Home Care Services: An Examination of the Washington State Workers' Compensation Claims Data, 2010-2014

Technical Report Number 95-1-2016

Ninica L. Howard, MS, CPE
Darrin Adams, BS

July 2016

SHARP Safety & Health Assessment and Research for Prevention

Research for Safe Work

www.LNI.wa.gov/Safety/Research/

SHARP Safety & Health Assessment & Research for Prevention

Washington State Department of Labor & Industries

Safety and Health Assessment and Research for Prevention (SHARP) Program

Washington State Department of Labor and Industries

PO Box 44330

Olympia, Washington 98504-4330

Acknowledgements: This report was supported in part by Grant Number 5 U60 OH008487-12 from CDC-NIOSH. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of NIOSH of the Centers for Disease Control and Prevention.

TABLE OF CONTENTS

List of Tables……3

Report Summary……4

Introduction……6

Methods……8

Definition of Home Care Services……8

Injury Data Sources……10

Workers' Compensation Data Analysis……11

Results……13

Home Health Services, Nursing NOC, Risk Class 6110……14

Chore Services/Home Care Assistants, Risk Class 6511……15

Home Care Services/Home Care Referral Registry,

Risk Class 6512……16

Discussion…… 17

Conclusion……17

References…… 19

Tables……20

Workers' Compensation (WC) Claims Data Tables

The tables in this report are the compilation of workers' compensation claims data between 2010 and 2014, extracted from the Washington State Industrial Insurance system on July 22, 2016.

Table 1. Washington Workers' Compensation 2010-2014, State Fund Lost Time Claims by Injury Type: Home Health Services, Nursing (Not Otherwise Classified) – *Risk Class 6110*

Table 2. Washington Workers' Compensation 2010-2014, State Fund Lost Time Claims by Specific WMSD Diagnoses: Home Health Services, Nursing (Not Otherwise Classified) – *Risk Class 6110*

Table 3. Washington Workers' Compensation 2010-2014, State-Fund Medical Only Claims by Injury Type: Home Health Services, Nursing (Not Otherwise Classified) – *Risk Class 6110*

Table 4. Washington Workers' Compensation 2010-2014, State-Fund Medical Only Claims by Specific WMSD Diagnosis: Home Health Services, Nursing (Not Otherwise Classified) – *Risk Class 6110*

Table 5. Washington Workers' Compensation 2010-2014, State Fund Lost Time Claims by Injury Type: Chore Services/Home Care Assistants – *Risk Class 6511*

Table 6. Washington Workers' Compensation 2010-2014, State Fund Lost Time Claims by Specific WMSD Diagnoses: Chore Services/Home Care Assistants – *Risk Class 6511*

Table 7. Washington Workers' Compensation 2010-2014, State-Fund Medical Only Claims by Injury Type: Chore Services/Home Care Assistants – *Risk Class 6511*

Table 8. Washington Workers' Compensation 2010-2014, State-Fund Medical Only Claims by Specific WMSD Diagnosis: Chore Services/Home Care Assistants – *Risk Class 6511*

Table 9. Washington Workers' Compensation 2010-2014, State Fund Lost Time Claims by Injury Type: Home Care Services/Home Care Referral Registry – *Risk Class 6512*

Table 10. Washington Workers' Compensation 2010-2014, State Fund Lost Time Claims by Specific WMSD Diagnoses: Home Care Services/Home Care Referral Registry – *Risk Class 6512*

Table 11. Washington Workers' Compensation 2010-2014, State-Fund Medical Only Claims by Injury Type: Home Care Services/Home Care Referral Registry – *Risk Class 6512*

Table 12. Washington Workers' Compensation 2010-2014, State-Fund Medical Only Claims by Specific WMSD Diagnosis: Home Care Services/Home Care Referral Registry – *Risk Class 6512*

Report Summary

The utilization of health care services is increasing in the United States, including care services performed in the home environment. Home care services promote, maintain and restore health. Home care can maximize independence as the effects of disability and illness are minimized while allowing people to remain in their home. Although the working environment of home care providers is very different from institutionalized care, such as in hospitals and nursing homes, the injuries suffered by those working in home care services are similar. Understanding the frequency and severity of these injuries can help steward injury prevention efforts.

Using the Washington State Department of Labor and Industries risk classification system, claims from three sectors of home care services were analyzed. These risk classes were 1) 6110 - Home Health Services, Nursing Care, Not Otherwise Classified (referred to as Home Health Services), 2) 6511 - Chore Services/Home Care Assistants (referred to as Home Care Agencies), and 3) 6512 - Home care services/home care referral registry (referred to as Home Care Aides). The focus of these analyses was Washington State Fund (SF) lost-time and medical-only workers' compensation claims between 2010 and 2014. Claims were analyzed by seventeen injury types, by work-related musculoskeletal disorders (WMSDs) in six body regions and by five specific WMSD disorders. Lost-time claims frequencies, claim rates, claim costs (rate, overall, average and median), lost work days rate, and lost work days (overall, average and median) were determined. Claims frequencies, claims rate, and claim costs (overall, average and median) were determined for medical-only claims.

Across the home care sectors of interest, the top three lost-time claims types were WMSDs, Falls from Same Level and Struck By/Against. This mirrored the top three claims types across all Washington industries. A comparison of medical-only claims between Home Care Services and all Washington State industries found the same three claims types to also be the most common. WMSDs were also the most common injury type for both lost-time (47.4% of claims overall) and medical-only claims (30% of claims overall). Among the specific WMSD disorders examined in this report (Rotator Cuff Syndrome, Sciatica, Elbow Epicondylitis, Hand/Wrist Tendonitis, Carpal Tunnel Syndrome, Knee Bursitis) Rotator Cuff Syndrome (RCS) was the most prevalent WMSD type in each sector.

Through the analyses of the workers' compensation data in each of the Home Care Services sectors, we found the following:

Home Health Services (risk class 6110)

- The highest lost-time claims rate, 310 claims/10,000 Full Time Equivalents (FTEs).

- The highest average lost-time claim costs of the three sectors, $38,679/claim.
- The highest WMSD lost-time claims rate of the three sectors, 144.0 claims/10,000 FTEs
- The highest medical-only claims rate among the three sectors, 794.1 claims/10,000 FTEs
- The back accounted for 60% of the WMSD lost-time claims
- Among the WMSD lost-time claims in this sector, Sciatica had the highest average cost, $191,355
- Struck By/Against injuries were the most common non-WMSD medical-only claim type in this sector, 213 claims

Home Care Agencies (risk class 6511):

- The most number of lost work days of the three sectors, 329,906 days
- The highest total costs for medical-only claims of the three sectors, $4,359,241
- The highest medical-only claims rate of the three sectors, 232.1 claims/10,000 FTEs
- The highest Back WMSD medical-only claims rate of the three sectors, 152.1 claims/10,000 FTEs
- The back accounted for 61% of WMSD lost-time claims
- Neck WMSDs were the most costly among WMSDs in this sector with an average cost of $46,209/claim
- Overexertion injuries were the most costly non-WMSD medical-only injury in this sector, $2,491/claim

Home Health Aides (risk class 6512):

- The highest average days away from work per claim of the three sectors, 358 days/claim
- The lowest total costs for medical-only claims of the three sectors, $1,727,730
- The highest average cost per medical-only claim of the three sectors, $2,235/claim
- WMSDs, Falls from Same Level and Overexertion lost-time claims accounted for most of the claims in this sector, 78%
- WMSDs accounted for 55% of all lost-time claims
- Back WMSDs had a lost-time rate of 4,186.2 days/10,000 FTEs
- Rotator cuff syndrome was the most frequent WMSD medical-only claim type in this sector, 43% of all specific WMSD diagnoses.

A robust understanding of the injuries suffered by home care givers can inform prevention actions taken in several areas, including the interaction between care giver and care recipients, the residential environment of home care, and home care technologies.

Home Care Services: An Examination of the Washington State Workers' Compensation Claims Data, 2009-2014

INTRODUCTION

Home Care Services have become a major provider of formal, community-based long term care, providing a range of medical and therapeutic services in a patient's home. Home Care Services can promote, maintain and restore health, or maximize independence while minimizing the effects of disability and illness.

According to the Bureau of Labor and Statistics [(1)], in 2015, there were approximately 820,630 home health aides in the United States. BLS defines home health aides as those who provide individualized health care services, under the supervision of a medical professional. Services may include checking vitals, changing bandages and dressing wounds, and applying topical medications to the elderly, convalescents, or persons with disabilities in the patient's home or in a care facility. They also may provide personal care such as bathing, dressing and grooming. Personal Care Aides (may also be referred to home care aides) numbered 1,369,230 in 2015, according to the BLS [(2)]. Personal care aides assist the elderly, convalescents, or persons with disabilities with activities of daily living in the person's home, including bathing, dressing, grooming, housekeeping (making beds, doing laundry, washing dishes) and preparing meals.

The demand for home care services in the United States is growing as a result of a number of factors. The population in the U.S. is aging as life expectancy increases. Additionally, home care services has been shown to be more cost-effective than institutional care [(3) (4)], and with increases in healthcare costs, private and public payers have shifted more towards supporting home care services [(4) (5) (6)]. Medical practice is also expediting hospital discharge and ongoing care plans, making home care a necessary extension of institutionalized care. Consequently, employment in home health aides is projected to grow 38% between 2014 and 2024 [(1)]. The growth in personal care aides is projected to be 26% for this same period [(2)]. Nationally, in 2014, home health aides suffered a musculoskeletal disorder (MSD) incidence rate of 55.4 MSDs/10,000 FTEs while personal care aides had an incidence rate of 60.6 MSDs/10,000 FTEs. In comparison, the incidence rate for all occupations in 2014 was 33.8 MSDs/10,000 FTEs [(7)].

Consequently, the occupational environment in which home care is provided and the risk to those providing that care has quickly become an emerging area of focus. The working environment of home care services is unique among the health care sectors. Home care providers often work alone; support or help is not available. Their environment is not standardized – each home is different in terms of the room size, the arrangement of furniture,

the equipment available, etc. Additionally, the working environment is not in the control of the care provider. Finally, home care providers may be exposed to hazards not encountered in the institutional setting, such as poor lighting, threatening animals, and substandard living conditions.

The aim of this report is to identify the types of workers' compensation claims that are being filed by specific home care services groups in Washington State. Employers, industry associations and labor representatives may use these data to better understand the types of injuries that are occurring among this working population and use this knowledge to help guide injury prevention efforts.

METHODS

Defining the Home Care Services from Washington State's Workers' Compensation System:

There are many terms for care services that occur in the home setting. For the sake of this report, we sought to examine workers' compensation claims data for those providing home health and home care services.

Most often, employers are classified by the North American Industrial Classification System (NAICS) codes. However, NAICS codes proved too general for our purposes. The applicable NAICS code, 621610, covers medical home care of the elderly, home health agencies, home nursing services, hospice care services (in home), visiting nurse associations, and nursing agencies providing home nursing services. The workers compensation insurance data provide an alternative system for case identification within select working populations through the risk classification system. Industries and occupations are grouped into "classes" based on the type of work performed and risk for insurance loss. Using the risk classes in the Washington workers' compensation system for the home care services can provide a more specific description of the risk for injury and the burden of injuries to these workers.

The Washington State Department of Labor and Industries risk classification system was used to identify claims within the home care services industry. This report focuses on three risk classes:

6110 – Home Health Services, Nursing Care NOC: This risk class applies to establishments engaged in providing skilled and semi-skilled nursing and home health care services to individuals who do not need the continuous care and supervision that hospitals and nursing facilities can provide

6511 – Chore Services/Home Care Assistants:
This risk class applies to entities *(agencies)* providing chore services or home care assistance to private individuals. Chore services performed include, but are not limited to general household chores; meal planning and preparation; shopping and errands; personal care, such as bathing, body care, dressing, and help with ambulating; and companionship.

6512 – Home care services/home care referral registry:
Risk Class 6512 is assigned to persons *(individuals)* who are employed by people who are ill, people with disabilities, or vulnerable individuals to provide home care services that enable those individuals to remain in their own homes. Services include: household tasks, such as housekeeping, shopping, meal planning and preparation; personal care such as assistance with dressing, feeding, and personal hygiene to facilitate self-care.

Injury Data Sources

This report includes accepted State-Fund workers' compensation claims from 2010 to 2014. The workers' compensation data for this report was provided by the Washington State Department of Labor and Industries (L&I).

In Washington State, non-federal employers are required to obtain workers' compensation (WC) insurance through the Department of Labor and Industries (L&I) industrial insurance system, unless they meet specific requirements to self-insure (SI), or are covered by an alternative workers' compensation system. L&I administers the State Fund (SF), the industrial insurance program which covers approximately two-thirds of Washington workers. Outside the State Fund, there are approximately 400 self-insured entities.

Accepted WC claims are divided into two general categories; medical-only and compensable. A claim that involves the worker seeking medical treatment and is cleared to return to work without restrictions within a 3-day waiting period is classified as medical only. A claim is considered compensable when the work restrictions extend beyond the 3-day waiting period and the claimant receives wage replacement, disability or death benefits. For this report, we present workers' compensation data pertaining to:

1) Medical-only claims, and
2) Compensable claims where wage replacement benefits are paid (Lost-Time Claims)

Also in this report, we focused on State Fund claims. Information on SI claims is often incomplete and therefore, SI claims were excluded from this analysis. Additionally, during the report period (2010-2014), State Fund represented an average of 90% of the employers in Risk Class 6110, 99% in Risk Class 6511 and 100% in Risk Class 6512. The WC database includes administrative information needed to adjudicate claims; codes for characterizing the injury or illness; costs associated with disability payments; wage replacement and pensions; medical procedures and treatment; and physician diagnoses codes.

All Washington SF claims were coded for nature, body part affected, primary and secondary source, and the event or exposure for injury or illness using the Occupational Injury and Illness Classification System (OIICS) [(8)]. OIICS codes are assigned at the beginning of the claims and represent an initial description of the injury or illness.

Workers' Compensation Data Analysis

We identified all State Fund WC claims with dates of injury or illness between January 1, 2010 and December 31, 2014. For each claim, the following data were extracted:

- Claim identification number
- Claims status (medical only, compensable)
- Occupational Injury and Illness Classification (OIICS) codes for nature, body part, source, event/exposure of injury or illness,
- Costs associated with the claims
- Time loss days

Using the Washington State Department of Labor and Industries risk classification system to identify workers' compensation claims in the home health and home care industry, we performed several analyses.

Analysis by Injury Type

This report examined claims data grouped into seventeen injury types, based on OIICS coding that may occur in home care services. These groupings were used in previous analyses of WC claims data for all industries in Washington State [(9)]. These injury types are:

1) Work-related Musculoskeletal Disorders (WMSDs)
2) Fall from Same Level
3) Struck By/Against
4) Fall from Elevation
5) Motor Vehicles
6) Overexertion (not a result of cumulative exposure)
7) Caught In/ Caught Under/Caught Between
8) Violence
9) Bodily Reaction
10) Exposure to Loud Noises
11) Respiratory Disease
12) Exposure to Toxins
13) Exposure to Extreme Temperature
14) Abraded
15) Electrical
16) Explosion
17) Other

The *Other* category is comprised of claims that lacked sufficient detail to discretely classify them upon initial report. Additionally, to ensure confidentiality, injury types that had less than 5 claims were included in this category.

We performed additional analyses on claims with an injury type of WMSDs.

Analysis by Body Part: We examined claims for WMSDs by body area. These body areas are:

- Back
- Elbow
- Hand/Wrist
- Knee
- Shoulder
- Neck

Analysis by WMSD Disorders: WMSD claims were also analyzed by specific disorder. These disorders were:

- Rotator Cuff Tendinitis
- Sciatica
- Epicondylitis of the Elbow
- Tendonitis of the Hand/Wrist
- Carpal Tunnel Syndrome
- Bursitis of the Knee

Data Statistics

WC claims rates are expressed as claims per 10,000 full-time equivalents (FTEs). An FTE is defined as working 2,000 hours per year (40 hours per week for 50 weeks). The number of FTEs in each home care risk class was calculated using the hours worked by employees, reported by the employer.

Claim costs include both closed and open claims. For closed claims, the costs reflect the actual dollar amounts paid out. For claims that are open, the costs reflect the actual amounts paid to date plus the case reserve estimates for future costs associated with the claims. The claims costs do not include claims administration costs, or indirect costs to the employer or worker, such as employee turnover, lost or reduced productivity and the impact on the worker's home life.

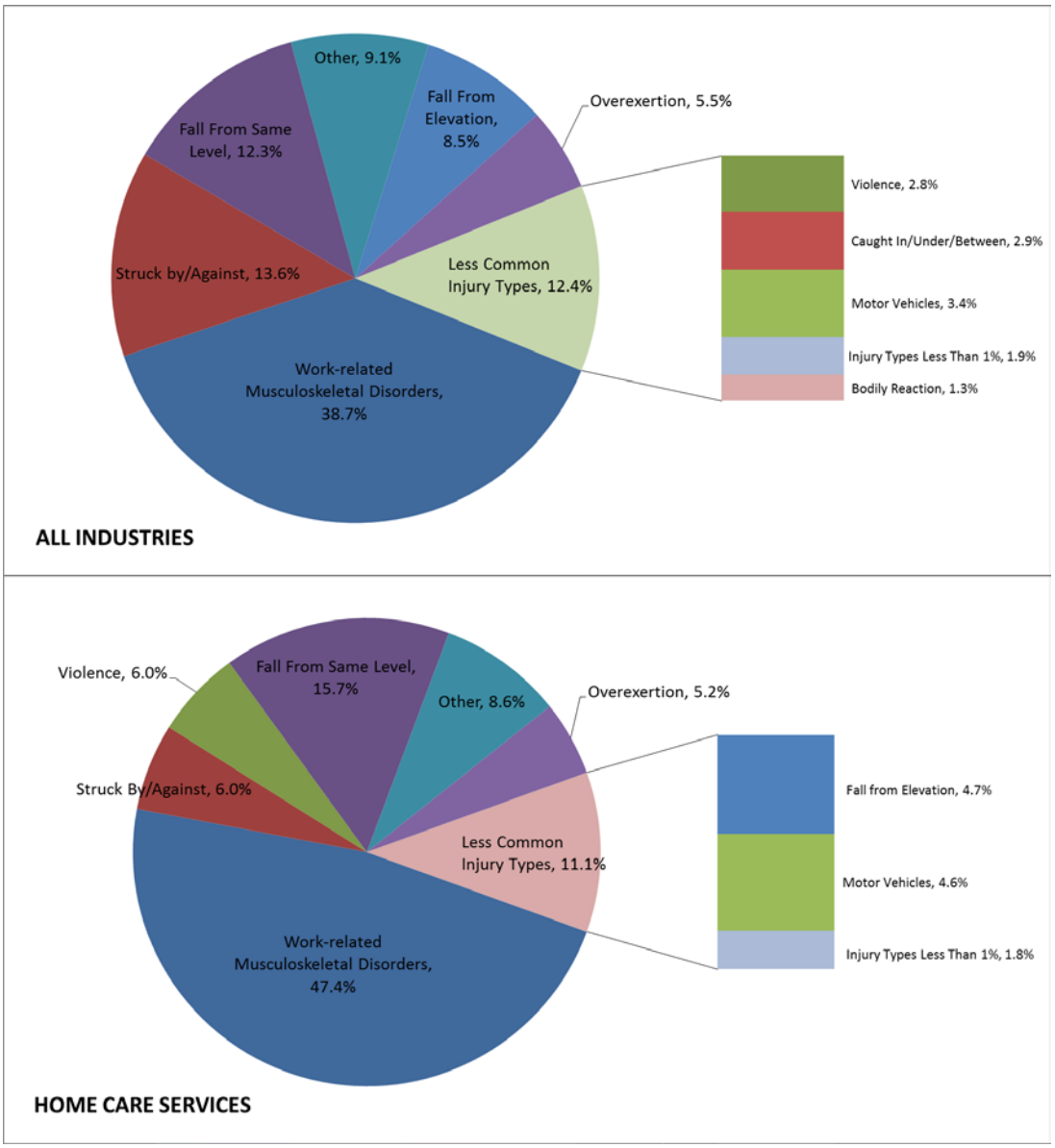
The severity of compensable injuries is expressed through two measures:

1) The rate of time loss (TL): calculated as total time loss days per 10,000 FTEs, and
2) The claims cost rate: calculated as total costs ($) per 10,000 FTEs

RESULTS

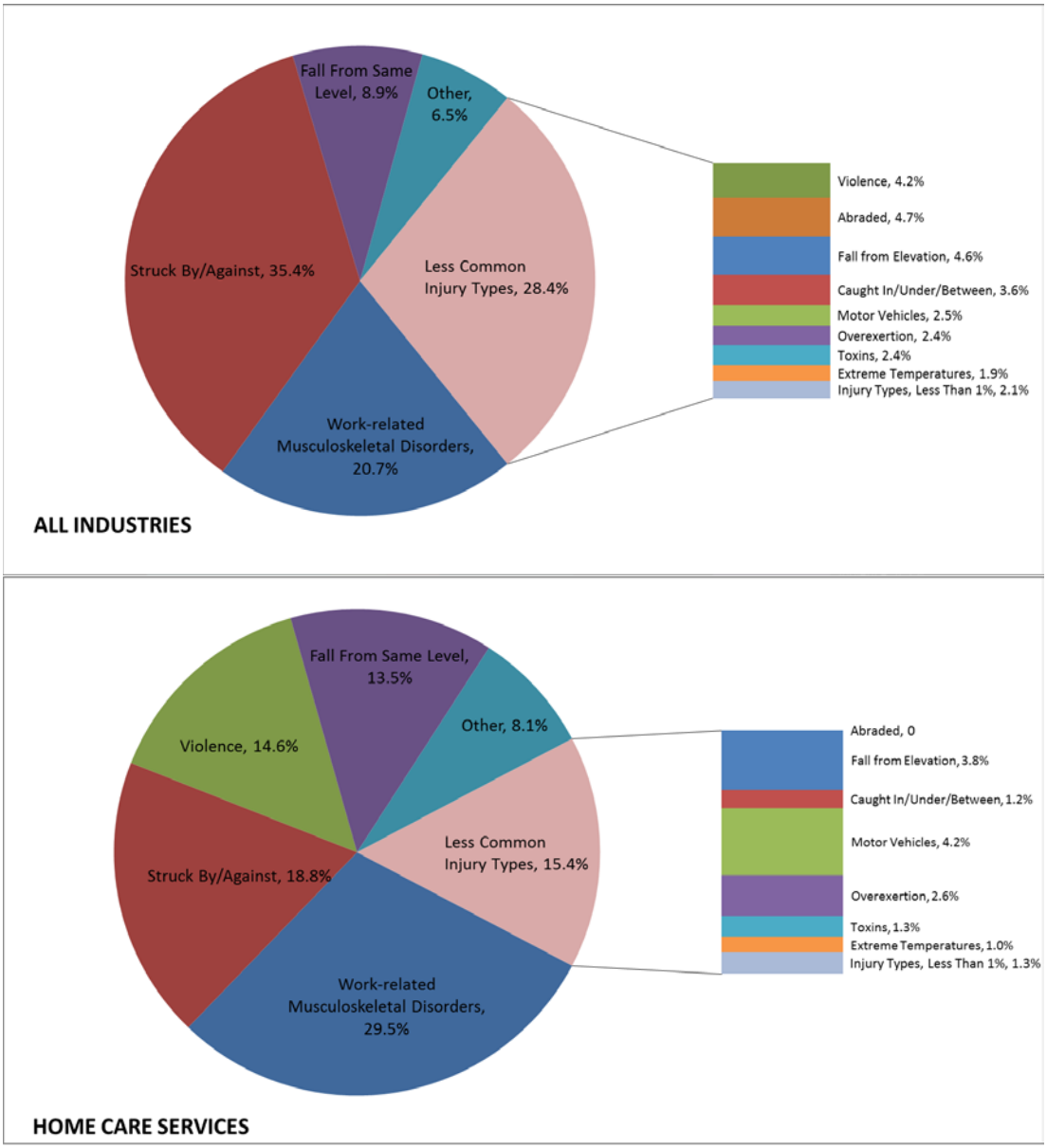
When State Fund workers' compensation lost-time claims of Home Care Services were compared to lost-time claims for all industries in Washington State between 2010 and 2014, the same injury types, *Work-Related Musculoskeletal Disorders, Fall from Same Level* and *Struck By/Against* dominated the claims (Figure 1). In Home Care Services, the proportion of *WMSD* claims (47% vs 39%) and *Fall From Same Level* (16% vs 12%) were higher. Injuries from *Violence* accounted for 6% of the lost-time claims, compared to 2.8% across all Washington industries. *Motor Vehicle* injuries were also higher in Home Care Services (4.6% vs 3.4%).

Figure 1. Comparison between State-Fund Time Loss Workers' Compensation Claim Types between All Industries and Home Care Services, 2010-2014.



During the same period (2010-2014) the same three claims types were also the most frequent in a comparison of State-Fund workers' compensation medical-only claims between Home Care Services and all Washington industries (Figure 2). Among medical only claims, however, the most prevalent claim type for all industries was *Struck By/Against* (35.4%) while *WMSDs* remained the most prevalent for Home Care Services (29.5%). The frequency of medical-only claims for Violence was higher for Home Care Services (15%) then for all industries (4%). Additionally, the proportion of medical-only claims for Violence was higher than lost-time claims (6.0%).

Figure 2. Comparison between State-Fund Medical Only Workers' Compensation Claim Types between All Industries and Home Care Services, 2010-2014.



Risk Class 6110, Home Health Services, Nursing N.O.C (Tables 1-4)

For Home Health Services, Nursing N.O.C. there were 422 State-Fund lost-time claims between 2010 and 2014, a lost-time claims rate of 310.0 claims per 10,000 FTEs (Table 1). The associated WC costs were $16,322,538. *WMSDs* were the most common injury type among the lost-time claims for this risk class, accounting for 46% of all claims. Among all the lost-time WMSD claims, the back was the most common injured body area (60% of WMSD claims, 22% of all claims). Injuries from *Fall from Same Level* accounted for 19,952 lost work days (second to WMSDs, 35,553 lost days). While *Back WMSDs* accounted for the second highest number of lost work days during this period (19,858 days), *Shoulder WMSDs* resulted in the most days away from work per claim (an average of 297 time loss days/claim). *Neck WMSDs* had the highest average lost-time claim cost of $56,104.

Of the specific WMSD disorders analyzed for this report (Table 2), *Sciatica* had the highest average cost of $191,355, followed by *Carpal Tunnel Syndrome* at $99,294. *Rotator Cuff Syndrome* had a claims rate of 14.0 claims/10,000 FTEs. This far surpassed the next highest rate, 2.9 claims/10,000 FTEs for both *Hand/Wrist Tendonitis* and *Epicondylitis*.

There 1,081 accepted medical-only claims between 2010 and 2014, costing $1,847,605 (Table 3). *Struck By/Against* injuries were the most common non-WMSD injury type (213 claims), accounting for approximately 20% of all medical-only claims. *Back WMSDs* had the highest frequency by WMSD body area (19% of all claims). Violence accounted for 15% of the claims. *Stuck By/Again*st injuries had a claims rate of 156.5 claims per 10,000 FTEs, second to all WMSDs (232.1 claims/10,000 FTEs). The average cost of a claim with injuries from *Bodily Reaction* was $3,246 per claim (the highest among non-WMSD injuries) compared to $4,519 per claim for *Hand/Wrist WMSDs*, the highest average cost among WMSDs. *Neck WMSDs* had the second highest average cost at $3,914 per claim.

Chore Services/Home Care Assistants (Tables 5-8)

For Chore Services/Home Care Assistants (risk class 6511), there were 1,478 accepted SF lost-time claims between 2010 and 2014 (Table 5). This resulted in $45,773,660 in workers' compensation costs. WMSD injury was the most common claim type, accounting for 46% of the lost-time claims for this time period. The Back was the most common WMSD claim (28% of WMSD claims), followed by *Shoulder WMSD* (10% of WMSD claims). WMSD claims costs $22,608,656 (almost half of the costs for all lost-time claims for this risk class). The next most common claim injury type was *Falls from Same Level* (15% of all claims) and *Violence* (8% of all claims). The overall lost-time claims rate for this risk class was 233.3 claims per 10,000 FTEs. Again, *WMSDs* had the highest claims rate of 106.4 claims/10,000 FTEs. A *Neck WMSD* lost-time

claim proved to be the most costly, with an average of $46,209 per claim. The total number of lost work days between 2010 and 2014 was 329,960. *Back WMSDs* had the highest average loss days rate with 16,511.6 days per 10,000 FTEs.

Of the specific WMSD disorders analyzed, *Rotator Cuff Syndrome* was the most common within this risk class (Table 6), accounting for $5,504,005 in costs. *Carpal Tunnel Syndrome* had the highest average claim cost ($65,016), though *Rotator Cuff Syndrome* had the highest number of lost work days, resulting in a time loss rate of 5,519 lost work days/10,000 FTEs.

For risk class 6511, there were 3,043 State-Fund medical only claims accepted between 2010 and 2014 (Table 7). Total direct costs for all accepted medical-only claims were $4,359,241. *Stuck By/Against* and *Back WMSDs* were the most common injuries, accounting for 19% and 16% of the medical-only claims, respectively. *Violence* claims accounted for 17% of the claims. Excluding WMSDs, *Overexertion* injuries were the most costly injury with an average claim cost of $2,491, followed by injuries from *Vehicles* (average cost $2,395). Costs for medical-only claims of WMSDs of the back, shoulder, hand/wrist, neck, elbow and knee totaled $1,930,192. The Back was also the most common body part for WMSD medical-only claims, accounting for 55% of the WMSD claims.

Home Care Services/Home Care Referral Registry (Tables 9-12)

Between 2010 and 2014, there were 419 State-Fund accepted lost-time claims for Home Care Services/Home Care Referral Registry (risk class 6512), of which 229 (55% of all claims) were for WMSDs (Table 9). *WMSDs, Falls from Same Level* and *Overexertion* accounted for 78% of all lost-time claims in this risk class. *Struck By/Against* injuries accounted for 5% of these claims. Direct costs for all claims were $20,908,519. The lost-time claims rate for all injury types was 39.1 claims/10,000 FTEs while the claims rate for *Back WMSDs* was 11.8 claims/10,000 FTEs. The total number of lost-time days for this period was 150,130 days. *Back WMSDs* had the highest lost-time rate of 4,816.2 days per 10,000 FTEs. The highest average costs per claim were for *Violence* injuries ($136,311) and *Neck WMSD* ($89,406).

Among the WMSD disorders analyzed in this report, *Rotator Cuff Syndrome* proved to be the costliest lost-time claim ($2,186,478), though the highest average cost was for *Sciatica* ($107,075 per claim, median cost of $93,366) (Table 10). Related to the high average cost, *Sciatica* also had the highest average number of lost-time days of 712, followed by *Epicondylitis* (561 days).

Seven hundred, seventy-two (772) medical-only claims were accepted between 2010 and 2014. The direct costs were $1,725,730 (Table 11). The majority of medical-only claims were for

WMSDs (38% of all claims) and *Struck By/Against* (18%). *Falls from Same Level* accounted for 17% of all medical-only claims. *Back WMSDs* had the greatest total costs of $384,241 and the highest claims rate (14.4 claims/10,000 FTEs). The highest average cost per claim was for injuries from *Vehicles* ($4,366/claim).

Among the specific WMSDs medical-only claims analyzed in this report, *Rotator Cuff Syndrome* (RCS) was the most frequent disorder (43%) though RCS claims only represented 2% of all medical-only claims in this home care services group. Total medical-only costs for RCS claims were $118,866 (Table 12). RCS also had the highest average costs of $7,429. *Carpal Tunnel Syndrome* (CTS) and *Hand/Wrist Tendonitis* followed Rotator Cuff Syndrome in frequency (16% of specific WMSDs medical-only claims) though CTS incurred highest costs ($31,798) than Hand/Wrist Tendonitis ($9,964).

Discussion

In general, the analyses of the workers' compensation data claims between 2010 and 2014, found similarities in injury types between three sectors of home care services. These sectors were Home Health Services, Chore Services/Home Care Assistance and Home Care Services. This suggests that care providers in these environments face similar risk factors of injury.

Work-related musculoskeletal disorders (WMSDs) were the most common State-Fund lost-time claim type of the three home care groups. Back WMSD was the most common WMSD, supporting findings of the high physical load from manually handling patients. Though Back WMSDs were the most common, Neck WMSDs proved to be the costliest, with the highest average cost per claim. This might indicate the difficulty of rehabilitating an injury to this area.

Besides WMSDs, the other most common medical-only injury types in all three home care groups was Struck By/Against, Fall from Same Level and Violence. The high frequency of Struck By/Against and Falls from Same Level claims may be a consequence of clutter within the home environment or working in small spaces, such as in bathrooms. With respect to Washington's workers' compensation system, violence can include injuries sustained from non-deliberate, unintentional actions by the patients. Care giver injuries resulting from contact with a disoriented or spastic patient may be classified as a violent act in the WC system. However, care givers in the home environment may also be confronted by members of the patient's family or friends.

Back WMSDs had the highest time loss rate among the injury types. This is an indication of the high number of back injuries sustained by home care caregivers. However, Neck WMSDs had the highest average number of lost work days in all three home care groups. While Back WMSDs may occur more often, Neck WMSDs, on average, require longer recovery periods. Outside of WMSDs, Overexertion injuries had the highest average number of lost work days for both Home Health Care and Chore Services/Home Care groups. Again, this may be an indication of the high physical load home care services demand. In the Home Care Services/Home Care Registry group, Violence had the highest average number of lost work days.

Conclusion

In 2011, the National Research Council (NRC) examined home care issues from a human systems viewpoint and made recommendations for improvements when care is provided in the home environment [(10)]. This council recommended improvement in four areas: 1) health care technologies, 2) care givers and care recipients, 3) the residential environment for health care and 4) research and development needs. A more robust understanding of the injuries suffered

by care givers in the home care environment can inform actions taken to improve in these four areas.

References

1. Bureau of Labor Statistics (BLS), U.S. Department of Labor, *Occupational Outlook Handbook, 2016-17 Edition*, Home Health Adies, on the Internet at http://www.bls.gov/ooh/healthcare/home-health-aides.htm (visiting June 15, 2016).

2. Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2016-2017 Edition*, Personal Care Aides, on the Internet at http://www.bls.gov/ooh/personal-care-and-service/persoanl-care-aides.htm (visiting *June 15, 2016*).

3. Beer, Jenay M, McBride, Sara E, Mitzner, Tracy L,Rogers, Wendy A.. Understanding challenges in the front lines of home health care: A human-systems approach. Applied Ergonomics 2014; 45: 1687-1699.

4. Ciszewski, P. Home health care: a growing industry continues to flourish. Medical Interface 1997; 10: 70-75.

5. National Research Council. (2011). *Health Care Comes Home: The Human Factors.* Committee on the Role of Human Factors in Home HealthCare, Board on Human-Systems Integration, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press.

6. Kaye HS; Chapman S; Newcomer RJ; Harrington C. The personal assistance workforce: Trends in supply and demand. Health Affairs 2006; 25(4): 1113-1120.

7. Bureau Labor Statistics, U.S. Department of Labor, (2015, November 19). Nonfatal occupational injuries and illnesses requiring days away from work, 2014. USDL 15-2205.

8. Occupational Injury and Illness Classification Manual. U.S. Department of Labor, Bureau of Labor Statistics. 2007

9. Anderson NJ, Bonauto DK, Adams, BS. Prioritizing industries for occupational injury and illness prevention and research, Washington State workers' compensation claims data, 2002-2010. Technical Report Number 61-1-2013.

10. National Research Council. (2011). *Health Care Comes Home: The Human Factors.* Committee on the Role of Human Factors in Home HealthCare, Board on Human-Systems Integration, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press.

Table 1.Washington Workers' Compensation 2010-2014, **State Fund Lost-Time Claims By Injury Type:**
Home Health Services, Nursing (Not Otherwise Classified) – Risk Class 6110

Injury Type	Time Loss Claims	Time Loss Claims per 10,000 FTE	Time Loss Days Paid	Time Loss Days per 10,000 FTEs	Total Cost of Time Loss Claims	Average Time Loss Claim Cost	Median Time Loss Claim Cost	Average Days	Median Days
All Injury Types	422	310.0	82,729	60,776.3	$16,322,538	$38,679	$11,640	196	50
Work-related Musculoskeletal Disorders[α]	196	144.0	35,553	26,118.8	$6,267,492	$31,977	$9,551	181	49
Back	117	86.0	19,858	14,588.6	$3,384,342	$28,926	$6,675	170	28
Shoulder	41	30.1	12,196	8,959.7	$2,064,637	$50,357	$27,608	297	213
Neck	26	19.1	7,272	5,342.3	$1,458,704	$56,104	$19,105	280	102
Knee	20	14.7	5,126	3,765.8	$933,740	$46,687	$11,851	256	41
Hand/Wrist	16	11.8	3,213	2,360.4	$754,960	$47,185	$12,843	201	80
Elbow	9	6.6	1,742	1,279.7	$181,107	$20,123	$11,380	194	182
Fall from Same Level	74	54.4	19,952	14,657.6	$4,669,844	$63,106	$13,901	270	56
Other	41	30.1	3,260	2,395.0	$592,978	$14,463	$10,127	80	38
Motor Vehicles	28	20.6	7,733	5,681.0	$1,930,880	$68,960	$18,797	276	64
Fall from Elevation	25	18.4	6,108	4,487.2	$1,172,800	$46,912	$12,277	244	56
Violence	21	15.4	2,943	2,162.1	$401,205	$19,105	$7,055	140	16
Struck By/Against	19	14	1,975	1,450.9	$387,182	$20,378	$3,541	104	20
Overexertion	18	13.2	5,205	3,823.8	$900,162	$50,009	$36,221	289	214

[α] WMSD claims may be classified in more than one body region resulting in the sum of the claims of the WMSD types totaling more than the overall total of WMSD claims.

Table 2. Washington Workers' Compensation 2010-2014, **State Fund Lost-Time Claims By Specific WMSD Diagnoses:** Home Health Services, Nursing (Not Otherwise Classified) – Risk Class 6110

WMSD Diagnosis Type	Time Loss Claims	Time Loss Claims per 10,000 FTE	Time Loss Days Paid	Time Loss Days per 10,000 FTEs	Total Cost of Time Loss Claims	Average Time Loss Claim Cost	Median Time Loss Claim Cost	Average Days	Median Days
Rotator Cuff Syndrome	19	14.0	6,982	5,129.3	$1,356,258	$71,382	$38,879	367	263
Sciatica	3	2.2	1,675	1,230.5	$574,065	$191,355	$261,169	558	689
Carpal Tunnel Syndrome	5	3.7	1,378	1,012.3	$496,470	$99,294	$13,080	276	182
Hand/Wrist Tendonitis	4	2.9	797	585.5	$112,416	$28,104	$15,549	199	83
Epicondylitis	4	2.9	481	353.4	$67,076	$16,769	$13,334	120	49

Table 3.Washington Workers' Compensation 2010-2014, **State-Fund Medical Only Claims by Injury Type**: Home Health Services, Nursing (Not Otherwise Classified) – Risk Class 6110

Injury Type	Medical-Only Claims	Med-Only Claims per 10,000 FTE	Total Med-Only Claim Costs	Average Cost	Median Cost
All Injury Types✦	1,081	794.1	$1,847,605	$1,709	$683
Work-related Musculoskeletal Disorders	316	232.1	$755,635	$2,391	$1,177
Back	207	152.1	$455,716	$2,202	$1,094
Shoulder	38	27.9	$134,276	$3,534	$1,407
Hand/Wrist	25	18.4	$112,986	$4,519	$1,313
Neck	20	14.7	$78,274	$3,914	$2,440
Elbow	15	11	$46,134	$3,076	$1,129
Knee	13	9.6	$22,454	$1,727	$1,037
Struck By/Against	213	156.5	$154,650	$726	$435
Violence	160	117.5	$159,023	$994	$512
Fall From Same Level	143	105.1	$301,689	$2,110	$767
Other	89	65.4	$128,368	$1,442	$855
Motor Vehicles	65	47.8	$180,620	$2,779	$1,218
Fall from Elevation	46	33.8	$110,145	$2,394	$909
Overexertion	19	14	$25,384	$1,336	$712
Caught In/Under/Between	10	7.3	$10,413	$1,041	$738
Toxins	10	7.3	$3,875	$387	$353
Bodily Reaction	5	3.7	$16,232	$3,246	$3,777
Abraded	5	3.7	$1,571	$314	$225

✦ The total for "All Types" includes work-related musculoskeletal disorders medical-only claims.

Table 4. Washington Workers' Compensation 2010-2014, **State Fund Medical-Only Claims By Specific WMSD Diagnoses:** Home Health Services, Nursing (Not Otherwise Classified) – Risk Class 6110

WMSD Diagnosis Type	Medical-Only Claims	Med-Only Claims per 10,000 FTE	Total Med-Only Claims Costs	Average Cost	Median Cost
Rotator Cuff Syndrome	15	11	$96,595	$6,440	$3,619
Hand/Wrist Tendonitis	8	5.9	$40,500	$5,062	$3,035
Epicondylitis	8	5.9	$12,639	$1,580	$1,068
Sciatica	7	5.1	$27,965	$3,995	$973
Carpal Tunnel Syndrome	4	2.9	$49,868	$12,467	$6,053

Table 5. Washington Workers' Compensation 2010-2014, **State Fund Lost-Time Claims By Injury Type**:
Chore Services/Home Care Assistants – Risk Class 6511

Injury Type	Time Loss Claims	Time Loss Claims per 10,000 FTE	Time Loss Days Paid	Time Loss Days per 10,000 FTEs	Total Cost of Time Loss Claims	Average Time Loss Claim Cost	Median Time Loss Claim Cost	Average Days	Median Days
All Injury Types	1,478	233.3	329,960	52,086.2	$45,773,660	$30,970	$8,256	223	54
Work-related Musculoskeletal Disorders[α]	674	106.4	167,575	26,452.7	$22,608,656	$33,544	$8,818	249	65
Back	410	64.7	104,599	16,511.6	$13,734,180.00	$33,498	$7,526	255	56
Shoulder	147	23.2	44,267	6,987.8	$6,598,830.00	$44,890	$22,371	301	129
Neck	101	15.9	50,552	7,979.9	$7,242,306.00	$71,706	$31,989	501	287
Knee	56	8.8	16,986	2,681.3	$2,587,704.00	$46,209	$20,795	303	83
Hand/Wrist	51	8.1	16,995	2,682.8	$1,979,667.00	$38,817	$13,318	333	86
Elbow	46	7.3	13,280	2,096.3	$1,470,804.00	$31,974	$16,018	289	137
Fall from Same Level	222	35	49,940	7,883.3	$7,671,432	$34,556	$9,922	225	50
Other	139	21.9	26,809	4,232.0	$3,902,200	$29,073	$8,056	193	67
Violence	113	17.8	19,877	3,137.7	$3,029,191	$26,807	$6,101	176	36
Struck By/Against	99	15.6	18,890	2,981.9	$2,675,376	$27,024	$3,587	191	26
Overexertion	73	11.5	19,312	3,048.5	$2,195,475	$30,075	$11,849	265	62
Motor Vehicles	68	10.7	7,728	1,219.9	$1,215,432	$17,874	$7,078	114	31
Fall from Elevation	65	10.3	16,126	2,545.6	$1,964,235	$30,219	$11,323	248	74
Caught In/Under/Between	9	1.4	2,259	356.6	$335,745	$37,305	$8,260	251	71
Bodily Reaction	6	0.9	1,287	203.2	$156,390	$26,065	$9,615	215	46
Exposure to Extreme Temperature	5	0.8	114	18.0	$17,310	$3,462	$1,419	23	10
Respiratory Disease	5	0.8	43	6.8	$2,245	$449	$406	9	6

[α] WMSD claims may be classified in more than one body region resulting in the sum of the claims of the WMSD types totaling more than the overall total of WMSD claims.

Table 6. Washington Workers' Compensation 2010-2014, **State Fund Lost-Time Claims By Specific WMSD Diagnoses:** Chore Services/Home Care Assistants – Risk Class 6511

WMSD Diagnosis Type	Time Loss Claims	Time Loss Claims per 10,000 FTE	Time Loss Days Paid	Time Loss Days per 10,000 FTEs	Total Cost of Time Loss Claims	Average Time Loss Claim Cost	Median Time Loss Claim Cost	Average Days	Median Days
Rotator Cuff Syndrome	85	13.4	34,963	5,519.1	$5,504,005	$64,753	$40,351	411	283
Sciatica	28	4.4	14,080	2,222.6	$1,802,780	$64,385	$33,042	503	267
Carpal Tunnel Syndrome	20	3.2	11,160	1,761.7	$1,300,320	$65,016	$33,612	558	360
Hand/Wrist Tendonitis	19	3	6,485	1,023.7	$860,415	$45,285	$9,282	341	54
Epicondylitis	12	1.9	4,824	761.5	$481,272	$40,106	$25,959	402	219
Bursitis	2	0.3	435	68.7	$89,138	$44,569	$44,569	218	218

Table 7.Washington Workers' Compensation 2010-2014, **State-Fund Medical Only Claims by Injury Type**: Chore Services/Home Care Assistants – Risk Class 6511

Injury Type	Med-Only Claims	Med-Only Claims per 10,000 FTE	Total Med-Only Claim Costs	Average Cost	Median Cost
All Injury Types✦	3,043	480.4	$4,359,241	$1,433	$622
Work-related Musculoskeletal Disorders	837	132.1	$1,739,126	$2,078	$1,120
Back	472	74.5	$1,008,932	$2,138	$1,293
Shoulder	135	21.3	$276,349	$2,047	$962
Hand/Wrist	89	14	$207,153	$2,328	$954
Neck	60	9.5	$210,305	$3,505	$2,096
Elbow	53	8.4	$128,492	$2,424	$1,318
Knee	48	7.6	$98,961	$2,062	$912
Struck By/Against	569	89.8	$487,196	$856	$474
Violence	521	82.2	$425,272	$816	$437
Fall Same Level	392	61.9	$646,173	$1,648	$735
Other	238	37.6	$283,032	$1,189	$580
Motor Vehicles	126	19.9	$301,707	$2,395	$1,479
Fall from Elevation	111	17.5	$143,512	$1,293	$605
Overexertion	75	11.8	$186,842	$2,491	$1,345
Toxins	50	7.9	$19,300	$386	$254
Caught In/Under/Between	42	6.6	$74,368	$1,771	$551
Extreme Temperatures	40	6.3	$19,359	$484	$411
Respiratory Disease	18	2.8	$11,265	$626	$303
Abraded	10	1.6	$3,145	$315	$313
Bodily Reaction	9	1.4	$9,103	$1,011	$413
Electrical	5	0.8	$9,841	$1,968	$496

✦ The total for “All Claims” includes work-related musculoskeletal disorders medical-only claims.

Table 8. Washington Workers' Compensation 2010-2014, **State-Fund Medical Only Claims by Specific WMSD Diagnosis**: Chore Services/Home Care Assistants – Risk Class 6511

WMSD Diagnosis Type	Med-Only (MO) Claims	Med-Only Claims per 10,000 FTE	Med-Only Claim Costs	Average Cost	Median Cost
Rotator Cuff Syndrome	26	4.1	$87,841	$3,378	$2,303
Hand/Wrist Tendonitis	21	3.3	$83,661	$3,984	$3,345
Sciatica	8	1.3	$45,755	$5,719	$5,072
Carpal Tunnel Syndrome	6	0.9	$29,771	$4,962	$1,563
Epicondylitis	6	0.9	$10,560	$1,760	$1,766

Table 9.Washington Workers' Compensation 2010-2014, **State Fund Lost-Time Claims By Injury Type**:
Home Care Services/Home Care Referral Registry – Risk Class 6512

Injury Type	Time Loss Claims	Time Loss Claims per 10,000 FTE	Time Loss Days Paid	Time Loss Days per 10,000 FTEs	Total Cost of Time Loss Claims	Average Time Loss Claim Cost	Median Time Loss Claim Cost	Average Days	Median Days
All Injury Types	419	39.1	150,130	14,015.4	$20,908,519	$49,901	$19,444	358	162
Work-related Musculoskeletal Disorders[α]	229	21.4	84,024	7,844.1	$11,173,597	$48,793	$18,386	367	174
Back	126	11.8	51,590	4,816.2	$7,065,954	$56,079	$18,712	409	190
Shoulder	59	5.5	22,468	2,097.5	$2,825,156	$47,884	$31,959	381	296
Neck	34	3.2	19,333	1,804.8	$3,039,804	$89,406	$27,643	569	293
Hand/Wrist	24	2.2	7,221	674.1	$985,368	$41,057	$18,042	301	141
Knee	17	1.6	8,922	832.9	$1,073,805	$63,165	$41,923	525	335
Elbow	17	1.6	5,693	531.5	$715,071	$42,063	$23,295	335	221
Fall Same Level	68	6.3	21,249	1,983.7	$3,008,456	$44,242	$14,975	312	142
Other	38	3.5	14,191	1,324.8	$2,337,931	$61,525	$26,045	373	171
Overexertion	29	2.7	9,700	905.5	$1,454,640	$50,160	$15,973	334	175
Struck By/Against	21	2	8,124	758.4	$1,191,897	$56,757	$11,123	387	166
Fall from Elevation	18	1.7	4,874	455.0	$780,012	$43,334	$22,357	271	135
Motor Vehicles	10	0.9	3,248	303.2	$505,990	$50,599	$27,887	325	79
Violence	6	0.6	4,720	440.6	$817,866	$136,311	$137,879	787	711

[α] WMSD claims may be classified in more than one body region resulting in the sum of the claims of the WMSD types totaling more than the overall total of WMSD claims.

Table 10. Washington Workers' Compensation 2010-2014, **State Fund Lost-Time Claims By Specific WMSD Diagnoses:** Home Care Services/Home Care Referral Registry – Risk Class 6512

WMSD Diagnosis Type	Time Loss Claims	Time Loss Claims per 10,000 FTE	Time Loss Days Paid	Time Loss Days per 10,000 FTEs	Total Cost of Time Loss Claims	Average Time Loss Claim Cost	Median Time Loss Claim Cost	Average Days	Median Days
Rotator Cuff Syndrome	37	3.5	17,952	1,675.9	$2,186,478	$59,094	$43,922	485	370
Sciatica	13	1.2	9,251	863.6	$1,391,975	$107,075	$93,366	712	525
Carpal Tunnel Syndrome	12	1.1	3,418	319.1	$478,644	$39,887	$21,533	285	209
Hand/Wrist Tendonitis	11	1	4,112	383.9	$614,438	$55,858	$22,895	374	238
Epicondylitis	7	0.7	3,928	366.7	$533,568	$76,224	$37,654	561	343

Table 11.Washington Workers' Compensation 2010-2014, **State-Fund Medical Only Claims by Injury Type**: Home Care Services/Home Care Referral Registry – Risk Class 6512

Injury Type	Med-Only Claims	Med-Only Claims per 10,000 FTE	Med-Only Claims Costs	Average Cost	Median Cost
All Injury Types	772	72.1	$1,725,730	$2,235	$893
Work-related Musculoskeletal Disorders	291	27.2	$757,720	$2,604	$1,292
Back	154	14.4	$384,241	$2,495	$1,259
Shoulder	48	4.5	$190,325	$3,965	$2,137
Knee	29	2.7	$80,000	$2,759	$604
Hand/Wrist	36	3.4	$76,186	$2,116	$954
Neck	23	2.1	$75,547	$3,285	$1,342
Elbow	13	1.2	$25,832	$1,987	$994
Struck By/Against	137	12.8	$168,707	$1,231	$494
Fall Same Level	128	11.9	$391,469	$3,058	$1,212
Other	92	8.6	$136,093	$1,479	$811
Overexertion	34	3.2	$71,517	$2,103	$1,055
Violence	34	3.2	$49,780	$1,464	$658
Fall from Elevation	27	2.5	$69,695	$2,581	$577
Motor Vehicles	16	1.5	$69,853	$4,366	$2,618
Extreme Temperatures	7	0.7	$5,337	$762	$664
Caught In/Under/Between	6	0.6	$5,557	$926	$934

✦ The total for “All Claims” includes work-related musculoskeletal disorders medical-only claims.

Table 12. Washington Workers' Compensation 2010-2014, **State Fund Medical-Only Claims By Specific WMSD Diagnoses:** Home Care Services/Home Care Referral Registry – Risk Class 6512

WMSD Diagnosis Type	Medical-Only Claims	Med-Only Claims per 10,000 FTE	Total Med-Only Claims Costs	Average Cost	Median Cost
Rotator Cuff Syndrome	16	1.5	$118,866	$7,429	$2,812
Carpal Tunnel Syndrome	6	0.6	$31,798	$5,300	$4,725
Hand/Wrist Tendonitis	6	0.6	$9,964	$1,661	$1,326
Epicondylitis	5	0.5	$8,402	$1,680	$1,052
Sciatica	4	0.4	$17,616	$4,404	$2,140