DOSH Compliance and Consultation Visits and Compensable Claims Rates in Washington State, 2016-2017

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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

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Executive Summary

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, 2018). But due to the greater volatility of claims rates at ‘non-fixed-site’ businesses and the small numbers of consultation visits satisfying our study selection criteria, several annual analyses did not find statistically significant changes among ‘non-fixed-site’ businesses receiving enforcement visits or at business receiving only consultation visit(s) during the same evaluation periods.

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 2016 than that at businesses not receiving any DOSH visits. The impact of DOSH activities on compensable claims rates during SFY 2016-2017 was evaluated separately for fixed and the non-fixed-site industries for all accounts and for just smaller-sized businesses (5-24 FTEs). 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) 2014-2017.
2. State Fund companies.
3. Companies with a single business location.
5. Companies with no DOSH activity during the two years prior to the year of the DOSH activity (SFY 2014-2015).

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 18,618 accounts which satisfied all the study criteria represented 6.5% of the 284,633 identified accounts reporting hours in at least one quarter during SFY 2014-2017.
- 211 accounts had at least one DOSH consultation visit, and
- 389 accounts had at least one inspection,
- 22 accounts had at least one inspection AND one consultation visit during SFY 2016.
- Of the 389 accounts with DOSH enforcement inspections, 164 (42%) received at least one DOSH programmed inspection
- 318 (82%) of all inspections resulted in at least one citation during SFY 2016.
It should be noted that, as compared to last year’s study, the number of accounts with inspections in the baseline year (SFY 2016) has decreased. This decrease continues 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 4,083 in SFY 2014-2017. The number of inspections which satisfied our selection criteria fell 27%, from 563 in SFY 2014 to 389 in SFY 2015. Most of this decrease came from a 42% decrease in the number of “programmed” inspections (285 in SFY 2014, decreasing to 164 in SFY 2016). Over a longer period, the share of total inspections that are “programmed” has fallen from 71% in SFY 2011 to 42% in SFY 2016. In addition, there is an increasing share of non-fixed industry workplaces in this year’s cohort as compared to previous years. In SFY 2011, for example, non-fixed industry inspections comprised 22% of the eligible inspections studied. In the SFY 2016 cohort in this year’s study this group represents 40% of the total.

Finally, from the period SFY 2009-2012 to the period of the current study (SFY 2014-2017) 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 10.5% to 5.7% of total business locations. Consultations have fallen from 4.2% to 2.8% as a proportion of all business locations. For this study, 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 (see Figure 2), although the decrease was not statistically significantly greater than that for the non-DOSH activity accounts. For non-fixed-site industries inspections were associated with substantial and statistically significant declines in claims rates. In both fixed and non-fixed 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 compensable claims rates in the pre-study period:

- **Fixed-site industries**
  - Workplaces without any DOSH activity experienced an average decrease in their compensable claims rate of 3.1% from SFY2016 to SFY2017.
  - DOSH inspected workplaces had a decrease of 7.9% in their compensable claims rate, but this was not statistically significantly different from the NO DOSH rate change (p=0.616).
  - DOSH consultations were associated with a 30% decline in compensable claims rates. This was statistically different from the NO DOSH cohort (p=0.030).

- **Non-fixed-site industries**
  - Workplaces without any DOSH activity experienced an average increase in their compensable claims rate of 5.8% from SFY2016 to SFY2017.
  - DOSH inspected workplaces had a decrease of 36.7% in their compensable claims rate, and this was statistically significantly different from the NO DOSH rate change (p<0.0001).
  - DOSH consultations were associated with a 9.7% decrease in compensable claims rates. However, this was not statistically different from the NO DOSH cohort (p=0.867).
Impact of DOSH enforcement inspections and consultations on compensable claims rates in smaller businesses (5-24 FTEs):

Results of DOSH enforcement activity among smaller-sized establishments differ from those among workplaces of larger size. Inspections were associated with a more substantial decrease in claims rates one year following the activity in both fixed- and non-fixed-site industries (see Figure 3). The association was especially strong and was statistically significant in small non-fixed-site businesses. Claims rate changes in workplaces that received consultation visits decreased by more than in the non-DOSH accounts, particularly among small, fixed-site businesses. After adjusting for average size of the accounts and the compensable claims rates in the pre-study period:

- **Fixed-site industries**
  - Workplaces under 25 FTEs without any DOSH activity experienced an average decrease in their compensable claims rate of 6.4% from SFY2016 to SFY2017.
  - DOSH inspected workplaces had a decrease of 19.9% in their compensable claims rate, although this was not statistically significantly different from the NO DOSH rate change (p=0.409).
  - DOSH consultations were associated with a 58.2% decline in compensable claims rates. This was statistically different from the NO DOSH cohort (p=0.002).

- **Non-fixed-site industries**
  - Workplaces without any DOSH activity experienced an average *increase* in their compensable claims rate of 4.1% from SFY2016 to SFY2017.
DOSH inspected workplaces had a decrease of 44.1% in their compensable claims rate, and this was statistically significantly different from the NO DOSH rate change (p<0.0001).

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).

Impact of DOSH enforcement on non-musculoskeletal compensable claims rates:

Because there is no specific rule 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 fixed-site businesses (compare Figure 4 to Figure 2). 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 experienced no change in their non-MSD compensable claims rate of from SFY2016 to SFY2017.
- DOSH inspected workplaces had a decrease of 19.6% in their non-MSD compensable claims rate, although this was not quite statistically significantly different from the NO DOSH rate change (p=0.113).
- DOSH consultations were associated with a 26.9% decline in non-MSD compensable claims rates. This was also not quite statistically different from the NO DOSH cohort (p=0.121).
o Non-fixed-site industries
   o Workplaces without any DOSH activity experienced an average decrease in their non-MSD compensable claims rate of 6.5% from SFY2016 to SFY2017.
   o DOSH inspected workplaces had a decrease of 32.7% in their non-MSD compensable claims rate. This was significantly different from the NO DOSH rate change (p=0.015).
   o DOSH consultations were also associated with a 31.1% decrease in non-MSD compensable claims rates. However, due to small numbers of such activities (n=49) this was not statistically different from the NO DOSH cohort (p=0.260).

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 continued to decline as a share of the total number of inspections in the eligible accounts. In SFY 2016 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 both kinds of inspections having roughly similar associations with claims rate declines among non-fixed-site businesses. However, among fixed-site firms, claims rates increased following programmed site-visits. This is similar to the previous year’s cohort. With such small numbers of programmed visits, however, more years of data will be required to know whether a new pattern has emerged. After adjusting for average size of the accounts and the compensable claims rates in the pre-study period:

- **Fixed-site industries**
  - Workplaces without any DOSH activity experienced an average decrease in their compensable claims rate of 3.1% from SFY2016 to SFY2017.
  - Workplaces receiving programmed DOSH inspections had an increase of 25.1% in their compensable claims rate, although this was not quite statistically significantly different from the NO DOSH rate change (p=0.117).
  - Workplaces receiving unprogrammed DOSH inspections had a decrease of 20.7% in their compensable claims rates, which was not quite statistically different from the NO DOSH cohort (p=0.102).

- **Non-fixed-site industries**
  - Workplaces without any DOSH activity experienced an average decrease in their compensable claims rate of 5.7% from SFY2016 to SFY2017.
Workplaces receiving programmed DOSH inspections had a decrease of 32.3% in their compensable claims rate, which was marginally significantly different from the NO DOSH rate change (p=0.065).

Workplaces receiving unprogrammed DOSH inspections had a decrease of 39.1% in compensable claims rates. This was statistically different from the NO DOSH cohort (p<0.0001).

When this analysis was repeated on the smaller-sized workplaces there was a greater association with a decrease in compensable claims rate for unprogrammed inspections, with the unprogrammed inspections’ impact at 24% and 45% reduction at fixed and non-fixed-site industries, respectively.

**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 substantially greater impact among non-fixed-site businesses than they did in fixed-sites. Conversely, inspections without citations had greater impact among fixed-site businesses. (see Figure 6). This is contrary to results seen in most previous one-year studies, as well as in the ten-year compiled study, where inspections with citations had consistently stronger associations with decreasing claims rates (Foley et al., 2012).

**Fixed-site industries**

- Workplaces without any DOSH activity experienced an average decrease in their compensable claims rate of 3.1% from SFY2016 to SFY2017.
- Workplaces receiving DOSH inspections with a citation had a decrease of only 0.4% in their compensable claims rate. This was not statistically significantly different from the NO DOSH rate change (p=0.803).
Workplaces receiving DOSH inspections without citation had a decrease of 35.8% in their compensable claims rate. However, this was not quite statistically significantly different from the NO DOSH rate change (p=0.106).

Non-fixed-site industries

Workplaces without any DOSH activity experienced an average decrease in their compensable claims rate of 5.7% from SFY2016 to SFY2017.

Workplaces receiving DOSH inspections with a citation had a decrease of 42.5% in their compensable claims rate. This was statistically significantly different from the NO DOSH rate change (p<0.0001).

Workplaces receiving DOSH inspections without citation had an increase of 3.9% in their compensable claims rate. However, this was not statistically significantly different from the NO DOSH rate change (p=0.714).

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 seen for the all-claim rate. It is not known why conflicting patterns are seen between the two industrial classes.

Fixed-site industries
Workplaces without any DOSH activity experienced no change in their non-MSD compensable claims rate % from SFY2016 to SFY2017.

Workplaces receiving DOSH inspections with a citation had a decrease of 14.9% in their non-MSD compensable claims rate. However, this was not statistically significantly different from the NO DOSH rate change (p=0.288).

Workplaces receiving DOSH inspections that did not result in any citation had a decrease of 37.4% in their non-MSD compensable claims rate. This was also not statistically significantly different from the NO DOSH rate change (p<0.146).

Non-fixed-site industries

Workplaces without any DOSH activity experienced an average decrease in their non-MSD compensable claims rate of 6.4% from SFY2016 to SFY2017.

Workplaces receiving DOSH inspections with a citation had a decrease of 38.9% in their non-MSD compensable claims rate. This was statistically significantly different from the NO DOSH rate change (p=0.004).

Workplaces receiving DOSH inspections that did not result in any citation had an increase of 6% in their non-MSD compensable claims rate. This was not significantly different from the NO DOSH rate change (p=0.692).

Unlike in the pooled ten-year study, the effect of removing MSD claims from the model did not consistently strengthen the association of a decrease in compensable claims rates following DOSH activity (Foley et al., 2012). Again, the small numbers of DOSH activity eligible for study in a one-year framework may be partially responsible for this result.

Long-term patterns and conclusions
In general, this one-year study fits 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, with 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 smaller-sized firms. Complaint-driven unprogrammed inspections once again had greater effect on decreasing claims rates than did programmed visits. Another view of the results over the sixteen 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 2014-2017.

- All accounts, State Fiscal Year (SFY) 2014-2017 (n=284,633)
  - Accounts with consultation visits, SFY 2014-2017 (n=8,096)
  - Accounts with inspection visits, SFY 2014-2017 (n=16,330)

- Reporting hours each quarter SFY 2014-2017 (n=92,116)
  - State fund (n=91,782)
    - Single business location (n=67445)
      - 5 or more full time equivalent employees (n=20,593)
  - No Consultation or Inspection during SFY 2014-2015

18,618 Accounts during SFY 2016:
- 189 Consultation only
- 367 Inspection only
- 22 Both consultation and inspection
- 164 Programmed inspections
- 247 Unprogrammed inspections
- 318 Inspection with citation
Figure 2: Percent Change in Compensable Claims Rate: No DOSH vs Enforcement vs Consultation by Industry Type, 2016-2017

Figure 3: Percent Change in Compensable Claims Rate, FTE 5-24: No DOSH vs Enforcement vs Consultation by Industry Type, 2016-2017
Figure 4: Percent Change in Non-MSD Compensable Claims Rate, No DOSH vs Enforcement vs Consultation, by Industry Type, 2016-2017

Figure 5: Percent Change in Compensable Claims Rate, No DOSH vs DOSH/Programmed vs DOSH/Unprogrammed, by Industry Type, 2016-2017
Figure 6: Percent change in Compensable Claims Rate, No DOSH vs DOSH/No Citation vs DOSH/Yes Citation, by Industry Type, 2016-2017

Figure 7: Percent change in Non-MSD Compensable Claims Rate, No DOSH vs DOSH/No Citation vs DOSH/Yes Citation, By Industry Type, 2016-2017
Figure 8: Sixteen Annual Studies of DOSH Activity and Compensable Claim Rate Change, 1999-2016
Figure 9: Sixteen Annual Studies of DOSH Activity and Compensable Claim Rate Change, Five-Year Moving Average of Impact: Activity Years 1999-2016

**Fixed-Site Industry**

**Non-Fixed Industry**
Reference List


