# Return-to-work is not a single event

## Applying new methods and data to understand RTW

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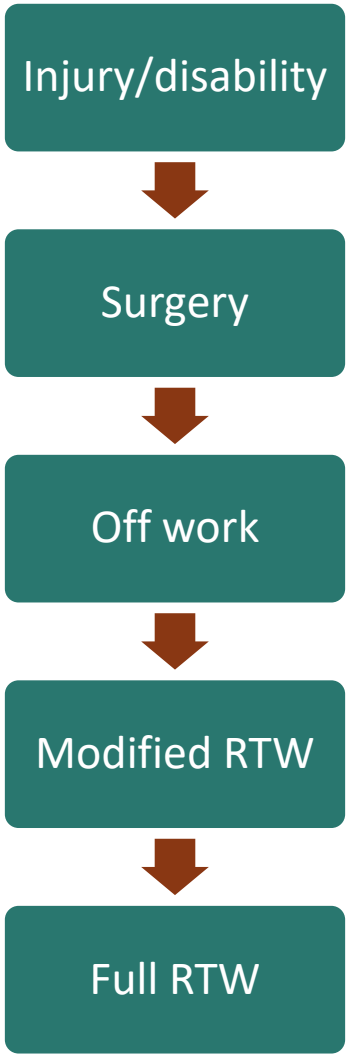
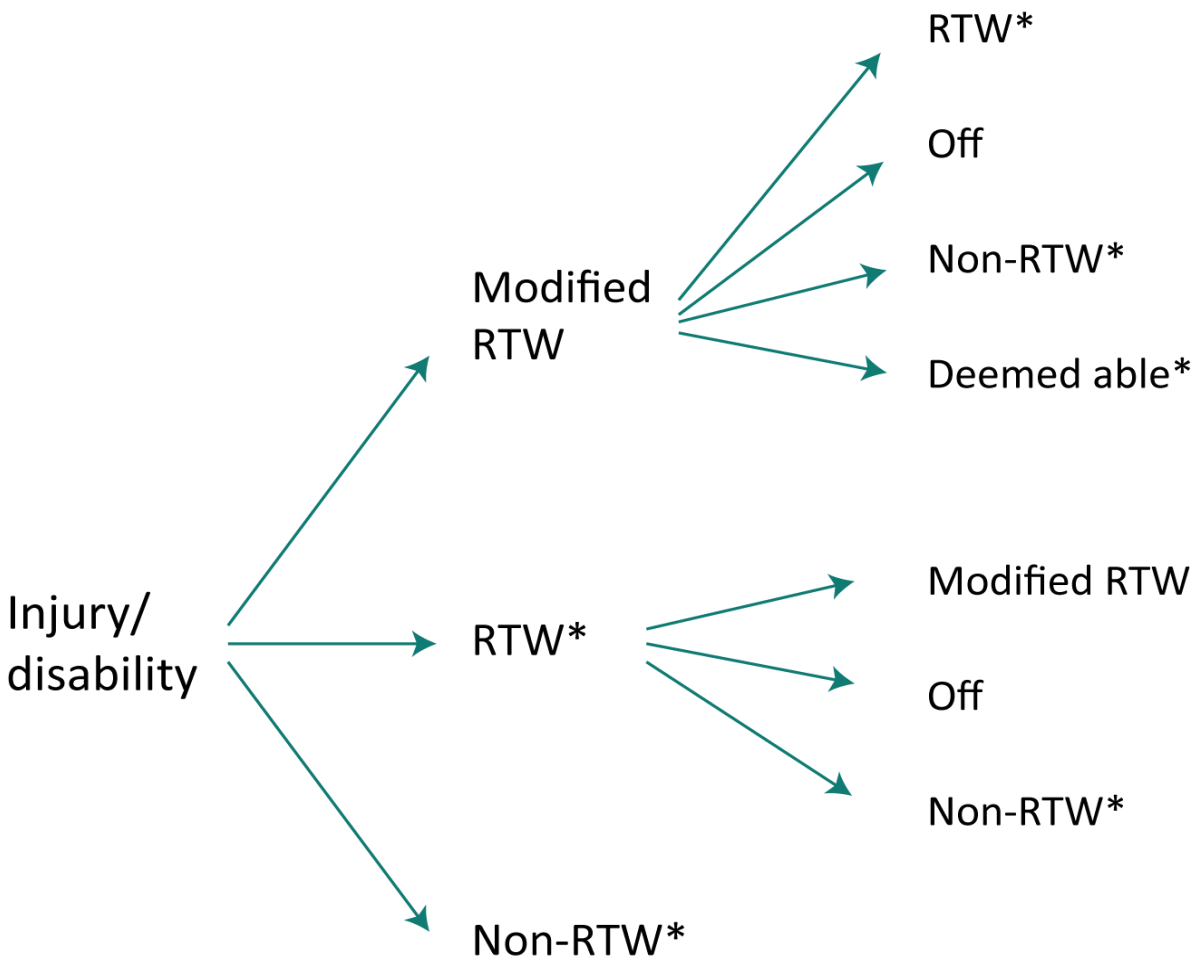
# Impact of musculoskeletal injuries

1. Worldwide, MSIs cause >20% of all years lived with disabilities
2. In Canada, MSIs account for the highest costs for productivity losses due to disability
3. In BC, >65% of all lost-time workers' compensation claims are due to work-related MSIs & 80% of all work disability days are due to work-related MSIs

# What is return-to-work?



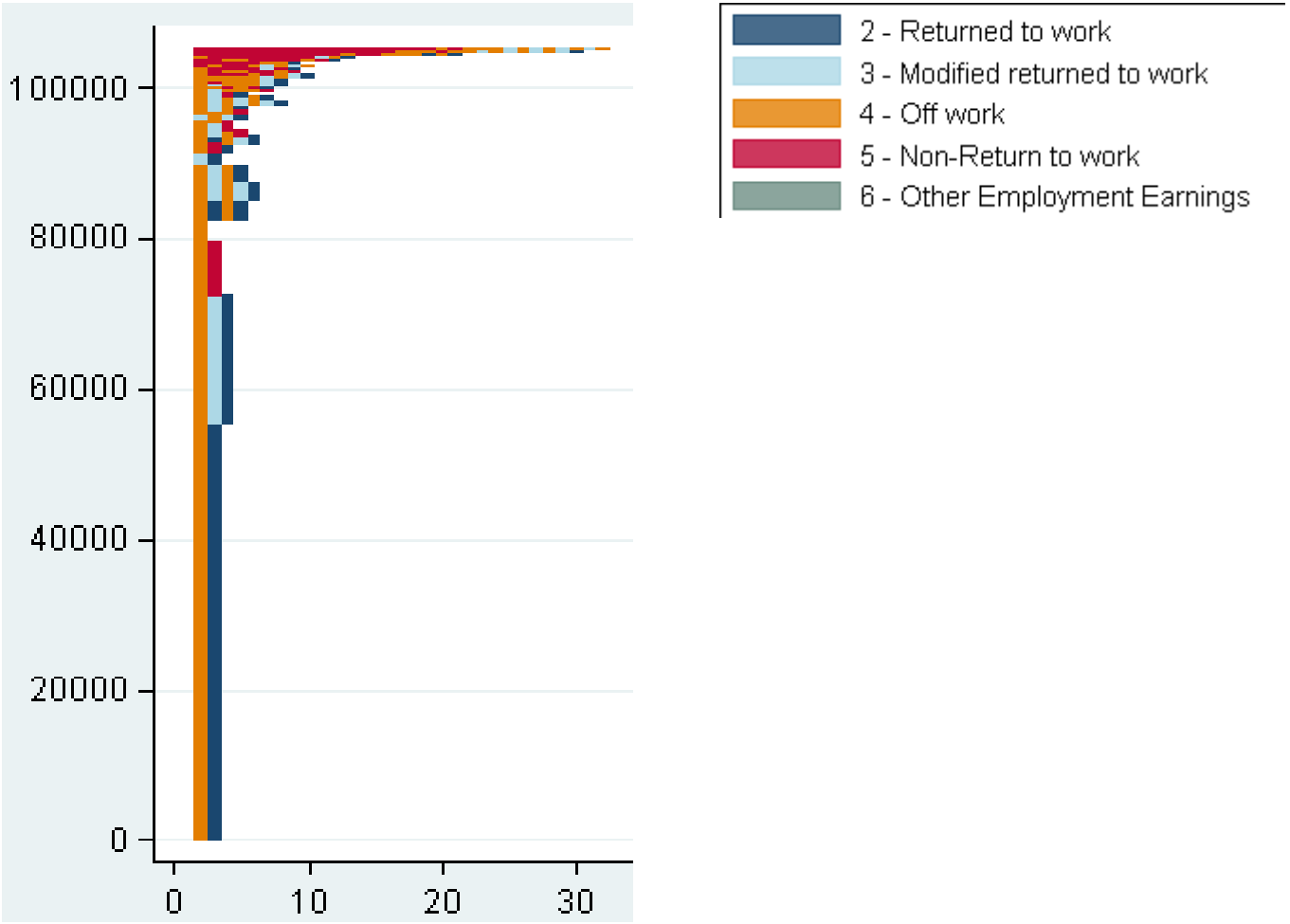
# RTW transitions



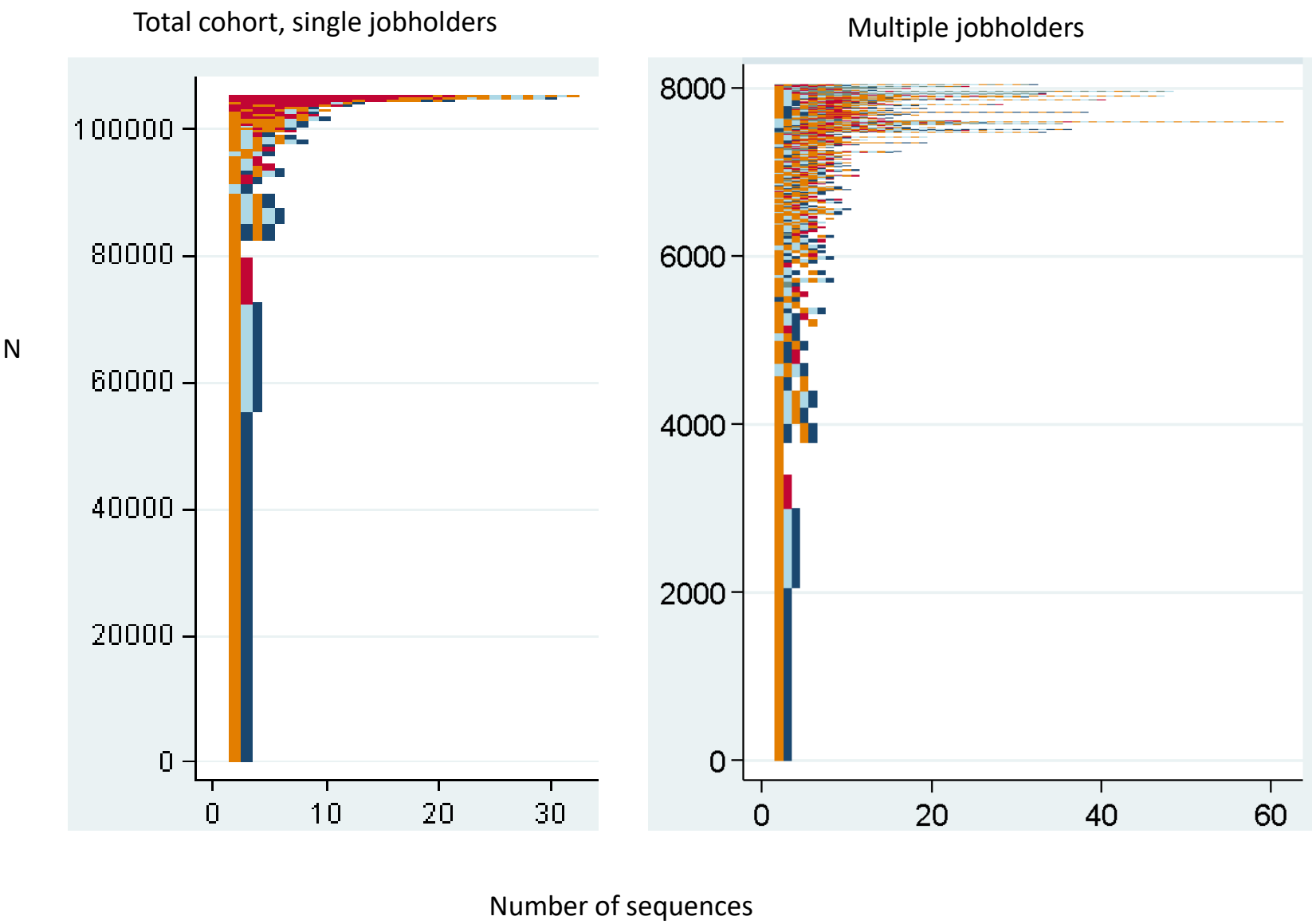

* Potential end event

# Sequence Analysis

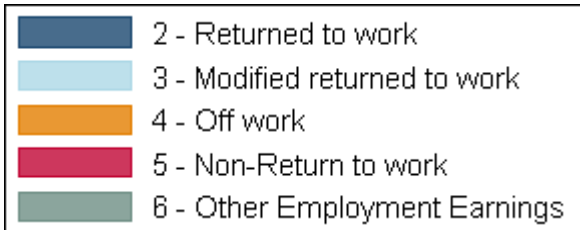
Total cohort, single jobholders



# 2.1 Multiple jobholders

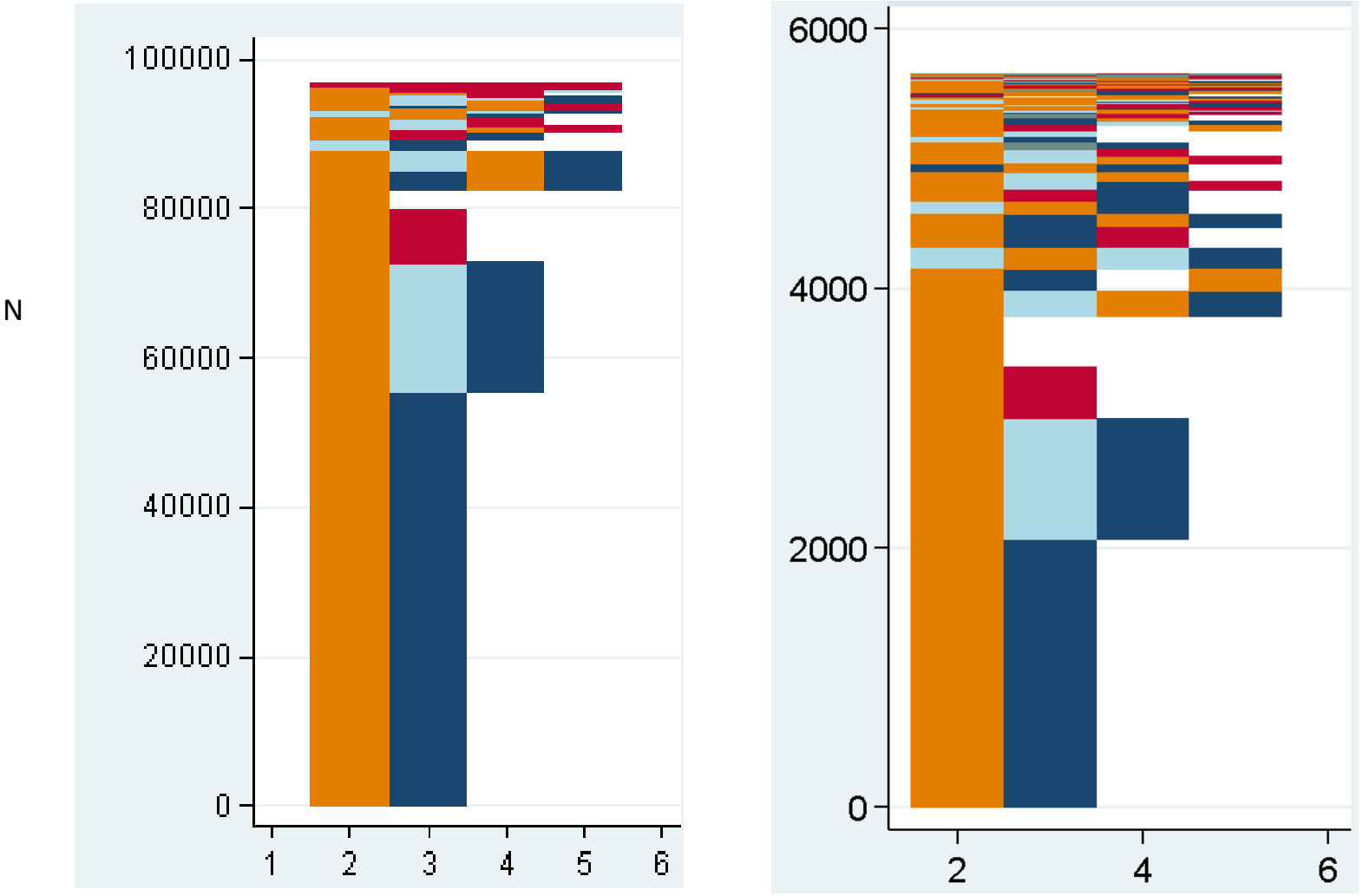


# 2.2 Multiple jobholders

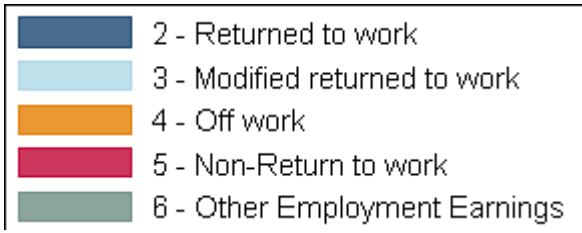



Total cohort, single jobholders

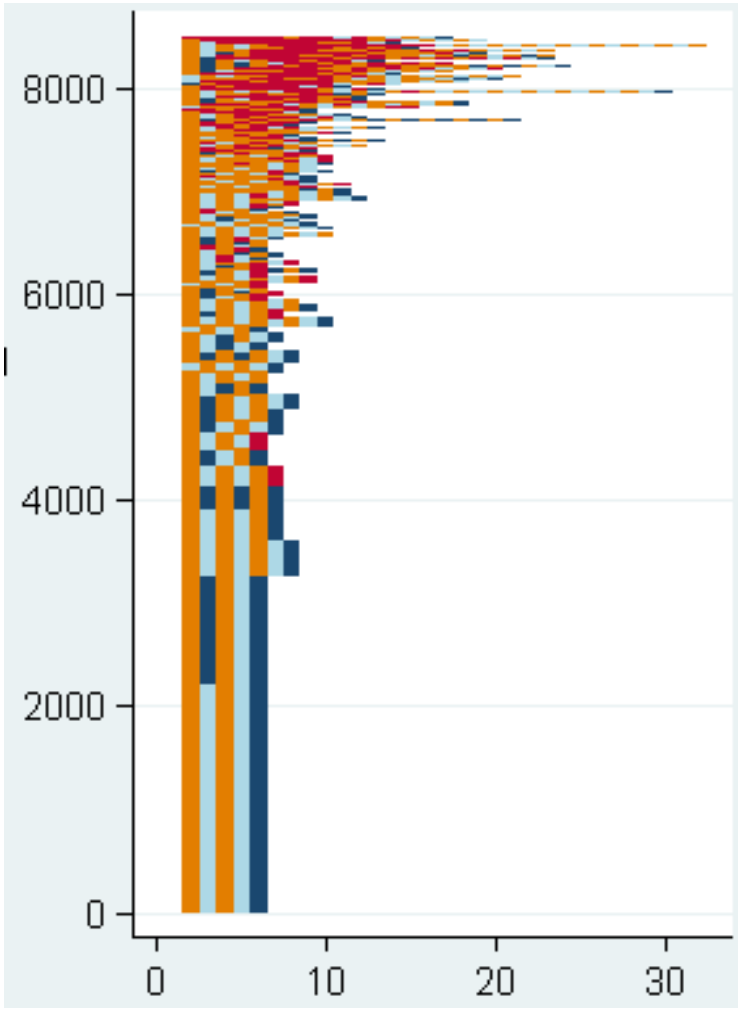
Multiple jobholders



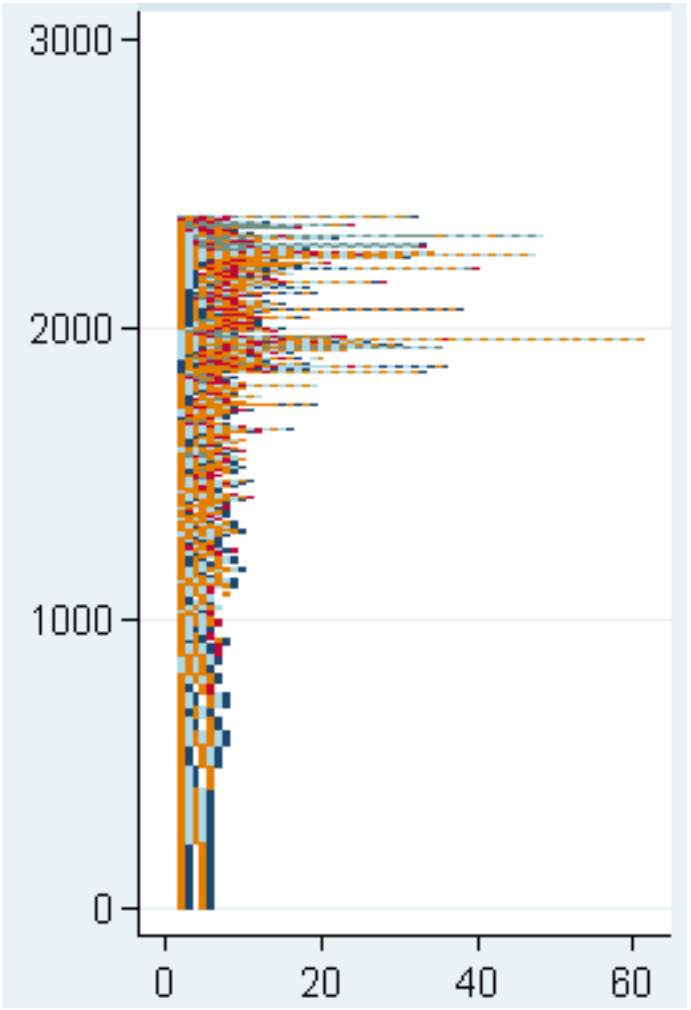
# 2.3 Multiple jobholders




Total cohort, single jobholders




Multiple jobholders



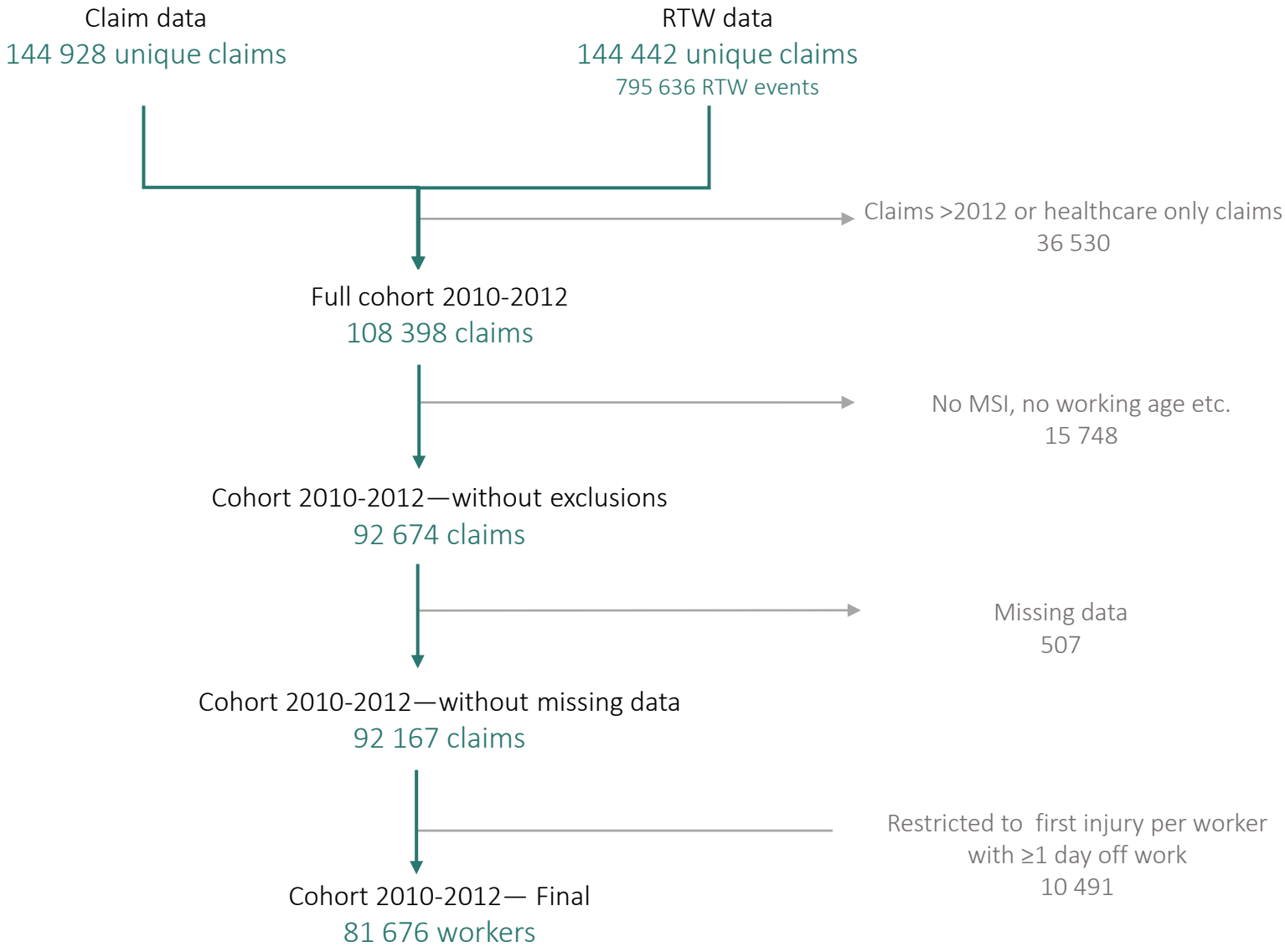

N

Number of sequences

# Current Research

- Explore approaches to classify and group RTW trajectories
- Investigate the relationship between clinical, demographic, and work-related characteristics and RTW trajectories for workers with a work-related MSI

# Methods - Cohort



# Methods - Sequence analysis of unique cohort trajectories

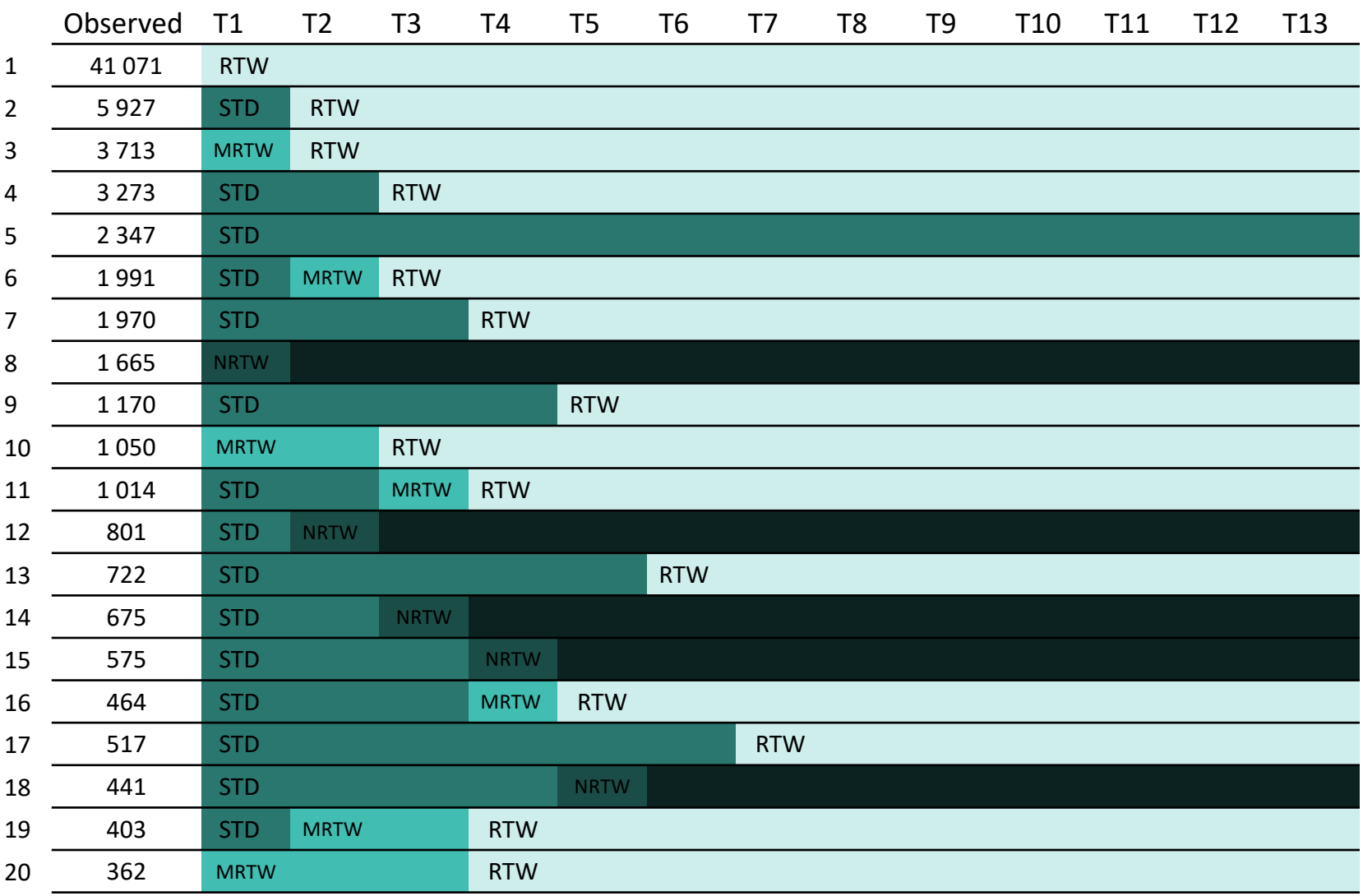
- Even with 4 RTW states the number of possible unique trajectories within one year after injury is large… very large

  $4^{365} = 5648 \text{ X } 10^{219}$


- Practical approach:
  - 13 periods of 4 weeks

    $4^{13} = 2028 \text{ X } 10^{31}$ → 67 108 864

# Results – RTW trajectories



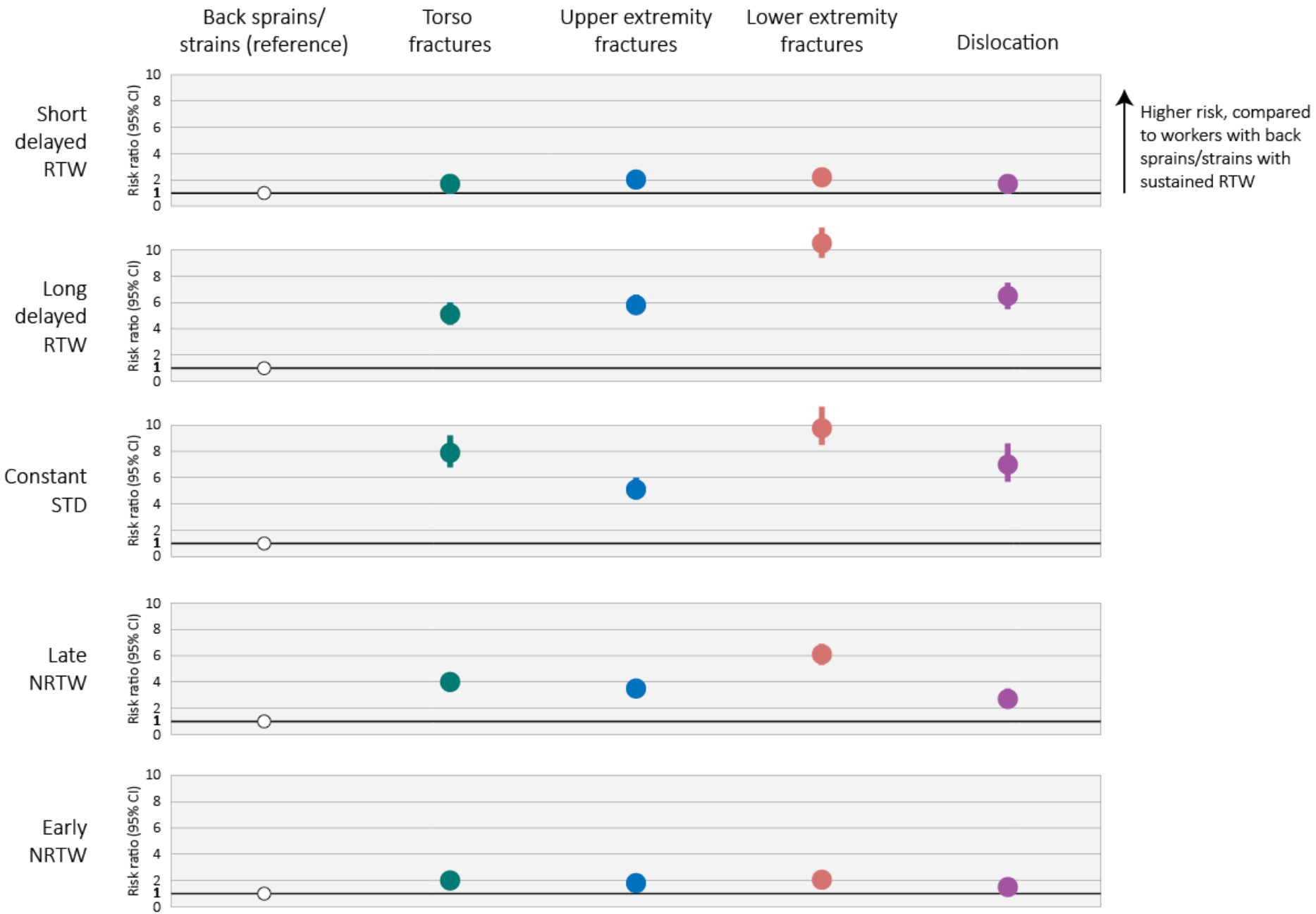
# Results – RTW trajectory clusters

| Number cluster | Name cluster | Cluster description | Observed | % |
|---|---|---|---|---|
| 1 | Sustainable RTW | Trajectories end in RTW by the 1st month | 41 071 | 50.3 |
| 2 | Short delayed RTW | Trajectories end in RTW by month 2-6 | 24 942 | 30.5 |
| 3 | Early NRTW | Trajectories end in NRTW within the first 6 months | 5 351 | 6.6 |
| 4 | Long delayed RTW-preceded by STD | Trajectories end in RTW by month 7-13<br>Preceding events predominantly STD | 3 342 | 4.1 |
| 5 | Late NRTW | Trajectories end in NRTW by month 7-13 | 2 384 | 2.9 |
| 6 | Constant STD | Trajectories end in STD by the 1st month | 2 347 | 2.9 |
| 7 | Deferred STD | Trajectories end in STD by month 2-13 | 719 | 0.9 |
| 8 | Long delayed RTW-preceded by MRTW | Trajectories end in RTW by month 7-13<br>Preceding events predominantly MRTW | 627 | 0.8 |
| 9 | Unclassifiable | Unclassifiable trajectories | 893 | 1.1 |
| | | Total | 81 676 | 100 |

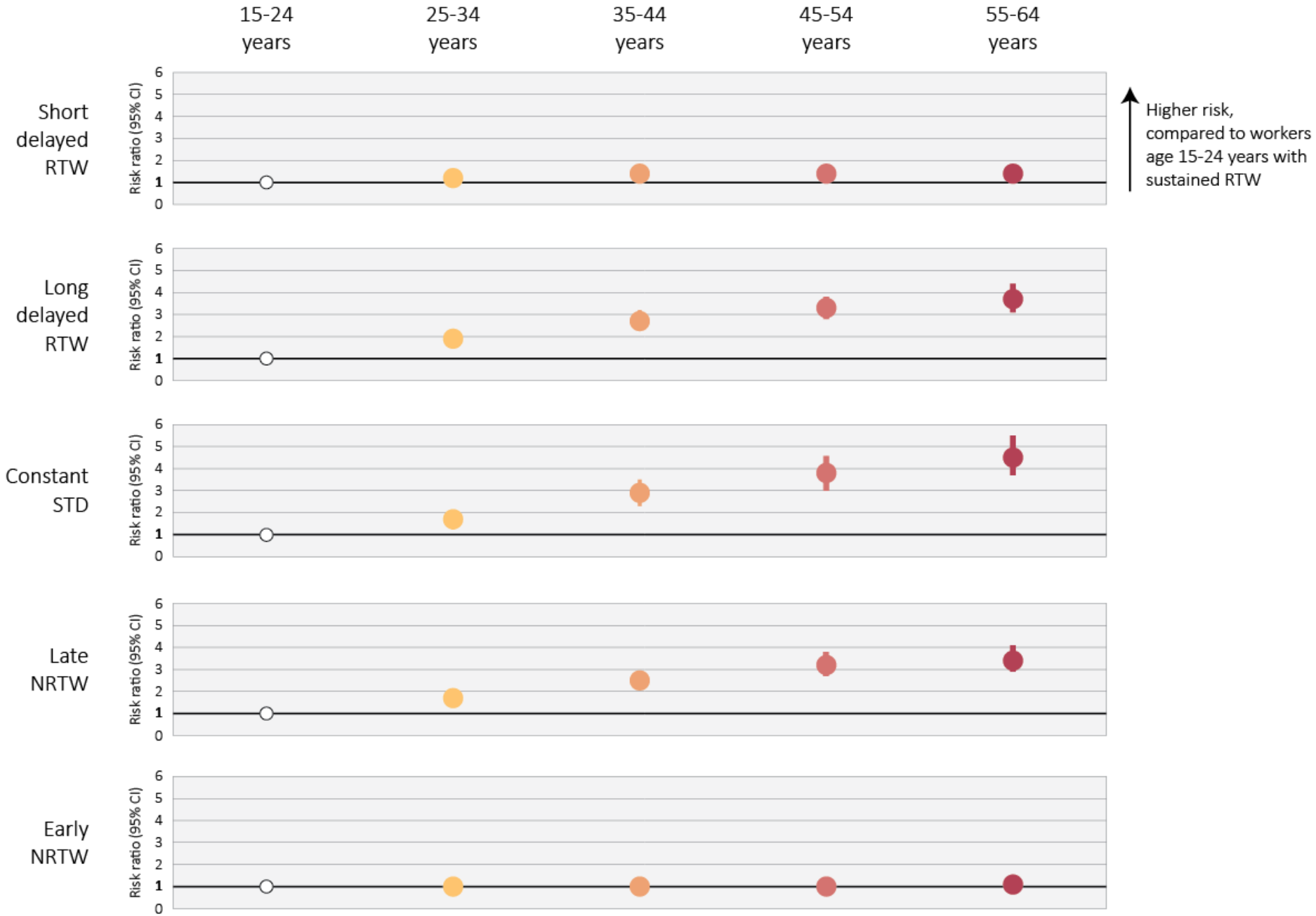
# Now what?

Investigate the relationship between *clinical, demographic*, and *work-related characteristics* and different RTW trajectories for workers with a work-related MSI

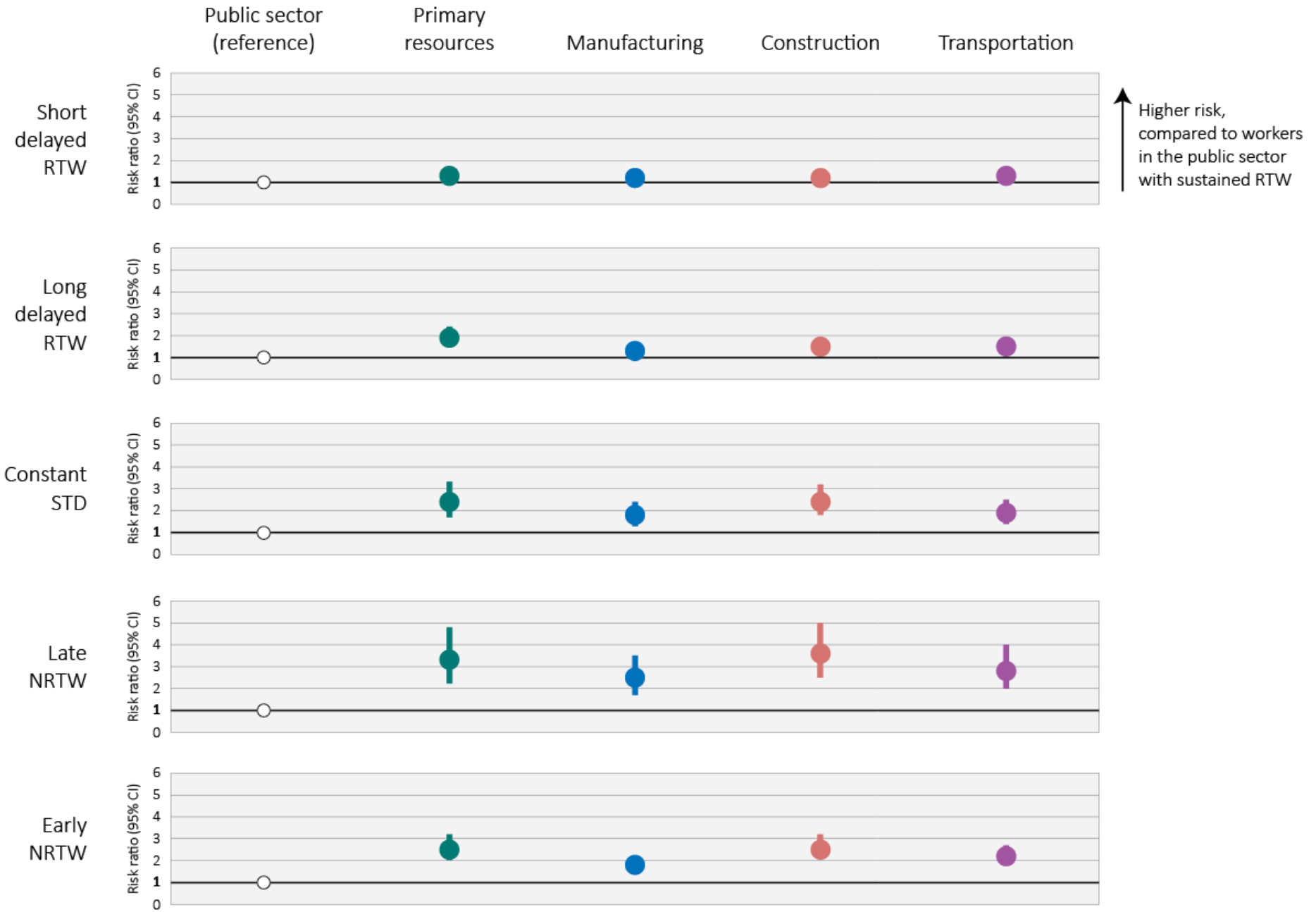
# Results – Injury type



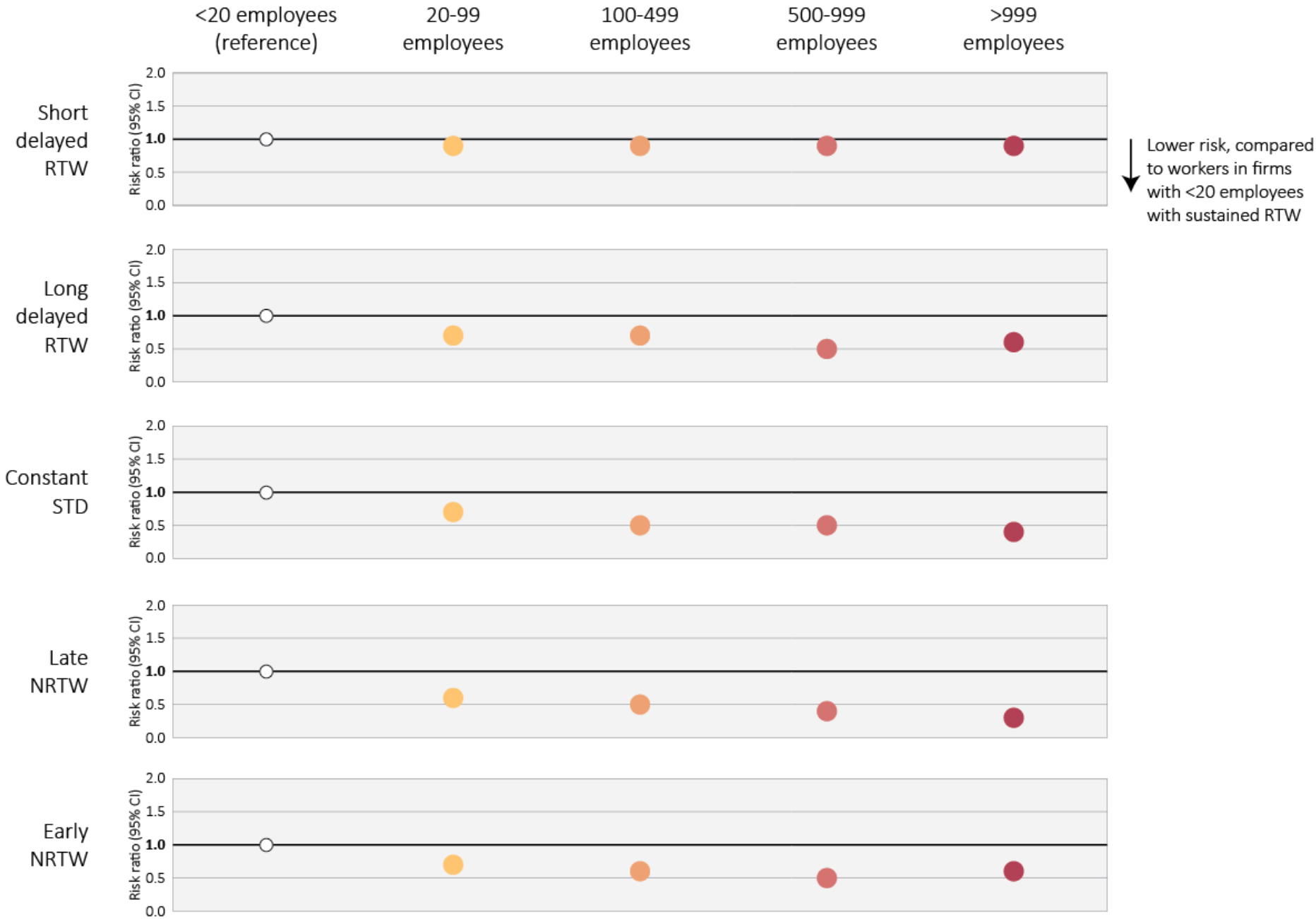
# Results – Age


15-24 years
25-34 years
35-44 years
45-54 years
55-64 years
Short delayed RTW
Long delayed RTW
Constant STD
Late NRTW
Early NRTW
Risk ratio (95% CI)
0
1
2
3
4
5
6
Higher risk, compared to workers age 15-24 years with sustained RTW

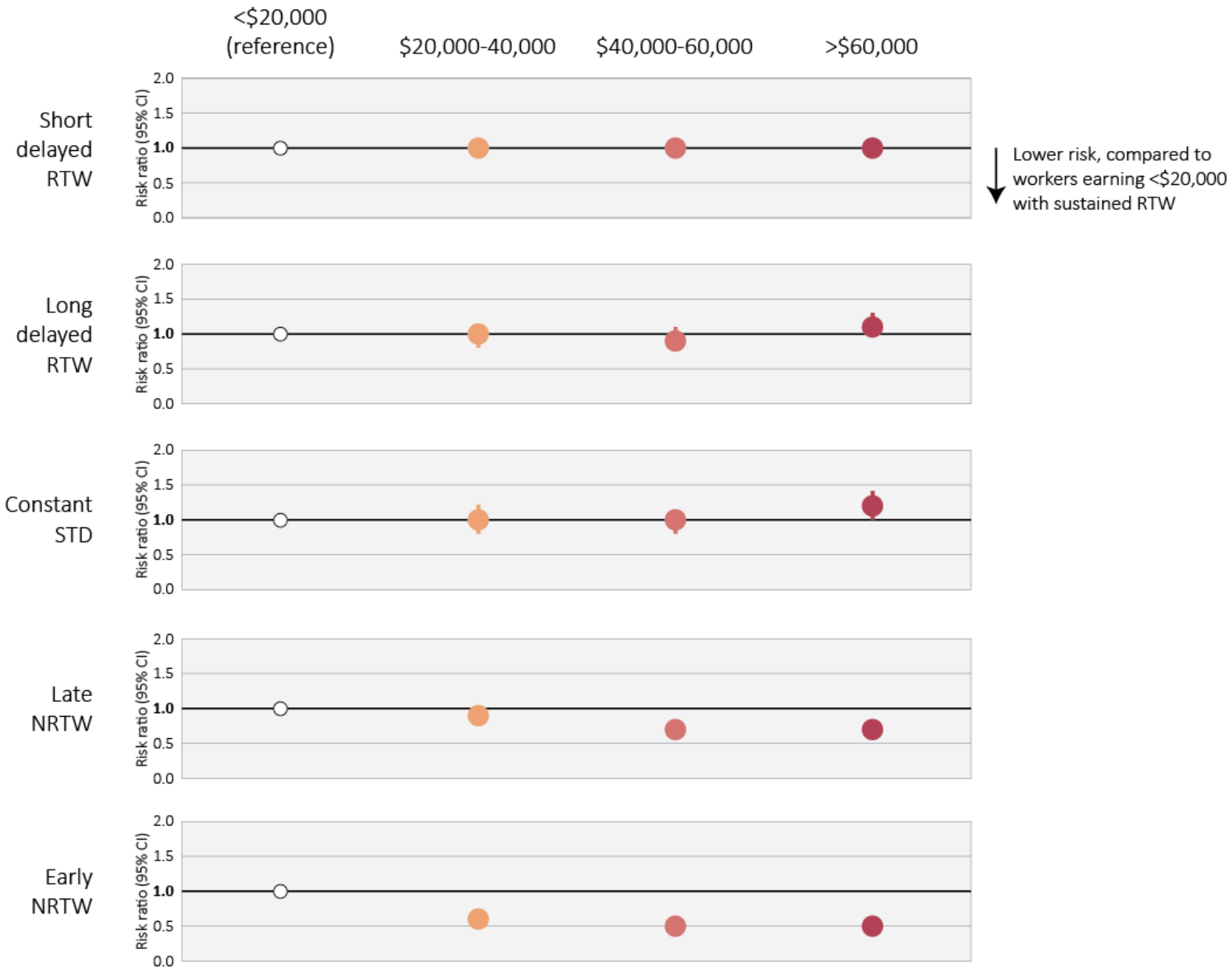
# Results – Industry



# Results – Firmsize



# Results – Wage



# Summary

1. Back strains associated with early sustained RTW; fractures with longer RTW trajectories
2. Age gradient for longer RTW trajectories
3. Primary resources, manufacturing, construction, and transportation associated with longer RTW trajectories
4. Larger firm size is associated with earlier RTW trajectories
5. Higher wage less likely associated with NRTW

# Next steps

1. Provide more detailed RTW trajectories, including weekly timeframes
2. Focus on specific groups – multiple jobholders
3. Effectiveness & cost-effectiveness MRTW

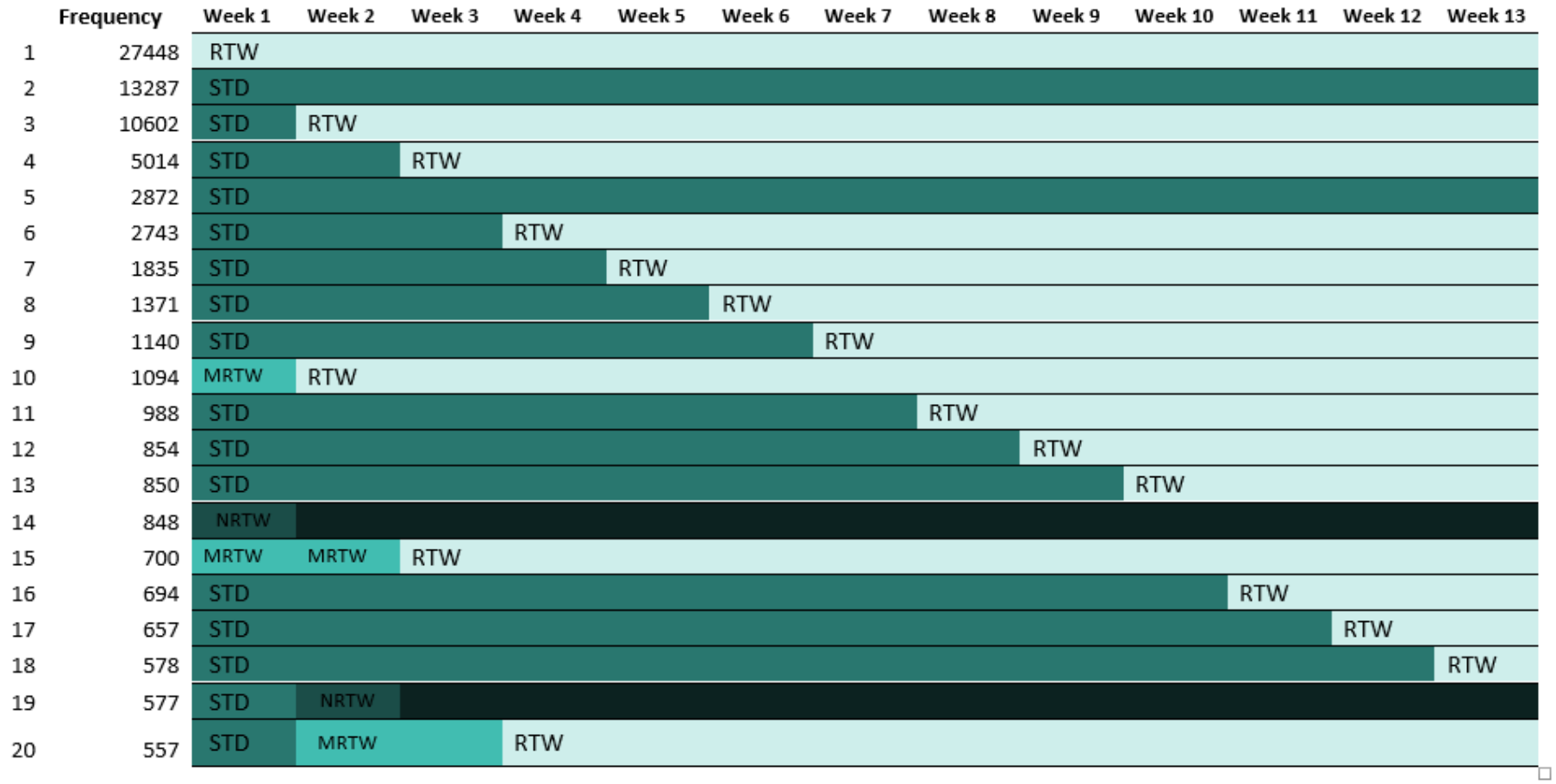
# Example weekly timeframes (population 2010 – 2013)

- Focus on month 1-3, monthly timeframes

| | Frequency | Month 1 | Month 2 | Month 3 |
|---|---|---|---|---|
| 1 | 50877 | RTW | | |
| 2 | 16081 | STD | | |
| 3 | 7495 | STD | RTW | |
| 4 | 5046 | MRTW | RTW | RTW |
| 5 | 4182 | STD | | RTW |
| 6 | 3042 | STD | STD | STD |
| 7 | 3650 | STD | MRTW | RTW |
| 8 | 3408 | STD | STD | MRTW |
| 9 | 2290 | STD | | |
| 10 | 1626 | NRTW | | |
| 11 | 1388 | STD | MRTW | MRTW |
| 12 | 1381 | MRTW | MRTW | RTW |
| 13 | 1093 | STD | NRTW | |
| 14 | 998 | STD | | NRTW |
| 15 | 532 | RTW | | |
| 61 | 476 | MRTW | STD | STD |
| 17 | 402 | STD | MRTW | STD |
| 18 | 388 | RTW | STD | STD |
| 19 | 354 | MRTW | MRTW | STD |
| 20 | 248 | RTW | | |

# Example weekly timeframes (population 2010 – 2013)

- Focus on month 1-3, weekly timeframes



# Example weekly timeframes (population 2010 – 2013)

- Focus on RTW month 1, weekly timeframes

# Example weekly timeframes (population 2010 – 2013)

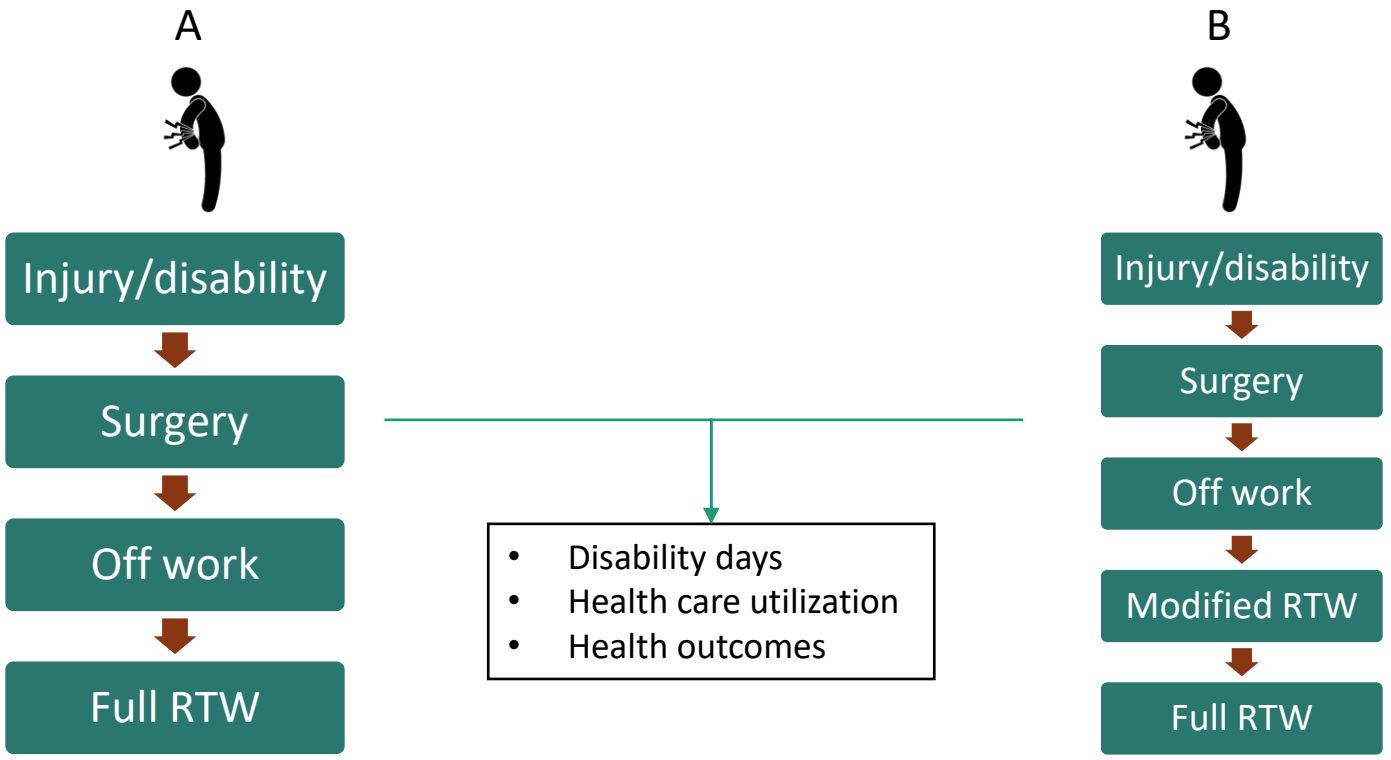
- Focus on month 1-3, weekly timeframes for workers who RTW within 1 month

| | Frequency | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 | Week 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 27448 | RTW | | | | | | | | | | | | |
| 2 | 10602 | STD | RTW | | | | | | | | | | | |
| 3 | 5014 | STD | STD | RTW | | | | | | | | | | |
| 4 | 2743 | STD | STD | STD | RTW | | | | | | | | | |
| 5 | 1094 | MRTW | RTW | | | | | | | | | | | |
| 6 | 700 | MRTW | MRTW | RTW | | | | | | | | | | |
| 7 | 557 | STD | MRTW | MRTW | RTW | | | | | | | | | |
| 8 | 497 | STD | MRTW | RTW | | | | | | | | | | |
| 9 | 403 | MRTW | MRTW | MRTW | RTW | | | | | | | | | |
| 10 | 364 | STD | STD | MRTW | RTW | | | | | | | | | |
| 11 | 216 | NRTW | RTW | | | | | | | | | | | |
| 12 | 204 | RTW | | | | | | | | | | | | |
| 13 | 147 | RTW | STD | RTW | | | | | | | | | | |
| 14 | 104 | MRTW | STD | RTW | | | | | | | | | | |
| 15 | 96 | STD | NRTW | RTW | | | | | | | | | | |
| 16 | 80 | NRTW | NRTW | RTW | | | | | | | | | | |
| 17 | 63 | RTW | | | | | | | | | | | | |
| 18 | 61 | RTW | STD | STD | RTW | | | | | | | | | |
| 19 | 54 | MRTW | STD | STD | RTW | | | | | | | | | |
| 20 | 48 | RTW | STD | STD | RTW | | | | | | | | | |

# Future Reseach

Investigate effective and cost-effect policy strategies for a sustainable RTW trajectory

- Focus on Modified return-to-work



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