

DOSH Compliance Effectiveness in Washington State, 2019-2020

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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 2019-2020) 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 11.7% in the next year. By contrast, claims rates rose by 9.3% in workplaces not visited by DOSH.
- Inspections in non-fixed industry workplaces were followed by a decrease in compensable claims rate of 18.9% in the next year. By contrast, claims rates fell by 17.2% in workplaces not visited by DOSH.
- Consultations in fixed site industries were followed by a 12.5% decrease in compensable claims rates.
- Consultations in non-fixed site industries were followed by a 15.8% decrease in compensable claims rates.
- There has been a strengthening of the “inspection effect” over the period from 2011 through 2019 as compared to 1999 through 2008. This is also true of consultations in fixed-site industries.
- From the period SFY 2011 to SFY 2019 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.
- The decrease in non-musculoskeletal disorder (MSD) claims rates following DOSH inspections was larger than that for all injury types combined, particularly in non-fixed-site industries.
- Compensable claims fell by more among those receiving a citation, although the difference was not statistically significant.

Conclusions: This study suggests enforcement inspections and consultations continue to make substantial contributions toward the agency’s goal of reducing workplace injury and illness rates and that an expansion of the number of inspections and consultations is warranted.

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 2007, 2013, 2015, 2019, 2021). Some annual analyses did not find statistically significant changes among 'non-fixed-site' businesses receiving enforcement visits or at business receiving only consultation visit(s), due to the greater variation of claims rates at 'non-fixed-site' businesses and 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 2019 than that at businesses not receiving any DOSH visits. The impact of DOSH activities on compensable claims rates during SFY 2019-2020 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:

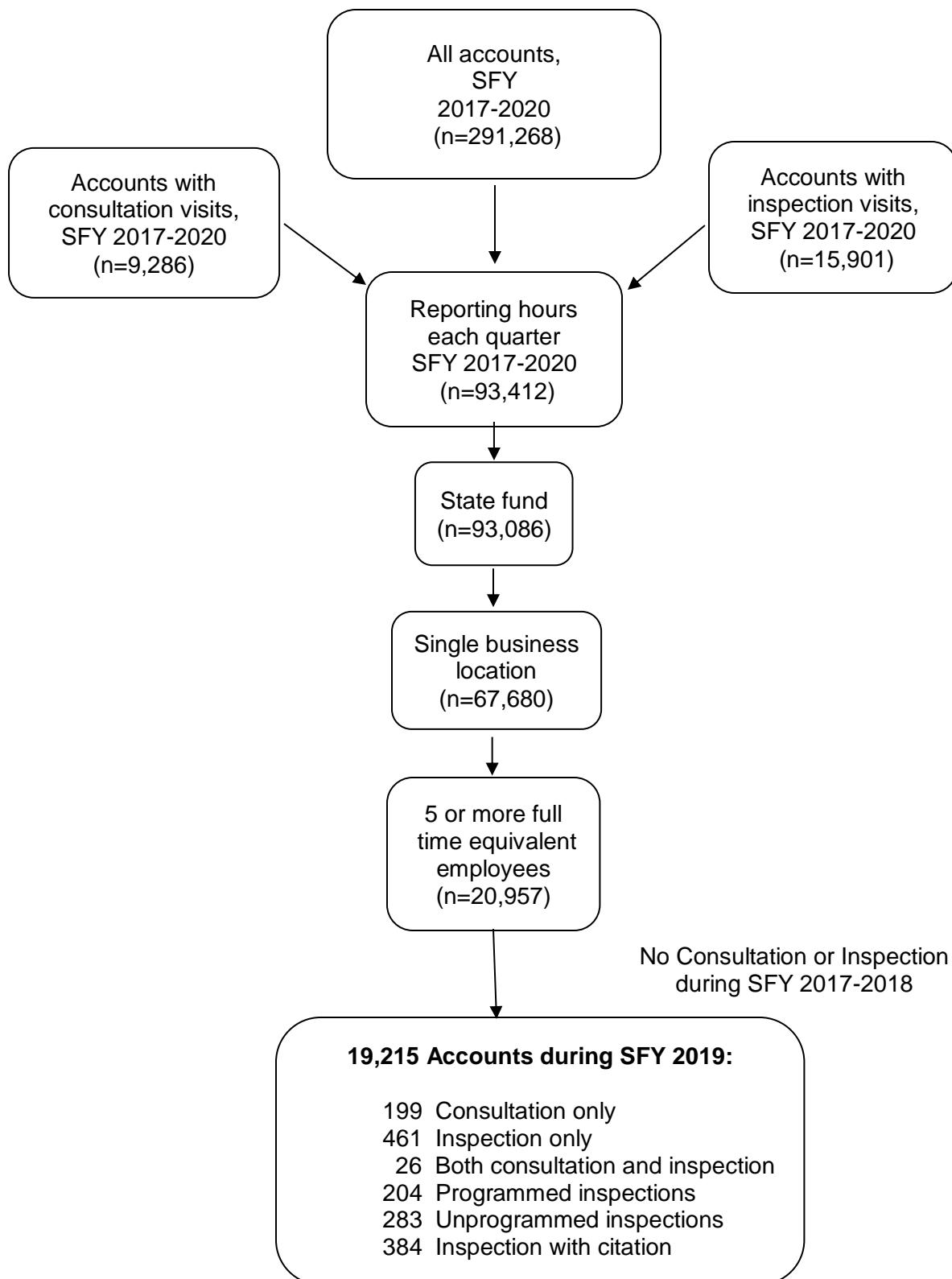
1. Only companies reporting hours each quarter during SFY 2017-2020
2. State Fund companies.
3. Companies with a single business location.
4. Companies with at least 5 FTEs per year during SFY 2017-2020.
5. Companies with no DOSH activity during the two years prior to the year of the DOSH activity (SFY 2017-2018).

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 19,215 accounts which satisfied all the study criteria represented about 21% of the 94,938 identified accounts reporting hours in throughout SFY 2017-2020.
- 225 accounts had at least one DOSH consultation visit, and
- 487 accounts had at least one inspection,
- 26 accounts had at least one inspection AND one consultation visit during SFY 2019.
- Of the 487 accounts with DOSH enforcement inspections, 204 (42%) received at least one DOSH programmed inspection, an increase from the 35% of inspections which were programmed in the previous year.
- 384 (79%) of all inspections resulted in at least one citation during SFY 2019, a slight increase from the prior year.

Figure 1. Extraction of eligible study accounts from Washington workers' compensation employer account database, SFY 2017-2020.



It should be noted that, as compared to last year's study, the number of accounts with inspections in the baseline year (SFY 2019) has increased by 2%. This increase reverses a long-term decline in inspection activity overall which has seen a decline from an annual average of 6,005 total inspections in SFY 2009-2012 to only 3,975 in SFY 2017-2020. The number of inspections which satisfied our selection criteria increased significantly by 15%, from 422 in SFY 2018 to 487 in SFY 2019. Most of this increase came from a 38% increase in the number of "programmed" inspections (148 in SFY 2018 to 204 in SFY 2019). Over a longer period however, the share of total inspections that are "programmed" has fallen from 71% in SFY 2011 to 42% in SFY2019.

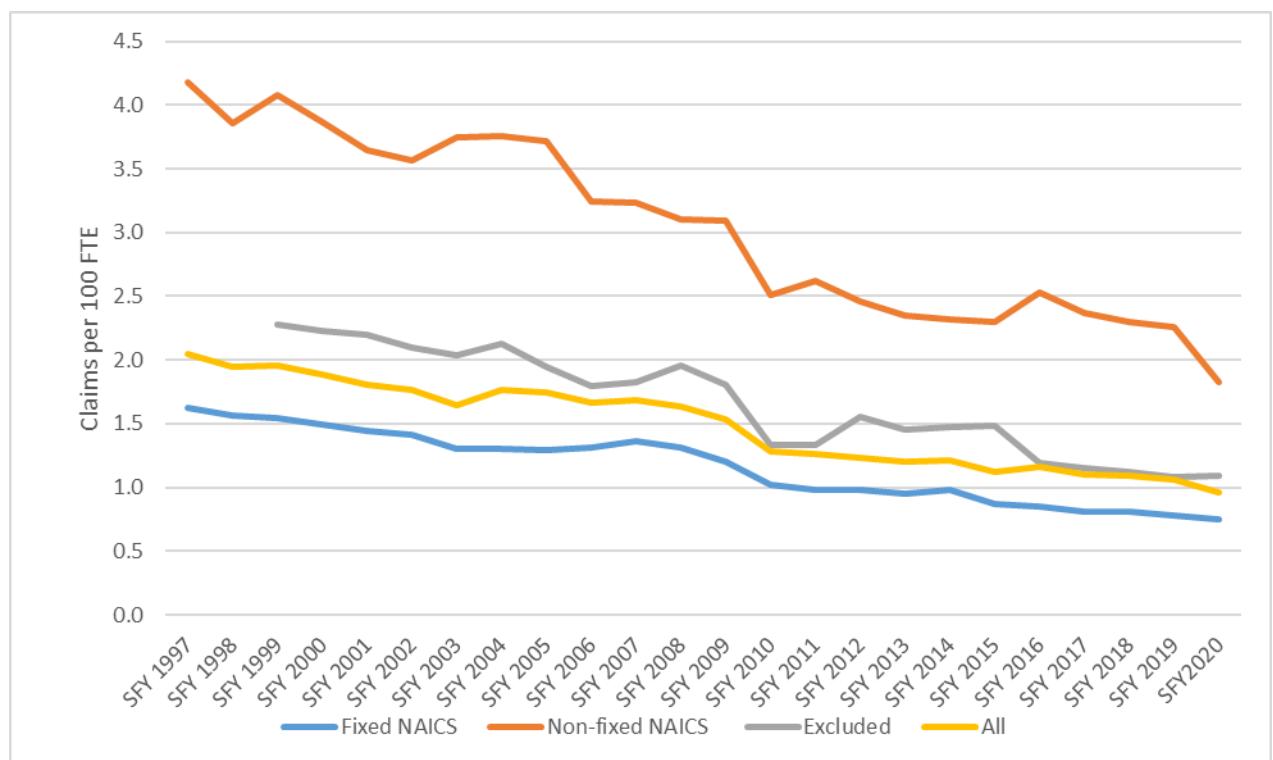
Finally, from the period SFY 2009-2012 to the period of the current study (SFY 2017-2020) there has been a decline in the number of DOSH visits as a proportion of all business locations reporting hours. For inspections this has fallen from 10% to 5% of total business locations. Consultations have fallen from 4% to 3% as a proportion of all business locations. This decline in the density of regulatory compliance activity as a share of businesses represents a loss of potential impact on injury prevention, as the results from this study will show.

Compensable Claims Rate Change, 1997-2020

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 4.7% per year for the businesses which satisfied all selection criteria. They fell 6.1% 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. This long downward trend continued into the latest period studied. For SFY 2019-2020, compensable claims rates for all firms satisfying the inclusion criteria fell by 9.4%. For all excluded businesses, they were unchanged. 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 and industry grouping, SFY 1997-2020.

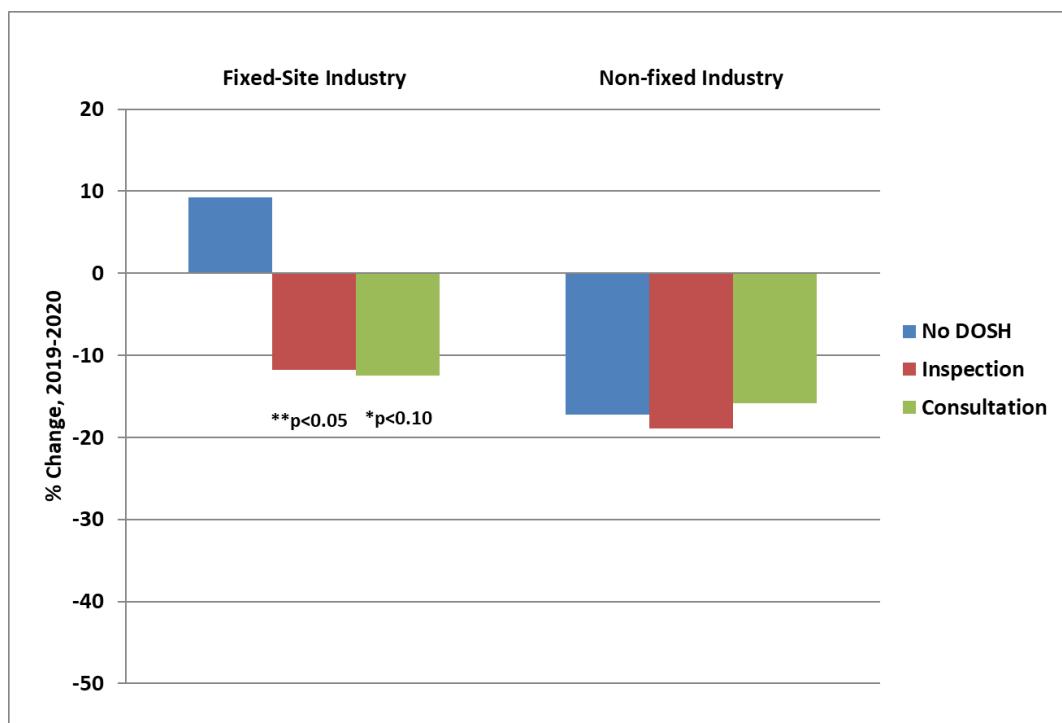


"All" means accounts satisfying all selection criteria; "excluded" means survived 16 quarters, State Fund, but had one or more of the following features that excluded them: multiple business locations, less than 5 FTEs, or DOSH activity in the two years prior to the baseline year.

Impact of DOSH enforcement inspections and consultations on compensable claims rates

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 non-fixed-site industries such as construction and transportation were associated with a greater decrease in compensable claims rates (-18.9% vs. -11.7%) from SFY2019 to SFY2020 than inspections in fixed-site industries. Decreases in claims rates following inspection were larger in small and medium-sized firms than in larger businesses (over 50 FTEs). Consultations resulted in a decrease in claims rates among both fixed- and non-fixed site businesses.

Figure 3: Percent Change in Compensable Claims Rate: No DOSH vs Enforcement vs Consultation, by Industry Type, 2019-2020



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 SFY 2019 about 42% of DOSH enforcement visits among the set of eligible accounts in the study were programmed visits. Compared to SFY 2018, this partly reverses a long decline from SFY 2011, when programmed inspections accounted for about 71% of the total.

In previous years unprogrammed inspections, such as those which are complaint-driven, were much more likely than programmed inspections to result in a decrease in compensable claims rates. This pattern was reversed in the study of SFY 2018-2019, but in this year’s cohort the traditional pattern is partly restored: in non-fixed-site industries unprogrammed inspections were followed by a greater decrease in compensable claims rates (see Table 1).

Table 1. All Injury Types, Compensable Claims Rate Changes by DOSH Activity Status, All Firm Sizes, 2019-2020.

			FIXED-SITE				NON-FIXED-SITE
	N	%CHANGE	PVAL		N	%CHANGE	PVAL
NO DOSH	15086	9.3			3443	-17.2	
INSPECTIONS	279	-11.7	0.043		182	-18.9	0.895
CONSULTATIONS	138	-12.5	0.074		61	-15.8	0.932
PROGRAMMED	131	-13.2	0.182		73	10.7	0.232
UNPROGRAMMED	159	-10.8	0.103		124	-25.8	0.544
NO CITATION	49	-9.4	0.265		54	-15.2	0.910
CITATION	241	-12.6	0.074		143	-20.6	0.825

NB: Multivariable Repeated Measures Poisson Models, adjusting for account size and non-musculoskeletal compensable claims rates during SFYs 2017-2018.

Lastly, we examined the impact of inspections with citations separately from those without citations. Inspections with citations were found to be associated with a greater decrease in claims rates than were inspections without citations. When breaking out the results by size category, it was found that this result was driven mainly by inspections among the small and medium-sized firms (under 50 FTE). For larger firms, citations did not strengthen the impact of inspections.

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. In fact, 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). Consultations did not have an equivalent effect on non-MSD compensable claims rates. This is consistent with the results found in the ten-year pooled study (1999-2008) and in previous one-year studies (Foley, 2021).

Table 2. Non-Musculoskeletal Injuries, Compensable Claims Rate Changes by DOSH Activity Status, All Firm Sizes, 2019-2020.

			FIXED				NON-FIXED	
		N	%CHANGE	PVAL		N	%CHANGE	PVAL
NO DOSH		15086	18.2			3444	-20.0	
INSPECTIONS		279	-11.7	0.041		148	-25.4	0.689
CONSULTATIONS		138	4.0	0.498		73	-15.0	0.791
PROGRAMMED		131	-12.9	0.135		73	-19.7	0.989
UNPROGRAMMED		159	-11.4	0.102		124	-26.9	0.657
NO CITATION		49	-5.6	0.404		54	-22.6	0.874
CITATION		241	-14.6	0.037		143	-26.8	0.698

NB: Multivariable Repeated Measures Poisson Models, adjusting for account size and non-musculoskeletal compensable claims rates during SFYs 2017-2018.

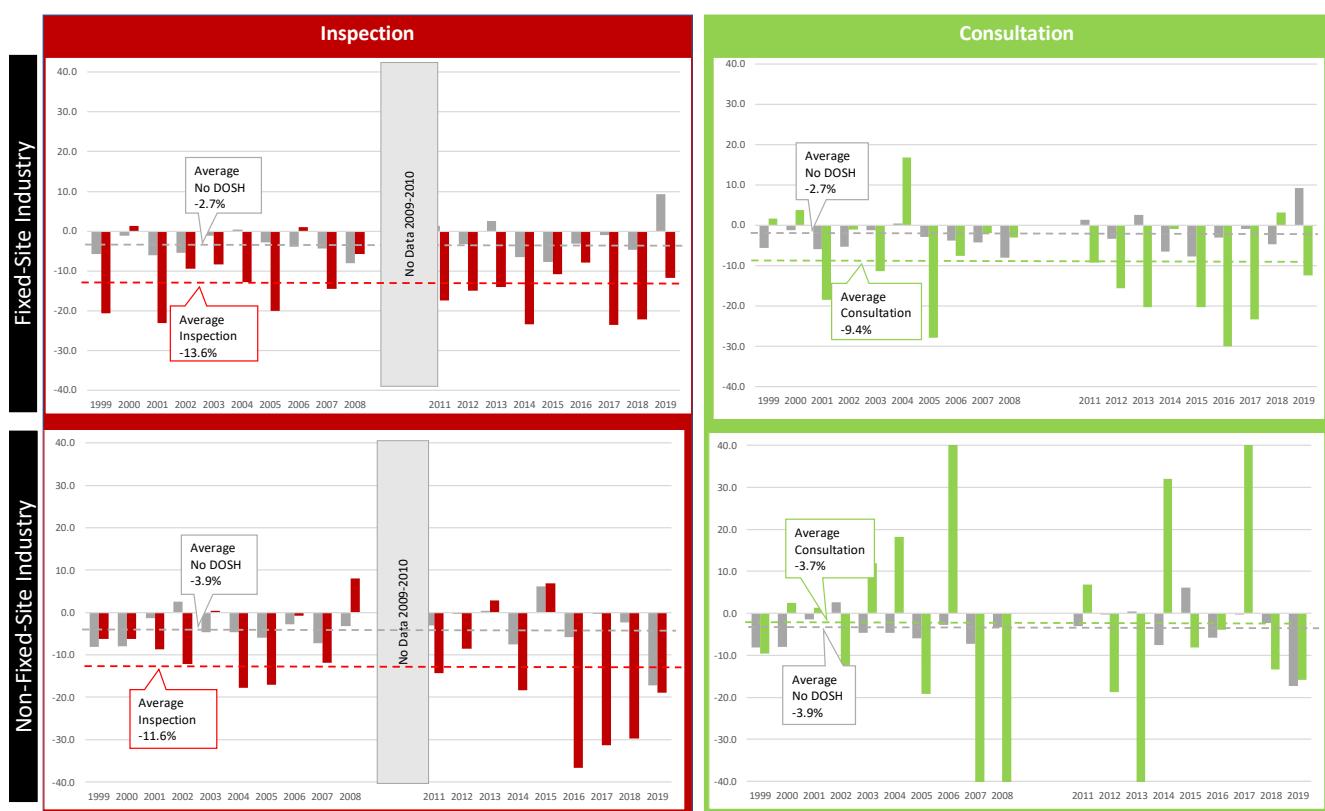
There was a greater decrease in non-musculoskeletal claims rates following inspections than we saw for compensable claims rates overall, and this pattern held when examining the effect of unprogrammed versus programmed inspections in non-fixed industries (see Table 2).

Finally, for non-musculoskeletal claims, citations greatly strengthened the effect of inspections at fixed worksites. (see Table 2).

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 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. However, in this year's study, DOSH inspection activity had a slightly greater effect among the non-fixed-site industries. In Figure 4, the average post-DOSH activity changes in claims rate 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.

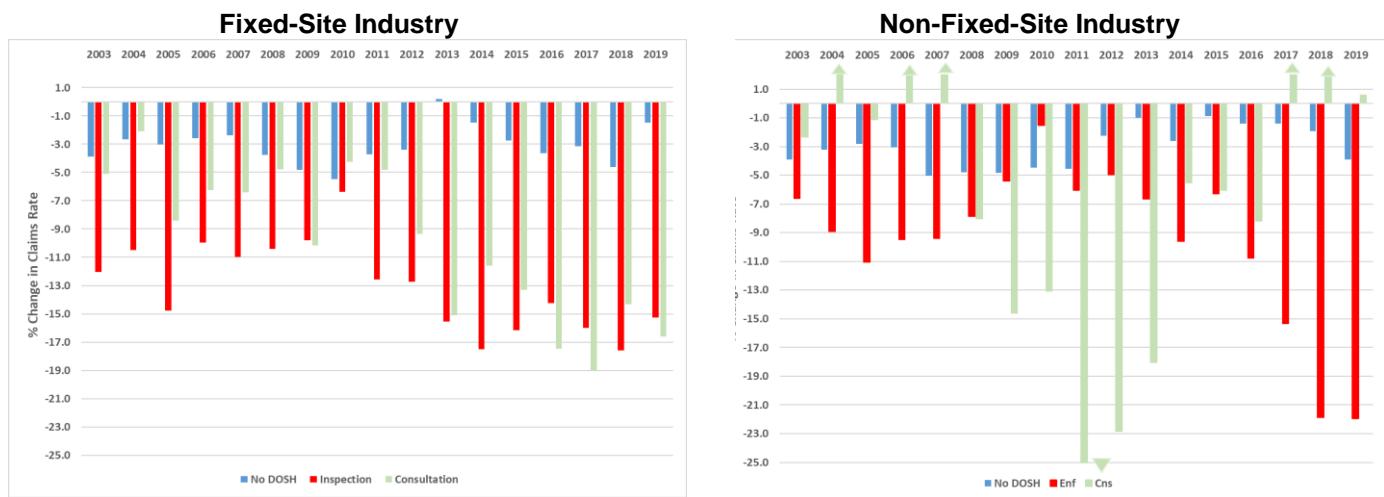
Figure 4: DOSH Activity and Compensable Claim Rate Change, 1999-2019



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 2019, this effect strengthened to a 16.3% fixed-site decrease, and a 16.5% 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 -14.4%. 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 only -2.1% in the later period. 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. 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 seventeen 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 gradual weakening through 2018 which has now been followed by a relatively effective year in 2019.

Figure 5: Annual Studies of DOSH Activity and Compensable Claim Rate Change, Five-Year Moving Average of Impact: Activity Years 1999-2019



Conclusion

This analysis, having been applied repeatedly over many annual cohorts, and having shown a substantial decline in compensable claims rates following DOSH activity show that these interventions trigger broad improvements in safety practices at visited workplaces that result in preventing serious and costly injuries.

This study supports the view 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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