on behalf of the workers it is charged to protect.

References

American Public Health Association. 2005. Occupational health and safety protections for immigrant workers. Accessed at http://www.apha.org/advocacy/policy/policysearch/default.htm?id=1318 (May 2013).

Bartel, Ann P., and Lacy Glenn Thomas. 1985. Direct and indirect effects of OSHA regulation: A new look at OSHA's impact. *Journal of Law and Economics* 28(1): 1–25.

Bernhardt, Annette, Ruth Milkman, Nik Theodore, Douglas Heckathorn, Mirabai Auer, James DeFilippis, Ana Luz Gonzalez, Victor Narro, Jason Perelshteyn, Diana Polson, and Michael Spillerl. 2009. Broken law, unprotected workers: Violations of employment and labor laws in American's cities. Accessed at http://www.unprotectedworkers.org/index.php/broken_laws/index (June 7, 2013).

[BLS] Bureau of Labor Statistics. 2011. Researcher access to confidential data files at the BLS. Accessed at http://www.bls.gov/bls/blsresda.htm (May 2013).

Boden, Leslie I., and Al Ozonoff. 2008. Capture-recapture estimates of nonfatal workplace injuries and illnesses. *Annals of Epidemiology* 16(6): 500–06.

Bradburry, John Charles. 2006. Regulatory federalism and workplace safety: Evidence from OSHA enforcement, 1981–1995. *Journal of Regulatory Economics* 29(2): 211–24.

[CEO] Chief Evaluation Office, U.S. Department of Labor. 2012. Evaluation of part 50 reporting of mine injuries and illnesses. Accessed at http://www.dol.gov/asp/evaluation/ongoing/MSHAInjury.htm (May 2013).

de Wolf, Virginia A. 2012. Procedures for researcher access to confidential microdata at the Bureau of Labor Statistics. Accessed at http://www.bls.gov/osmr/pdf/st950040.pdf (March 14, 2012).

[DOL] U.S. Department of Labor. 1997. News release: OSHA expands cooperative compliance programs to reduce injuries and illnesses in the workplace. Accessed at http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=NEWS_RELEASES&p_id=1075.

———. 2010a. A new approach to measuring the performance of U.S. Department of Labor workers' protection agencies. Accessed at http://www.dol.gov/_sec/stratplan/newapproach.pdf.

———. 2010b. Strategic plan fiscal years 2011–2016. Accessed at http://www.dol.gov/_sec/stratplan/StrategicPlan.pdf.

———. 2012a. RIN 1218-AC 49. Improve tracking of workplace injuries and illnesses. 29 C.F.R. 1904.

———. 2012b. U.S. Labor Department, California sign agreement to reduce misclassification of employees as independent contractors. Accessed at http://www.dol.gov/opa/media/press/whd/WHD20120257.htm.

Economic Research Group. 2009. *OSHA data initiative collection quality control: Analysis of audits on cy 2006 employer injury and illness recordkeeping*. Final Report. Task Order Number 3, Contract Number J-099-F-2-8441.

Finkin, Matthew. 2002. Employee representation outside the Labor Act: Thoughts on arbitral representation, group arbitration, and workplace committees. *University of Pennsylvania Journal of Labor and Employment Law* 5: 75–100.

Fung, Archon, Mary Graham, and David Weil. 2007. *Full Disclosure: The Perils and Promises of Transparency*. Cambridge: Cambridge University Press.

[GAO] U.S. Government Accountability Office. 2011. *Government performance: GPRA modernization act provides opportunities to help address fiscal, performance, and management challenges*. Testimony before the Committee on the Budget, U.S. Senate. Accessed at http://www.gao.gov/assets/130/125777.pdf (May 2013).

Gerke, David. 2010. Critique of behaviour based safety systems for the M.U.A. *Workers Health Centre*. Accessed at http://www.docstoc.com/docs/67938966/Critique-ofBehaviour-Based-SafetySystems-for-the-MUA (June 17, 2013).

Gray, Wayne B., and John M. Mendeloff. 2005. The declining effects of OSHA inspections on manufacturing injuries, 1979 to 1998. *Industrial and Labor Relations Review* 58(4): 571–87. Accessed at http://digitalcommons.ilr.cornell.edu/ilrreview/vol58/iss4/3.

Howe, Jim. 1998. Warning! Behavior-based safety can be hazardous to your health and safety program! Accessed at http://www.uawlocal974.org/BSSafety/Warning!_Behavior-Based_Safety_Can_Be_Hazardous_To_Your_Health_and_Safety_Program!.pdf (March 12, 2012).

Jacoby, Sanford. 1994. Reflections on labor law reform and the crisis of American labor. *Chicago-Kent Law Review* 69: 219–27.

Ji, MinWoong, and David Weil. 2009. Does ownership structure influence regulatory behavior? The impact of franchising on labor standards compliance. Boston University School of Management Research Paper No. 2010-21. Accessed at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1623387 (June 17, 2013).

Leigh, J. Paul, James P. Marcin, and Ted R. Miller. 2004. An estimate of the U.S. government's undercount of nonfatal occupational injuries. *Journal of Occupational and Environmental Medicine* 46(1): 10–18.

McAteer, J. Davitt, Katie Beall, James A. Beck, Jr., Patrick C. McGinley, Celeste Monforton, Deborah C. Roberts, Beth Spence, and Suzanne Weise. 2011. *Upper Big Branch, the April 5, 2010 explosion: A failure of basic coal mine safety practices*. Report to the Governor. Accessed at http://www.nttc.edu/programs&projects/minesafety/disasterinvestigations/upperbigbranch/UpperBigBranchReport.pdf.

Morantz, Alison D. 2009. Has devolution injured American workers? State and federal enforcement of construction safety. *Journal of Law, Economics, and Organization* 25(1): 183–210.

———. 2013. Coal mine safety: Do unions make a difference? *ILR Review* 66(1): 88–116.

Morantz, Alison D., and Alexandre Mas. 2008. Does post-accident drug testing reduce injuries? Evidence from a large retail chain. *American Law and Economics Review* 10(2): 246–302.

[MSHA] Mining Safety and Health Administration. 2012a. *Briefing by Department of Labor, Mine Safety and Health Administration on disaster at Massey Energy's Upper Big Branch Mine-South*. Preliminary report prepared for the President. Accessed at http://www.msha.gov/PerformanceCoal/DOL-MSHA_president_report.pdf (May 2013).

———. 2012b. *Internal review of MSHA's actions at the Upper Big Branch Mine-South, Performance Coal Company, Montcoal, Raleigh County, West Virginia*. Accessed at http://www.msha.gov/PerformanceCoal/UBBInternalReview/UBBInternalReviewReport.pdf (May 2013).

[OCIO] Office of the Chief Information Officer, U.S. Department of Labor. 2012. Paperwork reduction. Accessed at http://www.dol.gov/oasam/ocio/programs/InfoManagement.htm (June 17, 2013).

Orrenius, Pia M., and Madeline Zavodny. 2012. Immigrants in risky occupations. IZA Discussion Paper No. 6693. Accessed at http://ssrn.com/abstract=2101980 (May 2013).

OSHA. 2009. Directive Number 09-08 (CPL 02) (effective September 30). Injury and illness recordkeeping national emphasis program (RK NEP). Accessed at http://www.osha.gov/OshDoc/Directive_pdf/CPL_02_09-08.pdf.

———. 2010. Modernization of OSHA's injury and illness data collection process. 75 Fed. Reg. 24505–24509.

———. 2011. Directive Number 03-00-014 (effective November 29). PSM covered chemical facilities national emphasis program. Accessed at http://www.osha.gov/OshDoc/Directive_pdf/CPL_03-00-014.pdf (May 2013).

Ruser, John W., and Robert S. Smith. 1991. Re-estimating OSHA's effects: Have the data changed? *Journal of Human Resources* 26(2): 212–35.

[ULC] Uniform Law Commission. 2012. Legislative fact sheet—Trade secrets act. Accessed at http://www.uniformlaws.org/LegislativeFactSheet.aspx?title=Trade%20Secrets%20Act (June 17, 2013).

[UMWA] United Mine Workers of America. 2011. Industrial homicide: Report on the Upper Big Branch Mine disaster. Accessed at http://www.umwa.org/files/documents/134334-Upper-Big-Branch.pdf (March 15, 2012).

Viscusi, W. Kip. 1979. The impact of occupational safety and health regulation. *Bell Journal of Economics* 10(1): 117–40.

[WHD] Wage and Hour Division. 2008. Fact sheet no. 48: Application of U.S. labor laws to immigrant workers: Effect of Hoffman Plastics decision on laws enforced by the Wage and Hour Division. Accessed at http://www.dol.gov/whd/regs/compliance/whdfs48.htm.

Weil, David. 2001. Assessing OSHA performance: New evidence from the construction industry. *Journal of Policy Analysis and Management* 20(4): 651–74.

———. 2005. Public enforcement/private monitoring: Evaluating a new approach to regulating the minimum wage. *Industrial Labor Relations Review* 58(2): 238–57.

———. 2007. Crafting a progressive workplace regulatory policy: Why enforcement matters. *Comparative Labor Law and Policy Journal* 28(2): 125–54.

———. 2010. Improving workplace conditions through strategic enforcement: A report to the Wage and Hour Division. Accessed at http://www.dol.gov/whd/resources/strategicEnforcement.pdf (May 2013).

———. 2014. *The Fissured Workplace: Why Work Became So Bad for So Many and What Can Be Done to Improve It.* Cambridge, MA: Harvard University Press.

Weil, David, and Carlos Mallo. 2007. Regulating labour standards via supply chains: Combining public/private interventions to improve workplace compliance. *British Journal of Industrial Relations* 45(4): 791–814.

Williams, Lindsey. 2010. Support the Miner Safety and Health Act. Accessed at http://www.whistleblowersblog.org/2010/07/articles/department-of-labor-1/support-the-miner-safety-health-act (May 2013).