

**Supplementary Information For: Work-Related Upper Extremity and Back Injury Claims
across Canada from 2000-2019**

Youssef Habib (BSc), Daanish M. Mulla (PhD), Peter J. Keir (PhD)*

*Occupational Biomechanics Laboratory, Department of Kinesiology, McMaster University,
Hamilton, ON, Canada, L8S 4K1*

*Corresponding Author:

Peter J. Keir, PhD

McMaster University

Department of Kinesiology

Ivor Wynne Centre, room 219B

1280 Main Street West

Hamilton, ON, Canada, L8S4K1

Telephone: 905-525-9140 ext. 23543

Email: pjkeir@mcmaster.ca

Supplementary Table 1: The nature of injury categories included in the analysis for the back and upper extremity body parts based on injury type: (1) Traumatic, (2) Non-Traumatic, or (3) Sprains and Strains. Low back injuries were defined as claims affecting the “back including the spine and spinal cord”. Injuries to other trunk or abdominal areas coded specifically as the “unspecified trunk”, “trunk locations that are not elsewhere coded”, “multiple trunk locations”, “abdomen”, “pelvic region”, “hip”, and “chest” were excluded among low back injuries. Upper extremity injuries were defined as claims affecting any region from the shoulder to the fingers, which included the following body part categories: “shoulder, including clavicle, scapula and trapezius muscle if shoulder is mentioned”, “arm(s)”, “wrist(s)”, “hands, except finger(s)”, “finger(s), fingernail(s)”, “multiple upper extremities locations” and “upper extremities that are not elsewhere coded”.

Body Part	Injury Type	Nature of Injury Codes
Low Back	Traumatic	00000 - Traumatic injuries and disorders, uns. 02000 - Traumatic injuries to muscles, tendons, ligaments, joints, etc., uns. 02001 - Soft Tissue Injury (Traumatic) 02900 - Traumatic injuries to musculoskeletal system with inflammation of muscles, tendons, ligaments, joints, etc., uns. 02904 - Traumatic capsulitis 02905 - Traumatic ganglion 02908 - Traumatic myositis 02909 - Traumatic injuries to musculoskeletal system with inflammation of muscles, tendons, ligaments, joints, etc., n.e.c. 02910 - Traumatic Arthropathies, arthritis, polyarthritis, ankylosis of the joint, 02911 - Traumatic dorsopathies, unspecified 02912 - Traumatic dorsalgia 02914 - Traumatic sciatica 02915 - Traumatic lumbago 02916 - Traumatic disc disorders, unspecified 02917 - Traumatic herniated disc 02918 - Traumatic Intervertebral disc syndrome 02919 - Traumatic disc disorders, n.e.c. 02920 - Traumatic dorsopathies, n.e.c. 02921 - Traumatic minor intervertebral disorders (MID) 02922 - Traumatic facet syndrome 02923 - Traumatic radiculitis 08900 - Other combinations of traumatic injuries and disorders, n.e.c. 09700 - Nonspecific injuries and disorders, uns. 09720 - Back pain, hurt back 09780 - Multiple nonspecific injuries and disorders 09790 - Nonspecific injuries and disorders, n.e.c.
Low Back	Non-Traumatic	17000 - Musculoskeletal system and connective tissue diseases and disorders, uns. 17100 - Arthropathies and related disorders (arthritis) 17200 - Dorsopathies, uns. 17201 - Dorsalgia 17210 - Sciatica 17220 - Lumbago 17230 - Disc disorders, uns. 17231 - Herniated disc 17232 - Intervertebral disc syndrome 17233 - Diskarthrosis

		<p>17239 - Disc disorders, n.e.c. 17290 - Dorsopathies, n.e.c. 17291 - Minor intervertebral disorders (MID) 17300 - Inflammation and irritation of joints, tendons, muscles and connective tissues, uns. 17292 - Facet syndrome 17293 - Radiculitis 17360 - Myositis 17390 - Inflammation and irritation of joints, tendons, muscles and connective tissues, n.e.c. 17394 - Capsulitis 17400 - Osteopathies, chondropathies, acquired deformities, uns. 17490 - Osteopathies, chondropathies, acquired deformities, n.e.c. 41200 - Symptoms involving nervous and musculoskeletal systems, uns. 41210 - Spasms or tremors, n.e.c. 41280 - Multiple symptoms involving nervous and musculoskeletal systems 41290 - Symptoms involving nervous and musculoskeletal systems, n.e.c.</p>
Low Back	Sprains and Strains	<p>02100 - Sprains, strains, tears, uns. 02190 - Sprains, strains, tears, n.e.c. 08200 - Sprains or strains and bruises 17370 - Sprains, strains, tears (Repetitive)</p>
Upper Extremity	Traumatic	<p>00000 - Traumatic injuries and disorders, uns. 02000 - Traumatic injuries to muscles, tendons, ligaments, joints, etc., uns. 02001 - Soft Tissue Injury (Traumatic) 02101 - Rotator cuff tear 02900 - Traumatic injuries to musculoskeletal system with inflammation of muscles, tendons, ligaments, joints, etc., uns. 02901 - Traumatic bursitis 02902 - Traumatic tendinitis 02903 - Traumatic epicondylitis 02904 - Traumatic capsulitis 02905 - Traumatic ganglion 02906 - Traumatic synovitis 02907 - Traumatic tenosynovitis 02908 - Traumatic myositis 02909 - Traumatic injuries to musculoskeletal system with inflammation of muscles, tendons, ligaments, joints, etc., n.e.c. 02910 - Traumatic Arthropathies, arthritis, polyarthritis, ankylosis of the joint, 08900 - Other combinations of traumatic injuries and disorders, n.e.c. 09700 - Nonspecific injuries and disorders, uns. 09730 - Soreness, pain, hurt, except the back 09780 - Multiple nonspecific injuries and disorders 09790 - Nonspecific injuries and disorders, n.e.c.</p>
Upper Extremity	Non-Traumatic	<p>12410 - Carpal tunnel syndrome 13710 - Raynaud's syndrome or phenomenon, vibration induced white finger disease. 17000 - Musculoskeletal system and connective tissue diseases and disorders, uns. 17100 - Arthropathies and related disorders (arthritis) 17300 - Inflammation and irritation of joints, tendons, muscles and connective tissues, uns. 17320 - Synovitis 17330 - Tendonitis</p>

		17340 - Tenosynovitis 17360 - Myositis 17390 - Inflammation and irritation of joints, tendons, muscles and connective tissues, n.e.c. 17391 - Rotator cuff syndrome 17392 - Dupuytren's contracture 17393 - Epicondylitis 17394 - Capsulitis 17395 - Trigger Finger 17400 - Osteopathies, chondropathies, acquired deformities, uns. 17490 - Osteopathies, chondropathies, acquired deformities, n.e.c. 41200 - Symptoms involving nervous and musculoskeletal systems, uns. 41210 - Spasms or tremors, n.e.c. 41280 - Multiple symptoms involving nervous and musculoskeletal systems 41290 - Symptoms involving nervous and musculoskeletal systems, n.e.c.
Upper Extremity	Sprains and Strains	02100 - Sprains, strains, tears, uns. 02190 - Sprains, strains, tears, n.e.c. 08200 - Sprains or strains and bruises 17370 - Sprains, strains, tears (Repetitive)

Supplementary Table 2: Grouped nature of injuries based on similarity of injury type and combining the traumatic and non-traumatic injury counterparts (e.g., 02901 – Traumatic bursitis and 17310 – Bursitis). This was done for data reduction purposes in order to identify the most prevalent nature of injuries (Figures 2 and 3).

Grouped Nature of Injury	Nature of Injury Codes
Non-specific injuries	00000 - Traumatic injuries and disorders, uns. 08900 - Other combinations of traumatic injuries and disorders, n.e.c. 09700 - Nonspecific injuries and disorders, uns. 09780 - Multiple nonspecific injuries and disorders 09790 - Nonspecific injuries and disorders, n.e.c.
Musculoskeletal (MSK) injuries	02000 - Traumatic injuries to muscles, tendons, ligaments, joints, etc., uns. 02909 - Traumatic injuries to musculoskeletal system with inflammation of muscles, tendons, ligaments, joints, etc., n.e.c. 17000 - Musculoskeletal system and connective tissue diseases and disorders, uns. 17300 - Inflammation and irritation of joints, tendons, muscles and connective tissues, uns. 17390 - Inflammation and irritation of joints, tendons, muscles and connective tissues, n.e.c.
Soft tissue injury	02001 - Soft Tissue Injury (Traumatic)
Sprains and strains	02100 - Sprains, strains, tears, uns. 02190 - Sprains, strains, tears, n.e.c. 08200 - Sprains or strains and bruises 17370 - Sprains, strains, tears (Repetitive)
Rotator cuff tear/syndrome	02101 - Rotator cuff tear 17391 - Rotator cuff syndrome
Bursitis	02901 - Traumatic bursitis 17310 - Bursitis
Tendonitis	02902 - Traumatic tendinitis 17330 - Tendonitis
Epicondylitis	02903 - Traumatic epicondylitis 17393 - Epicondylitis
Ganglion	02905 - Traumatic ganglion
Synovitis	02906 - Traumatic synovitis 17320 - Synovitis
Tenosynovitis	02907 - Traumatic tenosynovitis 17340 - Tenosynovitis
Myositis	02908 - Traumatic myositis 17360 - Myositis
Arthropathies, arthritis, ankylosis	02910 - Traumatic Arthropathies, arthritis, polyarthritis, ankylosis of the joint, 17100 - Arthropathies and related disorders (arthritis)

Dorsopathies	02911 - Traumatic dorsopathies, unspecified 17200 - Dorsopathies, uns.
Dorsalgia	02912 - Traumatic dorsalgia 17201 - Dorsalgia
Sciatica	02914 - Traumatic sciatica 17210 - Sciatica
Lumbago	02915 - Traumatic lumbago 17220 - Lumbago
Disc disorders	02916 - Traumatic disc disorders, unspecified 17230 - Disc disorders, uns.
Herniated disc	02917 - Traumatic herniated disc 17231 - Herniated disc
Intervertebral disc syndrome	02918 - Traumatic Intervertebral disc syndrome 17232 - Intervertebral disc syndrome
Minor intervertebral disorders and facet syndrome	02921 - Traumatic minor intervertebral disorders (MID) 17291 - Minor intervertebral disorders (MID) 02922 - Traumatic facet syndrome 17292 - Facet syndrome
Radiculitis	02923 - Traumatic radiculitis 17293 - Radiculitis
Back pain, hurt back	09720 - Back pain, hurt back
Soreness, pain, hurt, except the back	09730 - Soreness, pain, hurt, except the back
Carpal tunnel syndrome	12410 - Carpal tunnel syndrome
Raynaud's, vibration induced white finger	13710 - Raynaud's syndrome or phenomenon, vibration induced white finger disease.
Diskarthrosis	17233 - Diskarthrosis
Dupuytren's contracture	17392 - Dupuytren's contracture
Trigger finger	17395 - Trigger Finger
Osteopathies, chondropathies, acquired deformities	17400 - Osteopathies, chondropathies, acquired deformities, uns. 17490 - Osteopathies, chondropathies, acquired deformities, n.e.c.
Symptoms – Nervous and MSK system	41200 - Symptoms involving nervous and musculoskeletal systems, uns. 41280 - Multiple symptoms involving nervous and musculoskeletal systems 41290 - Symptoms involving nervous and musculoskeletal systems, n.e.c.
Spasms, tremors	41210 - Spasms or tremors, n.e.c.

Supplemental Table 3: Province-specific (random effects) estimates of all statistical models analyzing the intercept and main effect of body part on rates of injury claims. The intercept represents province-specific estimates of rates of injury claims in the year 2000. A negative (or positive) value for the random effect of body part is indicative of greater (or lower) rate of low back than upper extremity (UE) injury claims. Please note that these random effects estimates are based on square root transformed data.

Province	Non-Traumatic Injuries		Sprains and Strains		Traumatic Injuries		Total Injuries	
	Intercept	UE	Intercept	UE	Intercept	UE	Intercept	UE
AB	5.09	4.64	26.14	-9.79	8.52	-0.57	28.21	-7.40
BC	7.06	4.76	32.76	-12.16	12.36	-0.82	35.91	-9.06
MB	8.86	3.57	33.10	-14.18	12.78	-0.83	36.70	-10.45
NB	7.75	3.63	23.28	-10.50	11.72	-0.87	27.47	-7.16
NL	7.05	3.28	23.65	-10.30	20.21	-4.43	32.14	-8.77
NS	10.51	0.51	25.00	-10.61	17.19	-3.61	32.16	-9.29
ON	6.26	2.61	22.80	-11.16	7.25	1.14	24.91	-7.67
PE	5.17	6.33	28.26	-11.02	6.44	1.12	29.99	-7.62
QC	9.40	6.49	30.51	-17.37	6.87	1.18	32.66	-10.43
SK	8.50	2.31	24.84	-8.95	22.48	-5.39	35.03	-9.06