

DOSH Compliance and Consultation Visits and Compensable Claims Rates in Washington State, 2017-2018

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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 SFY 2017-2018 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:

- As compared to last year's study, the number of accounts with inspections in the baseline year (SFY 2017) has increased by 14%. On the other hand, the number of accounts with consultations in the baseline year *decreased* by 22% as compared to the prior year.
- Inspections in fixed and non-fixed industries had decreases in their compensable claim rates of 23.6% and 31.4%, respectively.
- Consultations in fixed site industries were associated with a 23.4% decline in compensable claims rates, but this was not statistically significant.
- Effectiveness of inspections and consultations was greatest among medium-sized firms.
- When measuring the change in non-WMSD claims rate, the impact of DOSH inspections is strengthened among businesses across both industry types. Consultations did not have a similar effect on non-MSD compensable claims rates.
- Programmed inspections had a strong association with claims rate declines among non-fixed-site businesses. Among fixed-site firms, claims rates had a decrease only following unprogrammed site-visits.
- Enforcement visits that result in a citation had slightly more impact among fixed-site businesses than they did in fixed-sites. Conversely, inspections without citations had slightly more impact among non-fixed-site businesses.
- Among medium-sized firms citations significantly increased the impact of inspections.

Conclusions: This study suggests enforcement inspections continue to make substantial contributions to reaching the agency's goal of reducing workplace injury and illness rates.

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). But 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, 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).

In 2011, 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). They also suggest that while enforcement has a similar impact in both fixed and non-fixed-site industries, consultation has a particularly strong effect in the non-fixed establishments.

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 2017 than that at businesses not receiving any DOSH visits. The impact of DOSH activities on compensable claims rates during SFY 2017-2018 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 State Fiscal Years (SFY) 2015-2018
2. State Fund companies.
3. Companies with a single business location.
4. Companies with at least 5 FTEs per year during SFY 2015-2018.
5. Companies with no DOSH activity during the two years prior to the year of the DOSH activity (SFY 2015-2016).

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 19,182 accounts which satisfied all the study criteria represented 6.7% of the 287,407 identified accounts reporting hours in at least one quarter during SFY 2015-2018.
- 164 accounts had at least one DOSH consultation visit, and
- 444 accounts had at least one inspection,
- 18 accounts had at least one inspection AND one consultation visit during SFY 2017.
- Of the 444 accounts with DOSH enforcement inspections, 187 (42%) received at least one DOSH programmed inspection
- 341 (77%) of all inspections resulted in at least one citation during SFY 2017.

It should be noted that, as compared to last year's study, the number of accounts with inspections in the baseline year (SFY 2017) has increased by 14%. This increase interrupts what was a long-term decline in inspection activity overall which had seen a decline from an annual average of 6,005 total inspections in SFY 2009-2012 to only 4,219 in SFY 2015-2018. The number of inspections which satisfied our selection criteria rose 14%, from 389 in SFY 2016 to 444 in SFY 2017. Most of this increase came from a 32% increase in the number of "programmed" inspections (142 in SFY 2016, increasing to 187 in SFY 2017). Over a longer period however, the share of total inspections that are "programmed" has fallen from 71% in SFY 2011 to 42% in SFY2017. On the other hand, the number of accounts with consultations in the baseline year *decreased* by 22% as compared to the prior year.

Finally, from the period SFY 2009-2012 to the period of the current study (SFY 2017-2018) 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 6% of total business locations. Consultations have fallen from 4% to 3% as a proportion of all business locations. This decline in activities complicates the ability of statistical methods to detect the association of inspections or consultations with a decrease in claims rates.

Impact of DOSH enforcement inspections and consultations on compensable claims rates

DOSH enforcement activity was associated with a decrease in claims rates one year following the activity in fixed-site industries as compared to non-DOSH activity accounts (see Figure 2). For non-fixed-site industries inspections were also associated with a substantial and statistically significant decline in claims rates. In fixed-site industries, workplaces that received a consultation visit had a greater decrease in claims rates than those workplaces not receiving a DOSH activity. After adjusting for average size of the accounts and the long-term average compensable claims rate for each account:

- Fixed-site industries
 - Workplaces without any DOSH activity experienced an average decrease in their compensable claims rate of 1.0% from SFY2017 to SFY2018.
 - DOSH inspected workplaces had a decrease of 23.6% in their compensable claims rate.
 - DOSH consultations were associated with a 23.4% decline in compensable claims rates, but this was not statistically significant.

- Non-fixed-site industries
 - Workplaces without any DOSH activity experienced an average decrease in their compensable claims rate of 0.3% from SFY2017 to SFY2018.
 - DOSH inspected workplaces had a decrease of 31.4% in their compensable claims rate, and this was statistically significantly different from the NO DOSH rate change.
 - DOSH consultations were associated with a 44.1% *increase* in compensable claims rates. However, this was not statistically different from the NO DOSH cohort.

Impact of DOSH enforcement inspections and consultations on compensable claims rates by size category

Results of DOSH enforcement activity vary across establishments of different sizes. Inspections were associated with a more substantial decrease in claims rates among medium-sized establishments than among either smaller or larger-sized businesses (see Figures 3a, 3b and

3c). This pattern was found amongst both fixed and non-fixed businesses. Claims rates decreased in workplaces that received consultation visits by more than in the non-DOSH accounts only among medium and large-sized businesses. In small, non-fixed businesses, claims rates rose significantly in the year after the consultation. After adjusting for average size of the accounts and the compensable claims rates in the pre-study period:

- Inspections in fixed-site industries
 - DOSH inspected workplaces under 25 FTEs had a decrease of 3.1% in their compensable claims rate, although this was not statistically significantly different from the NO DOSH rate change.
 - DOSH inspected workplaces with 25-49 FTEs had a decrease of 33.3% in their compensable claims rate.
 - DOSH inspected workplaces with 50 or more FTEs had a decrease of 26.8% in their compensable claims rate.

- Inspections in non-fixed-site industries
 - DOSH inspected workplaces with 5-24 FTEs had a decrease of 20.7% in their compensable claims rate, though this was not statistically significant.
 - DOSH inspected workplaces with 25-49 FTEs had a decrease of 57% in their compensable claims rate.
 - DOSH inspected workplaces with over 50 FTEs had a decrease of 15.2% in their compensable claims rate, though this was not statistically significant.
 - DOSH consultations were associated with a 5.3% decrease in compensable claims rates. However, this was not statistically different from the NO DOSH cohort ($p=0.802$).

- Consultations in fixed-site industries

- DOSH consultations in workplaces with less than 25 FTEs were associated with a 10.1% increase in compensable claims rates, although this was not statistically significant.
- DOSH consultations in workplaces with 25-49 FTEs were associated with a 63.6% decrease in compensable claims rates.
- DOSH consultations in workplaces with 50 or more FTEs were associated with a 31.2% decrease in compensable claims rates, although this was not statistically significant.

- Consultations in non-fixed-site industries
 - DOSH consultations in workplaces with less than 25 FTEs were associated with a 79% increase in compensable claims rates.
 - DOSH consultations in workplaces with 25-49 FTEs were associated with a 96% increase in compensable claims rates.
 - DOSH consultations in workplaces with 50 or more FTEs were associated with a 20.2% decrease in compensable claims rates, although this was not statistically significant.

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 (compare Figure 4 to Figure 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:

- Fixed-site industries
 - Workplaces without any DOSH activity had a 1.4% decrease in their non-MSD compensable claims rate of from SFY2017 to SFY2018.
 - DOSH inspected workplaces had a decrease of 30.9% in their non-MSD compensable claims rate.
 - DOSH consultations were associated with a 18% decline in non-MSD compensable claims rates, although this was not statistically significant.

- Non-fixed-site industries
 - Workplaces without any DOSH activity experienced an average increase in their non-MSD compensable claims rate of 0.9% from SFY2017 to SFY2018.
 - DOSH inspected workplaces had a decrease of 31.8% in their non-MSD compensable claims rate.
 - DOSH consultations were associated with a 4.8% decrease in non-MSD compensable claims rates, although this was not statistically significant.

Impact of DOSH “programmed” vs “unprogrammed” inspection visits

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 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 2017 about 42% of DOSH enforcement visits among the set of eligible accounts in the study were programmed visits. This is a decline from previous years such as SFY 2011, when programmed inspections accounted for about 71% of the total. In previous years unprogrammed inspections were much more likely than programmed inspections to result in a decrease in compensable claims rates. This pattern changed in this year's cohort, with programmed inspections having a strong association with claims rate declines among non-fixed-site businesses. However, among fixed-site firms, claims rates had a decrease only following unprogrammed site-visits. After adjusting for average size of the accounts and the compensable claims rates in the pre-study period:

- Fixed-site industries
 - Workplaces receiving programmed DOSH inspections had an *increase* of 1.0% in their compensable claims rate, although this was not statistically significant.
 - Workplaces receiving unprogrammed DOSH inspections had a decrease of 37% in their compensable claims rates.

- Non-fixed-site industries
 - Workplaces receiving programmed DOSH inspections had a decrease of 49.3% in their compensable claims rate.
 - Workplaces receiving unprogrammed DOSH inspections had a decrease of 15.7% in compensable claims rates, although this was not statistically significant.

When this analysis was repeated on the workplaces with less than 25 FTEs there was a similar pattern of change in compensable claims rate for unprogrammed and programmed inspections. Among medium-sized firms the decrease in claims rates following a programmed inspection was greater than that for unprogrammed inspections in both fixed and non-fixed site industries.

Impact of DOSH enforcement with and without citations on compensable claims rates:

In this year's cohort, enforcement visits that result in a citation had somewhat greater impact among fixed-site businesses than they did in fixed-sites. Conversely, inspections without citations had greater impact among non-fixed-site businesses. (see Figure 6). This is inconsistent with results seen in the ten-year pooled study, where inspections with citations had consistently stronger associations with decreasing claims rates (Foley et al., 2012). However, among medium-sized firms the impact of inspections with citations was stronger than that for inspections in both fixed and non-fixed site industries.

- Fixed-site industries
 - Workplaces receiving DOSH inspections with a citation had a decrease of 24.8% in their compensable claims rate.

- Workplaces receiving DOSH inspections without citation had a decrease of 22.2% in their compensable claims rate, although this was not statistically significant.
- Non-fixed-site industries
 - Workplaces receiving DOSH inspections with a citation had a decrease of 34.3% in their compensable claims rate.
 - Workplaces receiving DOSH inspections without citation had an increase of 30% in their compensable claims rate.

Impact of DOSH enforcement with and without citations on non-MSD compensable claims

When we remove compensable musculoskeletal claims and test the association of inspections with and without citations on the change in non-MSD claims rates we find a stronger effect of inspection regardless of whether or not citations are issued among fixed-site businesses. Among non-fixed-site businesses inspections with citations had the greatest effect, but the effect was no stronger than that already seen for the all-claim rate.

- Fixed-site industries
 - Workplaces receiving DOSH inspections with a citation had a decrease of 29.9% in their non-MSD compensable claims rate.
 - Workplaces receiving DOSH inspections that did *not* result in any citation had a decrease of 35.1% in their non-MSD compensable claims rate rate, although this was not statistically significant.
- Non-fixed-site industries
 - Workplaces receiving DOSH inspections with a citation had a decrease of 33.2% in their non-MSD compensable claims rate.

- Workplaces receiving DOSH inspections that did *not* result in any citation had a decrease of 31.3% in their non-MSD compensable claims rate.

As with the pooled ten-year study, the effect of removing MSD claims from the model strengthened the association of a decrease in compensable claims rates following DOSH activity (Foley et al., 2012).

Long-term patterns and conclusions

In general, this one-year study fits well within the range of the results found in the analysis of ten years of DOSH enforcement and consultation (see Figure 8). As this chart shows, over the long-term the DOSH activity showing the greatest association with decreasing claims rates is enforcement activity in the fixed-site industries. However, this year, DOSH inspection activity had its greatest effect among the non-fixed-site industries. Consultation activity, by contrast, was consistent with previous years' results in showing greater effect in fixed-site industries, particularly among medium-sized firms. Complaint-driven unprogrammed inspections had greater effect on decreasing claims rates among fixed-site workplaces than did programmed visits. However, the pattern was reversed in non-fixed-site workplaces. This is perhaps due to the nature of inspection visits to construction work-sites. While these are categorized as "programmed", they are often triggered by inspectors in the field observing hazardous or non-compliant activities occurring. In this regard they share some similarities with complaint- or referral-based inspections in that there is prior information on hazards at the site available to the inspector prior to launching an inspection. Another view of the results over the seventeen annual studies highlights the trends over time in claims rate changes following DOSH activity using a five-year moving average in order to reduce the year-to-year variation (Figure 9). This chart shows that, for inspections, the weakest association with claims rate declines occurred during the period from 2006 to 2010. Since that time, inspections appear to

be returning to the levels of effectiveness that they had in the earlier years. For consultations among fixed-site industries the story has been of one rising effectiveness over the entire period. For consultations among non-fixed-site industries, initial ineffectiveness in the period from 1999 through 2007 was followed by a substantial improvement in the years since 2014.

In general, the magnitude of the decline in compensable claims rates following DOSH activity suggests that these interventions may trigger broad improvements in safety practices at visited workplaces that result in preventing injuries.

This study suggests enforcement inspections continue to make substantial contributions to reaching the agency's goal of reducing the workplace injury and illness rates in Washington State.

Figure 1. Extraction of eligible study accounts from Washington workers' compensation employer account database, SFY 2015-2018.

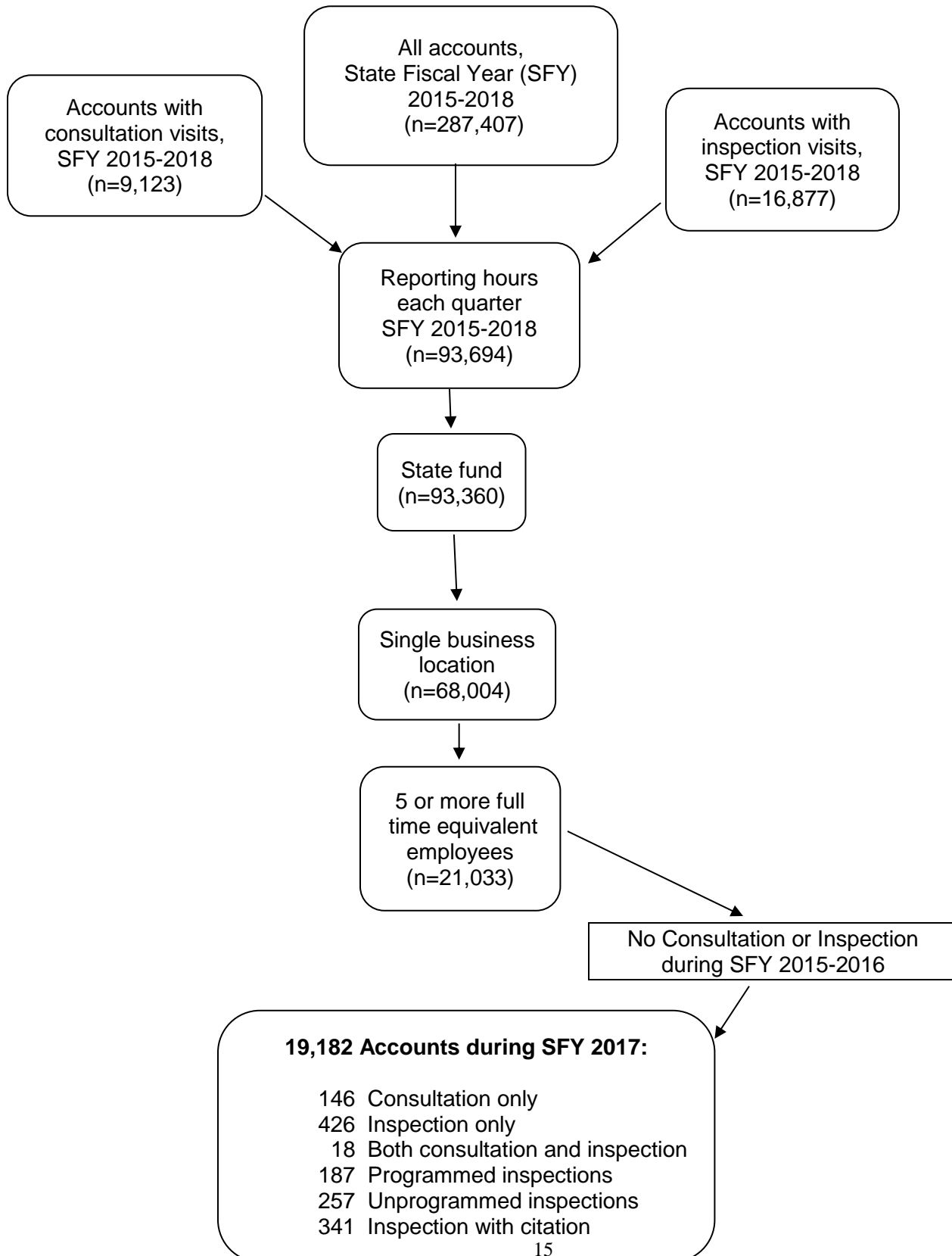


Figure 2: Percent Change in Compensable Claims Rate: No DOSH vs Enforcement vs Consultation, by Industry Type, 2017-2018

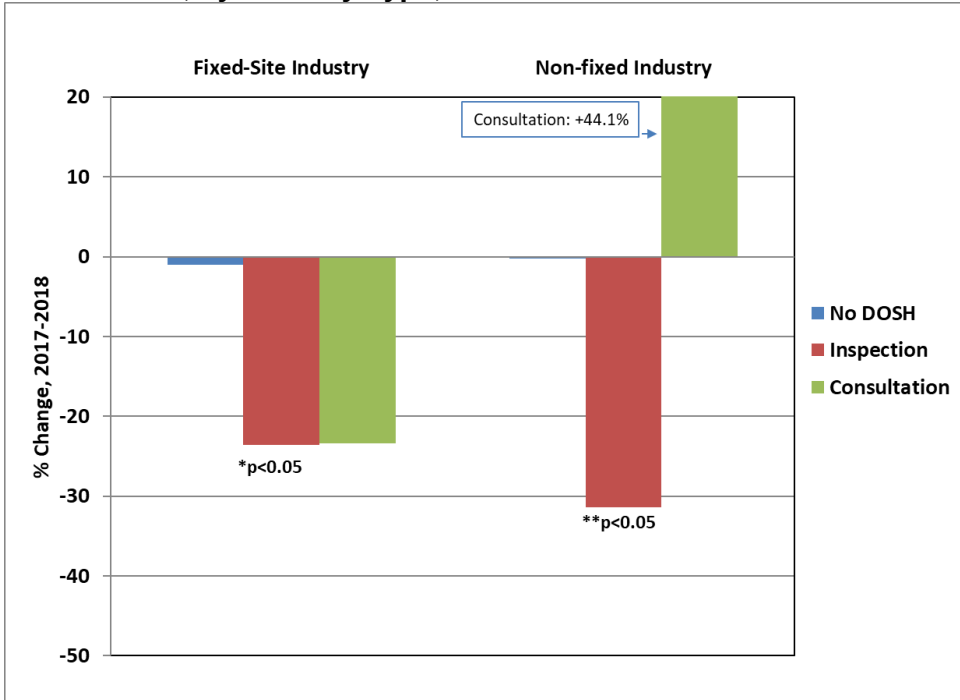
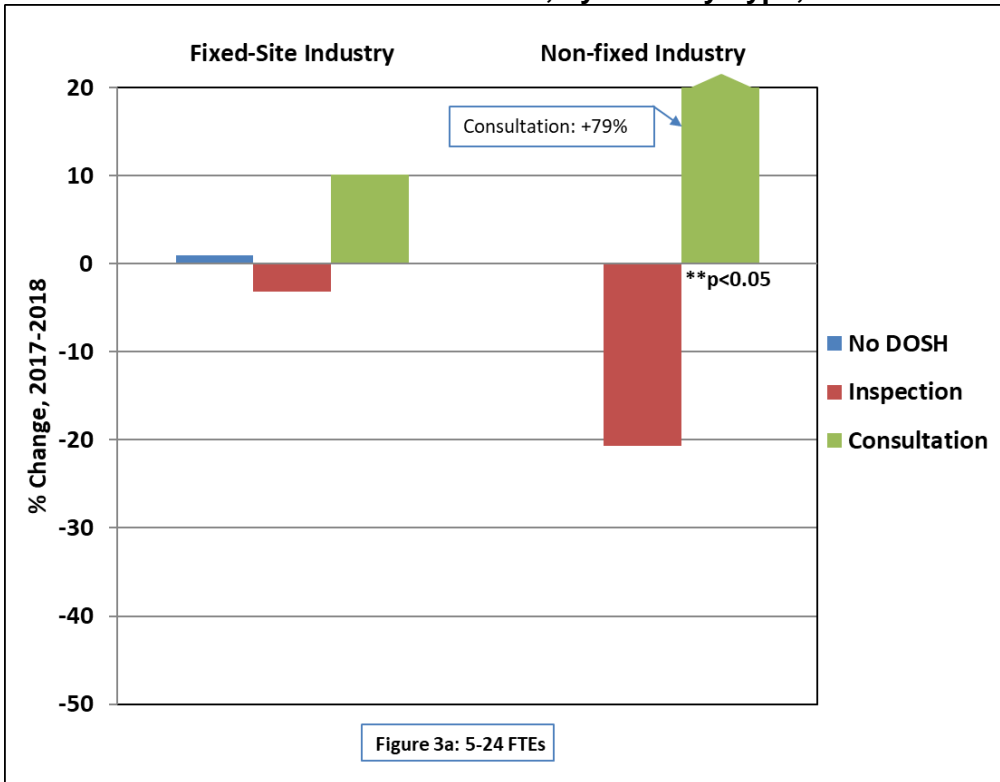


Figure 3a-b-c: Percent Change in Compensable Claims Rate, by Size Category: No DOSH vs Enforcement vs Consultation, by Industry Type, 2017-2018



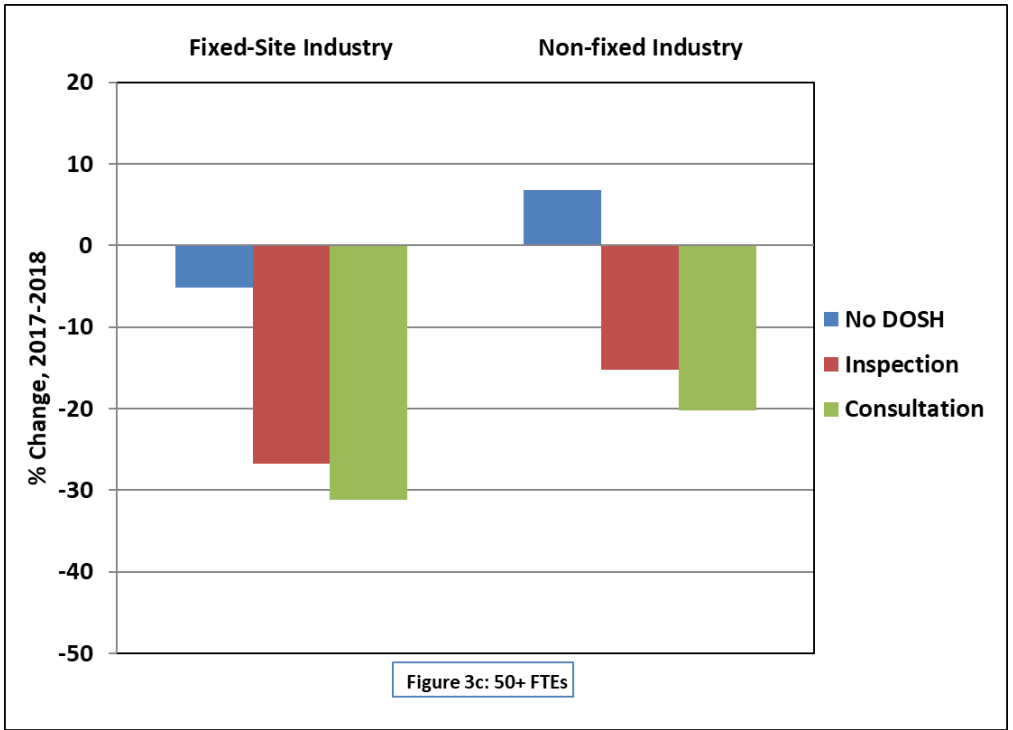
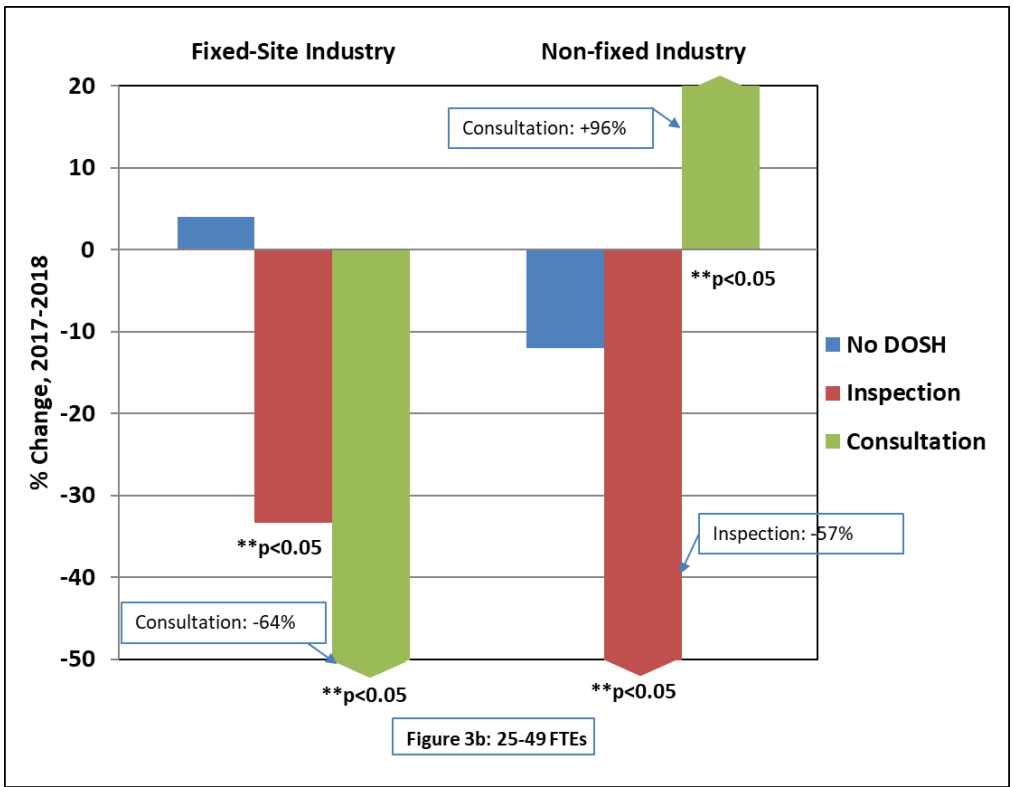


Figure 4: Percent Change in Non-MSD Compensable Claims Rate, No DOSH vs Enforcement vs Consultation, by Industry Type, 2017-2018

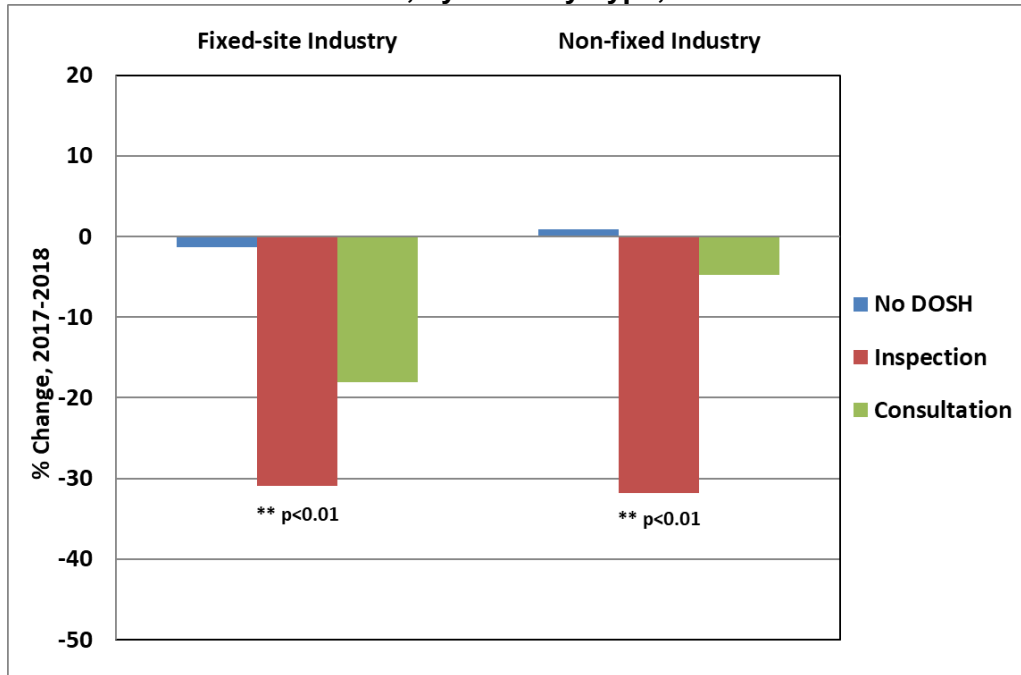


Figure 5: Percent change in Compensable Claims Rate, No DOSH vs DOSH/Programmed vs DOSH/Unprogrammed, by Industry Type, 2017-2018

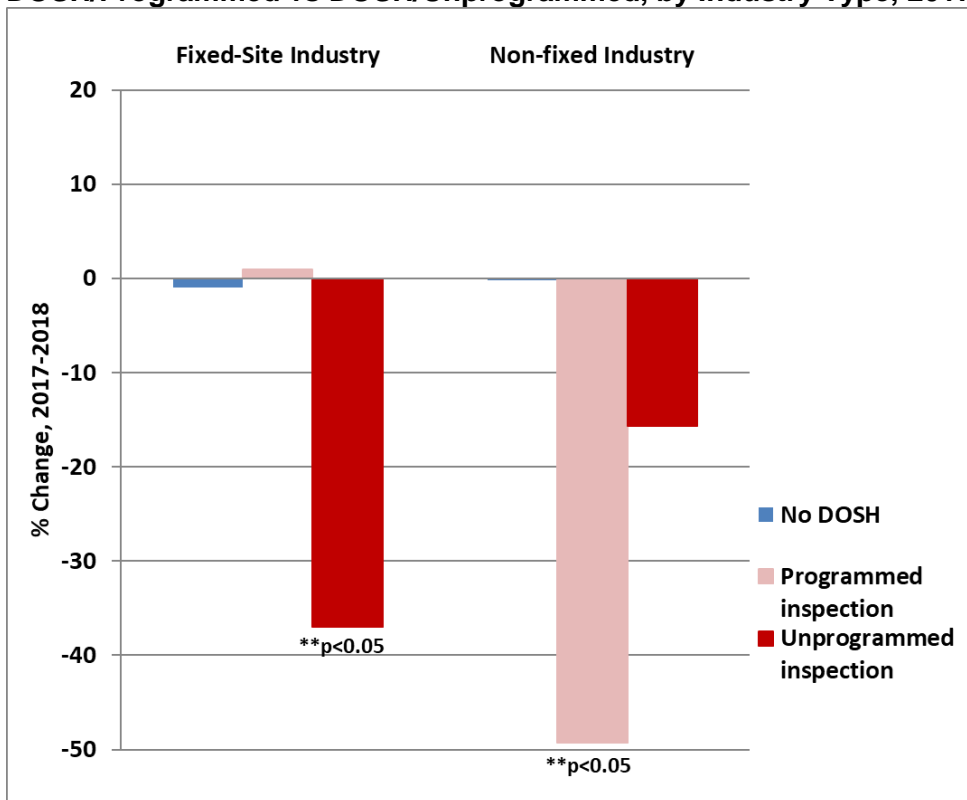


Figure 6: Percent change in Compensable Claims Rate, No DOSH vs DOSH/No Citation vs DOSH/Yes Citation, by Industry Type, 2017-2018

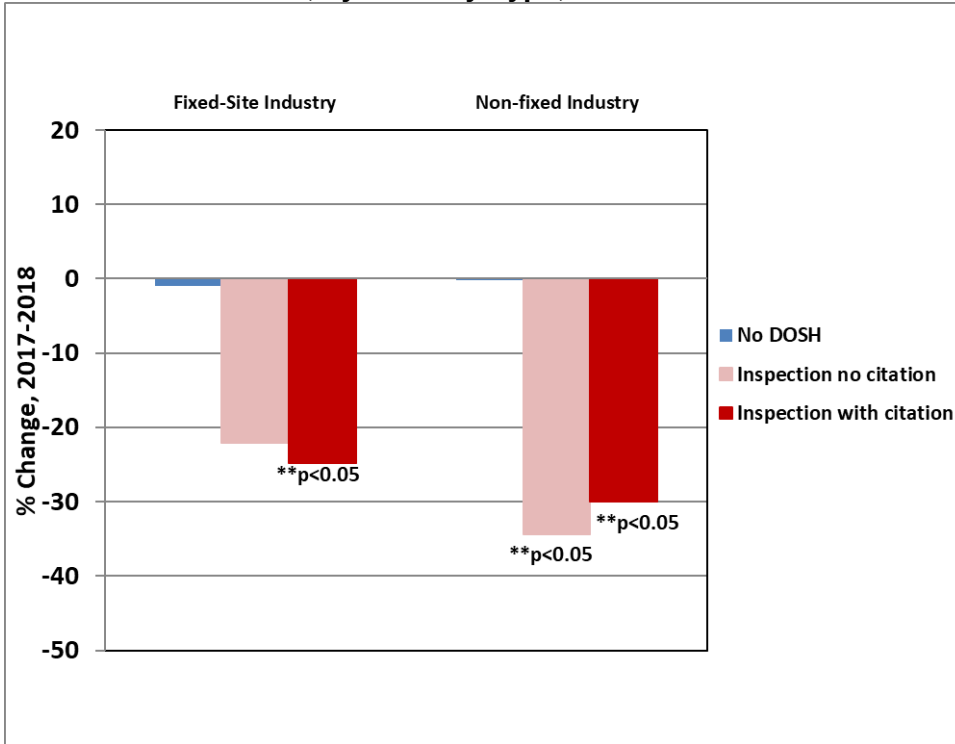


Figure 7: Percent change in Non-MSD Compensable Claims Rate, No DOSH vs DOSH/No Citation vs DOSH/Yes Citation, by Industry Type, 2017-2018

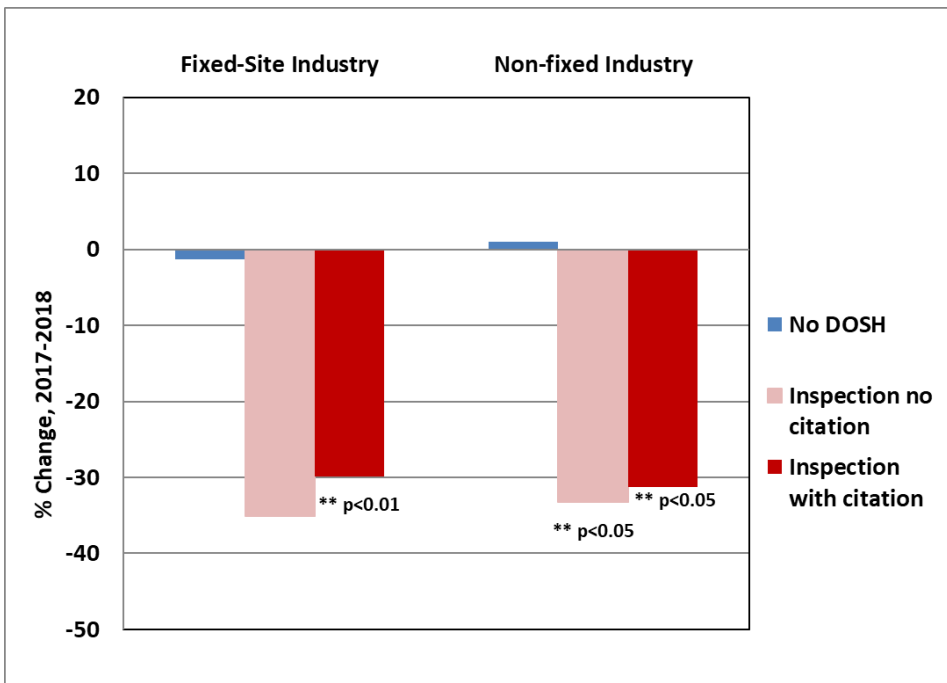


Figure 8: Annual Studies of DOSH Activity and Compensable Claim Rate Change, 1999-2017

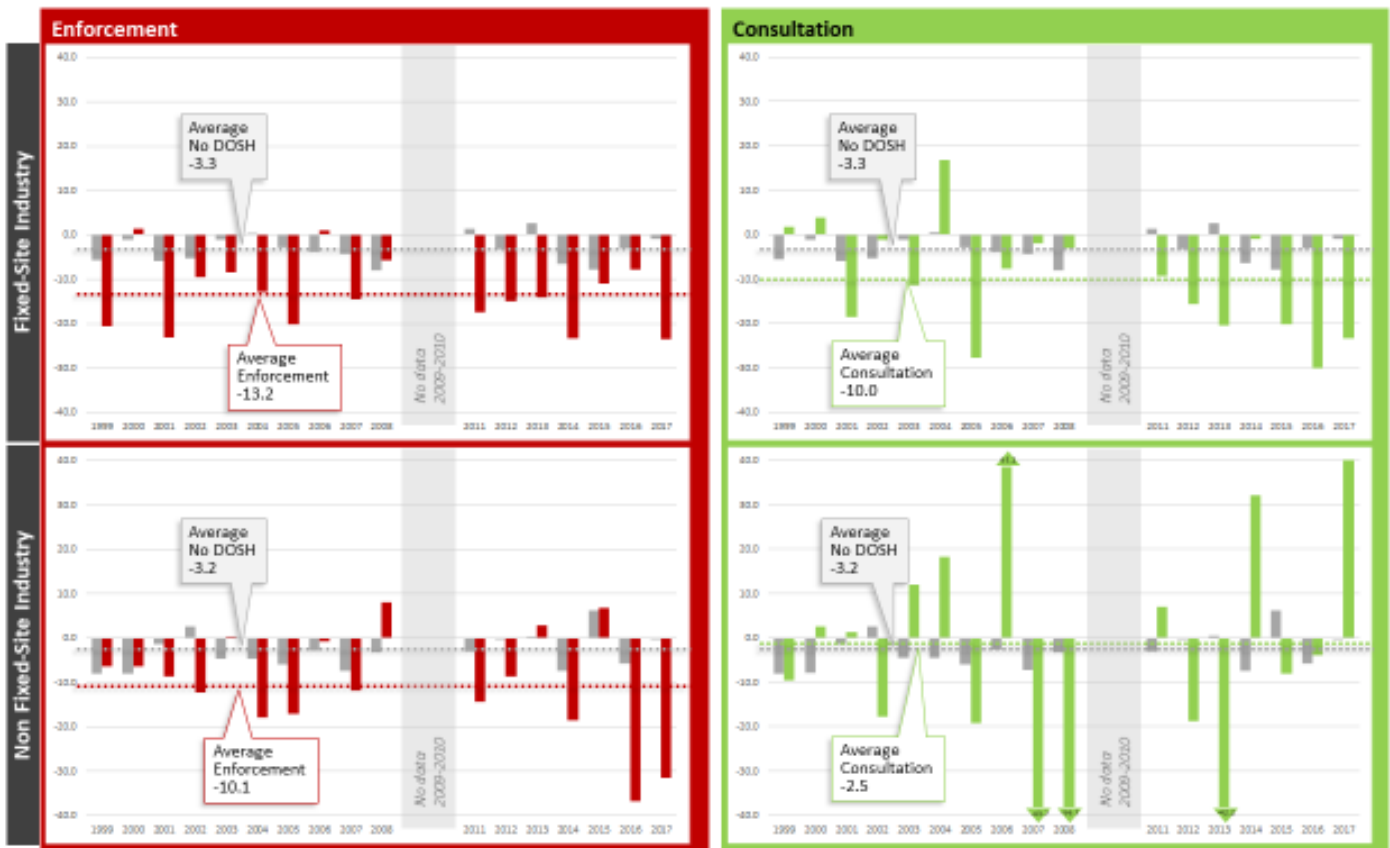
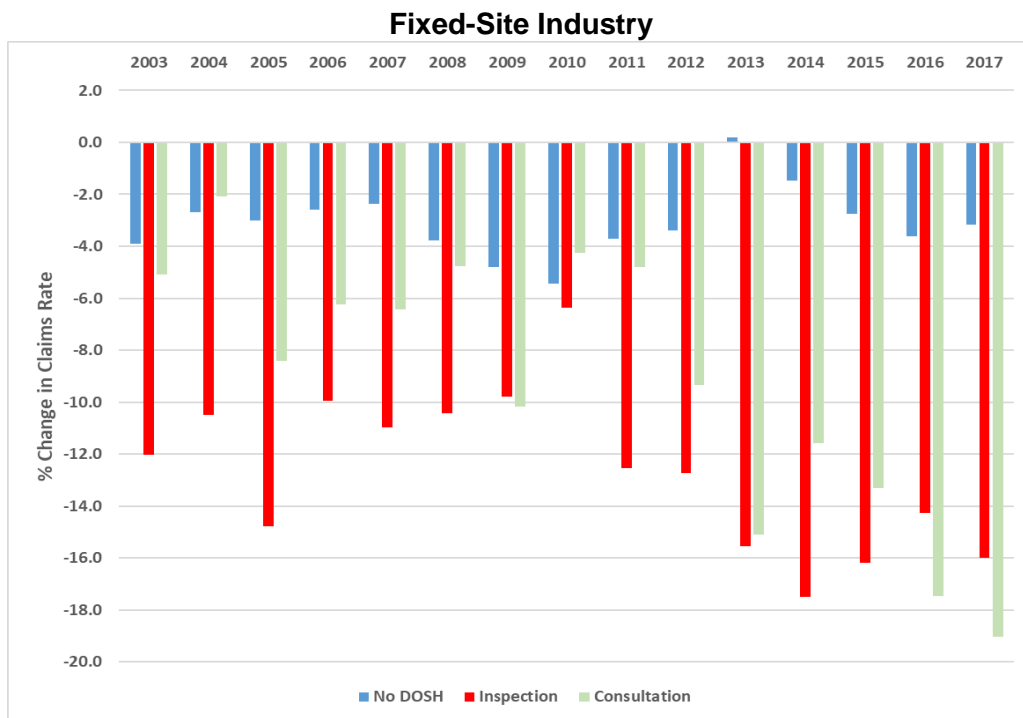
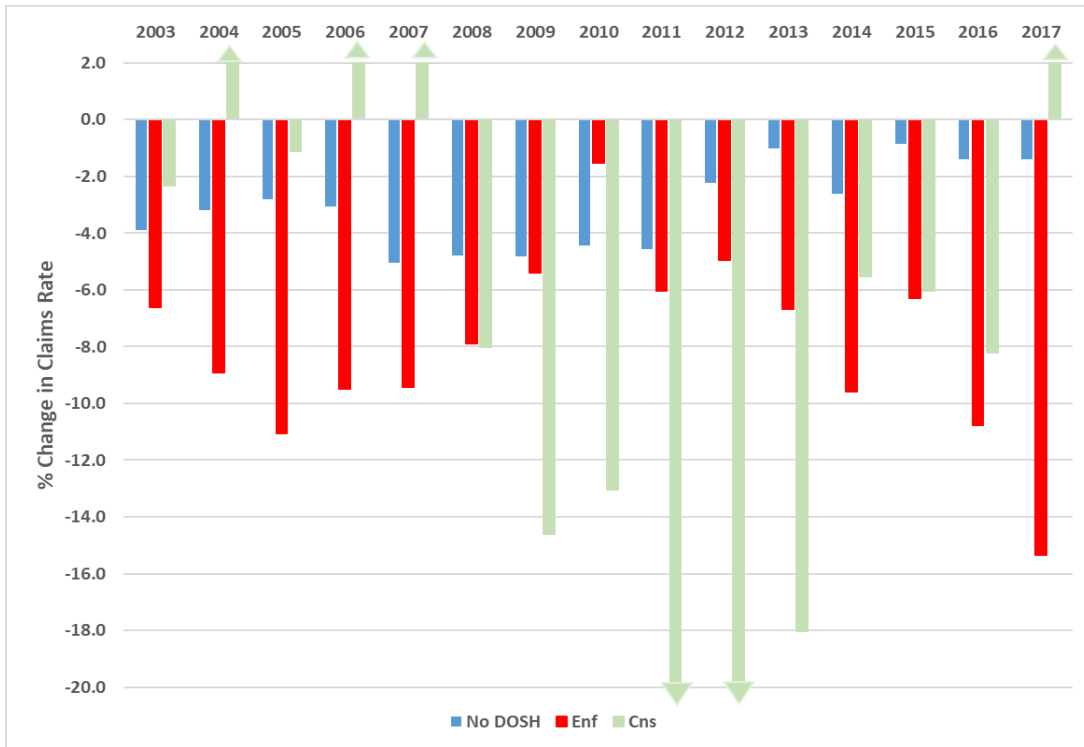


Figure 9: Annual Studies of DOSH Activity and Compensable Claim Rate Change, Five-Year Moving Average of Impact: Activity Years 1999-2017



Non-Fixed Industry



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