

DOSH Compliance Effectiveness in Washington State, 2021-2022

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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 2021-2022) was estimated by multivariate regressions analysis at the individual account level for all single-location businesses. 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 23.8% in the next year. By contrast, claims rates *rose* by 13.4% in workplaces not visited by DOSH.
 - By comparison, the five-year average change in claims rates following inspections in fixed-sites was a decrease of 21.6%
- Inspections in non-fixed industry workplaces were followed by a decrease in compensable claims rate of 19.8% in the next year. By contrast, claims rates fell by 3.1% in workplaces not visited by DOSH.
 - In contrast, the five-year average change in claims rates following inspections in non-fixed-sites was a decrease of 13.4%%
- Consultations in fixed site industries were followed by a 22.9% increase in compensable claims rates.
 - The five-year average change in claims rates following consultations in fixed-sites was a decrease of 10.1%.
- Consultations in non-fixed site industries were followed by a 71.1% increase in compensable claims rates.
 - The five year average change in claims rates following consultations in non-fixed-sites was an increase of 21.3%.
- There has been a strengthening of the “inspection effect” over the period from 2011 through 2021 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 for consultations were well out of the normal range and might have been impacted by the reduced numbers of visits or shifts in the nature of consultations during this period. 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.

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 2013, 2015, 2019, 2021, 2022). Certain annual analyses among 'non-fixed-site' businesses receiving enforcement visits or at business 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 number of DOSH visits, we were able to estimate the impact of DOSH visits with greater statistical confidence. The results of the pooled analysis provide 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 2020 than that at businesses not receiving any DOSH visits. The impact of DOSH activities on compensable claims rates during SFY 2020-2021 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:

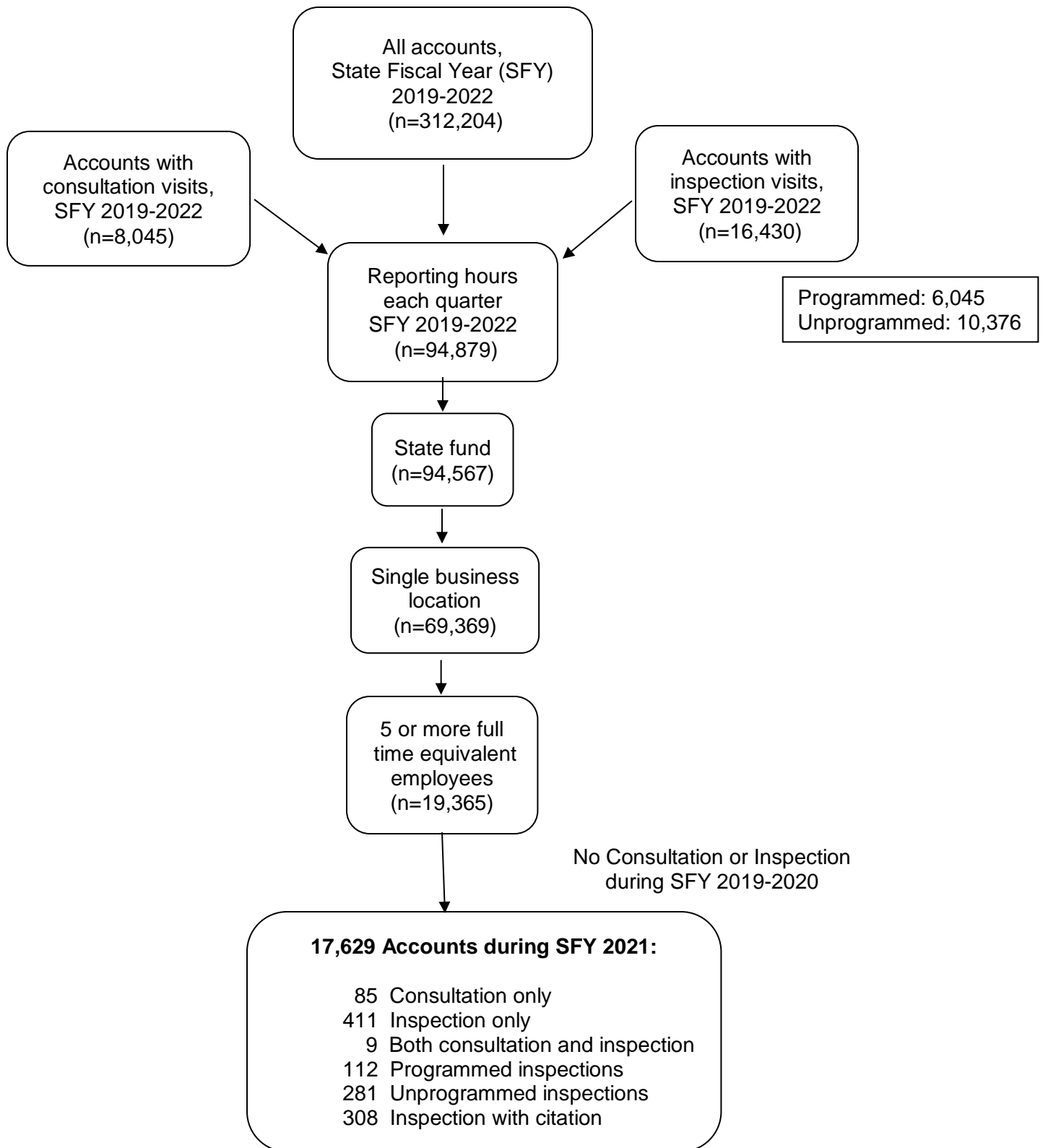
1. Only companies reporting hours each quarter during SFY 2019-2022
2. State Fund companies.
3. Companies with a single business location.
4. Companies with at least 5 FTEs per year during SFY 2019-2022.
5. Companies with no DOSH activity during the two years prior to the year of the DOSH activity (SFY 2019-2022).

Descriptive analyses were conducted first for the changes in compensable claims rate by SFY. Because average account size and the account's prior history of compensable claims rates were 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 17,629 accounts which satisfied all the study criteria represented almost 19% of the 94,567 identified accounts reporting hours in throughout SFY 2019-2022.
- 94 accounts had at least one DOSH consultation visit, and
- 420 accounts had at least one inspection,
- 9 accounts had at least one inspection AND one consultation visit during SFY 2021.
- Of the 420 accounts with DOSH enforcement inspections, 112 (27%) received at least one DOSH programmed inspection, a significant decrease from the 40% of inspections which were programmed in the previous year.
- 66% of all inspections resulted in at least one citation during SFY 2021, a decrease from the prior year (74%).

Figure 1. Extraction of eligible study accounts from Washington workers' compensation employer account database, SFY 2019-2022.



It should be noted that, as compared to last year's study, the number of accounts with inspections in the baseline year (SFY 2021) has decreased by about 8%, following on from a 9% drop in the previous year. This decrease continues 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 4,107 in SFY 2019-2021. Most of the decrease from the previous year came from a 38% decrease in the number of "programmed" inspections (180 in SFY 2019 to 112 in SFY 2020). Over a longer period the share of total inspections that are "programmed" has fallen from 71% in SFY 2011 to only 27% in SFY2020. The decrease in consultations from the previous year was even more substantial, with consultations falling by 41% overall (-27% among fixed; -68% among non-fixed). The role of the COVID pandemic amongst the reasons for these declines in DOSH activity is unknown.

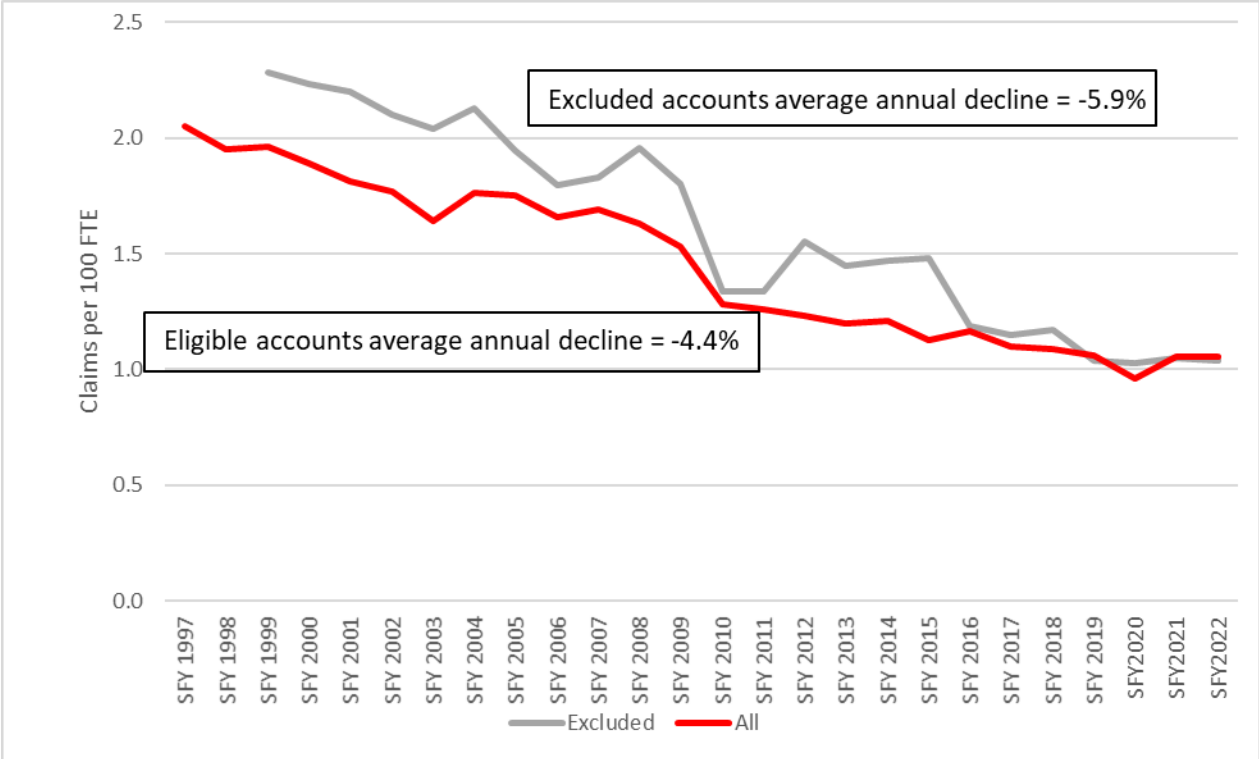
Finally, from the period SFY 2009-2012 to the period of the current study (SFY 2019-2022) there has been a decline in the number of DOSH visits as a proportion of all business locations reporting hours. For inspections this has fallen from 10% to 5% of total business locations. Consultations have fallen from 4% to 3% 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, 1997-2022

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 4.4% per year for the businesses which satisfied all selection criteria. They fell 5.9% 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. The importance of this fact is that it makes detecting the effect of DOSH inspections and consultations more difficult: when rates are on average already low there is less room for them to go lower.

Figure 2. Compensable claims rates, by selection status, SFY 1997-2022.



“All” 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.

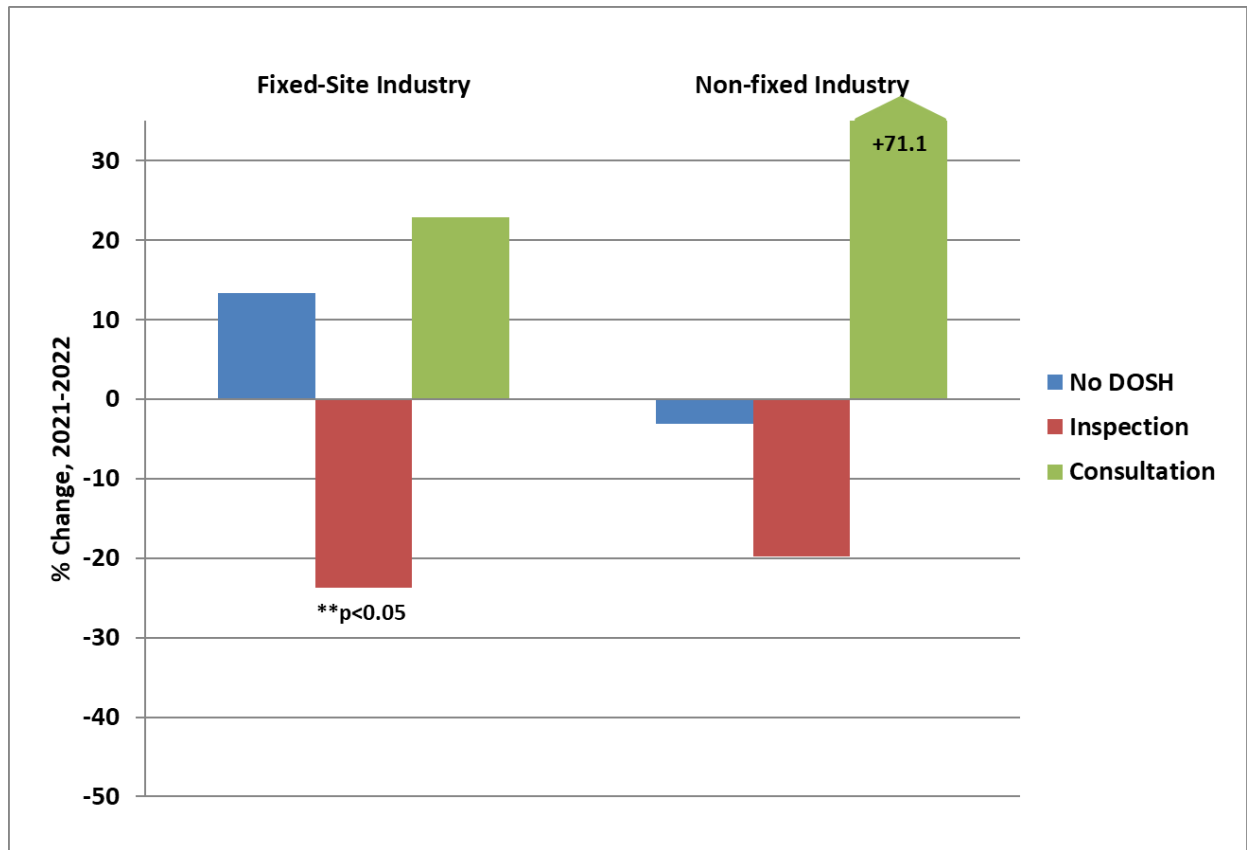
Impact of DOSH enforcement inspections and consultations on compensable claims rates

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 -23.8% from SFY2021 to SFY2022. Consultations in fixed-site businesses resulted in an increase in claims rates of +22.9% over the same period. This is an unusual result as compared to previous annual studies of consultation in fixed-site businesses. These results are notable when compared to the increased claims rate of +13.4% 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 of the fixed-site sector, and often quite variable from year-to-year. In particular, the reduction in consultation visits by 68% among non-fixed businesses left only 24 such visits to be studied in this year's report. A decline in the number of visits increases the uncertainty of any statistical estimate of average effect. So this year's results may not be representative. Nevertheless, from SFY 2021-2022, claims rates at DOSH inspected sites in non-fixed industries fell by -19.8%, while rates at DOSH-consulted sites rose by 71.1%. This is as compared to the fall of -3.1% 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, 2021-2022



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 SFY2021-22.

Table 1. All Injury Types, Compensable Claims Rate Changes by DOSH Activity Status, All Firm Sizes, 2021-2022 and Five-Year Average of DOSH Activity Years 2017-2022.

	SFY 2021-2022		Average SFY 2017-2022	
	Fixed-Site	Non-Fixed-Site	Fixed-Site	Non-Fixed-Site
	% Change	% Change	% Change	% Change
No DOSH	13.4	-3.1	6.0	-2.9
Inspections	-23.8	-19.8	-21.6	-13.4
Consultations	22.9	71.1	-10.1	21.3
Programmed	-31.7	11.9	-23.3	-0.3
Unprogrammed	-23.0	-25.2	-22.1	-12.1
No Citation	5.4	-24.2	-14.6	-9.1
Citation	-38.8	-16.9	-24.7	-16.0

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

Comparing the most recent one-year results for inspections and consultations in the first two columns of Table 1 to the five-year average change shown in columns 3 and 4, we see a significant departure from “normal” results for consultations. Usually, consultations result in a similar decline in claims rates across the two sectors. But in this year’s study, consultations in fixed-sector sites were associated with a much stronger *decline* in claims rates than usual, while those in non-fixed sites were followed by a significant *increase* in claims rates. For inspections, we find the results in this year to be similar to the average for the past five years.

Programmed vs Unprogrammed Inspections:

DOSH inspections are classified as being either “programmed” or “unprogrammed.” In the former case, a workplace may be 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. Such scheduling lists may also be 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 prior years unprogrammed inspections, such as those which are complaint-driven, resulted in a greater decrease in compensable claims rates than programmed inspections to.. However, over the past few years, this pattern was reversed somewhat: in fixed-site industries programmed inspections were followed by a greater decrease in compensable claims rates (see Table 1) In non-fixed businesses, the unprogrammed inspections were followed by the greater decrease in claims rates. 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 the five-year average results, when we examine the association of DOSH enforcement visits with changes in *non-MSD compensable claims rates* we find that the impact of DOSH inspections is *strengthened* among businesses across both industry 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, 2021, 2022, 2023).

Table 2. Non-Musculoskeletal Injuries, Compensable Claims Rate Changes by DOSH Activity Status, All Firm Sizes, 2021-2022 and Five-Year Average of DOSH Activity Years 2017-2022.

	SFY 2021-2022		Average SFY 2017-2022	
	Fixed-Site	Non-Fixed-Site	Fixed-Site	Non-Fixed-Site
	% Change	% Change	% Change	% Change
No DOSH	20.4	0.1	10.5	-0.8
Inspections	-25.4	-21.9	-23.0	-21.0
Consultations	78.8	52.4	6.8	5.7
Programmed	-31.7	7.5	-23.9	-14.3
Unprogrammed	-24.8	-26.2	-21.9	-20.2
No Citation	11.3	-31.5	-14.0	-14.1
Citation	-41.7	-15.4	-27.3	-25.1

Multivariable Repeated Measures Poisson Models, adjusting for account size and non-musculoskeletal compensable claims over the two years preceding the year of DOSH activity.

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. But, as before, the five-year average results are a better estimate of the expected effect on claims rates going forward.

Long-term patterns

In general, this one-year study fits well 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 similar, and substantial, effects across both the fixed-site and non-fixed industries.

Furthermore, the highly decrease in claims rates following inspections is well beyond the normal range found among previous annual studies in the past years.

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 1999-2021

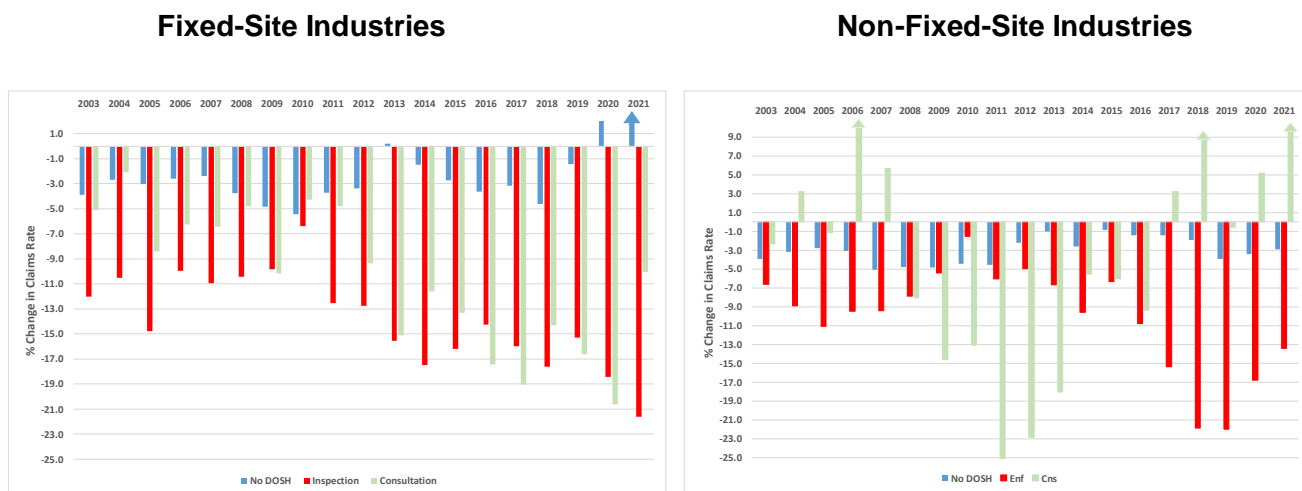


But this long-run average obscures a significant strengthening of the inspection effect in the second half of this time period. From 1999 through 2008, the average post-inspection decrease in claims rate was -11.2% for fixed-site workplaces, and -7.2% for non-fixed-site. For 2011 through 2021, this effect strengthened to a -17.9% fixed-site decrease, and a -12.3%

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 -13.4%. 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 most recent two years of consultations at non-fixed-site businesses. Moreover, the effect of consultation activity within the non-fixed-site industries has been highly variable from year to year. 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 usually instigated 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 subjects covered by consultations that are changing their association with claims rate changes.

Another view of the results over the annual studies uses a five-year moving 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. 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 weakening through 2021.

Figure 5: Annual Studies of DOSH Activity and Compensable Claim Rate Change, Five-Year Moving Average of Impact: Activity Years 1999-2020



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 DOSH activity year which forms the baseline in this study for the measurement of claims rate changes (July 2020-June 2021). 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 Labor and Industries’ goal of preventing workplace injury and illness in Washington State.

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