Report to the Virginia Workers' Compensation Commission

House Bill 617 (2020 reg. session)

Expanding Coverage under the Virginia Workers' Compensation Act for Injuries Caused by Repetitive Motion

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Executive Summary and Highlights

Executive Summary

The Virginia General Assembly enacted House Bill 617 in the 2020 session, directing the Virginia Workers' Compensation Commission to engage a consultant to study expansion of Virginia's workers' compensation system to include injuries caused by repetitive motion. The Commission engaged WorkComp Strategies LLC to conduct this analysis. We are pleased to offer this report which contains the results of the analysis and options for addressing this change to the Virginia system.

The origin of House Bill 617 is a December 2019 report from Virginia's Joint Legislative Audit and Review Commission ("JLARC") concerning the Virginia workers' compensation system.[1] JLARC found that Virginia was unique among state workers' compensation systems in not covering workplace injuries resulting from cumulative trauma. The Virginia Supreme Court has repeatedly held that the Virginia Workers' Compensation Act (the "Act") does not include traumatic injuries caused by repetitive motion.[2] In 1997 the Act was amended to provide that hearing loss and carpal tunnel syndrome were covered by workers' compensation.

As noted in the 2019 JLARC report, however, "cumulative trauma injuries are a well-established workplace injury." Our research, including interviews with occupational medicine specialists, confirms this assessment. Particularly with respect to frequent use of the arms and hands, "repetition, duration, and force of occupational tasks and the ergonomics of the work environment contribute to soft tissue damage" and nerve compression.[3] We also confirmed, however, that establishing causation for such injuries can be difficult. This is due to several reasons, which we cover in this report. In summary, injuries caused by repetitive motion are well-established occupational injuries, but they present challenges in determining causation.

We provide four options for amending the Act to address this issue, which can be broadly categorized as follows:

1. Amend the occupational disease section and retain the current burden of proof;
2. Relax the causation standard and definitions used for occupational diseases;
3. Remove the exclusion of neck and back injuries as occupational diseases;
4. Amend the definition of injury by accident.

We discuss the risks involved with each option in the report. In terms of claims cost, they are organized above roughly in order of lowest impact to highest, meaning options 1 and 2 cover

[1] Joint Legis. Audit & Rev. Comm'n, Virginia's Workers' Compensation System and Disease Presumptions (Dec. 16, 2019) (available at http://jlarc.virginia.gov/pdfs/reports/Rpt530-1.pdf).

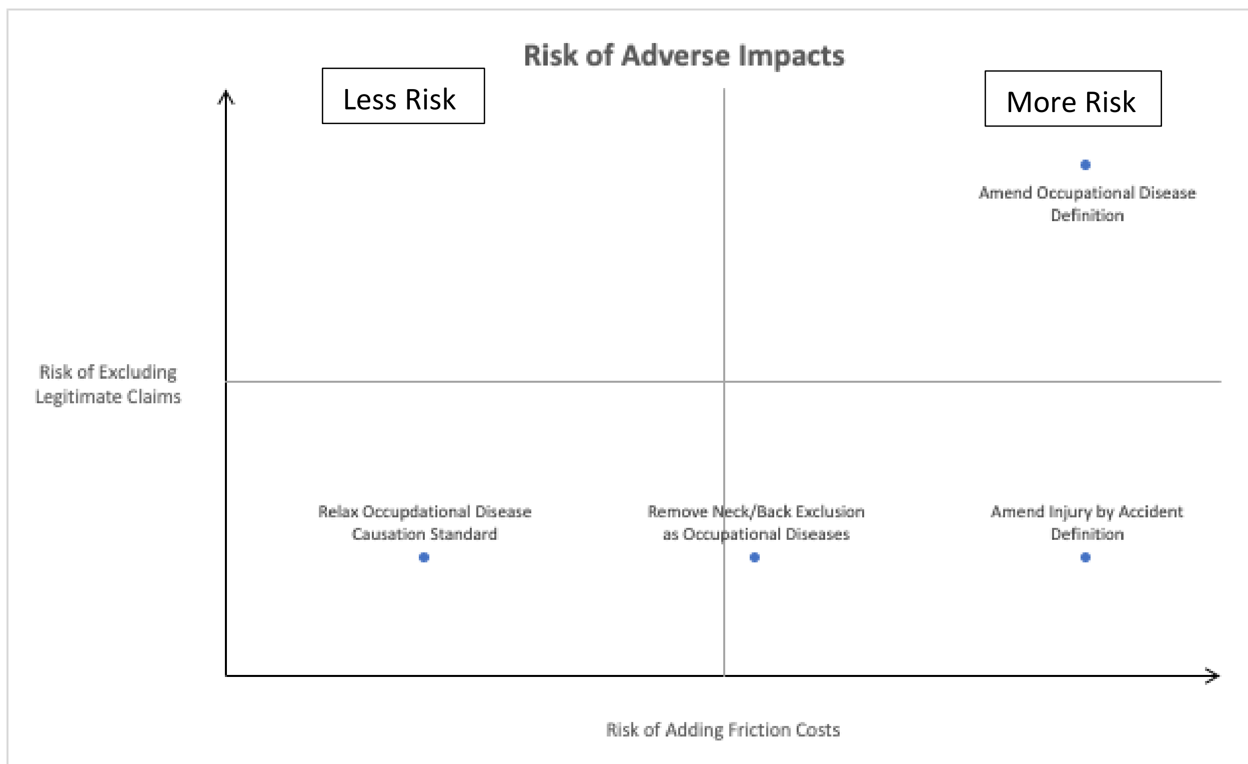
[2] *See, e.g.*, *The Stenrich Group v. Jemmott*, 251 Va. 186, 199 (1996) ("[J]ob-related impairments resulting from cumulative trauma caused by repetitive motion, however labeled or however defined, are, as a matter of law, not compensable.")

[3] See, e.g., O'Neil, Barbara A. et al., "Chronic occupational repetitive strain injury," Can. Fam. Phys. (Feb. 2001) (available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2016244/)

fewer expected additional claims, and options 3 and 4 cover more additional claims. There are other impacts associated with each option which are discussed in the report.

The purpose of this analysis is to identify approaches to expanding coverage in Virginia for legitimate occupational injuries. Any expansion of coverage involves new claims and new costs. But some approaches involve risk of un-predictability and increased litigation, which would add new cost to all stakeholders in the system, including the Commission. We call this risk "friction" cost. We believe that the more predictable the change, the better chance that employers will be able to manage legitimate claims and defend against non-occupational ones. Figure 1 below is a simple visualization of a plot of our four proposed options, where the risk of added friction cost is on the x axis and the risk of excluding legitimate claims is on the y axis. The four options are placed into four quadrants based on their relative weighting on these two factors.

Figure 1: Quadrants of Risk of Adverse Impact

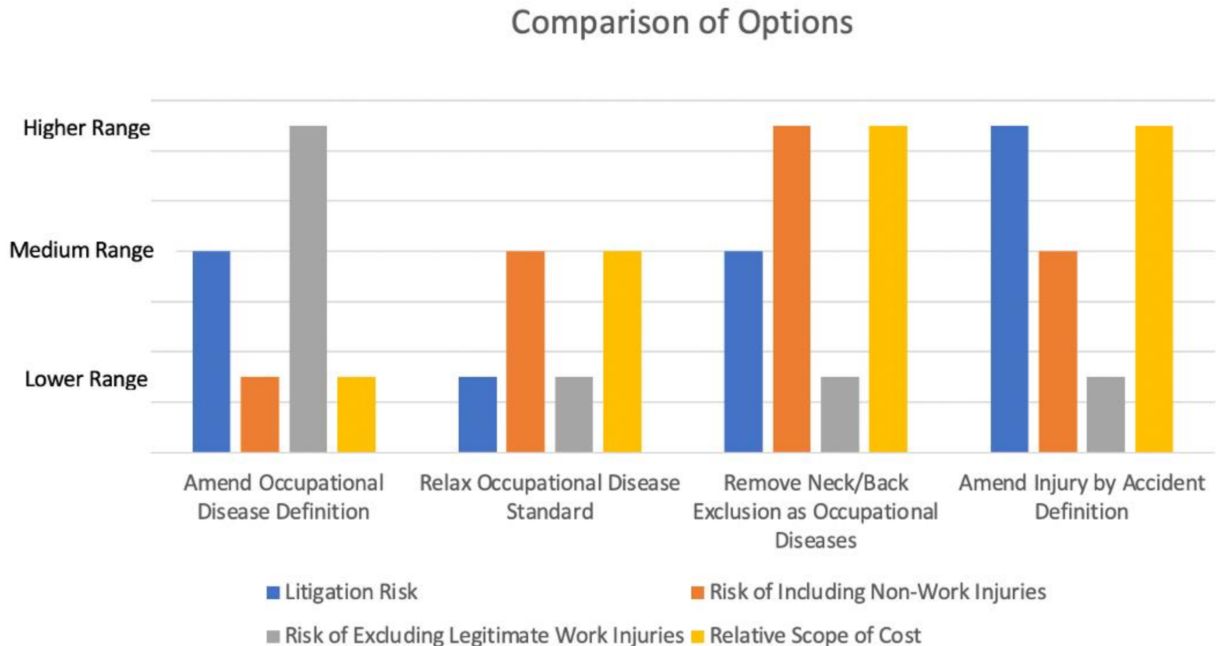


For example, the risk of adding friction costs is greater for the option to amend the definition of injury by accident, and the risk of excluding medically justifiable claims is greater for the option to amend the occupational disease definition while retaining its current causation standard.

Based on insurance data, injuries from repetitive motion constitute approximately 2.1% of workers' compensation injuries. Their respective share of overall claim costs, however, is 2.5%. This is due to some injuries, such as carpal tunnel syndrome, typically involving more expensive treatments, including surgery. Each option provided would have a different impact on the number of new claims added to the system. Costs are positively associated with claim

frequency (both rise together). Figure 2 below shows a qualitative comparison of the four options based on four criteria: the risk of increased litigation; the risk of excluding legitimate work injuries; the risk of including non-work injuries; and the estimated overall cost. The criteria use a relative scale of low/medium/high.

Figure 2: Comparison of Options



For example, the option to relax the occupational disease causation standard would have a lower overall cost impact than removing the neck and back exclusion as well as relatively lower risks of increased litigation, excluding legitimate work injuries, and including non-work injuries. Adopting the option to amend the occupational disease definition to include RSI, but without also modifying the causation standard and associated higher burden of proof, would likely have a lower overall cost impact, but heightened risks of litigation and of excluding legitimate work injuries. This analysis suggests that in expanding coverage for injuries caused by repetitive motion, the General Assembly should consider also modifying the causation standard and required items of proof for occupational diseases, as it would reduce the risk of failing to achieve the stated goal of expanding coverage for occupational RSI.

In summary, workers' compensation is a system of insurance that provides coverage for medical treatment and lost income benefits to employees injured as a result of their employment. It is intended to provide employers and their employees with compensation when workplace injuries occur without having to resort to legal expenses. Occupational injuries from repetitive motion constitute a relatively small portion of claims across the country, and we anticipate Virginia would have a similar experience, although depending on how this change is implemented, Virginia may experience more claims and associated costs than anticipated.

Highlights

What is Workers' Compensation?

- Workers' compensation provides statutory benefits for work injuries
  - Employers purchase insurance to cover these benefits (or become approved self-insured employers)
  - Virginia cities and counties are all self-insured or members of self-insured groups
- Each state has its own system
  - States often converge on common models for the law
  - There is no federal oversight over the state systems
  - Federal employees are not covered by the state systems
- An employer's insurance rate is based on the employer's expected benefit payments
  - The more dangerous the work, the more expensive the premiums
  - If an employer has a history of accidents, premiums will increase
- Benefits that are available for an injury are set by state statute
  - Medical treatment for the injury typically paid for life of the worker
  - Lost wages are paid during recovery from the injury
  - A defined lump-sum payment for permanent loss of body function
- Not every claim of injury is covered
  - State laws require a causal connection between the injury and medical treatment to the employment
  - Legal disputes can arise, which are litigated in workers' compensation tribunals
- Virginia's system is administered by the Virginia Workers' Compensation Commission
  - Administration principally involves resolving disputes
  - Other functions include enforcing insurance coverage and administering self-insurance

Injuries Caused by Repetitive Motion

- Refers to a category of injuries resulting in soft tissue damage to muscles and tendons (more frequently) and nerve compression (less frequently)
  - These can be caused by repetitive physical motions, stresses, and postures
  - Common work activities involved: packaging, assembly, welding, sewing, lab work, computer work, filing, bricklaying, meat-processing, and vehicle driving
  - Common diagnoses: carpal tunnel syndrome, tendinitis, bursitis, tenosynovitis, epicondylitis
- Virginia does not generally cover such injuries by workers' compensation
  - Historically these have been covered by workers' compensation in Virginia
  - In the 1980s and 90s Virginia court decisions made clear the requirement of a single "incident" and to not cover smaller, repetitive "incidents"
  - In 1997, the General Assembly added carpal tunnel syndrome
    - This was placed in the "occupational disease" section
    - Hearing loss, though not caused by "motion" but by smaller, repetitive "traumas" was also added

- Issues and concerns with occupational repetitive stress injuries
    - These injuries can arise from non-work activities and personal factors
        - Common non-work activities: exercise, sports, hobbies, computer use, home repair, gardening
        - These injuries can be exacerbated by other factors: age, weight, gender, and other illnesses such as arthritis
    - Virginia has taken a measured approach to covering conditions in workers' compensation that are common among the general public, such as cancer and respiratory conditions
- Neck and back injuries can sometimes occur as a repetitive stress injury
    - These injuries typically refer to conditions arising relatively slowly over time while performing job duties
    - Some neck and back injuries are caused by a somewhat discrete piece of work, which do not qualify as a "sudden" injury
    - Litigation would be expected seeking to cover neck and back injuries that are more like a "sudden" injury, but are not covered as a "sudden" injury

Frequency and Cost of Occupational Repetitive Stress Injuries

- Carpal tunnel syndrome in workers' compensation is less than 1% of insurance covered injuries across the country
- Other repetitive stress injuries are less than 2% of covered injuries
- Claim costs for carpal tunnel syndrome are generally much higher than other work injuries
    - Involves surgery more often than other RSI and more time away from work
    - Approximate average claim costs for all claims nationally are $10,850 compared to $19,520 for carpal tunnel claims (Claims from 2014, as of September 2020)
- Costs for other repetitive stress injuries are in line with common workplace injury costs
    - Typically treated with rest, anti-inflammatories, and stretching
    - Often simple job adjustments improve symptoms
    - These are not currently covered in Virginia

Issues with Expanding Coverage in Virginia

- Although carpal tunnel is legally covered in Virginia, it does not appear to be covering a proportionate number of carpal tunnel claims relative to other states
    - Virginia's rate of carpal tunnel is a small fraction of other states' experience
    - Some of this is due to poor reporting and reporting errors
    - The less hazardous employment mix in Virginia might explain lower claims
- Virginia's legal standard for covering carpal tunnel is strict
    - Burden of proof is "clear and convincing (not a mere probability)"
    - Worker must prove that carpal tunnel was caused by work activities
    - Worker must prove that carpal tunnel was not caused by non-work activities
    - North Carolina has a similar strict standard for carpal tunnel, and their frequency is low, although not as low as Virginia's

Options and Associated Risks

1. Add repetitive stress injuries as an occupational disease but retain the existing structure in the occupational/ordinary disease sections
    - This would have an increased risk of litigation, given the difficult statutory scheme for occupational/ordinary diseases
    - Would involve a low risk of including non-work injuries but a high risk of excluding legitimate work injuries
2. Add repetitive stress injuries as an occupational disease and re-structure the occupational/ordinary disease sections and burden of proof
    - This would have the least risk of increased litigation
    - Would involve a moderate risk of including non-work injuries but a low risk of excluding legitimate work injuries
    - Carpal tunnel syndrome (only RSI now covered) is roughly 5 times lower than surrounding states, and 7 times lower than the national average
3. Add repetitive stress injuries as an occupational disease and remove the restriction on neck and back injuries
    - Neck and back disease-like conditions more difficult in assessing causation
    - This would have an increased risk of litigation, as neck and back injuries excluded as not being "sudden" would be pursued as diseases
    - Would have a low risk of excluding legitimate injuries, but a moderate (perhaps even high) risk of including non-work injuries
4. Add repetitive stress injuries as an injury by accident
    - Although difficult to estimate, this would likely result in more litigation, claims, and related costs added to the system
    - It has the most risk of affecting the overall stability of the system
    - It is the most difficult to construct needed statutory changes, that considered all potential system-wide impacts

Overall System Cost Estimates

- Virginia is a relatively low-cost state for workers' compensation
- Virginia's insurance rates are currently 75% of the median costs nationwide (does not include self-insurance)
- In 2018, workers' compensation in Virginia cost about $1.1 billion in insurance premiums and about $500 million in cost to self-insured employers
- Adding repetitive stress injuries should add approximately 1,200 claims annually at a cost of approximately $20 million to the Virginia workers' compensation system
- The added cost stems from more from the relatively expensive carpal tunnel claims; other RSI claims added would be in line with average claim costs
- Range of costs due to policy choices
    - Retaining current restrictive occupational/ordinary disease structure of the code would likely result in fewer covered claims, but likely more litigation
    - Relaxing current exclusion of neck and back conditions as covered occupational diseases would likely result in more covered claims, and increased litigation

HB 617: Injuries Caused by Repetitive Motion

Expanding Coverage of the Virginia workers' compensation system to include injuries caused by repetitive motion

I. Background

Recent advances in automation and technology, and global industrial and economic shifts, have dramatically changed how work is performed in the U.S. One significant positive impact has been an increase in workplace safety and a reduction in workplace injuries. Advances in medical treatment and technology have also had positive impacts on workers' compensation systems. Available treatment modalities have supported quicker, more effective recovery from injury. This has also resulted in more precise identification of causes of conditions and targeted treatments.

Workers' compensation is state based, meaning that each state charts a course in developing its respective workers' compensation system. Virginia's system was enacted in 1919. All workers' compensation systems originally covered only "traumatic" accidents, such as fractures and burns. Gradually more and more conditions were covered. Virginia added coverage for occupational diseases in 1944. Legislatures have struggled to expand systems to cover legitimate work injuries, without un-intentionally allowing recovery for personal injuries.

Injuries, especially when relatively severe, can have a tremendous impact on the livelihood of employees and business operations of employers. Employees can lose their source of income, and be faced with mounting, expensive medical treatment. Employers can lose a valuable, experienced employee. The stakes are high, and disputes arise. Workers' compensation judges are on the front lines of resolving these disputes, but sometimes decisions are appealed in a state's appellate courts. In a stable system a consistent body of law develops, and stakeholders use a predictable interpretation of the law to inform how they deal with issues as they arise.

Which leads us to injuries caused by repetitive motion. These injuries can be controversial when they are connected with work. Their symptoms can be vague. Their origins can be difficult to identify. They can be caused by work, but they can also be caused by non-work activities of daily life. A great example is "tennis elbow," so named because of its prevalence among tennis players. This condition, however, is also common in the meat-processing industry.[4]
Virginia, like other states, has enacted laws to address this challenge of covering legitimate work injuries, and avoid covering personal injuries. The purpose of the laws is straightforward: employers should compensate employees when their employment causes them to be injured and become disabled. Virginia courts, however, have interpreted Virginia's workers'

[4] Walker-Bone, K. et al., *Occupation and Epicondylitis: A Population Based Study*, Rheumatology (Oxford: 2012) (available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3427015/).

compensation laws narrowly to restrict coverage. Currently, only carpal tunnel syndrome is covered, and as will be shown the extent of Virginia's coverage for this condition is limited.[5]

This report is in response to Virginia House Bill 617 (2020 regular session), to evaluate injuries caused by repetitive motion and suggest options for amending the Code of Virginia to expand coverage for such injuries. This report addresses the following questions:

- What are repetitive stress injuries?
- How common are they in workers' compensation?
- How expensive are they?
- Why aren't they covered in Virginia?
- What are options for covering them in Virginia?
- What are policy considerations for each option?
- What are risks involved in each option?
- How much would this cost?

II. What is an Injury Caused by Repetitive Motion?

This sort of injury goes by other synonymous names: repetitive stress injury and cumulative trauma. The National Institute for Occupational Health and Safety has taken the term "musculoskeletal injury" to encompass repetitive motion injuries. We use repetitive stress injury ("RSI") to describe any damage to nerves, tendons, ligaments, or muscles stemming from motions and similar physical stresses that inflict the observed damage. This motion may be thousands of repeated microtasks, such as key data entry or twisting an object on an assembly line. The activity may also be less frequent but more stressful, such as occasionally lifting baggage overhead or forcefully twisting screws or bolts. The key point is that some specific task in the performance of work, when done often enough, causes damage to the body.[6]

To be a compensable injury, the purported damage must be diagnosed by a physician with testing or other examination. Also, the physician must see (depending on the causality standard of the state) a plausible connection to work as a contributing cause or the dominant cause. RSI is very commonly found with certain types of employment, such as meat cutters and assembly line workers. However, almost any job could produce RSI under some tasks and certain predispositions of the worker to injury. Personal risk factors, such as age, gender, weight, diabetes, and smoking habits, may confound the assessment of work-relatedness of the injury.

To re-cap: Work activities such as repetition, particularly when involved with the use of force and poor ergonomic, contribute to musculoskeletal injury and sometimes nerve damage. Establishing a single source of the cause of such injuries, however, is sometimes difficult.[7] The

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[5] Hearing loss is also covered, but our focus is on injuries caused by repetitive motion. We have provided options for also including hearing loss generally with the definition of a repetitive stress injury.

[6] See brief posted by the Nat'l Inst. of Neurological Disorders & Stroke, Repetitive Motion Info. Page, found at: https://www.ninds.nih.gov/Disorders/All-Disorders/Repetitive-Motion-Disorders-Information-Page.

[7] See, e.g., O'Neil, Barbara A. et al., "Chronic occupational repetitive strain injury," Can. Fam. Phys. (Feb. 2001) (available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2016244/)

Virginia workers' compensation system does not generally cover such injuries (with the exception of carpal tunnel syndrome and hearing loss), which is unique among states in the U.S.

III. Frequency of Repetitive Stress Injuries

Next, we address how frequently repetitive stress injuries ("RSI")[8] occur in the workplace.[9] To estimate the frequency of RSI claims we use the frequency of claims for certain injury categories. The injury diagnoses we used are as follows: sprains, strains, carpal tunnel syndrome, and all other cumulative trauma injury types.[10] For the first two diagnoses the cause of injury is coded as "repetitive motion" or "cumulative trauma." For carpal tunnel we use that specific diagnosis regardless of the coded cause of injury. The last diagnosis is a catch-all category for claims with a nature of injury coded as "all other cumulative injury." These groupings do not overlap; we believe they capture a large majority of RSI claims.[11] We note that coding of claims can contain errors, but the errors apply to all states; thus the comparison of Virginia with other states is not obviously distorted by worse data coming from Virginia.

The percentage share of RSI is the count of injuries divided by total injuries for the geographic area under consideration. To compute the average rate we use cumulative claims spanning a five year period, namely accident years 2014 to 2018.[12] We use two state comparisons: 1) the region around Virginia (DC, KY, and MD), and 2) countrywide experience.[13]

We estimate that RSI represent 2.1% of total claims. This rate includes carpal tunnel injuries. This is based on data for insured claims, but it is roughly confirmed by BLS data and Electronic Data Interchange (EDI) data reported to a sample of other states. We did not observe any reason to believe that self-insured employers on the whole would have a *significantly* different rate than insured employers, so we apply the insurance estimate to the self-insured

[8] Such injuries are referred to by lawmakers, courts, and researchers and even by medical professional in various ways, for example injuries caused by repetition motion, repetitive stress, repetitive strain, cumulative trauma, and overuse. We use "repetitive stress injury" or "RSI" to include all these synonymous meanings.

[9] In general, a work injury is reported by an employee or witness to the employer. The employer is required by OSHA to log the injury, and the employer is also required to notify its workers' compensation insurance carrier. This is known as a "claim." The insurance carrier then reports the injury to the state workers' compensation agency, and if they accept the claim they also report payments. We have compiled data on both reported injuries (OSHA data collected by the Bureau of Labor Statistics) and on workers' compensation claims (insurer data from the National Council on Compensation Insurance and from state workers' compensation databases).

[10] Hearing loss claims are sometimes grouped into "cumulative trauma" claims. This condition is included in Va. Code §§ 65.2-400 & -401 as a covered occupational disease, along with carpal tunnel syndrome. H.B. 617 focused on "injuries caused by repetition motion" and we limited our analysis here to such injuries. But hearing loss and RSI are logically similar insofar as they can arise over time from repetitive "micro" traumatic events, and in our proposed definition we include injuries caused by "noise." As for frequency, hearing loss represents a tiny fraction of claims: 0.08% of all reported claims. We also note that 69% of these claims were reported to have been denied for failing to meet the burden of proof.

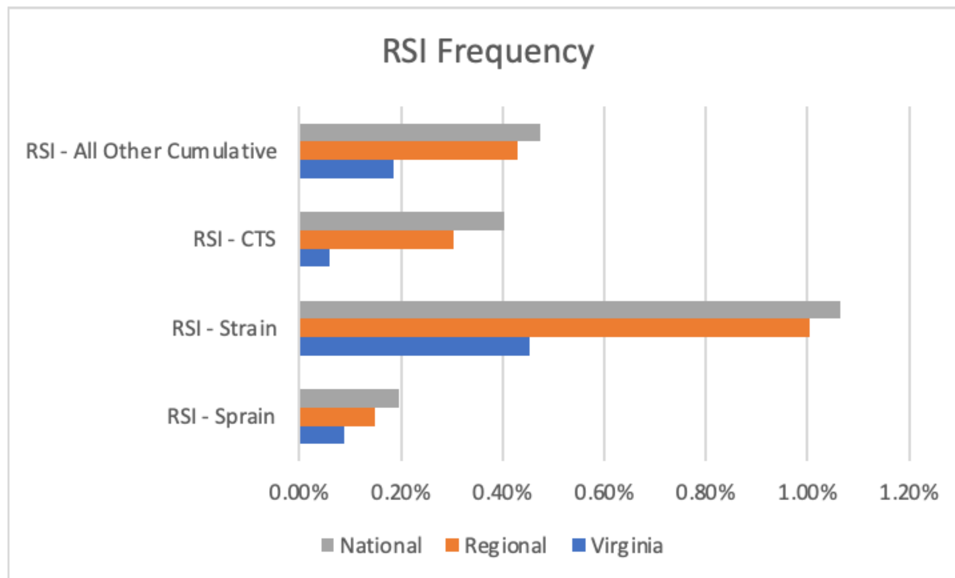
[11] See the Appendix for additional detail about the data sources and these coding parameters.

[12] An "accident year" groups all claims in which the reported injury date falls within a particular year.

[13] "Countrywide" is a term used by NCCI to refer to a broad set of states that it collects data for; there are 36 NCCI states, and other non NCCI state data is often also available. See the Appendix for additional detail.

population.[14] For states around Virginia the rate is 1.9%. Carpal tunnel syndrome represents 0.4% of claims across the nation; in Virginia, however, these claims are 0.06% of all claims. In the region they were 0.3% of claims, which is more in line with the national rate. The following figure shows the distribution of the incident rate of RSI among across the respective RSI nature of injury codes.

Figure 3: Frequency of Repetitive Stress Injuries by Injury Type



In choosing how Virginia might compare to the other geographic regions, it is worth remembering that Bureau of Labor Statistics injury surveys show Virginia having a significantly lower incidence rate for RSI than Kentucky, DC, and the national average. Keep in mind that, in theory, Virginia's current incidence rate for *paid* RSI, other than for carpal tunnel syndrome, should be zero, as these claims are routinely not accepted. The BLS data is based on *reported* injuries, and not claims payable under workers' compensation. The BLS data generally confirms reported insurance data that RSI claims (including CTS) have a very low frequency in Virginia.

The insurance data in the above chart showed, however, that RSI claims were not zero, but were paid in Virginia. This could be for several reasons. First, an adjuster may prefer to pay a claim while investigating, in order to leverage claim-management tools not available if denied, for example using panel physicians. Second, causation may not be clear, and the adjuster chooses to pay a claim in a close case rather than litigate. Third, the injury may be relatively minor, and the claim handling approach is to pay the claim and resolve it with a successful claim

[14] We found that the industrial mix of self-insured employers in Virginia is substantially different from insured employers, as measured by payroll groupings, and that some categories of employment that are at relatively higher risk of RSI are more prevalent among Virginia self-insured employers than among Virginia employers generally. However, over two-thirds of Virginia self-insured employer payroll consisted of the government sector, which has a lower incidence rate of RSI than the national rate, and we would estimate that RSI frequency among Virginia self-insured employers would be at or below overall estimates. More detail is provided in the Appendix.

and return-to-work outcome, rather than deny it and risk the claim becoming litigated and much more expensive. Fourth, a claim may be initially reported to the employer as a repetitive motion injury and so recorded on the insurance report, but after investigation the claim is determined to not be caused by repetitive motion and allowed for compensation, but without updating the nature of injury code. Regardless of why some RSI are in fact being paid in Virginia, it is clear that the Virginia frequency is comparatively low.

To recap: we estimate that RSI, if covered as in other states, would account for approximately 2.1% of covered claims in Virginia. Additional information concerning frequency is contained in the Appendix.

IV. Cost of Repetitive Stress Injuries

Next, we will report on the cost of occupational RSI. The impacts of expanding coverage for RSI in Virginia are primarily from allowing more work-related claims to be accepted and paid. As just set forth, our projected frequency of RSI represent a relatively small portion of overall workers' compensation claims. Thus, the impact on employers (in the form of additional premiums for these claims for insured employers or direct claim costs for self-insured employers) can be estimated based on per-claim costs and the anticipated additional claims. We collected data of claim costs paid by insurers to form a basis for estimating the amount of lost wages (known as "indemnity") as well as medical costs.

To estimate the cost of these new injury claims we span the range of possibilities by using average medical and indemnity costs for Virginia, Region and Countrywide. These average costs are broken out by the same injury categories described above for frequency.[15] Estimating medical cost is particularly difficult because: 1) Virginia has relatively little reliable (accurately coded) experience with medical treatment of RSI; and 2) the new Virginia fee schedule is likely to draw down average treatment cost from historic levels. Further complicating matters is the fact that our best medical cost data is subject to "development," which is the actuarial recognition that the ultimate, full amount of the medical costs takes many years of "development" to reach its ultimate level. For this reason, the paid costs over the sample period 2014-18 understate the ultimate cost for those years. As explained later, we attempt to correct for this with development factors.

We estimate that that overall share of total claim cost for RSI is 2.5%. This includes carpal tunnel syndrome, which has a much higher per-claim average cost. Excluding carpal tunnel, RSI are 1.8% of total claim costs. For the region RSI are 2.5% of total claim cost. Currently, in Virginia, RSI represent 0.55% of total claim costs. Note: we used the average of total proportionate costs for claims in accident years 2014-18, with payments accumulated through September 2020. The following figure shows the distribution of the proportionate claim cost across the respective RSI codes.

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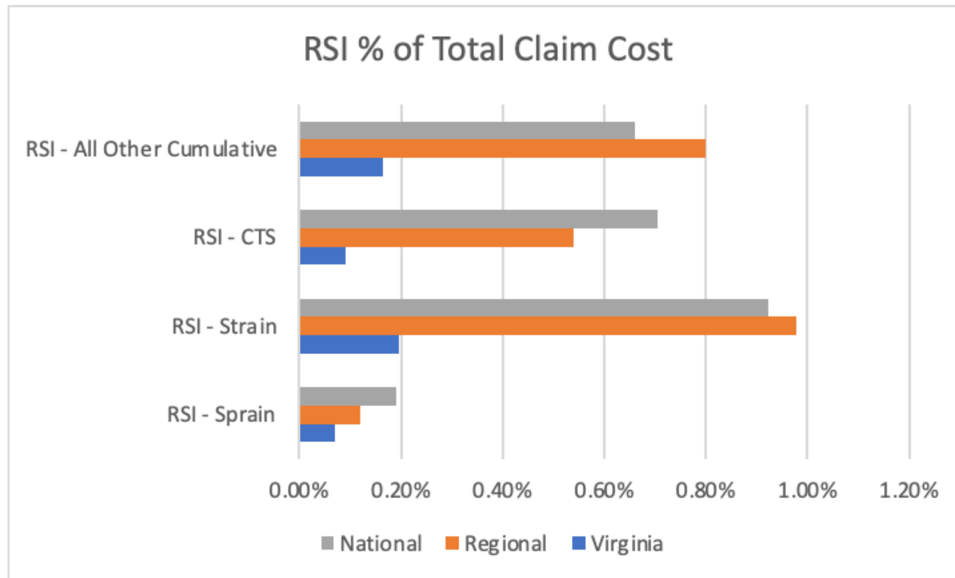
[15] In our experience, claim costs tend to be somewhat positively skewed from the median because of expensive "outlier" claims.

Figure 4: Repetitive Stress Injuries as a Percentage of Total Claim Cost



Next, we turn to costs per claim. We estimate that cost per claim for RSI is $17,000. This includes carpal tunnel, which is costlier per claim than other RSI. Excluding carpal tunnel, RSI costs per claim are $15,090. Regional experience is lower on average, and if Virginia's experience is more in line with the region, then the $17,000 estimate could be a little high. Virginia's current per claim cost, across all claims, using this same approach is $15,050.[16]

So far we have only considered employer costs. To complete the picture one should also consider the benefits to employees. Virginia workers that suffer injury from repetitive motion or stress would clearly benefit from the broadened coverage in Virginia. Currently, those workers with health insurance may have their treatment costs covered, but those without insurance will face out of pocket expenses. The indemnification of work-time lost or loss of a job is difficult to estimate. Some employers may provide workers with job modifications to accommodate their (non-covered) condition. Other workers may try to "tough out" the symptoms of RSI for as long as possible. Still others may be forced to change employment, e.g., someone with chronic bursitis or carpal tunnel syndrome from the meat cutting line will likely not return to that kind of work. We would add that these adverse consequences to workers have been recognized and made compensable in all states but Virginia.

In summary, RSI per claim costs are largely in line with other claims. Virginia costs per claim are generally higher than other states, although early indicators since adoption of the fee schedule in 2018 show this coming more in line with national cost levels.

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[16] For per-claim estimates we used *only* the average costs in insured claims for the 2014 accident year, as of September 2020. We have also added a development factor to allow for development of such claims for year-on-year costs to their ultimate cost. We then add a factor based on trends to the benchmark year of 2020. See the Appendix for additional detail. Note that this is all claims, including those involving only medical expenses (medical-only claims) and those that include benefits for time away from work (lost-time claims).

V. Coverage of Repetitive Stress Injuries in Virginia

Next, we provide analysis of why Virginia currently does not cover RSI. We first note that such injuries were covered at least in part from 1944, when Virginia amended the Act to cover occupational diseases, until approximately 1985, when the Virginia Supreme Court ruled that RSI were not covered occupational diseases.[17] Since 1985, the General Assembly has attempted two amendments of the Act to provide some coverage for RSI. Currently only carpal tunnel syndrome is a covered RSI, but as shown in the frequency analysis above, the coverage for this condition in Virginia is far less than in other states.

Workers' compensation injuries are typically classified as either a "specific" traumatic injury or as an occupational disease. For example, the Workers Compensation Insurance Organizations groups injuries as either "Specific Injury," such as amputations, burns, and fractures, or "Occupational Disease or Cumulative Injury," such as silicosis, dermatitis, and contagious disease.[18] Repetitive stress injuries are typically classified in this "disease" category, although the line between "trauma" and "disease" is not precise. State workers' compensation laws vary in how they classify RSI, but most use the "disease" classification.

There is also not consistency among medical providers concerning the "injury" vs. "disease" distinction. Some medical practitioners will diagnose using a "disease" type classification, whereas others will use an "injury" type classification. For example, medical treatment coding based on ICD-10 diagnostic definitions refer to "Mononeuropathies of the upper limb" as one of many "Diseases of the nervous system." Within the mononeuropathy category is "Carpal tunnel syndrome." Other ICD-10 diagnostic codes, however, refer to an "Injury of nerves at wrist and hand level" as a type of "Injury, poisoning, and certain other consequences of external causes." It seems obvious that workers' compensation coverage should apply to both situations, when work related, and that compensability should not turn on whether repetitive work motion causes an "injury of nerves at wrist and hand level" versus one that causes a "mononeuropathy of the upper limb."

In Virginia, RSI historically have been treated as occupational diseases. The Virginia Supreme Court, however, has consistently ruled that such conditions are not diseases, but traumatic injuries. The Court has catalogued how prior decisions had dealt with (or failed to deal with) this distinction. Importantly, the Court observed that the distinction was not academic: "[A]n impairment resulting from cumulative trauma caused by repetitive motion [is] an impairment which must be classified as an injury, not a disease."[19] The Court considered this a legal issue, and not a medical one: "whether a proper definition has been used to test the authenticity of a doctor's opinion is strictly a legal question." The Court focused on the phrase "cumulative

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[17] We provide additional detail about Virginia's treatment of occupational disease when addressing options for amending the Act to expand coverage for RSI.

[18] See Workers Compensation Insurance Organizations, Nature of Injury Codes (Mar. 2020) (available at https://www.wcio.org/Active%20PNC/WCIO_Nature_Table.pdf).

[19] *The Stenrich Group v. Jemmott*, 251 Va. at 186, 198 (1996). Medical evidence in *Jemmott* was that the conditions at issue (carpal tunnel syndrome and tenosynovitis caused by repetitive work motions) were a disease.

trauma caused by repetitive motion" and ruled that, as a matter of law, this was not a disease. The Court also deferred to the General Assembly as to expanding coverage to include "disabilities resulting from both injuries and diseases caused gradually by repeated trauma."

Carpal tunnel syndrome is a common type of RSI, and it *is* covered in Virginia, despite being a "micro-trauma" injury. This is because in 1997, in response to the *Jemmott* decision, the General Assembly amended the Act to consider hearing loss and carpal tunnel syndrome as "ordinary diseases of life."[20] To re-cap: Virginia covers only carpal tunnel syndrome and hearing loss among the category of repetitive stress injuries. Why is this? We believe that the likely reason why coverage is limited is because occupational injuries generally are not broadly covered by workers' compensation. Diseases, unlike sudden, traumatic injuries, are often latent for years, and cause can be enigmatic. Attribution to a particular employment can be difficult. When workers' compensation was first established in the early 1900's, diseases were excluded. Gradually, however, states came to recognize that occupational disease was a risk of employment and should be covered. Virginia followed suit in 1944, although the standard used in Virginia for evaluating whether a disease is occupational is unique among states. We discuss this in detail in the next section concerning options for amending the Act to provide coverage for RSI.

VI. Options for Covering Repetitive Stress Injuries in Virginia

Worker's compensation systems are intended to provide benefits for workplace injuries. Virginia, like most states, uses a definition of "injury" to define what is covered: "'Injury' means only injury by accident arising out of and in the course of the employment or occupational disease as defined in Chapter 4 (§ 65.2-400 et seq.)."[21] There are two basic approaches to accomplishing the change to cover RSI in Virginia: 1) amend the definition of injury; or alternatively 2) amend the occupational disease section. The 2019 JLARC report explained that having options would help the General Assembly "decide how to afford Virginia workers the opportunity to obtain compensation for work-related cumulative trauma injuries while also protecting Virginia employers and insurers from bearing the costs of non-workplace injuries."[22] The options that follow highlight potential modifications to the Code of Virginia.

As previously mentioned, the General Assembly in 1997 modified the Act to cover carpal tunnel syndrome and hearing loss. This was accomplished by amending the occupational disease section. Although the standard used is strict, and Virginia's coverage of carpal tunnel syndrome has been very limited, we believe that the General Assembly could similarly accomplish expanding coverage for RSI by amending the occupational disease section. But we will analyze both approaches. Either approach, however, should include a specific reference to prior non-

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[20] The Virginia Supreme Court has recognized that this amendment, to add hearing loss and carpal tunnel syndrome as covered ordinary diseases, was "within the purview of the Act" in contradiction to the ruling in *Jemmott*. Adams v. Alliant Techsystems, Inc. (Apr. 20, 2001) (Upon Questions of Law Certified by the U.S. District Court for the West. Dist. of Va.) (available at http://www.courts.state.va.us/opinions/opnscvwp/1002613.pdf).
[21] Va. Code § 65.2-101.
[22] JLARC 2019 Report at 36.

coverage for such conditions, to make clear that the amendment is intended to provide coverage for such conditions.

A. Option: Amend the Occupational Disease Section

The first option we consider for covering injuries caused by repetitive motion is to amend the occupational disease section. In Virginia, an "occupational disease" is a disease that arises out of and in the course of the employment, with several qualifiers to prevent non-workplace diseases from being covered. There is also a concept of an "ordinary disease of life," meaning a disease "to which the general public is exposed outside of the employment." An "ordinary" disease may be covered, if shown by "clear and convincing evidence (not a mere probability)" that the disease resulted from the employment, and provided that it is shown that the disease "did not result from causes outside of the employment." Va. Code § 65.2-401. As just mentioned, hearing loss and carpal tunnel syndrome are specifically included in the ordinary disease of life section. Amending the occupational disease section to cover repetitive motion injuries would involve two changes: 1) adding repetitive motion injuries as covered conditions, similar to how hearing loss and carpal tunnel syndrome are deemed covered (and including carpal tunnel syndrome within that modification); and 2) structuring the change such that occupational conditions are covered, and non-occupational conditions are excluded.

First, adding repetitive motion conditions involves an appropriate definition. Hearing loss and carpal tunnel syndrome are not defined in the section, instead relying on their plain meaning, but using a laundry-list approach is not ideal because terminology changes over time, and also because inevitably conditions are likely to be missed and medical science does not strictly adhere to statutory labels. Like other states, we recommend using general terminology, such as repetitive motion conditions, and adding explanatory language to provide a workable definition and the scope of its meaning. This would be accomplished by adding a proviso to Va. Code § 65.2-400(A), such as the following (new text underlined):

> [T]he term "occupational disease" . . . <u>specifically includes injury from conditions resulting from physical stressors including repetitive and sustained motions, exertions, posture stresses, contact stresses, vibration, or noise. Repetitive and sustained physical stress is not required to occur over a particular period, so long as such a period can be reasonably identified and documented. Notwithstanding prior decisions to the contrary, such injuries shall be covered injuries if shown to arise out of and in the course of the employment as set forth in this section.</u>

This definition is based on medical research of repetitive stress injuries. Note that certain conditions that arguably could fall within the ambit of "repetition" are not included, such as mental conditions (for example caused by repetitive exposure to stressful situations), abrasions (for example caused by repetitive rubbing), and injuries from repetitive exposure to extreme temperatures. The specific language of H.B. 617 was "injuries caused by repetitive motion" and not repetition generally. We did include "noise" which is not a repetitive motion, but this is intended to continue to include hearing loss as a covered condition. Additionally, conditions relating to the neck, back, and spine, which are currently excluded from coverage as an occupational disease, are discussed in the Policy Considerations section below.

Next, how should the statute be structured, to ensure that occupational conditions are covered, and injuries caused by non-occupational conditions are excluded? As discussed earlier, despite being covered conditions, the frequency of claims for hearing loss and carpal tunnel syndrome in Virginia is significantly lower than in other states sampled.[23] This, we believe, is likely due to the heightened burden of proof set forth in the ordinary disease of life section of the Act, in addition to the requirement that it be clearly and convincingly shown that the condition did not result from causes outside of the employment. Given the objective to *allow* coverage for injuries caused by repetitive motion, it appears that these current constraints on coverage also need to be modified. It is important to balance this objective, however, with that of *not* covering non-workplace injuries.

Currently, the approach used in § 65.2-401 is to require a certain level of proof; the focus is on the technical sufficiency of evidence. The purpose of the statute, however, is to ensure that the disease arose out of and in the course of the employment. A single, clear medical opinion by a treating physician can establish causation. Medical evidence that all reasonable causes are known and have been considered, including the employment-related causes, and that, on balance, employment is considered the principle, or primary cause of the disease, considering all causes, would accomplish the purpose of the statute. This would be accomplished by further defining the causation standard in § 65.2-400(A) as follows (new text from above version underlined):

> [T]he term "occupational disease" . . . specifically includes injuries from conditions resulting from physical stressors including repetitive and sustained motions, exertions, posture stresses, contact stresses, vibration, or noise. Repetitive and sustained physical stress is not required to occur over a particular period, so long as such a period can be reasonably identified and documented<u>, and further provided that the employment is shown to have primarily (more than 50%) caused the injury, considering all causes</u>. Notwithstanding prior decisions to the contrary, such injuries shall be covered injuries if shown to arise out of and in the course of the employment as set forth in this section.

This is based roughly on a 2015 change to the Tennessee workers' compensation laws.[24]

Some RSI conditions present unique challenges to medical providers and fact finders in determining causation. States vary in how they address this issue. The approach outlined above allows medical providers to weigh the relative contribution of occupational causes against all other causes of an injury. Moreover, in the Policy Considerations section, we discuss the potential for adopting standards that could be followed by treating physicians in assessing causation. These standards go a long way in clarifying and confirming the relative contribution of work versus all other causes. This could be the subject of rulemaking and provide consistency with how more difficult causation analyses can be addressed.

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[23] Carpal tunnel syndrome represents 0.4% of claims across the nation; in Virginia, however, these claims are 0.06% of all claims. Thus Virginia's rate is roughly 6.5 times lower than that in other states.

[24] The "primarily" standard in Tennessee is defined as requiring that the "employment contributed more than 50 percent (50%) in causing the injury, considering all causes." The effect of this definition is that it is mathematically impossible to have more than one "primary cause." Tenn. Code Ann. 50-6-102.

Additionally, we suggest that this option – amending the occupational disease provisions to add coverage for RSI – should be accompanied by further changes to the occupational disease and ordinary disease of life sections. The occupational disease section is confusing, contains superfluous language and overlapping provisions, and operates to exclude many conditions primarily caused by work. The overall rate of occupational disease in the U.S. is very low, but the Virginia rate of acceptance of a general category of occupational disease is 28% lower than the national rate.[25] As for the ordinary disease of life section, not only does the standard of proof require a very strict burden of proof of a causal connection with work as just outlined, the section also requires proving that there were *not* any non-occupational factors that contributed to the condition. Such a standard seems to require tremendous difficulty in showing that possible or potential causes played no role; it defies logic, for example, to conclude that playing tennis for exercise plays absolutely no role in a meat cutter's lateral epicondylitis (medical terminology for tennis elbow). This change is consistent with Virginia court decisions, which have held that establishing only a single cause is not required. Details for these additional changes are provided in the Summary section below.

Finally, the occupational disease section specifically excludes injuries to the neck, back, and spinal column. It is important to recognize that, while RSI are a relatively infrequent occupational injury, they can involve neck and back conditions. Thus, if the General Assembly determines to include all potential RSI in expanding coverage, it should address the neck and back exclusion. There are other factors in making such a change, however, and we discuss this in the Policy Considerations section below.

B. Option: Amend the Injury Definition

Other than amending the occupational disease provisions, the alternative option is to amend the definition of injury. Virginia Code § 65.2-101 defines an "injury" as an "injury by accident arising out of and in the course of the employment." As outlined previously, the Supreme Court has held this definition to exclude repetitive stress injuries.[26] This definition could be amended, however, to specifically include repetitive stress injuries, or a provision could be added that would prevent a defense that an injury is not compensable because it was a repetitive stress injury that otherwise meets the definition of an injury. For the following reasons we believe that such a change could have consequences beyond simply covering repetitive stress injuries, however, because the definition of injury is a key term used in numerous other provisions throughout the Act.

First, the precise triggering event for notice and the statute of limitations can be difficult to discern in such injuries. Symptoms could be mild at first, and it might not be obvious what is

[25] Analysis of 2014-18 average paid claim data as of September 2020, using WCIO Nature of Injury code 71 (All other occ disease injury NOC).

[26] *Jemmott*, *supra*, 251 Va. at 199 (1996) ("[J]ob-related impairments resulting from cumulative trauma caused by repetitive motion, however labeled or however defined, are, as a matter of law, not compensable under the present provisions of the Act.").

causing them. This is similar to an occupational disease, which tends to surface gradually. For occupational diseases, the triggering event is either "diagnosis of the disease" or "last injurious exposure."[27] If expanding coverage of RSI were handled as an "injury" than similar triggering event language should be added. Additionally, if RSI were added as an "injury" then hearing loss and carpal tunnel syndrome would most likely also be considered repetitive stress injuries; however, these conditions are currently set forth in the occupational disease and ordinary disease of life provisions of the Act. This would need to be addressed to add clarification and prevent litigation.

Finally, modifying the definition of "injury" to accomplish coverage of repetitive stress injuries could have unintended consequences with respect to injuries from "unknown" causes. For example, litigation has focused on how singular an event or series of events must be, to be considered a "sudden, identifiable incident." These cases typically involve an injury happening at work, but the evidence is not clear as to when, resulting in an injury stemming from a somewhat "unknown" cause. There are cases where four hours of exertion falls within the definition but even shorter periods of exertion do not. Modifying the definition of injury to include repetitive stress conditions could unintentionally result in a broader expansion of coverage of injuries from "unknown" causes.

C. Recap of Options

The basic alternatives for expanding RSI coverage are: 1) amend the definition of injury; or 2) amend the occupational disease section. For the latter alternative, there are additional options for modifying the causation standard. These options are: 1) maintain the status quo regarding the weight of evidence and continue to use the clear and convincing standard; or 2) adopt a less restrictive causation standard, for example "primary (more than 50%) cause considering all causes." Finally, there are also options that should be considered, namely whether to include conditions of the neck, back, and spinal column as RSI. A high-level overview of possible options to expand coverage for RSI in Virginia are as follows:

1. Add RSI as covered conditions in the occupational disease/ordinary disease of life sections but retain the current structure of those sections;
2. Add RSI as covered conditions in the occupational disease/ordinary disease of life sections with accompanying amendments to the general structure of those sections;
3. Add RSI as covered conditions in the occupational disease/ordinary disease of life sections but remove the prohibition of coverage for conditions of the neck, back, or spinal column; and
4. Add RSI as covered in the definition of injury.

The first option involves adding RSI as an occupational/ordinary disease but retaining the current structure of those sections, including the restrictive burden of proof (clear and convincing evidence). This option would likely result in the fewest amount of additional injuries

[27] See Va. Code § 65.2-406(A)(6).

being added to the system but would also likely result in increased litigation and exclusion of legitimate claims.

The second option – covering RSI as an occupational/ordinary disease with accompanying structural changes to those sections in the Act – involves specifying within those sections that RSI are covered, as well as modifying the general structure of those sections as well as the burden of proof. The occupational disease sections are overly complicated and difficult to apply, and result in too few conditions being covered, despite being work related.

The third option is to add RSI as an occupational/ordinary disease, and also to eliminate the current restriction place on neck and back injuries within that section. Although RSI typically involve upper extremity injuries, it is not unusual for employees to suffer neck and back injuries as the result of gradual, repetitive motions and stresses. These types of injuries present additional challenges with respect to causation and share commonalities with conditions experienced by the public generally. This option also carriers a higher risk of litigation as well as a higher risk that non-occupational injuries will be shifted to the workers' compensation system.

The fourth option is to amend the definition of injury by accident to include RSI. This effectively would place such injuries in the realm of "traumatic" injury. Courts have long used this definition, however, to avoid covering gradually incurred injuries, instead requiring proof of a single, identifiable incident. This option has a higher risk of spurring litigation and instability in the law, as other provisions in the Act rely on this interpretation of an injury, for example notice requirements and statute of limitations. It also potentially invites litigation over injuries of "unknown causes."

We now turn to public policy considerations involved in these options followed by an analysis of risks of negative and unintended consequences. We conclude with a classification of the options according to their respective likelihood of experiencing these consequences.

VII. Policy Considerations

There are additional policy considerations relevant to expanding the Virginia workers' compensation system to include repetitive stress injuries. These impact the policy considerations in adding coverage for RSI.

A. Neck and Back Injuries

We first discuss Virginia's current exclusion of back, neck, and spine conditions as occupational diseases. A decision to *include* RSI as occupational diseases brings this back/neck/spine exclusion into question. Gradually developing back, neck, and spine conditions can present unique difficulty in identifying causation with much certainty. (This may be more complicated than causation for repetitive stress injuries generally.) The disease provisions of the Act specifically exclude neck and back conditions, probably for this reason. Repetitive stress injuries

fall in a grey area, where rigid, precise injurious action can be hard to pinpoint.[28] Moreover, the boundary between "disease" and "injury" in many instances is not abundantly clear, hence the use of vaguer terms like "syndrome" or "condition." What is clear, however, is that one can injure his or her back by repetitive bending, lifting, carrying, or even standing still in one position. Whether this is caused by work activities or activities outside of work is a source of frequent debate and litigation. Despite these difficulties, qualified medical professionals are able to identify the likely cause(s) of a back or neck malady.

In addition to work related causes, back and neck injuries are also clearly precipitated by age, obesity, and other personal risk factors. Such arguments matter little to an individual who is unable to bend over to tie their shoes or to an employer required to pay for an employee's back surgery. Regardless, the Act's current definition of an occupational disease excludes "any condition of the neck, back, or spinal column."[29] It would be incongruous to include such conditions as meeting the definition of a repetitive stress injury, but to exclude them generally as an occupational disease. But including them as covered RSI adds risk that some conditions that are more connected with non-work factors are covered as work related. Also, neck and back injuries are more expensive to treat than most injuries.

It appears that the tension in covering back and neck injuries as diseases results from the origin of some such injuries being relatively unknown. For example, the injury could be from any number of causes, and no specific cause is identified with much certainty. We believe that this is best addressed through a clear causation standard, by which treating physicians review both work and non-work factors and the best available medical evidence to arrive at reasonable causation conclusions. In summary, the crux of the public-policy issue concerning whether to include neck and back injuries as covered occupational diseases, is one of added cost to the system weighed against the risk of adding costs to the system that are not truly work related along with possibly more litigation.

B. Occupational Disease Cases

If the General Assembly determines to amend the occupational disease provision of the Act to add coverage for RSI, then there are additional, pertinent consideration about that section generally that could impact the change. In Virginia there are two pertinent sections: occupational diseases and ordinary diseases of life, and all "diseases" first go through the occupational disease provision.

Proving an occupational disease in Virginia involves addressing several causation questions. First, an occupational disease cannot be one "to which the general public is exposed outside of the employment." Second, there is a multi-part causation analysis, requiring the following: a

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[28] See, e.g., Rempel, David M., et al., "Effect of Wrist Posture on Carpal Tunnel while Typing," Journal of Orthopaedic Research (Mar. 26, 2008); *see also* Leach Scully, J., "What is a Disease?", Science and Society (July 2004) ("It might not be easy to articulate what a disease is, but we like to think we would at least all know when we saw one.").

[29] Va. Code § 65.2-400(B)(4).

"direct" link to work; "natural" connection with the nature of the work; a "fair" trace to the work; no "substantial" non-work exposure; not a condition of the neck, back, or spine; "incidental to the character of the business"; not independent of an employer and employee relationship; and flowing originally as a natural consequence from a risk connected with the work.[30]

If the disease *is* one to which the general public is exposed outside of the employment, then it may still be treated as an occupational disease. These are known in the statute as "ordinary diseases of life." They have several additional causation questions, and must be established by "clear and convincing evidence (not a mere probability)" as follows: that the disease exists and arose out of and in the course of the employer as provided for occupational diseases; that the disease did not result from causes outside of the employer; and one of the following: (i) it follows as an incident of occupational disease; (ii) it is a certain type of infectious or contagious disease; or (iii) it is characteristic of the employment and was caused by conditions peculiar to the employment.[31]

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[30] Virginia Code § 65.2-400 provides as follows:

A. As used in this title, unless the context clearly indicates otherwise, the term "occupational disease" means a disease arising out of and in the course of employment, but not an ordinary disease of life to which the general public is exposed outside of the employment.

B. A disease shall be deemed to arise out of the employment only if there is apparent to the rational mind, upon consideration of all the circumstances:

1. A direct causal connection between the conditions under which work is performed and the occupational disease;
2. It can be seen to have followed as a natural incident of the work as a result of the exposure occasioned by the nature of the employment;
3. It can be fairly traced to the employment as the proximate cause;
4. It is neither a disease to which an employee may have had substantial exposure outside of the employment, nor any condition of the neck, back or spinal column;
5. It is incidental to the character of the business and not independent of the relation of employer and employee; and
6. It had its origin in a risk connected with the employment and flowed from that source as a natural consequence, though it need not have been foreseen or expected before its contraction.

C. Hearing loss and the condition of carpal tunnel syndrome are not occupational diseases but are ordinary diseases of life as defined in § 65.2-401.

[31] Virginia Code § 65.2-401 provides as follows:

An ordinary disease of life to which the general public is exposed outside of the employment may be treated as an occupational disease for purposes of this title if each of the following elements is established by clear and convincing evidence, (not a mere probability):

1. That the disease exists and arose out of and in the course of employment as provided in § 65.2-400 with respect to occupational diseases and did not result from causes outside of the employment, and
2. That one of the following exists:
   a. It follows as an incident of occupational disease as defined in this title; or
   b. It is an infectious or contagious disease contracted in the course of one's employment in a hospital or sanitarium or laboratory or nursing home as defined in § 32.1-123, or while otherwise engaged in the direct delivery of health care, or in the course of employment as emergency rescue personnel and those volunteer emergency rescue personnel referred to in § 65.2-101; or
   c. It is characteristic of the employment and was caused by conditions peculiar to such employment.

These several questions and conditions have areas of overlap. In the leading treatise on workers' compensation law, Virginia is characterized as having the "most elaborate statutory definition" for occupational diseases.[32] Our interviews with stakeholders confirmed that it can be unusually difficult for medical providers and adjusters to work through these questions. The Larson treatise goes on to describe the Virginia statutory framework for occupational diseases as follows:

> Virginia has a story all its own in its attempt to distinguish between occupational diseases and ordinary diseases of life. Despite some efforts to soften the blow of early decisions on the issue, the state continues to maintain its position of having the most restrictive view of compensability for these types of claims.[33]

Other states handle occupational disease claims with a similar list of causation questions. For example, Indiana has an almost identical definition. Injuries caused by repetitive motion, however, are covered in Indiana as an injury by accident, not an injury by disease.[34] Tennessee had an occupational-disease statute that was similar to Virginia's until 2015, when the state shifted to a single causation test for both accidental and disease injuries.[35] The state now uses a "primary cause" definition. Other states similarly use a "prevailing" or "major contributing" standards to evaluate causation.[36]

North Carolina is an example of a state that uses a list of diseases that can qualify for coverage. The list includes certain injuries caused by repetitive motion, including "Bursitis due to intermittent pressure in the employment," "Synovitis, caused by trauma in employment," and "Tenosynovitis, caused by trauma in employment," and there is a "catch all" provision for other conditions, but these exclude "all ordinary diseases of life to which the general public is equally exposed outside of the employment."[37] This may explain why the frequency of RSI in North Carolina is comparatively lower than that across the country. Virginia similarly used a list of qualifying disease conditions from 1944, when it first enacted coverage for occupational diseases, until 1970.[38]

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[32] 4 Larson, Arthur et al., Larson's Workers' Compensation Law § 52.03 (Bender, Rev. Ed. 2020).
[33] *Id.*
[34] Indiana Code § 22-3-7-10; *see* Union City Body Co. v. Lambdin, 569 N.E. 2d 373 (Ind. Ct. App. 1991).
[35] Note that WorkComp Strategies participated in an analysis of the Tennessee workers' compensation system in 2012 and made recommendations to clarify the causation standard. The analysis found that there were inconsistent interpretations of the standard and concerns over accepting conditions as occupational that were the result by non-work causes, including introduction of a "could have caused" standard by Tennessee courts. In 2013, the Tennessee Legislature enacted reforms to the Tennessee system which, among other things, tightened the causation standard; the "arising primarily" standard for repetitive motion conditions was in place prior to the analysis or reforms.
[36] *See, e.g.*, Mo. Rev. Stat. § 287.020(3) (prevailing factor); Or. Rev. Stat. §§ 656.005 & -802 (major contributing cause).
[37] N.C. Code § 97-53.
[38] See Scott, Eliz. V., *Workers' Compensation for Disease in Virginia: The Exception Swallows the Rule*, 20 Univ. of Rich. Law Rev. 161, 166-67 (1985). When Virginia added coverage for diseases, it adopted the six-part test and the schedule of covered diseases. The General Assembly removed the schedule in 1970 but retained the six-part test. The source of the six-part test is traced to a 1918 Massachusetts decision concerning compensability of a deadly

An additional aspect to understanding occupational-disease coverage is whether a pre-existing disease can be covered by workers' compensation. Discerning causation in such situations is problematic. A latent, asymptomatic condition could be aggravated by work activities and become symptomatic and disabling, whereas symptoms of a condition that pre-dated employment could continue to be experienced after beginning, but not made any worse by the employment.[39] Virginia courts have taken the approach in such "aggravation" cases that, if the aggravation results from a traumatic accident, then it is covered, but if it results from a disease, then it is not covered. The six-part occupational-disease test requires that the "origin" of a disease be a "risk connected with the employment," thus by definition the origin of a pre-existing disease cannot be the employment because it pre-dated the employment.[40] Among the other two states that use the six-part test, Illinois provides by statute that a work-related aggravation of a disease is a covered occupational disease, and in Indiana an aggravation of an ordinary disease of life is covered if caused by an otherwise covered injury or occupational disease.[41]

The obvious purpose of these various approaches to evaluating causation is to restrict coverage to cases where an injury is caused – to a reasonable degree – by the employment. This restriction is central to the operation of all workers' compensation systems, namely that an employer is not liable at common law for an employee's workplace injury, but an employee receives benefits under the workers' compensation system for a workplace injury, regardless of the employee's fault in causing the injury. This is known in workers' compensation as the "great compromise." The relevant, key phrase is *workplace injury*. In other words, the compromise hinges on whether the work caused the injury, which in Virginia and most workers' compensation systems is expressed in statute as "arising out of and in the course of the employment."[42] This is how the scope of the employer's obligation is confined in workers' compensation systems.

Occupational diseases, however, like repetitive stress injuries, fall into a type of injury for which causation is difficult to discern, which is particularly the case in conditions that arise not strictly within a particular employment context (e.g. coal miner's pneumoconiosis) but among the general public (e.g., lateral epicondylitis, often referred to as tennis elbow). Virginia chose to

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assault at the hands of a co-worker, and in Virginia to a 1938 decision concerning the compensability of a death caused by a fall from a moving vehicle.

[39] For example, a diagnosis of carpal tunnel syndrome could pre-date employment. There could be evidence that the condition was not active, symptomatic, or disabling until beginning the employment versus evidence that the employment was not a significant factor in the symptoms. *See, e.g.*, *Cavuto v. Safeway, Inc.*, 2009 Va. Wrk. Comp. Lexis 1429 (2009).

[40] *See, e.g., Ashland Oil Co. v. Bean*, 225 Va. 1 (1983) (denying compensation for the disabling condition of bursitis of the foot caused by a store clerk's use of certain shoes and frequent standing at work, when the condition resulted from inflammation of a bunion on the foot that pre-dated the employment).

[41] 820 Ill. Stat. 310/1(d); Indiana Code §§ 22-3-6-1(e) & -7-10(a).

[42] "The statutory phrase 'arising out of and in the course of the employment,' which appears in most workmen's compensation laws, is deceptively simple and litigiously prolific." *Cardillo v. Liberty Mut. Ins. Co.*, 330 U.S. 469, 479 (1947) (citation omitted).

address this difficulty by limiting coverage of any "ordinary disease of life to which the general public is exposed outside the employment." As originally enacted, there was no definition for an "ordinary disease of life to which the general public is exposed outside the employment." Instead, there was a schedule of "diseases and conditions" that were "deemed to be occupational diseases" provided that they were shown to be "occupational."[43] Included in the schedule were illnesses like cataracts due to exposure to molten glass heat and glare and ulceration due to exposure to in industrial slaughtering or processing of livestock and hide-handling, as well as more "ordinary" conditions like tenosynovitis, bursitis, epicondylitis, cellulitis, dermatitis, and "disability due to exposure to radioactive substances and X ray." The schedule was eliminated in 1970, and occupational diseases were assessed based only on the six-part test.[44] The reported purpose of this change was to "insure the most comprehensive coverage of occupational diseases."[45]

Thereafter, judicial interpretations evaluated disease claims on whether they met the definition of an occupational disease, i.e., arose out of and in the course of the employment, and if not, then they were a non-compensable ordinary disease of life.[46] The question of causation was not the susceptibility of the general public to the condition, but whether the particular employment exposed the employee to a higher risk of developing the condition. Thus, for example, claims for occupational tenosynovitis, arguably a condition that can develop in a non-work context, were allowed so long as the causal connection with work was established. This was bolstered by the fact that tenosynovitis was listed in the schedule of covered diseases in Virginia dating back to 1944.

To recap the law on diseases from 1944 through 1970: Virginia used a six-part test for occupational diseases, and excluded ordinary diseases of life. It also established a statutory schedule of "diseases and conditions" pursuant to which more "ordinary" illnesses were covered, so long as they were also shown to be occupational. In 1970 the schedule was repealed to offer a broader, more general coverage for occupational diseases, provided they were established as arising out of the employment.

The Virginia Supreme Court, however, rejected this approach in its 1985 decision in *Western Electric Co. v. Gilliam*.[47] The Court shifted the test of whether a disease was "ordinary" from an analysis of the employment to an analysis of the general public. The Court cited a 1984 decision involving a back strain, which was similarly not covered, and reasoned that "in terms of cause of effect, we find no legally sufficient difference between Yancey's back strain and Gilliam's tenosynovitis."[48] In effect, if the condition is "ordinary" then it is not compensable, regardless

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[43] *See* Va. Code § 65.1-47 (1968).
[44] 1970 Acts of Assembly Ch. 470.
[45] Report of the Virginia Advisory Legislative Council, Matters Pertinent to the Industrial Commission of Virginia and Workmen's Compensation Laws of Virginia, Va. H. Doc. No. 17, at 5-6 (1969).
[46] Two limited statutory exceptions were if a non-compensable occupational disease was caused by a compensable occupational disease and if an infectious or contagious disease contracted in the course of hospital work.
[47] 229 Va. 245 (1985).
[48] *Id.* at 247 (*citing Holly Farms v. Yancey*, 228 Va. 337 (1984)).

of whether the employment caused it. The Court was not persuaded by the argument that the 1970 expansion of the Workers' Compensation Act should not be interpreted to reduce coverage for the previously covered condition of tenosynovitis, but invited the General Assembly to act if it disagreed.

The General Assembly did disagree, and in 1986 enacted changes to the occupational-disease provisions which appeared directed, at least in part, to overturning the *Gilliam* decision. The critical element in defining the compensability of an "ordinary" disease shifted to whether the disease was "characteristic of the employment and was caused by conditions peculiar to such employment." Two important exceptions, however, were also included: 1) neck, back, and spine conditions were excluded from coverage; and 2) ordinary diseases of life were subject to a "clear and convincing" burden of proof. Thus, conditions like tenosynovitis would be covered, provided they met the clear and convincing standard. Such claims were accepted, but litigation resisting such claims eventually led to the Supreme Court's decision in *The Stenrich Group v. Jemmott*, which held that conditions like carpal tunnel syndrome and tenosynovitis, as gradually incurred traumatic injuries, did not result from a single, identifiable incident and thus were not covered by workers' compensation.[49]

To summarize the evolution of Virginia law concerning injuries caused by repetitive motion:

- They were not covered when the Virginia Workers' Compensation Act was first enacted;
- In 1944 they were covered by statute if they were listed on the disease schedule;
- In 1970 the schedule was eliminated and they were covered by statute;
- By 1985 they were not covered according to judicial interpretation;
- In 1986 they were covered by statute unless they were a neck, back, or spine condition;
- By 1996 they were not covered according to judicial interpretation;
- In 1997 only the single listed condition of carpal tunnel syndrome is covered;[50]
- In 2020 H.B. 617 directed the study of broadening coverage to add injuries caused by repetitive motion.

For these reasons, it would appear that changes to the occupational disease and ordinary disease of life sections are needed to ensure that coverage for RSI is added in a way that ensures work-related injuries are covered and non-work related injuries are not covered. We provide suggested changes in the Summary section below. We also believe that, given the complicated history of changes to the occupational disease sections, particularly with respect to RSI, further changes to broaden coverage should clearly state that past court decisions notwithstanding, RSI are a covered condition in Virginia.

C. Method for Determining Causation

As noted, establishing occupational causation is more challenging in RSI cases. There is, however, a well-established methodology for making medically sound determinations of

[49] 251 Va. at 186 (1996).

[50] Hearing loss is also covered but is not caused by "motion" but by repetitive exposure to noise. In presenting options for change, we include "noise" as one of the contributors to covered repetitive stress injuries.

causation even for RSI cases. This standard is well recognized and accepted by occupational medicine specialists, but not widely adopted by general practitioners. Reports from interviews with occupational medicine specialists were that it is not always clear from reviewing reports of treating physicians whether their determinations of causation are founded on any of the steps in this process. In fact, many physician reports of injury are summary statements of opinion.

We recommend further consideration of the NIOSH/ACOEM[51] six-step process for assessing causation, which could be established as the normative process for credibly making such determinations. It would be very helpful to claim adjusters if they are provided with medical reports that evidence following such a process. This would establish credible evidence of causation that should help prevent litigation. Such a process could be adopted through rule-making, allowing input from medical providers and claims specialists in structuring the format of such reports, as well as allowing for an addition to the fee schedule for providing this documentation.

In making a change such as adding RSI, reducing unpredictable results is important to ensuring broad acceptance and a smooth transition. As frequently noted in this report, causation is typically the main issue involved in managing occupational disease claims generally, and RSI claims specifically. We suggest that adopting guidelines for determining causation would help provide this level of predictability, as well as likely reduce the negative impact caused by adding non-work injuries to the workers' compensation system.

VIII. Risk of Negative Consequences

In our analysis we have presented options for adding coverage for injuries caused by repetitive stress motion. These options range from those with the least expected impact to those with a greater expected impact. Understandably, policymakers and stakeholders are keen to understand the likely impact of broadening coverage for repetitive stress injuries on claim frequency and cost. The most direct way to quantify cost impact from adding RSI to the Virginia system is to estimate the number of new claims added by coverage of RSI and multiply this by the estimated average cost per RSI claim.

Such a change, however, involves more than simply quantifying anticipated benefit payments. There will be other indirect changes to the total cost of the system. An immediate change will be additional work for claim adjusters to obtain detailed medical evidence on the cause of the injury claim. Initially after a change such as adding coverage for RSI, there may be an increase in litigation as the boundaries of the law is tested (this will increase insurance premium and self-insurer costs because of higher loss adjustment expense). There may be an impact on the number of claims as workers and advocates learn about the expanded coverage. Coverage for RSI will add costs to employers; this creates an incentive to employ safety and loss control

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[51] This process was originally published in Kusnetz and Hutchison, eds. DHEW, CDC, NIOSH, Pub. No. PB298-561 (1979). It was later adopted by the American College of Occupational and Environmental Medicine in Occupational Medicine Practice Guidelines, 2nd and 3rd Eds. ACOEM OEM Press, 2004, 2008, 2011. *See also* Hegmann, ed. ACOEM Occupational Medicine Practice Guidelines. 3rd ed. (Elk Grove Village, IL 2011).

measures. It will take time for employers and employees, respectively, to take measures to modify workplaces and to adhere to safer work practices that help prevent such injuries. Moreover, depending on how the change is implemented, either a fewer or greater number of covered claims should be expected. For example, removing the exclusion of neck and back injuries as covered occupational diseases will result in an increase in covered claims. We propose analyzing these impacts by assessing each option according to the risk of litigation; the risk of including non-work injuries; and the risk of excluding legitimate injuries.

A. Risk of Litigation

While parties to a claim may initially disagree on its handling, a dispute over workers' compensation coverage usually does not go to formal litigation if the outcome is predictable. The outcome will be reasonably certain if the law is clear and consistently enforced. Unlike many traumatic injuries (amputations, burns, broken bones), occupational disease claims have far more complexity and layers of inquiry that affect assessment of occupational causation. The law should establish workable guidelines for weighing these often-conflicting factors.

Doctors' reports are at the heart of claims handling decisions. The quality of initial reports of injury range from vague, incomplete statements of opinion to very thorough evidence-based conclusions. A superficial report for occupational disease causation is likely to generate follow up request by the claim adjuster. If the doctor fails to provide all the information requested, there is an increased likelihood of the adjuster setting up an independent medical exam (IME) to complete the medical assessment of the injury. Depending on the IME report, the adjuster may refuse further payment or accept and pay the claim.

Over-reliance on the use of IMEs is flawed. IME physicians are usually selected from among physicians that the adjuster hopes will share their perspective on how a claim of injury should be assessed. Some IME physicians have a track record of disputing occupational injuries, e.g., consistently finding that CTS symptoms are due to non-work causes. The claimant or his/her attorney in this situation would regard the IME report as biased and contest its findings. Far better to have the findings of the treating physician to be accepted by both parties. Parties to the claim may not like the opinion but conclude that it is not worth contesting.

This is not to say that the treating physician's report must be completely persuasive to the adjuster. But even should the adjuster find fault in the medical report, if the adjuster feels that the workers' compensation dispute system is likely to sustain that report as adequate in supporting work causality, the odds of going through the expense of litigation go down. In Virginia the treating physician typically is selected from a panel of physicians provided by the employer and adjuster. Effective use of panels can help reduce incomplete causation reports.

The risk of increased litigation over causality of RSI would be controlled by:

- The clarity and specificity of the legal standards and burden of proof;
- The consistency of case law that interprets these standards in actual claim situations;

- The ability of claim adjusters to get information from treating physicians that they feel is necessary to make a causation decision, as well as continued use by adjusters of qualified panel physicians; and
- Educational efforts by the Commission to help doctors understand the standards for determining causation and the adjuster's right to ask for such information.

If these factors worked to support rigorous and clear medical reports on causation, the risk of litigation is low. If, however, adjusters are frustrated in getting the sort of information detailed in the ACOEM six-point process (described generally above; details in the Appendix), the litigation risk is moderated. It is inevitable that a major change in the compensability standards will be initially tested through litigation. The boundaries of the new law need to be tested against actual cases. The persistence of litigation after the initial testing of the law in early disputes, however, will be higher if judicial decisions are inconsistent or unpredictable.

B. Risk of Covering Non-work Injuries

There are many "personal risk factors" that can contribute to symptoms associated with RSI, such as:

- Age – older workers are more likely to experience conditions like CTS, bursitis and shoulder injury;
- Gender – women are more susceptible to RSI type injuries;
- Weight – obesity can lead to joint and muscle problems and difficulty healing from injury;
- Smoking – heavy smokers have more problems with joints and discs in the spine;
- Arthritis – a contributing factor to joint injury;
- Activity Level – persons with sedentary lifestyles are more prone to RSI injury; and
- Other factors have been found to contribute to RSI symptoms.[52]

It is logical to ask: does the presence of one or more of the above risk factors rule out work as the primary cause of RSI symptoms? In general, the ACOEM six-step process would have the physician evaluate the gravity of these personal risks against the statistical risk of injury for particular job duties. For example, grocery clerks have a higher risk of back injury from standing or wrist injury from scanning and packing purchases. So even if a clerk with RSI symptoms has poor posture or is of retirement age, the doctor may find that the job duties were the primary cause of injury. Standing in place for hours or continually turning your wrist holding heavy objects is not a typical activity of daily living. Finally, the six-step process includes referring to the best available epidemiological evidence on the degree to which personal risk factors contribute to a given condition, e.g., gender differences in carpal tunnel syndrome are significant.

Another factor outside of work that can explain RSI symptoms is the routine practice of certain risky activities that could have induced the injury, such as are present in recreation, hobbies, or

[52] The American Medical Association has published guidelines to assist with weighing personal risk factors associated with specific injuries. *See, e.g.*, Melhorn, J.M. et al., *AMA Guides to the Evaluation of Disease and Injury Causation* (2014) at 134 (spine injury) & 295 (carpal tunnel syndrome).

second jobs. For example, guitar players can suffer RSI injuries to their hands and fingers, motorcycle or bike riders can develop carpal tunnel symptoms, and sports activities can cause "tennis" or "golfer's elbow."

This risk of covering non-work injuries under workers' compensation is partially controllable by having the standard for determining causation require that personal risk factors be identified and weighed by the treating physician against the stresses of the particular work done by the claimant. If adjusters can ask for and receive evaluations of personal risk factors, then the risk of covering non-work injuries is minimized. If, on the other hand, there is no inquiry into personal risk factors, especially personal pursuits of the employee outside of work, then the risk is higher that a number of injuries will be compensated even though personal factors outside of work are the dominant cause.

Additionally, employers currently have claims-handling mechanisms that allow claims to be investigated early, by qualified employer provided panels of physicians, to reach more accurate causation opinions. Moreover, post-employment-offer baseline employee physicals can help identify risks of injury. Finally, well-designed safety practices can help prevent losses, and establish that work-related causes of RSI are being actively addressed and controlled. Such practices can be designed with the advice of qualified medical experts, which can help prevent cases where injuries caused by factors outside of work are alleged to be work related.

C. Risk of not covering work-related injuries

Historically, workers' compensation only covered traumatic injuries occurring at a specific time and place. Some diseases were gradually recognized as work related. Lung disease and toxic chemical poisoning were added to coverage early, followed by a long list of other occupational diseases. In addition, coverage was extended to injuries that were subtle and not easily proven by objective medical evidence, e.g., a pulled muscle in low back that causes great pain but no objective evidence of muscle damage.

This extension of coverage for injuries caused by repetitive motion has become commonplace. Indeed, Virginia is the only state in the nation to deny coverage for RSI. If it is the will of the General Assembly to cover RSI, the standards for recognizing and accepting such injuries must be established with care. If the standard is too tight or restrictive, some bone fide work related injuries will not be compensated. As discussed previously, the standard for work causation can range from:

- Work as the sole cause
- Work as the primary cause
- Work as a contributing cause
- Work as a possible cause

Not only is the above range of work relatedness at issue, but also the method for establishing the connection to work. As in all workers' compensation systems, such inquiry must be done by physicians. But the rigor of the medical investigation (diagnosis, patient history, and job

analysis) and the quality of the reports is highly variable. Allowing for vague and unproven causation will increase coverage, while insisting on detailed evidence will in some cases remove coverage in which the physician fails to supply the information. Setting the bar for work relatedness and specifying it in statue and rule will determine the portion of injuries that are reasonably due to work and that receive compensation. This is a policy decision beyond the scope of medical fact finding.

An important consideration in analyzing the risk of not covering legitimate work injuries is shifting responsibility for the impact of such injuries from employers to employees and to the public generally. The obvious direct consequence is that the cost is borne not by those responsible for the harm. Studies estimate that over one-half of the total medical costs of occupational injuries are not paid by workers' compensation but through other private and public sources such as private health insurance, including almost 10% by workers directly.[53] Beyond issues of fairness, this can disrupt natural incentives through market forces to minimize employment practices that can lead to injury and increased cost. For example, when employers with unsafe work practices are required to pay increased premiums, this can serve as an economic incentive to modify practices and promote workplace safety.

Thankfully, the frequency of workplace injuries has been steadily declining in recent decades. Research shows, however, that occupational hazards continue to be a significant source of illness worldwide.[54] This is particularly true in less apparent disease conditions, which arise gradually and are more difficult to diagnose.

D. Summary of Risk Analysis

We have evaluated the options according to each of the risks outlined above. We have used a qualitative scale of "low/medium/high" to characterize risk levels. This is a rank ordering of risk, without any attempt to quantify the difference between medium and high or medium and low. This ranking of risk is an evaluative assessment of the authors, based on careful consideration of the experience of the workers' compensation system in Virginia and others throughout the country.

[53] *See* Leigh, J.P. and Marcin, J.P., *Workers' Compensation Benefits and Shifting Costs for Occupational Injury and Illness*, Journal of Occupational and Envir. Med. (Apr. 2012).
[54] *See* Rushton, L., *The Global Burden of Disease*, Current Envir. Health Rpts. (2017).

Table 1: Relative Weights of Risks of Negative Impacts for Each Proposed Option

Option	**Description**	**Litigation Risk**	**Including Non-Work Injuries**	**Excluding Legitimate Work Injuries**
Occupational Disease without Structural Change	Involves adding RSI according to the current structure and burden of proof of the occupational disease and ordinary disease of life sections	Medium	Low	High
Occupational Disease with Structural Change	Involves adding RSI along with amending the increased burden of proof for ordinary diseases of life and clarifying the causation requirements	Low	Medium	Low
Occupational Disease – unrestricted neck and back injuries	Involves adding RSI and also eliminating the prohibition against neck and back claims in the occupational disease section	Medium	High	Low
Injury by Accident	Involves adding RSI as a covered injury, by including RSI as a defined "injury by accident"	High	Medium	Low

According to this analysis, the second option – adding RSI as an occupational disease and adjusting the burden of proof – appears to involve the least negative risk among the options, and would have the most predictable overall cost impact. Other options would likely result in proportionate cost increases.

IX. Cost Impacts

In this section we set forth a range of cost possibilities from broadening coverage for RSI. This is founded on the baseline estimates for frequency and average cost per RSI claim added to the system. These estimates implicitly assume that: 1) Virginia will enact a law that follows the most common pattern in other states; 2) the enforcement of the law, especially with respect to litigation standards is typical of other states; and 3) the employment risk factors are similar to the average employment mix in the nation and Virginia employers follow the national pattern in lost prevention.

From this baseline estimate we have considered a range of scenarios to bound upside and downside cost possibilities. These scenarios are from judgmental adjustments to cost based on uncertainty about key assumptions. Among the assumptions considered are: 1) the changes in average medical cost in Virginia; 2) the rigor of medical causation determinations; 3) changes in litigation because of the new coverage.

Virginia's workers' compensation system costs about $1.1 billion in insurance premiums and about $500 million in cost to self-insured employers. These costs are made up of several components, including benefits paid to injured workers; charges paid to medical and other service providers; costs of handling claims, including attorney costs; insurance underwriting costs; self-insurance administrative costs; and other aspects of providing insurance and self-insurance. When evaluating impact from expanding coverage for RSI, "claim costs" are just one aspect to consider. In other words, "estimated average cost per claim" multiplied by "added claims from RSI" will only give a portion of the total overall cost impact on the system.

Understanding how a change in the workers' compensation laws of Virginia will impact overall system cost is quite difficult. There are myriad interactions between stakeholders that result from the operation of a workers' compensation system, including: injury prevention; injury reporting; access to appropriate medical care; prompt payment for lost wages; claims handling; attorney involvement; employer-provided modified duty; workplace accommodations; and services provided by the Commission. These highlight only the claim-related aspects of the system. Stable, predictable statutory and administrative environments and claim costs have a tremendous impact on overall system efficacy. Problems in any of these areas will impact overall system cost and operation, sometimes significantly. Of particular interest is litigation cost to the parties in the dispute and the Commission, which can burgeon if the statute and rules are not carefully crafted.

Some states, most notably California, have been caught in the turmoil of constant "reform" due to frequent changes, unnecessary manipulation of the system by certain interests, and high costs. Adding coverage for RSI in theory would impact only those employees at risk for occupational injury due to work involving repetitive motion, and if narrowly implemented would exclude burdening employers with claims for non-work conditions.

Using the frequency and cost estimates outlined earlier, we anticipate a system impact of approximately $20 million.[55] The frequency of RSI in Virginia is estimated to be 2.1% of total claims vs. the current frequency of 0.79%. We estimate approximately 1,200 additional claims, which are estimated to have a paid share of 2.5% of total cost vs. the current share of 0.55%. Average claim cost for RSI is estimated to be $17,000 vs. $15,050 for the overall average claim cost.

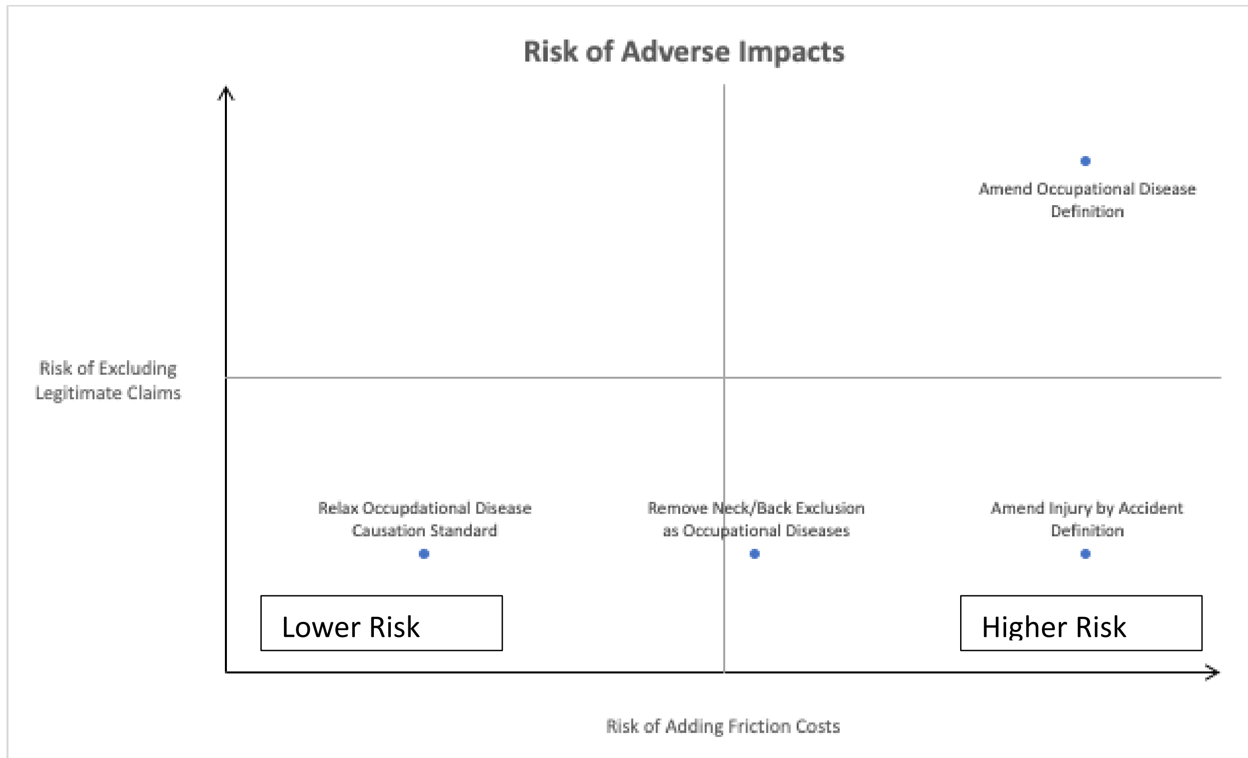
The four options for amending the Act to expand coverage for RSI are as follows:

1. Amend the occupational disease section and retain the current burden of proof;
2. Relax the causation standard used in occupational-disease claims;
3. Remove the exclusion of neck and back injuries as occupational diseases;
4. Amend the definition of injury by accident.

With respect to claims cost, they are presented here roughly in order of lowest to highest, meaning options 1 and 2 cover relatively fewer expected additional claims (and cost), and options 3 and 4 cover relatively more claims (and cost). Any expansion of coverage involves new claims and new costs and RSI is no exception. As described earlier, some approaches involve greater risk of uncertainty and increased litigation, which we refer to as “friction” cost. Moreover, the risk of excluding legitimate claims is a chief result of unnecessary friction. The risk of including non-work claims would be expected to have equivalent results. The figure below (also presented in the Executive Summary) illustrates the risk of each option of having adverse impacts on the system. The risk of added friction cost is on the x axis and the risk of excluding legitimate claims is on the y axis. The four options are placed into four quadrants based on their relative weighting on these two factors.

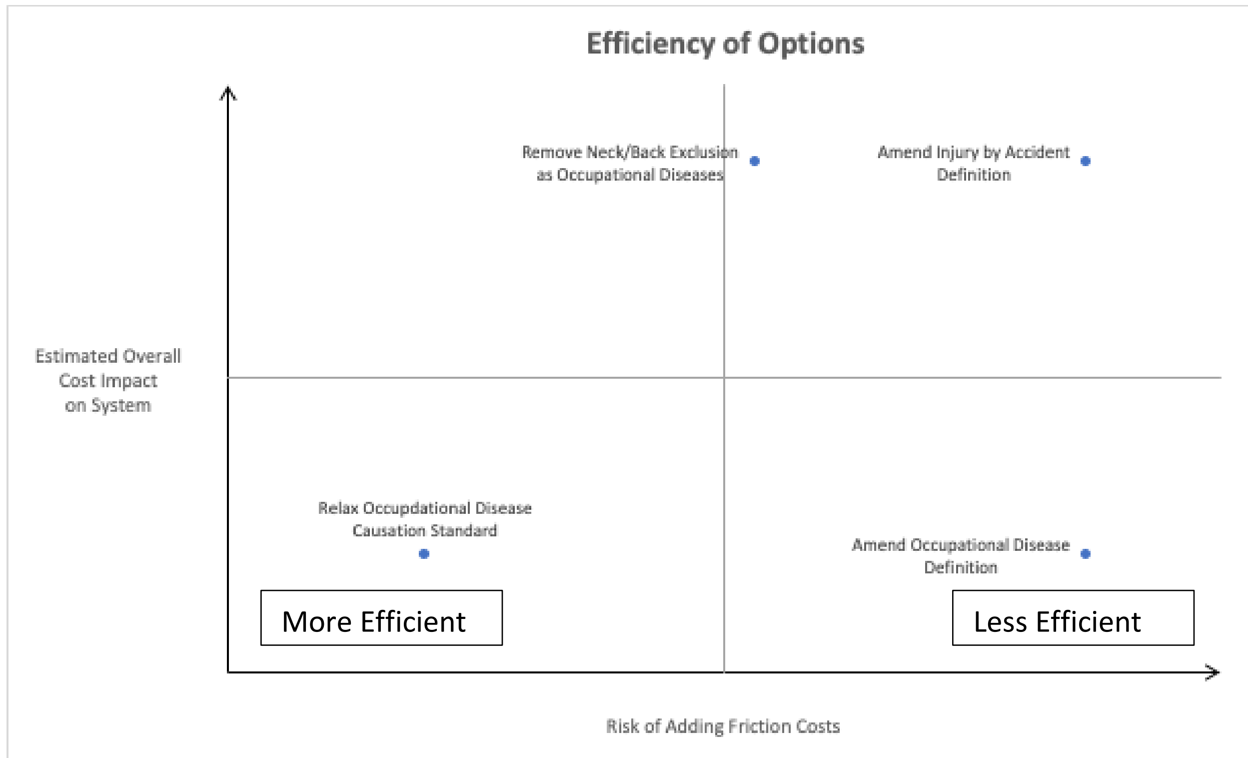
[55] This is calculated by multiplying the anticipated new claims by the total cost/claim. See the frequency and cost sections above for additional detail, as well as the Appendix.

Figure 5: Quadrants of Risk of Adverse Impact



Similarly, each option has a different estimated impact on the number of added claims. Estimated cost would directly correlate to claim frequency, but friction cost would increase out of proportion to claims added. This as a measure of efficiency, in other words, the less friction an option adds to the system, the more efficient it is in handling the increased claims from that option. The following figure (also presented in the Executive Summary) illustrates the expected efficiency of each option. The risk of additional friction costs is placed on the x axis and the estimated total cost impact is placed on the y axis. The top right quadrant would represent the highest risk of additional friction costs and the highest estimated total cost impact.

Figure 6: Quadrants of Efficiency of Options



X. Summary and Conclusion

This report has estimated a range of outcomes with respect to frequency and overall cost increase to the system. Employers would rightly expect some increase in claims and cost from broadening coverage for RSI. Some employers might worry that this “bump” in the cost of workers’ compensation would be a continuing trend. This fear of continued growth in RSI claims frequency might stem from the rapid increase across workers’ compensation systems in carpal tunnel syndrome and other repetitive motion claims in the 1980s and early 1990s. During those years, RSI injuries seemed to be an epidemic. Any keyboard use seemed to be provoking claims of carpal tunnel syndrome.

In recent years, medical research has cast light on the causes of RSI symptoms and how to avoid such injuries. Because of improved diagnosis and treatment of RSI and employer efforts to mitigate injury, the trend has been downward.[56] There are countless examples of automation reducing repetitive motion at work, e.g., nail guns have dramatically decreased RSI injuries in carpenters, robotics have eliminated much assembly line RSI injury, large data-entry keyboarding shops are a thing of the past. This is part of a larger trend in employer safety and

[56] NCCI reports an average annual decrease of between 5% and 10% for lost time claims involving occupational disease/cumulative injuries between 2013 and 2018. *State of the Line Report* (2020) (available at https://www.ncci.com/Articles/Documents/AIS2020-SOTL-Presentation.pdf).

job redesign. By way of perspective, the frequency of workers' compensation claims overall has declined 19 out of the last 20 years. Injury frequency reduction is likely to keep RSI injuries from substantial increase in the foreseeable future.

But similar to how employers would legitimately be wary of increased costs, employees are legitimately wary of making changes that do not result in legitimate occupational RSI being accepted and paid. This is highlighted by the current ordinary disease of life treatment of carpal tunnel syndrome; Virginia's rate of this injury is roughly 7 times lower than the average rate in other states. While there are many possible explanations for this, the likely explanation is that the ordinary disease of life provisions in the Act require a very high burden of proof, which results in legitimate claims for carpal tunnel syndrome related injuries being excluded from coverage.

In conclusion, we feel that there is a relatively low risk that RSI claims, over time, will be substantially higher than the percentage of total claims for RSI shown in the region around Virginia or nationwide. (Other states' RSI frequency is our basis for making cost projections for Virginia.) There is also a low risk that the rate of increase in RSI claims will see much increase in the future, based on the experience of other states. We anticipate that Virginia's experience would follow that across the country generally for RSI, namely that a 2.1% share of claims attributable to RSI would result in a cost increase such that RSI would account for 2.5% of total claim costs. Depending on how this is implemented, Virginia should not be greatly impacted by expanded litigation and inappropriate claims, with legitimate claims for RSI covered by the workers' compensation system.

XI. Summary of Potential Changes to the Act

The following changes to the Virginia Workers' Compensation Act could serve to accomplish the changes described in this report. In this presentation, removed text is struck; new text is underlined.

§ 65.2-101 (Definition of Injury)
"Injury" means only injury by accident arising out of and in the course of the employment or occupational disease including repetitive stress injuries as defined in Chapter 4 (§ 65.2-400 et seq.) . . .

§ 65.2-400 ("Occupational disease" defined)
A. As used in this title, unless the context clearly indicates otherwise, the term "occupational disease" means a disease arising out of and in the course of employment, but not an ordinary disease of life to which the general public is exposed outside of the employment, and specifically includes injury from conditions resulting from physical stressors including repetitive and sustained motions, exertions, posture stresses, contact stresses, vibration, or noise. Repetitive and sustained physical stress is not required to occur over a particular period, so long as such a period can be reasonably identified and documented. Notwithstanding prior court decisions to the contrary, such injuries shall be covered injuries if shown to arise out of and in the course of the employment as set forth in this section.
B. A disease or condition shall be deemed to arise out of the employment only if there is apparent to the rational mind, upon consideration of all the circumstances:
1. A direct causal connection between the conditions under which work is performed and the occupational disease or condition;
2. It can be seen to have followed as a natural incident of the work as a result of the exposure occasioned by the nature of the employment;
3. It can be fairly traced to the employment as the proximate cause;
4. It is neither a disease or condition to which an employee may have had substantial exposure outside of the employment, nor any condition of the neck, back or spinal column;
~~5. It is incidental to the character of the business and not independent of the relation of employer and employee; and~~
~~6. It had its origin in a risk connected with the employment and flowed from that source as a natural consequence, though it need not have been foreseen or expected before its contraction.~~
~~C. Hearing loss and the condition of carpal tunnel syndrome are not occupational diseases but are ordinary diseases of life as defined in § 65.2-401.~~

§ 65.2-401 ("Ordinary disease of life" coverage)
An ordinary disease of life to which the general public is exposed outside of the employment may be treated as an occupational disease for purposes of this title if each of the following elements is established ~~by clear and convincing evidence, (not a mere probability)~~:

1. That the disease exists and arose primarily (more than 50%) out of and in the course of employment as provided in § 65.2-400 with respect to occupational diseases, considering all causes ~~and did not result from causes outside of the employment~~, and
2. That one of the following exists:
a. It follows as an incident of occupational disease as defined in this title; or
b. It is an infectious or contagious disease contracted in the course of one's employment in a hospital or sanitarium or laboratory or nursing home as defined in § 32.1-123, or while otherwise engaged in the direct delivery of health care, or in the course of employment as emergency rescue personnel and those volunteer emergency rescue personnel referred to in § 65.2-101; or
c. It is characteristic of the employment and was caused by conditions peculiar to such employment.

XII. Appendix

[under separate cover]