

DOSH Compliance Effectiveness in Washington State, 2022-2023

SHARP Technical Report Number: 70-15-2025

Michael Foley

Safety and Health Assessment and Research for Prevention (SHARP) Program
Washington State Department of Labor and Industries
PO Box 44330
Olympia, WA 98504-4330

Tel: 1-888-667-4277

Fax: (360) 902-5672

E-mail: folm235@LNI.wa.gov

Key Words: DOSH, Washington State, enforcement, inspection, consultation, compensable claims rates, workers' compensation



Safety & Health Assessment & Research for Prevention Program
Promoting Safer, Healthier Workplaces
www.LNI.wa.gov/Safety/Research 1-888-66-SHARP

Executive Summary

Background: Since 2002 the Safety & Health Assessment & Research for Prevention (SHARP) program of the Washington State Department of Labor and Industries (L&I) has conducted annual analyses of the association between enforcement and consultation activities of the Washington State Division of Occupational Safety & Health (DOSH) and compensable claims rates.

Method: The association of compensable claim rate change with DOSH activity during State Fiscal Year (SFY 2022-2023) was estimated by multivariate regression analysis at the individual account level for all single-location businesses meeting size and continuity criteria. Results are reported separately for fixed and non-fixed-site industries, and for three different categories of firm size. In addition to industry type, the analysis also controls for the size of the business and for its prior claims rate history.

Results:

- Inspections in fixed-industry workplaces were followed by a decrease in compensable claims rate of 27.5% in the next year. By contrast, claims rates *rose* by 0.6% in workplaces not visited by DOSH.
 - The five-year average change in claims rates following inspections in fixed-sites was a decrease of 21.8%
- Inspections in non-fixed industry workplaces were followed by a decrease in compensable claims rate of 5.1% in the next year. By contrast, claims rates *rose* by 4.3% in workplaces not visited by DOSH.
 - The five-year average change in claims rates following inspections in non-fixed-sites was a decrease of 6.8%
- Consultations in fixed site industries were followed by a 31.9% decrease in compensable claims rates.
 - The five-year average change in claims rates following consultations in fixed-sites was a decrease of 21.3%.
- Consultations in non-fixed site industries were followed by a 3.0% decrease in compensable claims rates.
 - The five-year average change in claims rates following consultations in non-fixed-sites was an increase of 13.8%.
- There has been a substantial strengthening of the “inspection effect” over the period from 2011 through 2022 as compared to 1999 through 2008.
- Year-to-year variation in DOSH activity effects on claims is significant, particularly in non-fixed-site industries. For this reason it is important to track the effects over a longer period. Five-year average effects have been computed and are included in this year’s report.

Conclusions: Enforcement inspections in both fixed-site and non-fixed-site industries continue to make substantial contributions toward the agency’s goal of reducing workplace injury and illness rates. Results of this year’s study could have been affected by COVID-19 pandemic related closures of workplaces, or changes in DOSH activities. For this reason it is important to note the five-year average results. We have also removed all COVID-related claims from this analysis so as to allow better comparisons to previous years.

Background

Since 2002, the Safety & Health Assessment & Research for Prevention (SHARP) program of the Washington State Department of Labor and Industries (L&I) has conducted annual analyses of the association between enforcement and consultation activities of the Washington State Division of Occupational Safety & Health (DOSH) and compensable claims rates. Most of these annual reports have shown that DOSH enforcement inspections at ‘fixed-site’ industry workplaces were associated with a decline in claims rates relative to those businesses that had no DOSH visits (Foley et al. 2012; SHARP Technical Reports 2015, 2019, 2021, 2022, 2024). Certain yearly analyses among ‘non-fixed-site’ businesses receiving enforcement visits or at businesses receiving only consultation visit(s) did not find statistically significant changes. This is partly due to the structure of the non-fixed-site sector, populated by many small businesses with a greater variation of claims rates. It is also due to the small numbers of consultation visits satisfying our study selection criteria.

In 2012, we pooled ten previous annual studies together covering inspections and consultations from 1999 through 2008. With much larger numbers of DOSH visits, we were able to estimate the impact of DOSH visits with greater statistical confidence. The results of the pooled analysis provided strong evidence that DOSH inspection and consultation activities make a significant contribution to reducing claims rates and costs in the period following the visit (Foley et al. 2012).

With this pooled analysis serving as a benchmark, this one-year analysis re-examines the question of whether a greater decline in compensable claims rates occurred among the set of business receiving DOSH inspection and consultation visits in SFY 2022 than that at businesses not receiving any DOSH visits. The impact of DOSH activities on compensable claims rates during SFY 2022-2023 was evaluated separately for fixed and the non-fixed-site industries for all accounts, and for three different categories of firm size. Additional analyses were conducted for DOSH programmed or unprogrammed inspections, as well as for inspections with citation or without citation.

The methods used in this analysis mirror those used in the previous studies. The following

inclusion criteria were used to select the group of accounts for this study (see Figure 1):

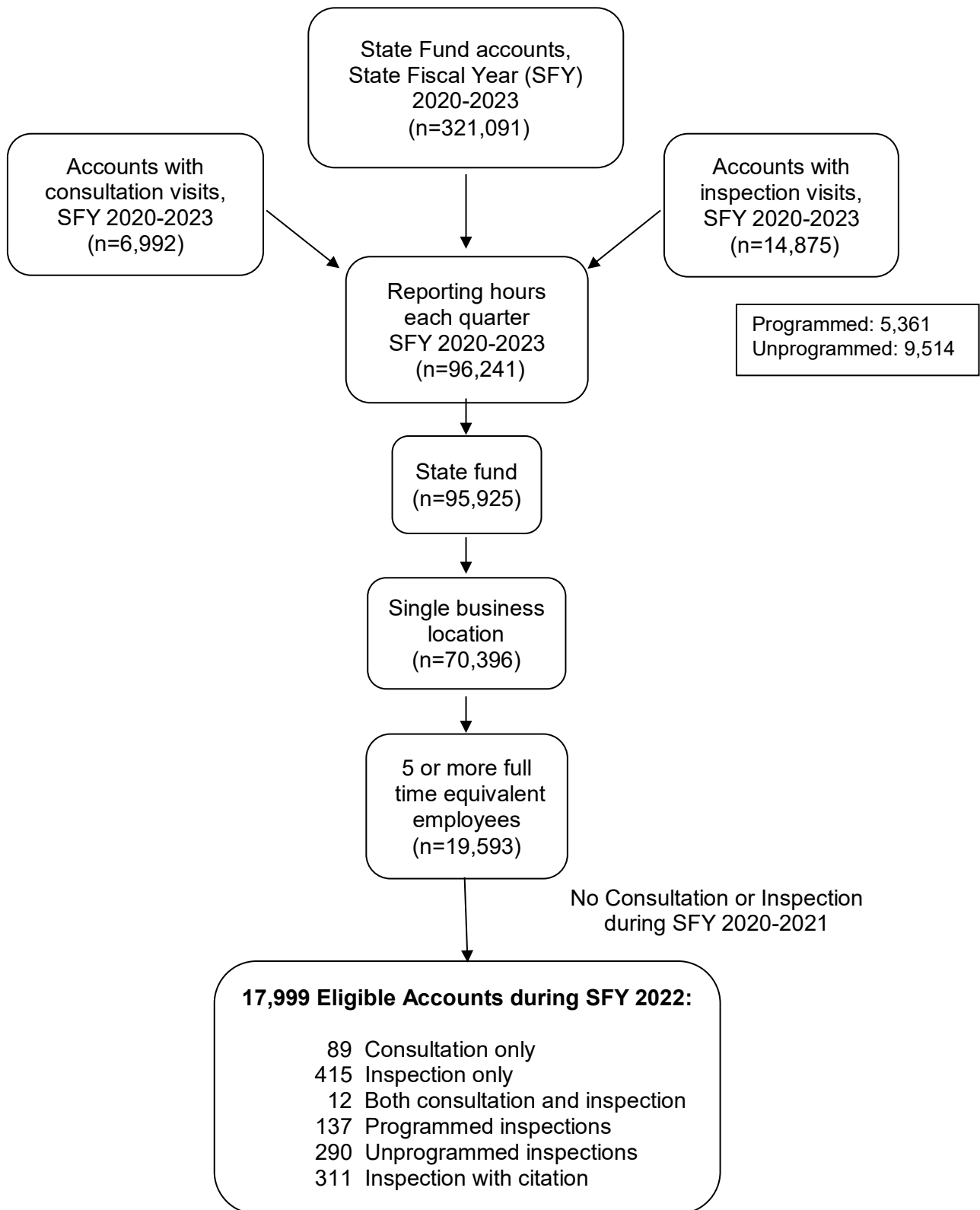
1. Only companies reporting hours each quarter during SFY 2020-2023.
2. State Fund companies.
3. Companies with a single business location.
4. Companies with at least 5 FTEs per year during SFY 2020-2023.
5. Companies with no DOSH activity during the two years prior to the year of the DOSH activity (SFY 2020-2023).

Compensable claims were extracted for all eligible accounts for the years SFY 2020-2023. All COVID-related claims were excluded from the analysis so as to preserve comparability to previous years studies. Descriptive analyses were conducted first for the change in compensable claims rate from the year of the DOSH visit to the year following. Because an account's size and prior history of compensable claims rates are important factors in evaluating the impact of DOSH activities, the changes in compensable claims rates were examined in multivariate analyses adjusting for these factors.

Accounts included (see Figure 1):

- The 17,999 accounts which satisfied all the study criteria represented almost 19% of the 94,567 identified accounts reporting hours in throughout SFY 2020-2023.
- 101 accounts had at least one DOSH consultation visit in SFY 2022, and
- 427 accounts had at least one inspection in SFY 2022,
- 12 accounts had at least one inspection AND one consultation visit during SFY 2022.
- Of the 427 accounts with DOSH enforcement inspections, 137 (32%) received at least one DOSH programmed inspection, a slight increase from the 27% of inspections which were programmed in the previous year.
- 73% of all inspections resulted in at least one citation during SFY 2022, an increase from the prior year (66%).

Figure 1. Extraction of eligible study accounts from Washington workers' compensation employer account database, SFY 2020-2023.



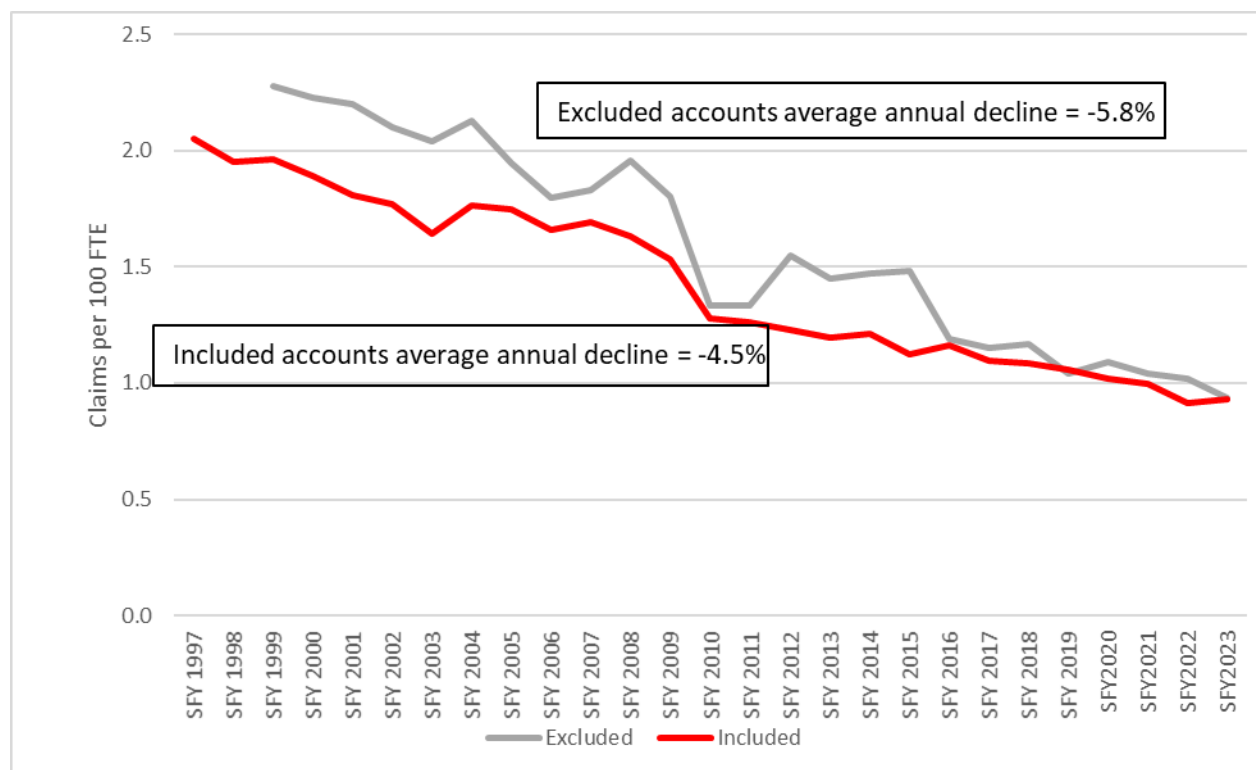
It should be noted that, as compared to last year's study, the number of accounts with inspections in the baseline year (SFY 2022) has increased slightly (+2%). However, there has been a long-term decline in inspection activity overall which has seen a drop from an annual average of 6,005 total inspections in SFY 2009-2012 to only 3,719 in SFY 2020-2023. The possible role of the COVID pandemic amongst the reasons for these declines in DOSH activity is unknown. Over the long term, the share of total inspections that are "programmed" has fallen from 71% in SFY 2011 to only 32% in SFY2022. The number of consultations has fallen by 23% as compared to pre-pandemic numbers, dropping from an annual average of 2,388 from SFY 2009-2012 to 1,748 consultations for SFY 2020-2023.

Finally, from the period SFY 2009-2012 to the period of the current study (SFY 2020-2023) there has been a decline in the number of DOSH visits as a proportion of all business locations reporting hours. For inspections, the proportion has fallen from 10% to 5% of total business locations. Consultations have fallen from 4% to 2% as a proportion of all business locations. This decline in the share of businesses affected by regulatory compliance activity represents a significant missed opportunity to prevent costly injuries, as the results from this study will show.

Compensable Claims Rate Change, 1997-2023

Before turning to the claims rate changes seen after DOSH inspection or consultation visits, it is important to understand that compensable claims rates have been declining across all industries and for all injury types for most of the past 25 years. In fact, as shown in Figure 2, compensable claims rates have declined an average of 4.5% per year for the businesses which satisfied all selection criteria. They fell 5.8% per year for businesses which were excluded because of multiple business locations or because they were very small (less than 5 FTEs). This means that claims rates are now roughly half as high as they were in 1997 when we began to evaluate the association of DOSH activity with the change in claims rates. So it is important to look at how claims rate declines at DOSH-visited sites *compare to sites not visited by DOSH*. It is the *excess decline* in rates at DOSH-visited sites that matters.

Figure 2. Compensable claims rates, by selection status, SFY 1997-2023.



“Included” means accounts satisfying all selection criteria; “excluded” means survived 16 quarters, State Fund, but had one or more of the following features that excluded them: multiple business locations, less than 5 FTEs, or DOSH activity in the two years prior to the baseline year. COVID claims excluded for SFY 2020-2023.

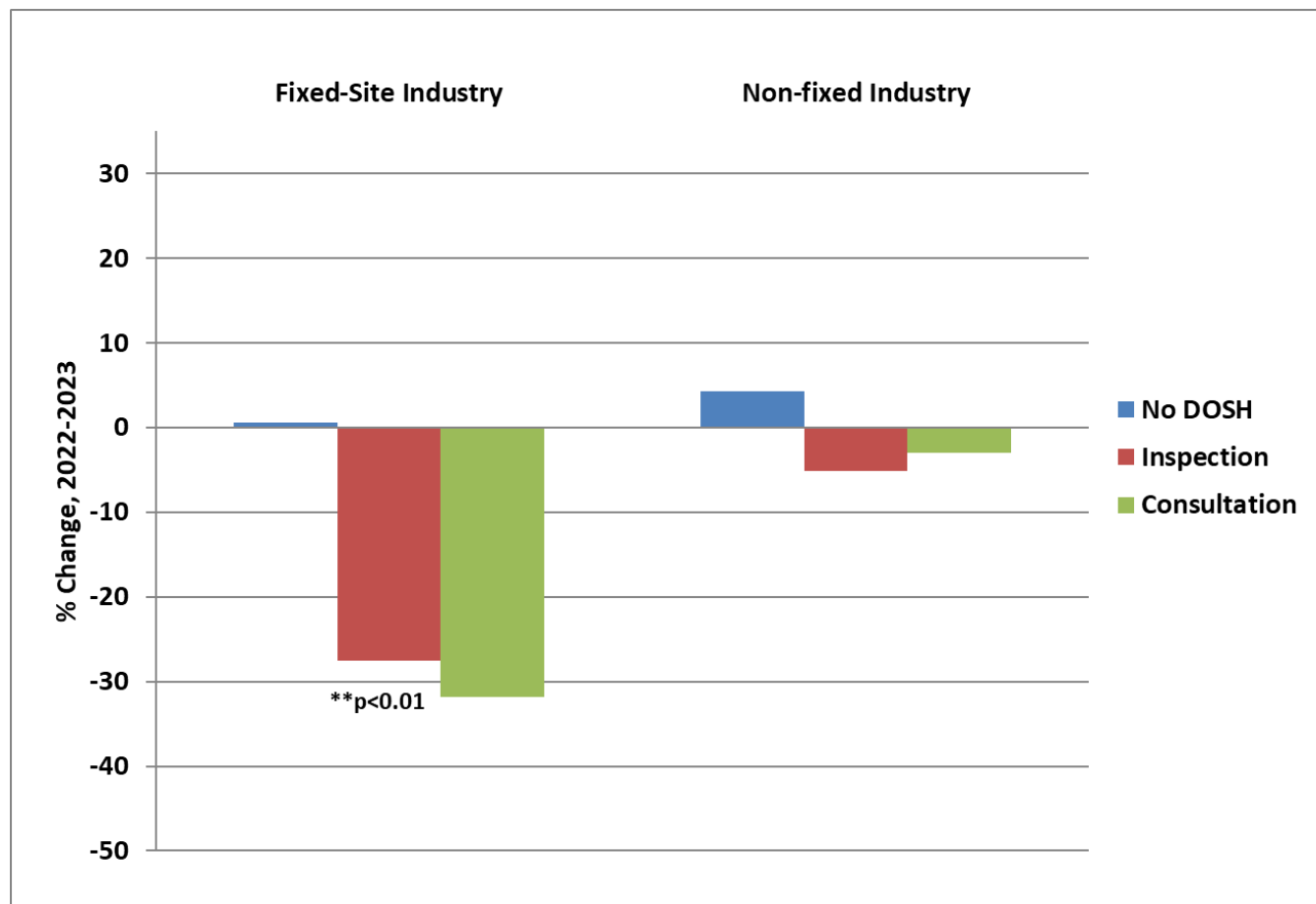
Impact of DOSH enforcement inspections and consultations on compensable claims rates

Overall Inspections and Consultations:

Results of DOSH enforcement activity vary between firms in fixed-site industries and non-fixed-site industries. As Figure 3 shows, after adjusting for average size of the accounts and the compensable claims rates in the pre-study period, inspections in fixed-site industries were associated with a decrease in compensable claims rates of -27.5% from SFY2022 to SFY2023. Consultations in fixed-site businesses resulted in a decrease in claims rates of -31.9% over the same period. These results are notable when compared to the increased claims rate of +0.6% in fixed-site businesses not visited by DOSH.

Results for DOSH activities among non-fixed-site industries, such as construction and transportation, are often different from those in the fixed-site sector, and often quite variable from year-to-year. In particular, the number of consultation visits among non-fixed businesses has not returned to the number typical of years before the COVID pandemic, at only 42 such visits to be included in this year's report. A decline in the number of visits increases the uncertainty of any statistical estimate of average effect. So any one year's results may not be representative. Nevertheless, from SFY 2022-2023, claims rates at DOSH inspected sites in non-fixed industries fell by -5.1%, while rates at DOSH-consulted sites fell by -3.0%. This is as compared to the increase of +4.3% seen at non-fixed businesses not visited by DOSH over this period.

Figure 3. Percent Change in Compensable Claims Rate: No DOSH vs Enforcement vs Consultation, by Industry Type, 2022-2023.



One-year percentage changes in claims are highly variable from year to year and this is exacerbated by the relatively small number of workplaces which satisfy the restrictive selection criteria necessary to isolate the influence of DOSH actions on claims rates. So it is important not to exaggerate the importance of any single one-year study's results. By combining five annual studies into one pooled average, we can avoid the variability of the single-year studies and get a better sense of the expected impact of DOSH inspections and consultations. This is depicted in Table 1 alongside the one-year results for SFY 2022-2023.

Table 1. All Injury Types, Compensable Claims Rate Changes by DOSH Activity Status, All Firm Sizes, 2022-2023 and Five-Year Average of DOSH Activity Years 2019-2023.

		SFY 2022-2023			Average SFY 2019-2023	
		Fixed-Site % Change	Non-Fixed-Site % Change		Fixed-Site % Change	Non-Fixed-Site % Change
No DOSH		0.6	4.3		-1.2	-3.1
Inspections		-27.5	-5.1		-21.8	-6.8
Consultations		-31.9	-3.0		-21.3	13.8
Programmed		-4.7	-27.3		-22.7	2.5
Unprogrammed		-32.4	1.3		-20.6	-6.8
No Citation		-14.3	-9.7		-15.5	-4.6
Citation		-33.1	-2.2		-24.7	-8.3

Multivariable Repeated Measures Poisson Models, adjusting for account size and compensable claims rates over the two years preceding the year of DOSH activity. Figures in **bold** are statistically significant at the 95% level.

For inspections, we find the results in this year to be consistent with the average for the past five years. We see a substantially larger decline among fixed-site workplaces inspected by DOSH than among non-fixed sites. A similar pattern was found for this year's consultation visits among fixed-site workplaces. This year's result for consultations contrasts favorably with the five-year averages. This contrast highlights the inherent unpredictability of consultation effect on claims rates. Reasons for this pattern are not known at this time, but should be explored. Consultations do not necessarily involve on-site visits, are voluntary, and are usually initiated by the business. They may also cover anything from a general overview of the site safety program to a very narrow focus on a particular issue. In addition, during the COVID pandemic, the nature of the consultations may have shifted. These factors have always differentiated consultations from inspections, but there may have been some change over time in the mix of topics covered by consultations that may affect their association with claims rate changes.

Programmed vs Unprogrammed Inspections:

DOSH inspections are classified as being either “programmed” or “unprogrammed.” In the former case, a workplace is scheduled for an inspection based upon selection criteria such as the industry to which it belongs, the firm’s workers’ compensation experience and the time elapsed since its last inspection. Some scheduling lists are also based upon the risk of fatal or non-fatal injuries in an industry, or upon the presence of health hazards which may lead to such diseases as cancers, which are not likely to be captured in workers’ compensation claims records. Unprogrammed inspections are largely driven by worker complaints, referrals from other sources based on observed hazards, mandatory employer reporting of injuries which result in hospitalization, and follow-up inspections to check that hazard abatement agreements have been implemented. In higher hazard industries with transient worksites, such as construction and logging, certain enforcement activities known as “drive-bys” occur when an inspector observes a project underway and decides to open an inspection. These kinds of inspections are considered “programmed” because they occur in higher hazard industries such as construction or logging, which merit a higher level of scrutiny. DOSH programmed inspections as a share of the total number of inspections have declined over recent years in the eligible accounts.

In most years unprogrammed inspections, such as those which are complaint-driven, result in a greater decrease in compensable claims rates than programmed inspections. However, this pattern is volatile from year to year, and it is more meaningful to focus on the longer-run average. As seen in Table 1, the annual result shows a greater decrease in claims rates for unprogrammed visits at fixed-site businesses, but the opposite result at non-fixed sites. Given the substantial year-to-year variation in annual results, the five-year average results are the more reliable estimate of the true expected association.

Citations vs Non-citations:

Lastly, we examined the impact of inspections with citations separately from those without citations. Among fixed-site workplaces, inspections with citations were associated with a greater

decrease in claims rates than were inspections without citations. Among non-fixed-site workplaces we saw inspections with citations having less impact on claims rates than those with citations, although rates fell among both the cited and non-cited. The five-year average results show citations tend to strengthen the decrease in claims rates following inspection.

Impact of DOSH enforcement on non-musculoskeletal compensable claims rates

Because there is no specific regulation in Washington State covering the hazards which lead to musculoskeletal disorders (MSDs), such hazards may receive less emphasis during inspections than those for which rules do exist. For both the annual and the five-year average results, the association of DOSH inspection visits with changes in *non-MSD compensable claims rates* among businesses across both industry types is even stronger than that for compensable claims of all types (see Table 2). This is consistent with the results found in the ten-year pooled study (1999-2008) and in several previous one-year studies (Foley, 2022, 2023, 2024). The same could not be said for consultation activities, however, where the effects on claims rate decreases were weaker than we saw for all claim types. Nevertheless, this year's consultation results were an improvement over that of recent years, as shown by comparing this year to the five-year average.

Table 2. Non-Musculoskeletal Injuries, Compensable Claims Rate Changes by DOSH Activity Status, All Firm Sizes, 2022-2023 and Five-Year Average of DOSH Activity Years 2019-2023.

	SFY 2022-2023			Average SFY 2019-2023	
	Fixed-Site	Non-Fixed-Site		Fixed-Site	Non-Fixed-Site
	% Change	% Change		% Change	% Change
No DOSH	5.7	11.6		1.0	-0.1
Inspections	-29.8	-16.7		-20.8	-15.8
Consultations	-21.4	3.3		-10.7	7.8
Programmed	2.8	-20.5		-19.8	-12.7
Unprogrammed	-36.4	-15.7		-20.5	-16.4
No Citation	-15.4	-27.2		-10.4	-12.8
Citation	-36.4	-10.3		-26.5	-18.0

Multivariable Repeated Measures Poisson Models, adjusting for account size and non-musculoskeletal compensable claims over the two years preceding the year of DOSH activity. Figures in **bold** are statistically significant at the 95% level.

This pattern held when examining the effect of unprogrammed versus programmed inspections. Finally, for non-musculoskeletal claims, citations greatly strengthened the effect of inspections at fixed worksites only. But, as before, the five-year average results are a better estimate of the expected effect on claims rates going forward—where citations are clearly associated with greater reductions in claims.

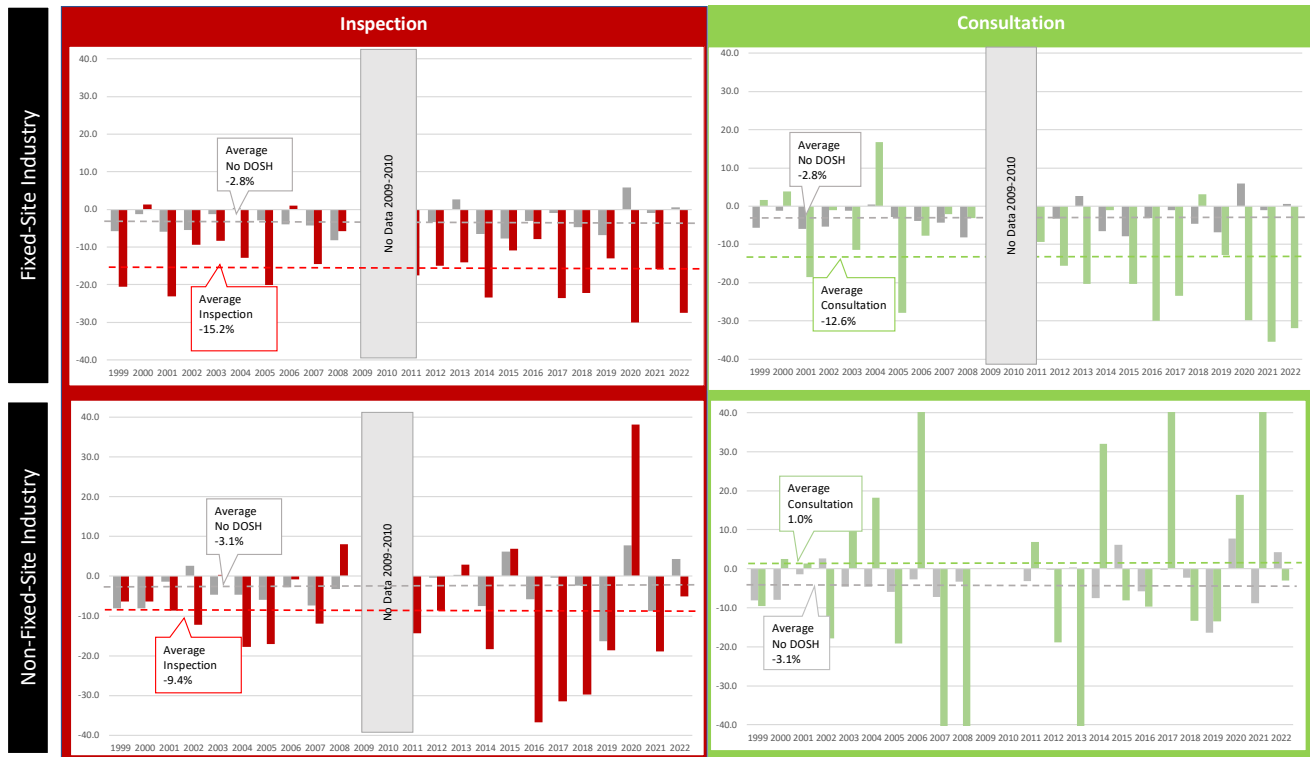
Long-term patterns

In general, this one-year study fits within the range of results found in the analysis of DOSH enforcement and consultation going back over 20 years (see Figure 4). Over the long-term, inspections in the fixed-site industries has been the DOSH activity showing the greatest association with decreasing claims rates. In this year’s study once again, DOSH inspection activity had substantial effects in fixed-site industries, and somewhat smaller effects in non-fixed-site industries .

In Figure 4, the average post-DOSH activity changes in claims rate over all twenty-one annual studies combined are shown as dashed colored lines. These are to be compared to “No DOSH” average change, shown in grey. The “excess decline” has been greater in fixed-site industries for both

inspections and consultations. With the exception of DOSH consultations in non-fixed-site industries, DOSH activities are consistently followed by a significant decrease in claims rates in the following year.

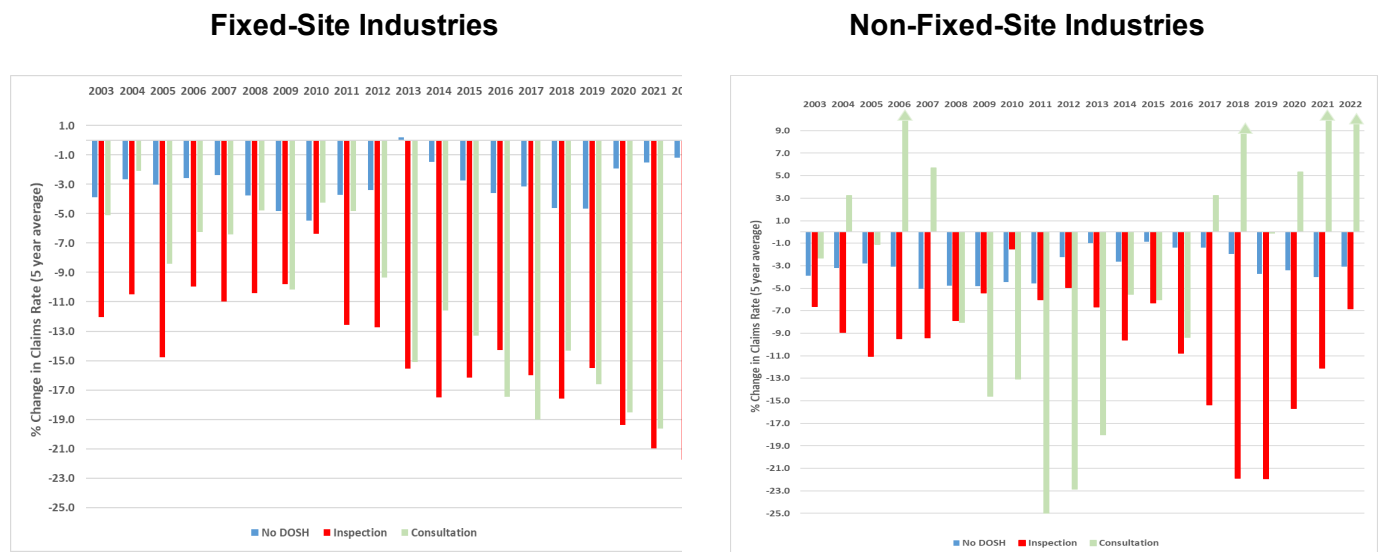
Figure 4. DOSH Activity and Compensable Claim Rate Change, DOSH Activity Years 1999-2022.



However, this long-run average obscures a significant strengthening of the inspection effect in the second half of this time period. From 1999 through 2008, the average post-inspection decrease in claims rate was -11.2% for fixed-site workplaces, and -7.2% for non-fixed-site. For 2011 through 2023, this effect strengthened to a -18.4% fixed-site decrease, and a -11.2% non-fixed site decrease. A similar trend took place for consultations but only in fixed-site workplaces, where the post-activity effect strengthened from -4.9% to -18.9%. This was not the case for consultations in non-fixed-site businesses. In fact, the post-consultation average decrease slipped from -5.2% in the earlier period to an increase of 6.1% in the later period. This was largely due to the results from the consultations during the years SFY2017 and SFY2021 at non-fixed-site businesses. The effect of consultation activity within the non-fixed-site industries has been highly variable from year to year.

Another view of the results over the annual studies uses a five-year trailing average of post-DOSH changes in claims rates to highlight the trends over time and to reduce the year-to-year variation (Figure 5). This chart shows that, for inspections, the weakest association with claims rate declines occurred during the period from 2006 to 2011. Since that time, inspections have surpassed the levels of effectiveness that they had in the earlier years. Consultations among fixed-site industries follow a similar pattern of increasing effectiveness in recent years, with the exception being the past two years. For consultations among non-fixed-site industries, initial ineffectiveness in the period from 1999 through 2007 was followed by a substantial strengthening until 2014, then a significant weakening through 2022.

Figure 5. Annual Studies of DOSH Activity and Compensable Claim Rate Change, Five-Year Moving Average of Impact: Activity Years 1999-2022.



Conclusion

This analysis, having been applied repeatedly over many annual cohorts, and having shown a substantial decline in compensable claims rates following DOSH activity, shows that these interventions trigger broad improvements in safety practices at visited workplaces that result in preventing serious and costly injuries. The COVID-19 pandemic was at its height during the DOSH activity year which forms the baseline in this study for the measurement of claims rate changes (July 2021-June 2022). The impact of lockdowns, work-at-home policies, and social distancing landed unevenly across industries. It is unclear if this played a role in the decline in DOSH activity numbers or if it affected the mix of workplaces visited or subjects covered during consultations. The pandemic might also have affected claims rates and claims reporting, and therefore our results. For this reason, it is particularly important to take a longer-run view of the association between DOSH activities and claims rates.

This study suggests that enforcement inspections and consultations continue to make substantial contributions toward L&I's goal of preventing workplace injury and illness in Washington State.

Reference List

- Fan ZJ, Foley M, Rauser E, Silverstein B. DOSH Inspection and Consultation Visits and Compensable Claims Rates in Washington State. SHARP Technical Report Number: 70-05-2013. Dec 2013.
- Foley M. DOSH Compliance Visits and Compensable Claims Rates in Washington State, 2014-2015. SHARP Technical Report Number: 70-06-2015. Dec 2015.
- Foley M. DOSH Compliance and Consultation Visits and Compensable Claims Rates in Washington State, 2015-2016. SHARP Technical Report Number: 70-09-2019. Jan 2019.
- Foley M. DOSH Effectiveness in Washington State, 2018-2019. SHARP Technical Report Number: 70-11-2021. Jan 2021.
- Foley M. DOSH Compliance Effectiveness in Washington State, 2019-2020. SHARP Technical Report Number: 70-12-2022. June 2022.
- Foley M. DOSH Compliance Effectiveness in Washington State, 2020-2021. SHARP Technical Report Number: 70-14-2024. June 2024.
- Foley M, Fan Z, Rauser E and Silverstein B. 2012. The impact of regulatory enforcement and consultation visits on workers' compensation claims incidence rates and costs, 1999-2008. American Journal of Industrial Medicine 55:976-990.