An Atlas Injury Prevention Solutions White Paper

October 2022

Onsite Early Intervention Services, Age, and Injury Rates within Manufacturing

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Contents

Introduction

How well do we understand how onsite early intervention programs impact injury rates within manufacturing environments? Does employee age affect those programs? This paper will investigate these questions using data provided by 18 client companies.

Overview & Data Collection

Data was collected from a subset of manufacturing clients Atlas served over four years.

Definitions

A review of the terms used during the analysis and development of graphs is provided.

Participants

There were 18 client companies, encompassing 55 individual sites, evaluated for the study. The characteristics of the population involved in the study are presented.

Onsite Early Intervention, Age, and Injury Rates

The relationships between onsite early intervention programs and their components, employee age, and injury rates of companies are discussed. Recommendations on how the findings should impact a health and safety program are provided.

Conclusions

A review of the relationships learned and primary considerations are presented.

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INTRODUCTION

When employees experience work-related injuries or illnesses, employers must provide proper care. Often this is done through a visit to a doctor's office, Urgent Care center, or hospital Emergency Room. However, if an employee's concern is musculoskeletal discomfort, industrial athlete or Early Intervention (EI) programs are offered by several injury prevention organizations as another care option.

Atlas Injury Prevention Solutions (Atlas IPS) provides EI programs to many employers where trained EI specialists offer full or part-time services onsite or as needed through local physical therapy clinics. An EI program aims to assess the employee's situation and, if appropriate, address symptoms through OSHA-approved first-aid measures.

According to Section 1904 of OSHA's recordkeeping regulation, employers must record work-related injuries and illnesses that require medical treatment beyond first aid. For example, first aid care for musculoskeletal concerns may include ice or heat, over-the-counter anti-inflammatories, and elastic tape or non-rigid splinting.

Furthermore, recent OSHA letters of interpretation state that soft tissue management and "exercises that are generally part of safe work practices" are also considered first aid for the early stages of worker discomfort. Therefore, based on OSHA's guidance, trained EI specialists can address musculoskeletal discomfort in an effective and compliant manner.

With Atlas IPS onsite EI programs, services move beyond simply addressing employee discomfort. EI specialists work with the employee at their worksite to identify the root cause of discomfort and coach the employee on how to complete tasks more safely or make ergonomic recommendations to the employer on workstation design. In addition, EI specialists can provide many other proactive services, including job demands analysis, wellness programs, stretching programs, and employee education.

The primary purpose of this white paper is to examine the effectiveness of EI programs in manufacturing environments. We will take an in-depth look at the effects of EI programs and their specific components on client companies' injury rates. We will also examine the impact of employee age on EI services.

Finally, we will define these relationships by analyzing data collected from current Atlas client companies and, if possible, compare our findings to recent research. The objective is to help health and safety leaders better understand what impact EI programs may have on injury rates.

OVERVIEW AND DATA COLLECTION

Data was collected by client health and safety personnel and Atlas IPS EI specialists working within manufacturing environments. The data was derived from 18 companies, 55 locations in US and Canada, from 2018 to 2021, and included the type of services offered, employee contacts, average employee age, and injury rates. This paper also used injury rate data provided by the Bureau of Labor Statistics (BLS) for comparison.

Atlas IPS uses an online database to collect data for tracking and evaluation purposes.

DEFINITIONS

The following are the service and measurement terms used within this paper:

Total Recordable Incident Rate (TRIR): A mathematical computation that considers how many OSHA recordable incidents a company has per number of hours worked. TRIR helps compare metrics in workplaces and industries.

Reactive Contacts/Hour: The number of reactive service contacts per hour an EI specialist makes with employees who report discomfort.

Proactive Contacts/Hour: The number of proactive service contacts per hour an EI specialist makes with employees to prevent injuries.

Resolution Rate: The number of employees seeking first aid from an EI specialist that report a decrease in discomfort and do not require referral to a doctor's office, Urgent Care center, or hospital Emergency Room.

Solutions Generated/Year: The number of solutions the company generates with the assistance of an ergonomic/safety audit in a given year.

The following statistical analysis tools and terms are also used in this paper:

Significant Difference: When comparing differences between groups, a T-test is used to compare the averages of the groups (mean). A probability value (p-value) determines if the differences between the means are significant or are more likely due to chance. For example, a significant difference would have a p-value <.05 or a less than 5% chance that the differences are due to chance alone. Therefore, when a considerable increase or decrease is described below, the data demonstrates a p-value <.05.

Correlation Coefficient (r): A measure of the strength and direction of the linear relationship between two variables. The value of r is always between +1 and –1. The correlation must be greater than +.50 or less than -.50 to be considered significant.

Positive Correlation: This occurs when there is an r-value greater than 0. A positive correlation exists when one variable decreases as the other variable decreases or one variable increases while the other increases. An r-value of +1.00 is considered a perfect positive correlation.

Negative Correlation: This occurs when there is an r-value less than 0. A negative correlation is a relationship between two variables in which one increases as the other decreases and vice versa. For example, an r-value of -1.00 is considered a perfect negative correlation.

PARTICIPANTS

This study examined data from 18 manufacturing companies at 55 locations, using Atlas IPS to provide onsite EI services between 2018 and 2021.

As an additional reference point, the BLS has stated that the average age of employees in US manufacturing companies is 44.1. Therefore, we separated the client companies into two groups: those over 44 and those under 44.

The figures below give a breakdown of the participating companies.

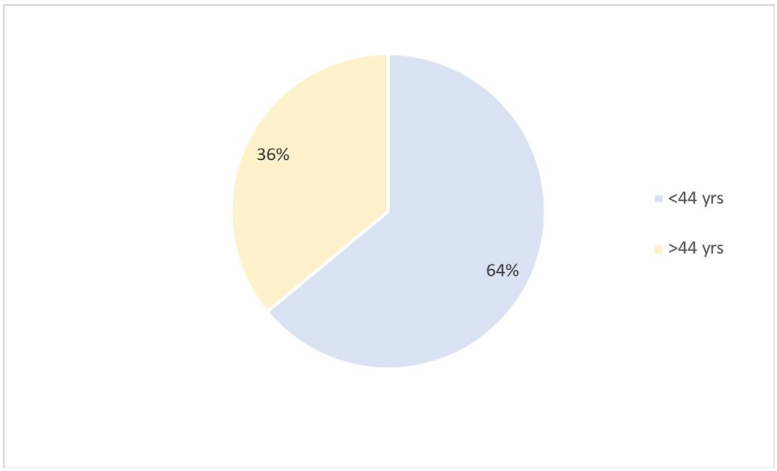

Figure 1: Average Age of Employees

Figure 1 represents the breakdown of the companies based on the average age of their employees. Companies were placed in groups over or under an average age of 44.

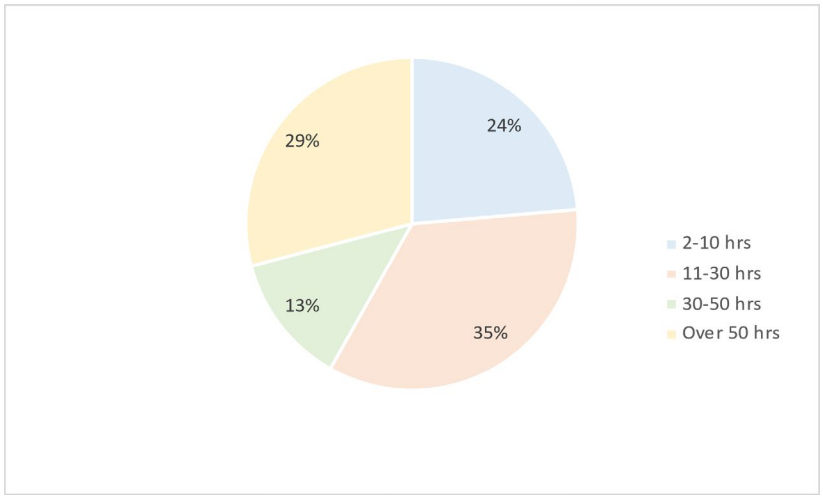

Figure 2: Onsite Hours per Month

Figure 2 represents the breakdown of the companies in the study based on the number of hours per month the EI specialist works onsite. The number of hours worked is based on site employment levels, shift configuration, and the scope of services provided.

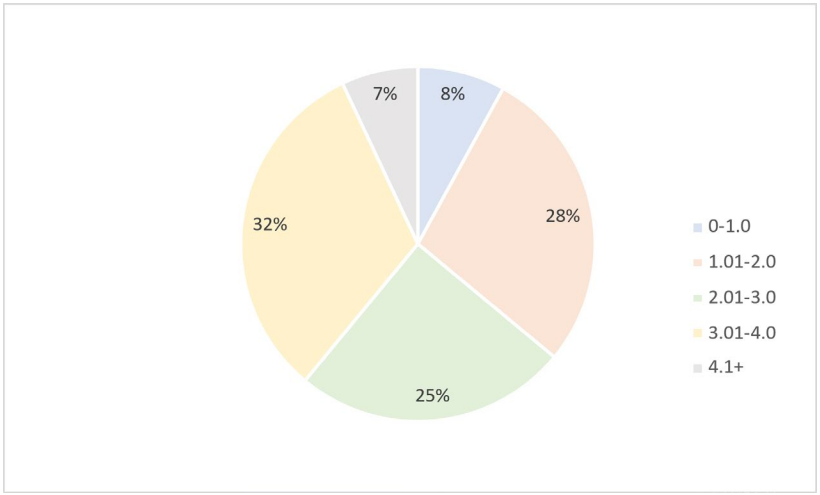

Figure 3: First Year TRIR

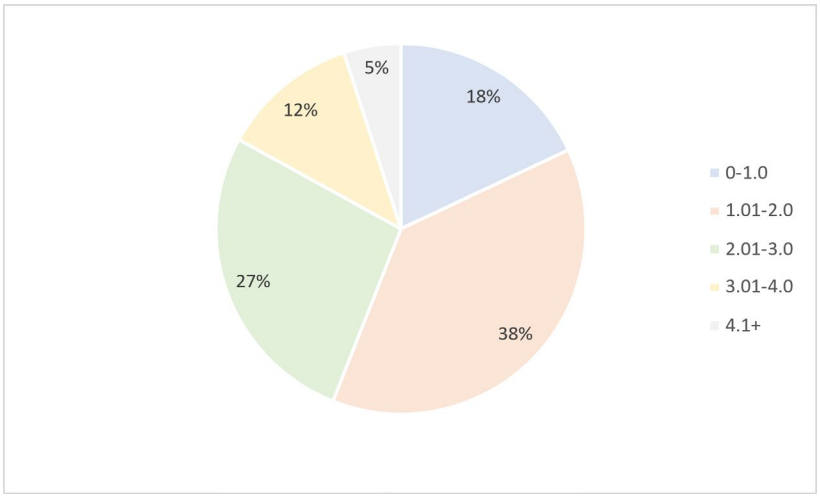

Figure 4: Second Year TRIR

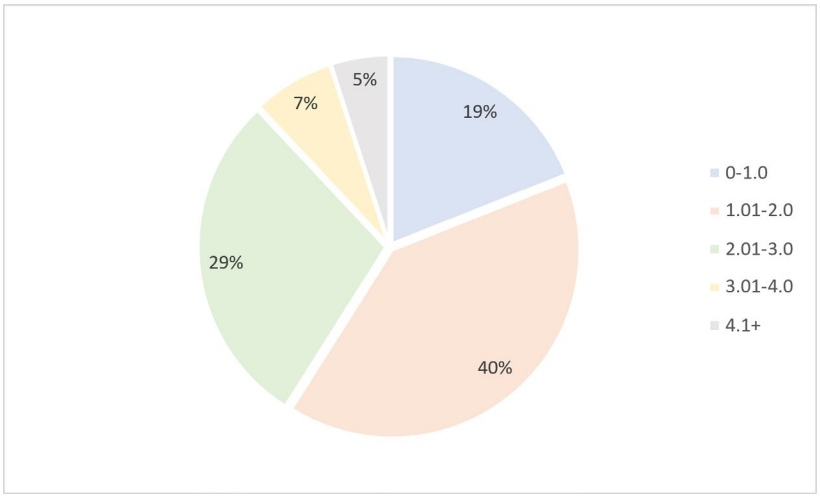

Figure 5: Third Year TRIR

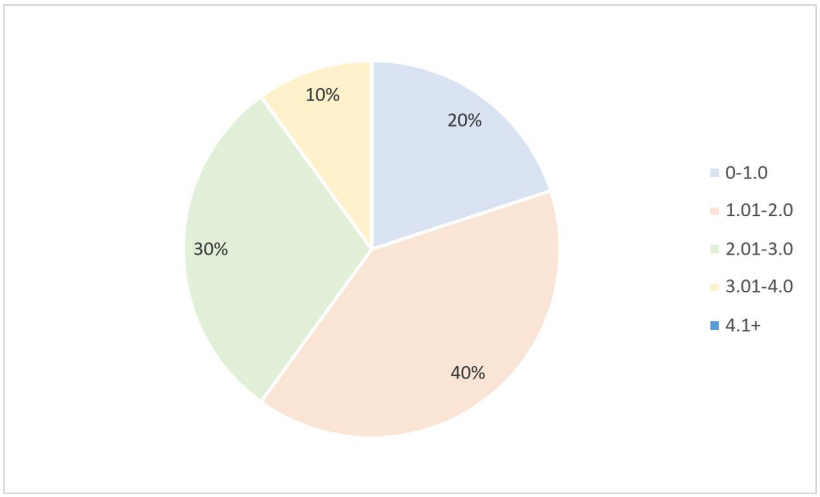

Figure 6: Fourth Year TRIR

Figures 3 through 6 represent the breakdown of companies studied based on their TRIR for the year of service with the Atlas Program.

ONSITE EARLY INTERVENTION, AGE, AND INJURY RATES

In 2015, Atlas released *Injury Prevention Through Early Intervention: Regulation and Results.* This paper thoroughly describes the OSHA guidelines and determinants for musculoskeletal injuries. The second part of the paper reviewed current research on the benefits of early treatment of musculoskeletal injuries.

This paper intends to move from guidelines and research to measurable outcomes and, more specifically, compare injury rates for manufacturing companies with EI programs and BLS averages and understand how employee age impacts those programs.

The BLS releases a yearly summary of injury statistics based on the type of industry, among other factors. For this white paper, we are looking at the manufacturing sector. Figure 7 demonstrates the average TRIR according to the BLS data for the manufacturing industry. We will be using the BLS figures through 2020 for our data analysis as BLS has not released the 2021 numbers at the time of this paper's publication.

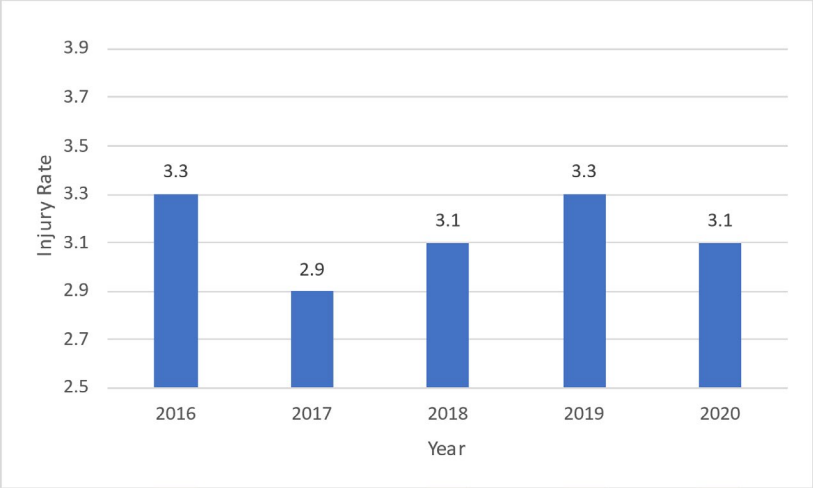

Figure 7: Manufacturing Industry Average TRIR Rate[3]

Using the injury rates above as the industry average, Figure 8 compares the client companies in our data set to find the percentage with TRIR rates below the industry average. Here we see a statistically significant increase in companies with better than industry-average TRIR rates as EI programs mature. Between the first and second years of Atlas EI services, there is a 29% improvement. The cohort improved from a slightly better-than-average TRIR rate (65%) to a

significant improvement over the industry average (84%). In years 3 (90%) and 4 (94%), there continues to be a gradual improvement in the cohort's TRIR rate.

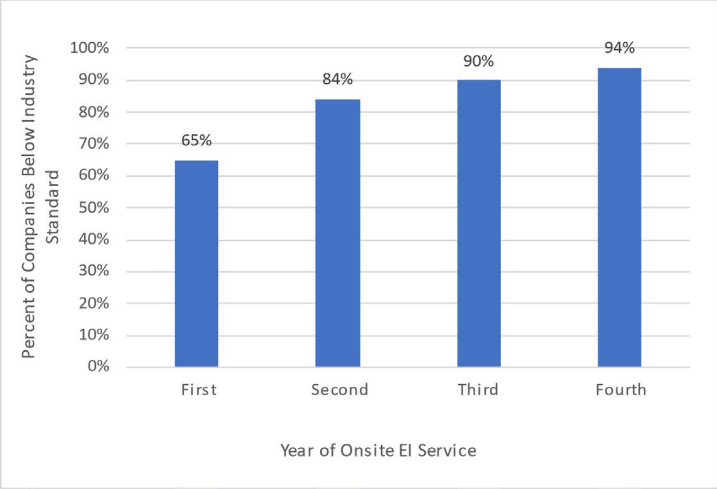

Figure 8: Percent of Companies Below Industry Average

This data demonstrates a strong positive correlation between EI services and decreased TRIR rates.

Further cohort analysis was done to differentiate between companies that have improved their injury rate and those that have seen their rate remain at the same level or increase. We compared the difference between the injury rates of companies during the first year of service and their current rate. This data, depicted in Figure 9, demonstrates a strong positive correlation between the presence of Atlas EI services and the decrease in injury rates.

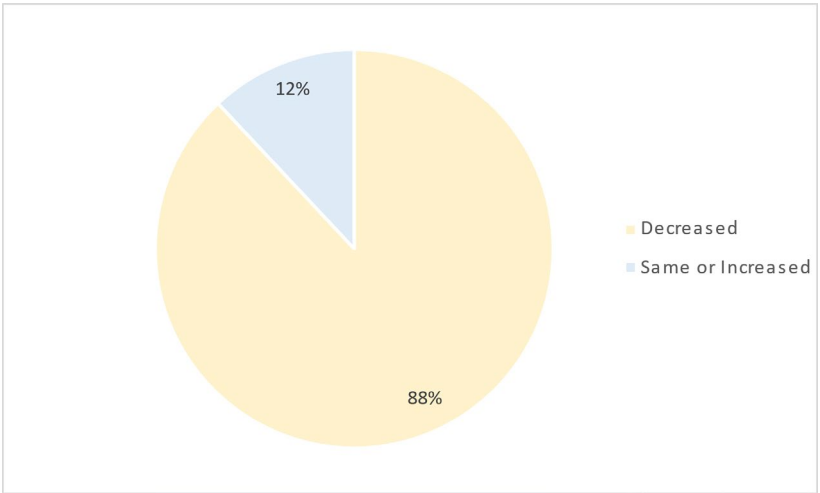

Figure 9: Change in Injury Rates

Next, this white paper aims to discover what EI services are most beneficial for TRIR reduction. For this analysis, we split the EI service statistics into proactive and reactive categories.

The first section of this paper will focus on interactions that the EI specialist had with employees that report discomfort and are in the EI first aid program or reactive contacts. Here we will discuss the success rate in keeping workers at work and avoiding unnecessary medical care.

The second part of the paper will look at the effect of proactive interactions, such as activities that look at processes, ergonomics, and employee health and wellness to prevent injuries from occurring. In this discussion, we will address the effects of solutions generated by the onsite professional on subsequent year injury rates.

Within each of the above sections, the paper will examine how both types of interactions are affected by average employee age.

Finally, the paper will look at how the rate at which the onsite professional connects with employees affects TRIR.

Reactive Interactions

When examining the impact of reactive services on TRIR rates, we considered overall resolution rates, reactive contacts per hour, and reactive contacts per first aid case.

Figure 10 demonstrates that 92% of employees seen by an EI specialist for first aid returned to work activities. In addition, these employees had no lost time, nor were they referred for medical care for the reported discomfort.

In addition, the data showed a 5% increase in successful cases in those companies with a below-average TRIR compared to their above-average TRIR counterparts.

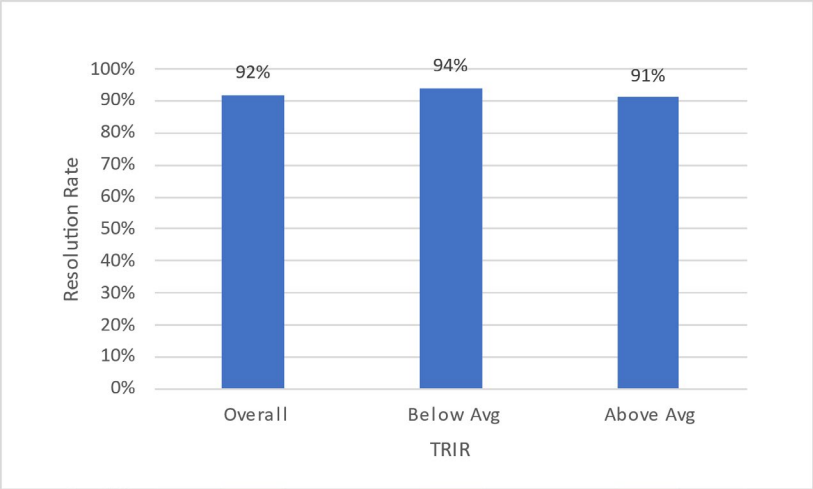

Figure 10: Resolution Rate vs. TRIR

Figure 11 compares the resolution rates between the two age groups. Here we see a slight increase in rates in the older average age group.

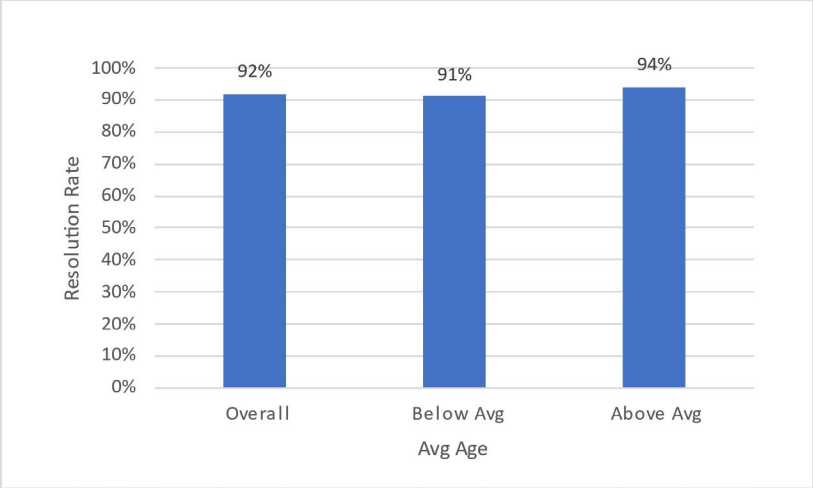

Figure 11: Resolution Rate vs. Average Age

Figure 12 demonstrates a significantly higher rate of contacts per case in companies with below-average TRIR rates. This significant difference reflects the importance of follow-up and interaction with employees that have discomfort within lower-performing companies.

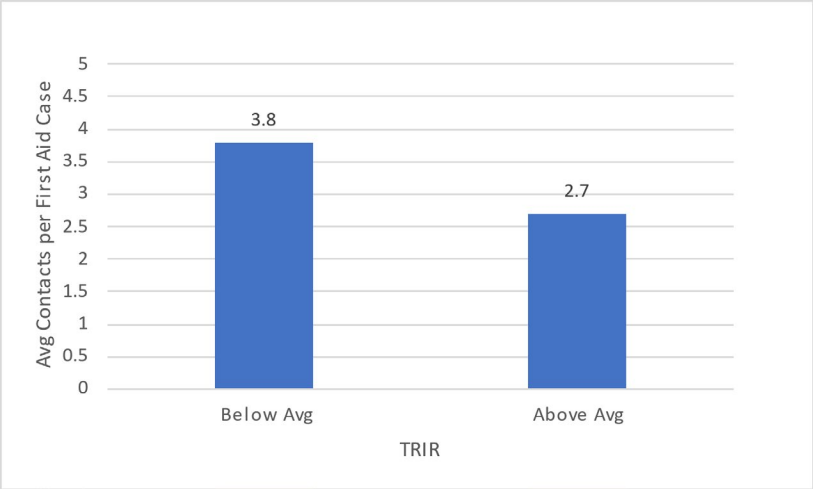

Figure 12: Difference in Avg Contacts per First Aid Case

Figure 13 demonstrates a significantly higher rate of contacts per case in companies with above-average employee age. This difference alludes to the need for and importance of follow-up interaction with older employees that have discomfort.

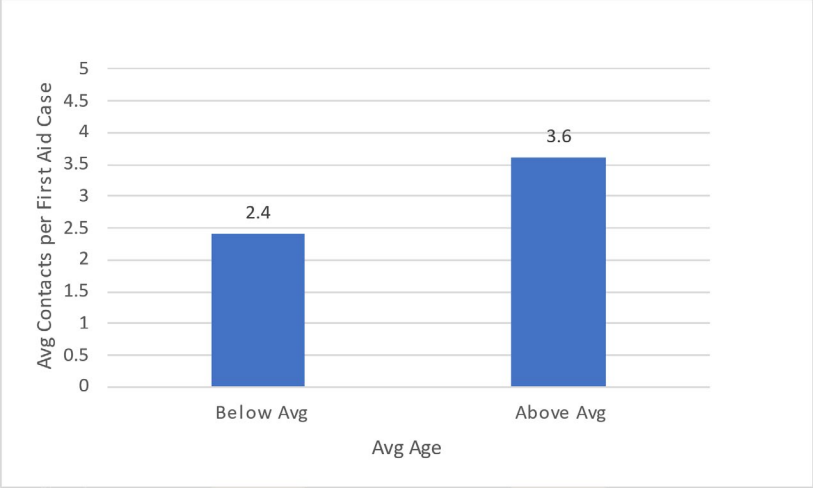

Figure 13: Difference in Avg Contacts per First Aid Case

Impact on Approach

On average, 92% of cases presenting to an EI specialist for first aid were cared for and did not require outside medical care. This significant finding demonstrates that having a trained specialist onsite can significantly decrease the unnecessary referral of employees to Urgent Care centers or hospital Emergency Rooms that do not need that level of care. Further, our data demonstrate that companies with an injury rate lower than the

industry average tend to have more interactions between employees and the EI specialist when discomfort is reported.

It should also be noted that companies with an average age greater than 44 also demonstrated more interactions with the onsite specialist for their discomfort. Although several factors could also be in play, these facts illustrate the importance of employee engagement and follow-up with providers when they experience pain.

Further data collection is needed, including the body part involved, nature/cause of the discomfort, and duration between the employee's first episode of discomfort and initial visit with the EI specialist. This information will assist in generating guidelines for care and planning for successful onsite first aid care.

Proactive Interaction

Reactively addressing symptoms fails to address why an employee's discomfort occurred. Onsite EI specialists work proactively with the employee and employer to review work methods and identify the root cause of the discomfort with ergonomic assessments, employee education, and job demand analysis. Employee interactions, including new hire training, stretching programs, and wellness interactions, are used by EI specialists to prevent injuries from occurring. When exploring the effect of proactive interactions on injury rates, we will use two specific data points: total annual proactive activities and total ergonomic/proactive solutions generated by the EI specialist.

Figure 14 demonstrates the difference in total proactive interactions between companies with above and below-average TRIR rates. Companies with a below-average TRIR rate show a 53% increase in interactions than those with an above-average TRIR rate.

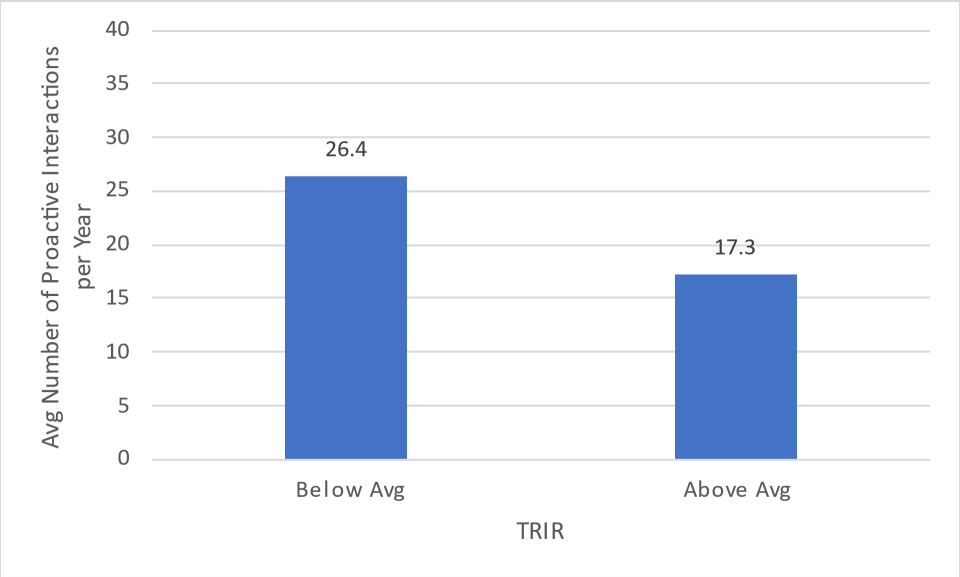

Figure 14: Difference in Proactive Contacts per Year

To completely understand this data, we need to look more carefully at the sites. As demonstrated earlier in Figure 2, each company has a program tailored to fit their employees' needs. The number of hours worked is based on site employment levels, shift configuration, and the scope of services provided. To better understand the effectiveness of proactive contacts, we broke the data down to the number of contacts per hour onsite.

Figure 15 demonstrates an even more significant finding. Companies with a below-average TRIR rate have 3 times as many proactive contacts with their employees on average. This finding is compelling and should help drive EI programs to serve the client and their employees better.

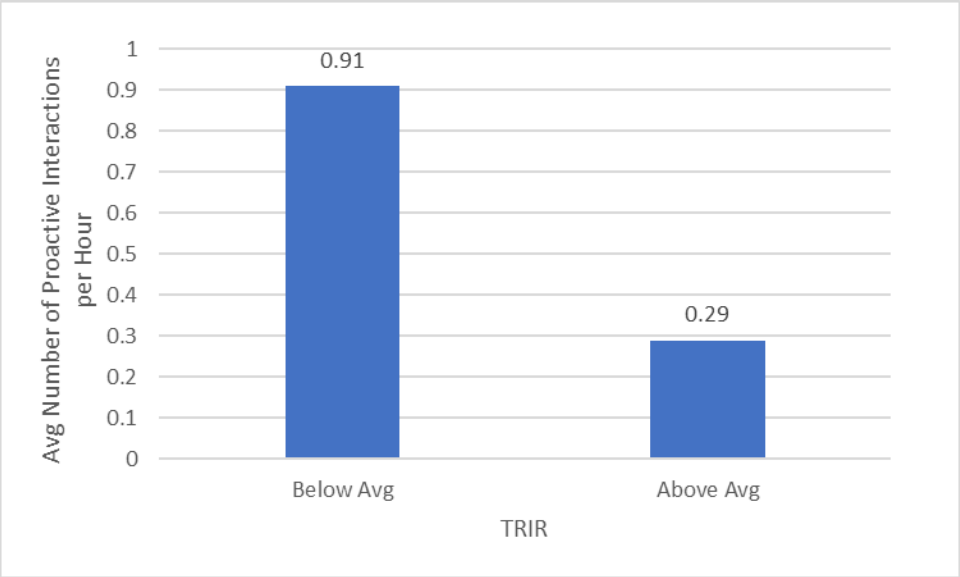

Figure 15: Difference in Proactive Contacts per Hour

The types and number of proactive interactions between these two groups were compared. The most significant interaction within the data was solutions generated by the onsite EI specialist and implemented by the client companies. Figure 16 demonstrates a 3.4 increase in solutions generated/implemented in the group with decreased injury rates. This significant correlation demonstrates the importance of assessing the potential issues for injury and the benefit of collaboration between the onsite provider and company leadership.

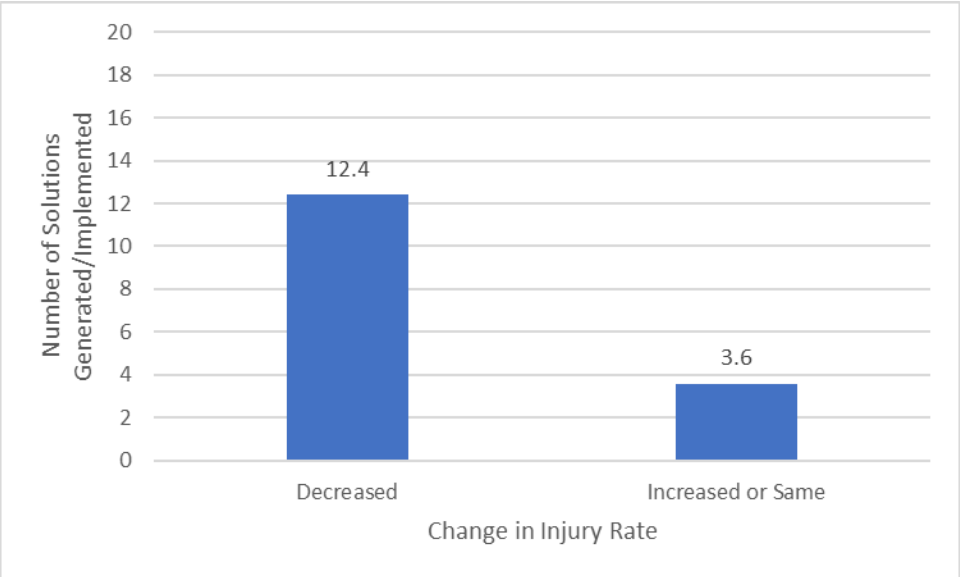

Figure 16: Number of Solutions generated/Implemented vs. Change in Injury Rate

This data demonstrates the importance of prevention as part of both an EI and safety program. In **Kalteh, et al's** systematic review of the literature in 2019, they

found that current research supports that improving the safety climate and culture can effectively reduce incidents and improve safety performance indicators. Safety climate and culture improve when employees see time and resources used for improvements and actions to address safety concerns.

IMPACT ON APPROACH

Proactive measures have proven to be vitally important in lowering injury rates and improving company employee safety. Therefore, EI specialists must include preventative activities in their onsite services. Current research and the data retrieved from client companies demonstrate that proactive measures play a significant role in preventing injuries and lowering injury rates.

Emphasis should be placed on developing and implementing more ergonomic solutions through job demand analyses, ergonomic risk assessments, and individual interactions with employees. The key is to help create reasonable solutions. Consider fiscally responsible changes before major, potentially financially prohibitive solutions.

Utilization

Our final section in this paper looks more into the utilization of the onsite provider and how it compares with the change in TRIR rates within client companies. In the Reactive section of this paper, we saw that a higher number of contacts the provider had with an employee seeking first aid correlated with better outcomes. We will now look further into the provider's overall onsite time utilization. Figure 17 looks at the difference in the number of contacts made per hour of onsite EI and compares the rate between companies with above-average and below-average injury rates. Here we see a significant increase in overall utilization of the program. Providers in companies with a below-average injury rate connect with approximately one more employee onsite per hour. These contacts may be through either proactive or reactive means. This difference demonstrates the importance of follow-through and engagement of the provider with the employees and company leadership when TRIR rates are below average.

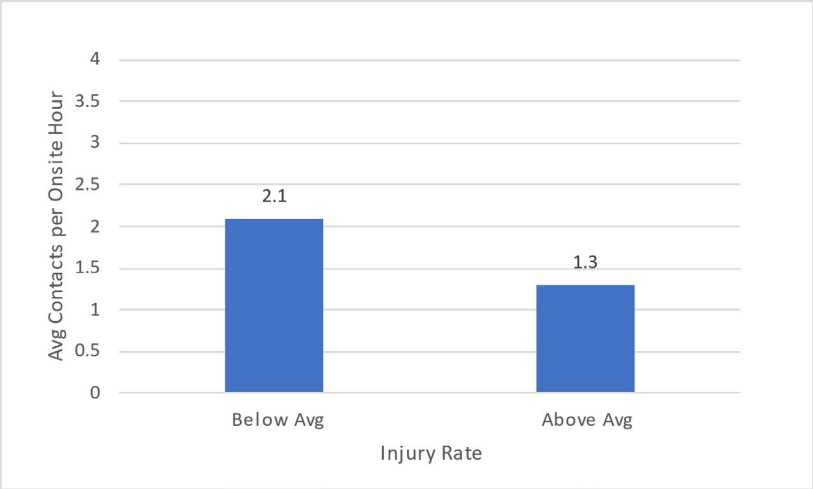

Figure 17: Difference in Avg Contacts per Onsite Hour vs Injury Rate

We also wanted to compare the difference in utilization based on employee age. Figure 18 demonstrates the difference between the groups. Although there is a slight increase in average contacts per hour, the difference is insignificant.

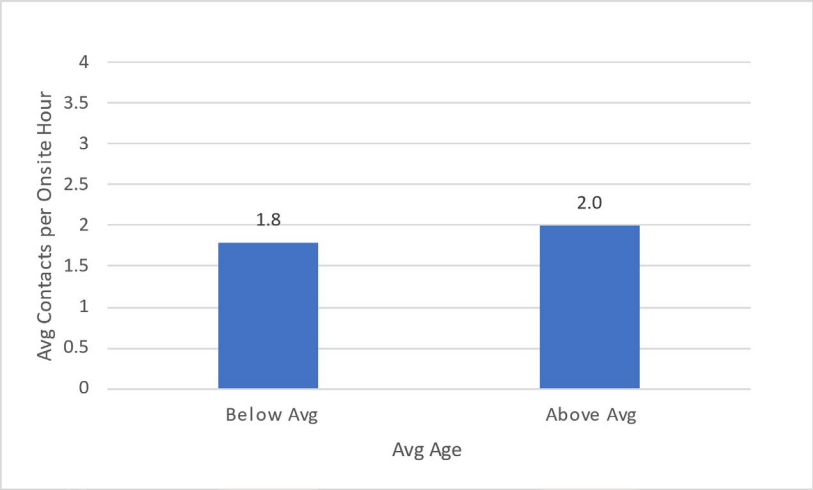

Figure 18: Difference in Avg Contacts per Onsite Hour vs Average Employee Age

IMPACT ON APPROACH

The utilization of the services offered by Atlas onsite providers is significant in decreasing injury rates. Many factors go into this part of our service. The EI specialist must engage with employees and company leadership. Well-rounded programs that include proactive and reactive activities allow the most significant utilization of the EI program.

CONCLUSION

Our study found a strong connection between the presence of EI specialists and an overall reduction in workplace injuries.

Here are some of our key takeaways:

Reactive Interactions

In our data set, 92% of employees seen by the EI specialist could return to work and other activities without referral to medical care, without unnecessarily entering the Worker's Compensation system, or without becoming a recordable event. Not only does this save companies money and unnecessary increases in WC insurance premium costs, but it also allows employees to remain at work.

Proactive Interactions

Companies that have more proactive interactions and activities with EI specialists see fewer workplace accidents. Onsite EI specialists work proactively with the employee and employer to review work methods and identify the root cause of the discomfort with ergonomic assessments, employee education, and job demand analysis. Companies with a below-average TRIR rate show a 53% increase in interactions with EI specialists than those with an above-average TRIR rate.

Utilization

The data shows that the more often an injured employee reaches out to EI specialists for care, the better their outcome. Providers in companies with a below-average injury rate connect with approximately one more employee onsite per hour. EI programs must help companies react to discomfort and prevent future injury by addressing employee discomfort as it arises and assisting the company in reducing the need for reactive interactions.

Age

Employee age plays a role in worker utilization of EI services. For example, older employees may require additional contact with the EI specialist when having discomfort. At the same time, younger employees tend to use the service less frequently. However, EI specialist engagement with all employees is needed to ensure the best outcomes for the employees and the company.

Final thoughts

Comprehensive onsite EI programs can be an effective tool to help decrease employee medical costs and injuries. To make sure your organization gets the most benefit possible, make sure your EI program includes the following:

1. Reactive triage for employees seeking first aid for discomfort and proper medical care for injured employees.
2. Active involvement in safety and ergonomic problem solving through analysis of ergonomic concerns implementation of financially sound solutions.
3. An increase in proactive services and employee contacts (both reactive and proactive) at companies with higher-than-average injury rates.
4. An increase in employee contacts for older workers (both reactive and proactive).

Reducing workplace injuries is good for companies and those working for them. But unfortunately, many organizations continue to take outdated and reactive approaches to injury response. Companies serious about reducing workplace injuries must take a serious look at implementing onsite EI specialists. Those that do can see significant reductions in injury rates, medical costs, and health-related turnover.

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