

Depression and Probable Post-Traumatic Stress Disorder Risk among Canadian Paramedics during COVID-19

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Land Acknowledgement

I acknowledge that I am on the traditional territory of many nations including the Mississaugas of the Credit, the Anishnabeg, the Chippewa, the Haudenosaunee and the Wendat peoples.



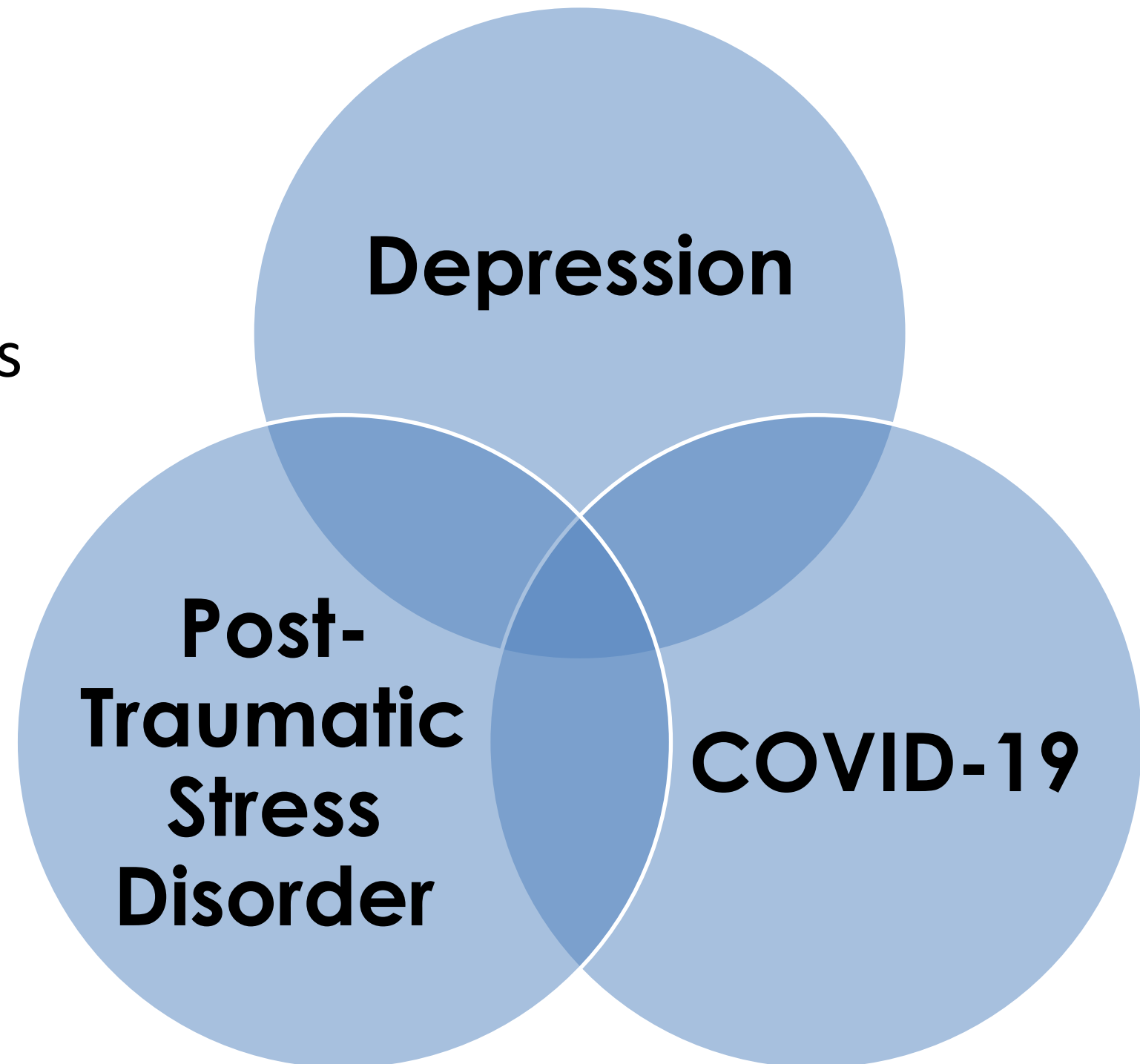
Relationships with Financial Sponsors

Note: Please include any relationships over the last 2 years

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- **Other:** none.

Agenda

- Background
 - Mental health outcomes
 - Canadian Paramedics
- Methods
- Preliminary Results
- Discussion

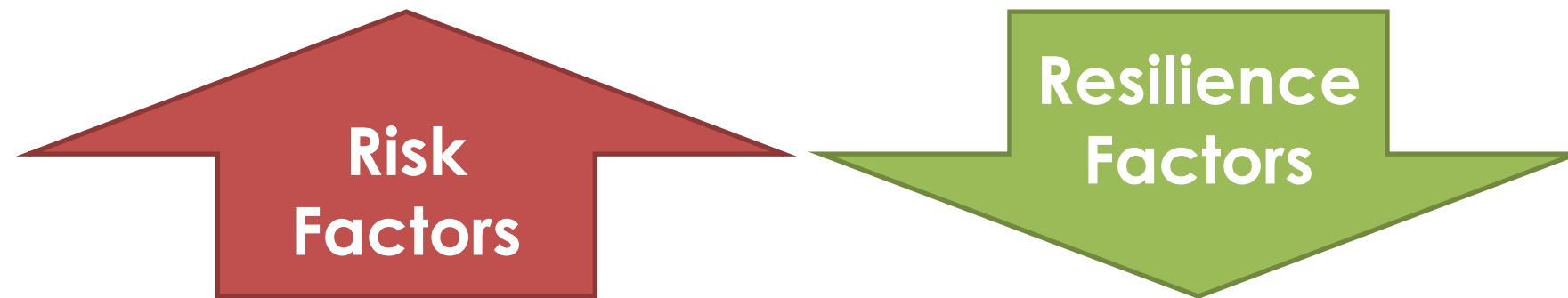


Background - Depression

- **Depression:** mood disorder that causes persistent feelings of sadness and loss of interest... changes that significantly affect the individual's capacity to function (1).
- Various stress-related mental health disorders are common among paramedics. Depression prevalence rates range from 15-37%(2-5).
 - Typically estimate risk using diagnostic screening instruments rather than clinical diagnosis.
- **Major Depressive Disorder (MDD):** persistently low or depressed mood, anhedonia or decreased interest in pleasurable activities, feelings of guilt or worthlessness, lack of energy, poor concentration, appetite changes, psychomotor retardation or agitation, sleep disturbances, or suicidal thoughts (6).

Background - PTSD

- Post-Traumatic Stress Disorder (PTSD): a disorder that develops in some people who have experienced a shocking, scary, or dangerous event. I.e., critical or traumatic incidents.



- People with PTSD often have co-occurring conditions, such as depression, anxiety, and substance use.
- Recent evidence suggests that PTSD rates range from 11-25% among paramedics (2-5).



**Life-
threatening
situations**

**Uncontrolled,
unpredictable
environments**

Workload

**Dangerous
Pathogens**

**Job strain (high
demands-low
control)**

Objectives

- To characterize prevalence rates of Canadian paramedics meeting screening criteria for major depressive disorder (MDD) and probable posttraumatic stress disorder (PTSD) during the COVID-19 pandemic.
- To model predictors for MDD and probable PTSD among Canadian paramedics.
- To explore potential gender differences for depression and PTSD risk among Canadian paramedics.

Methods – The CORSIP Project



- Recruited active-duty paramedics from Alberta, British Columbia, Manitoba, Ontario, Saskatchewan between Jan 2021-Jan 2023.
- Participants asked to submit consent and intake questionnaires via CORSIP web portal. Followed by lab requisition or dried blood spot (mail-in) analysis for antibody testing.
- Collected personal and occupational characteristics, SARS-CoV-2 immunity measures, and mental health screening instruments.
- All data collected on a rolling basis.

Measurement of Depression – Patient Health Questionnaire-9

Over the last 2 weeks, how often have you been bothered by any of the following problems?	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself – or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

Measurement of PTSD – Primary Care-PTSD-5

Pre-screening question about lifetime exposure to anything frightening, horrible, or traumatic.

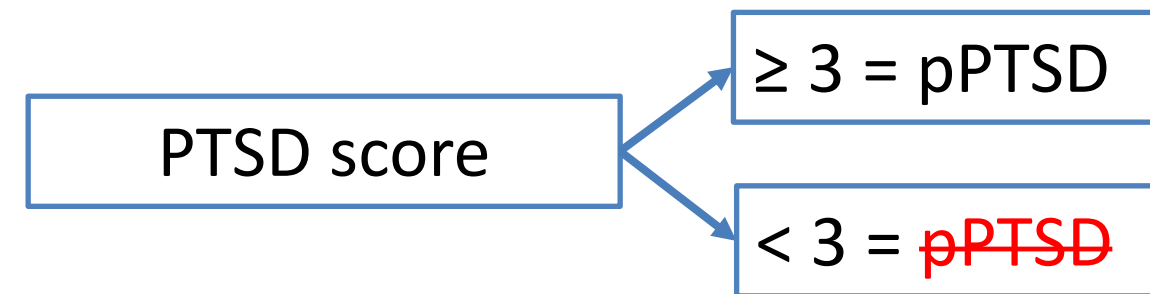
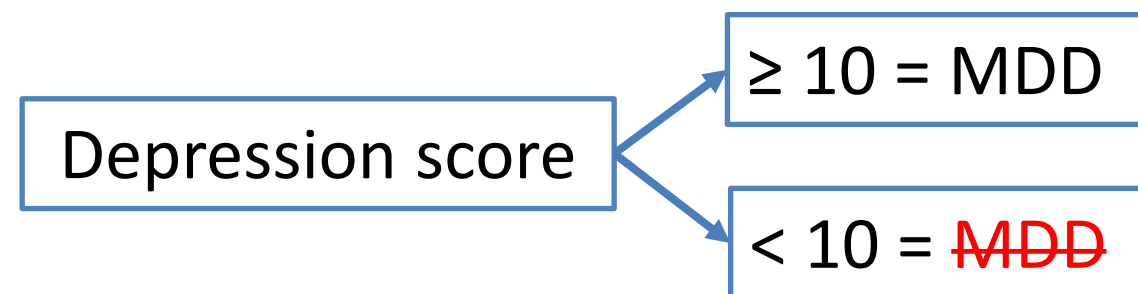
E.g., a serious accident or fire; a physical or sexual assault or abuse; an earthquake or flood; a war; seeing someone be killed or seriously injured; or having a loved one die through homicide or suicide.

In the past month, have you ...

1. had nightmares about the event(s) or thought about the event(s) when you did not want to?	YES	NO
2. tried hard not to think about the event(s) or went out of your way to avoid situations that reminded you of the event(s)?	YES	NO
3. been constantly on guard, watchful, or easily startled?	YES	NO
4. felt numb or detached from people, activities, or your surroundings?	YES	NO
5. felt guilty or unable to stop blaming yourself or others for the event(s) or any problems the events may have caused?	YES	NO
Total score is sum of “YES” responses in items 1-5.	TOTAL SCORE	

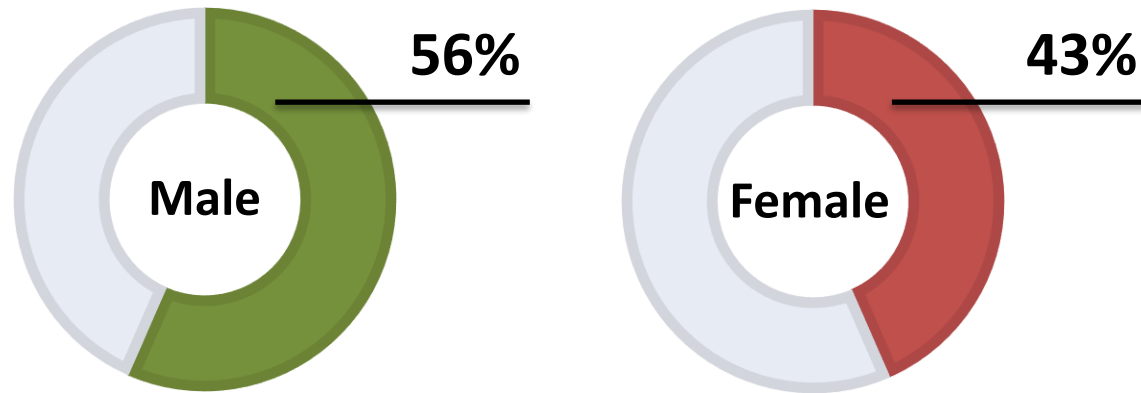
Methods – Statistical Analysis

- Bivariate analysis of demographics for depression and PTSD severity scores (e.g., differences in severity scores by age, gender, job, etc.)
 - Wilcoxon rank sum/Mann-Whitney U and Kendall tau's b correlation test used to look for differences in depression and PTSD scores for categorical and continuous predictors, respectively.
- Multiple logistic regression employed for MDD and pPTSD
 - Stepwise selection using bidirectional elimination based on akaike information criterion (AIC) (k=2).
 - Separate models for male and female workers.

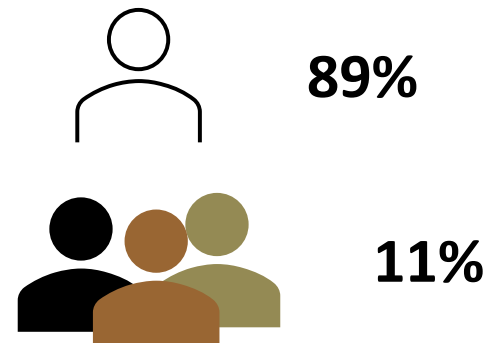


Personal Characteristics of CORSIP Paramedics (n = 3225)

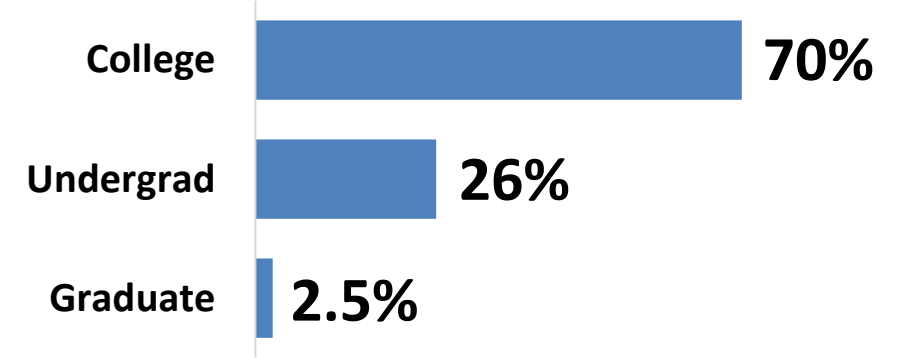
Gender



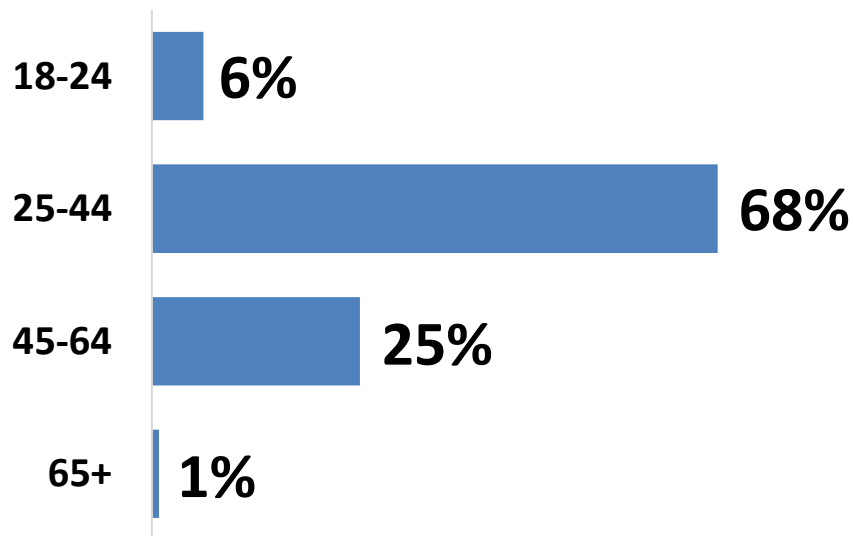
Race



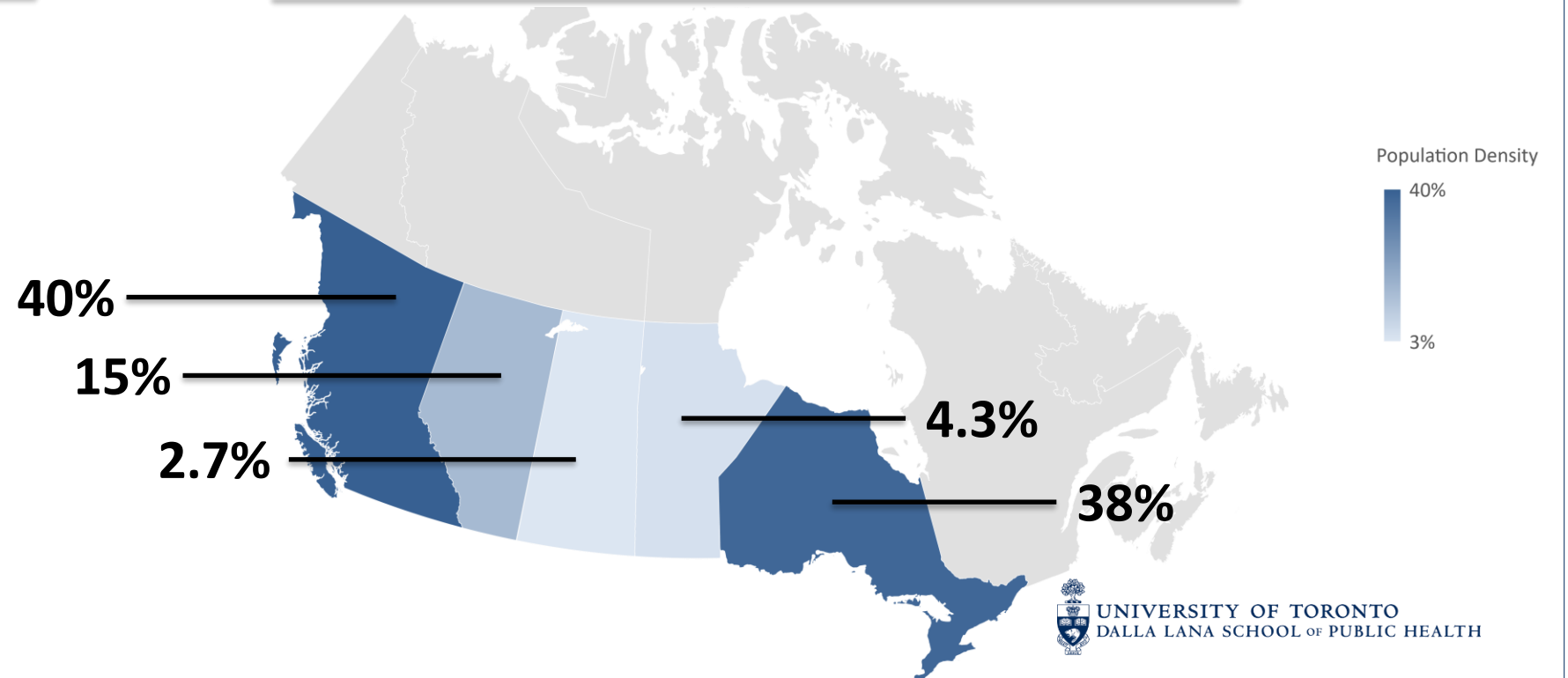
Education



Age (M = 36, IQR = 15)

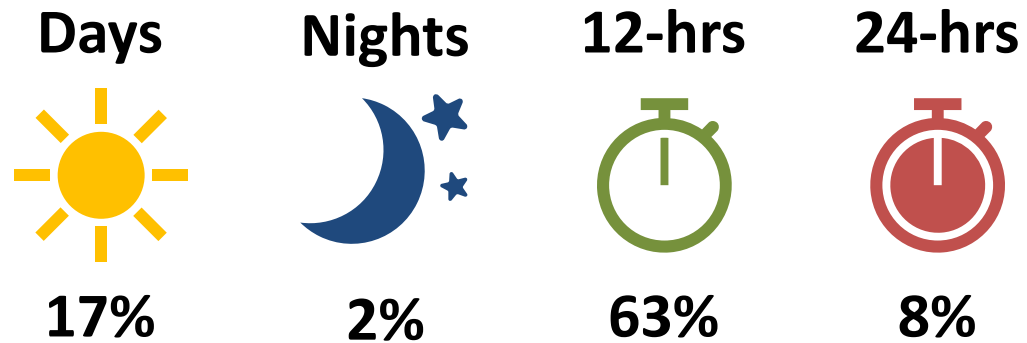


Location

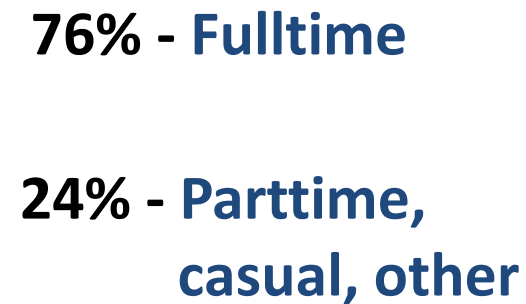


Occupational Characteristics of CORSIP Paramedics (n = 3225)

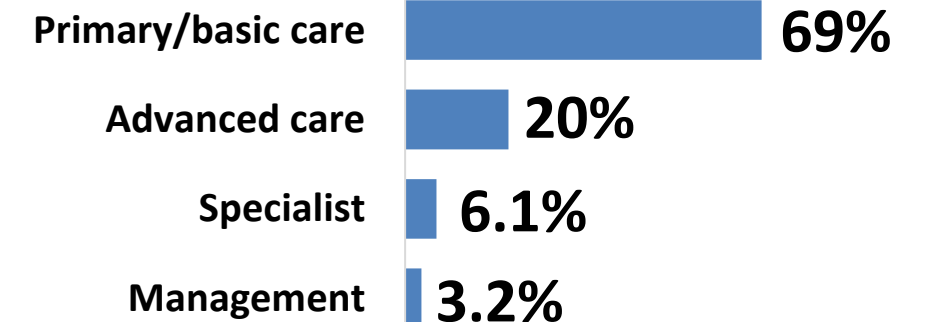
Shift Schedule



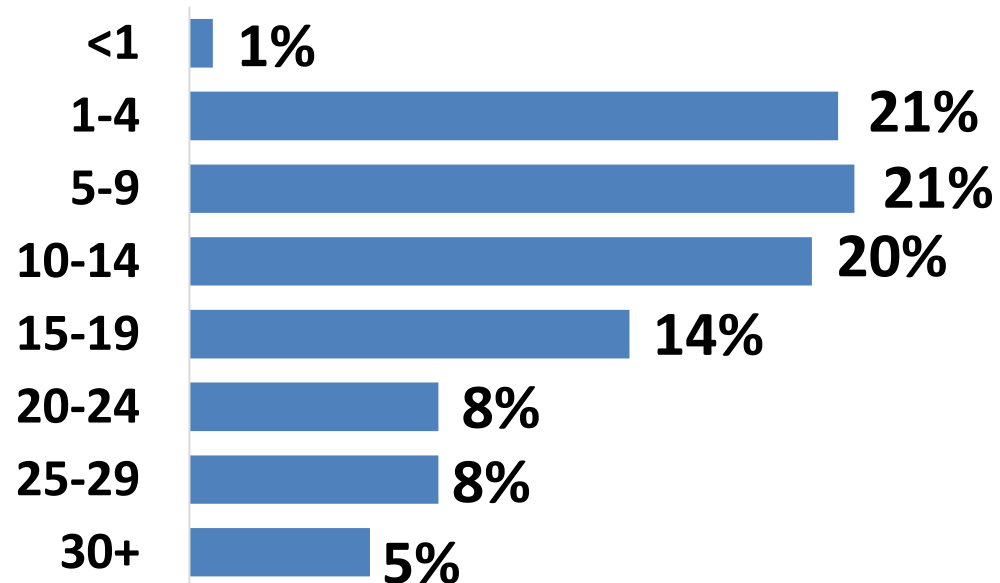
Employment Type



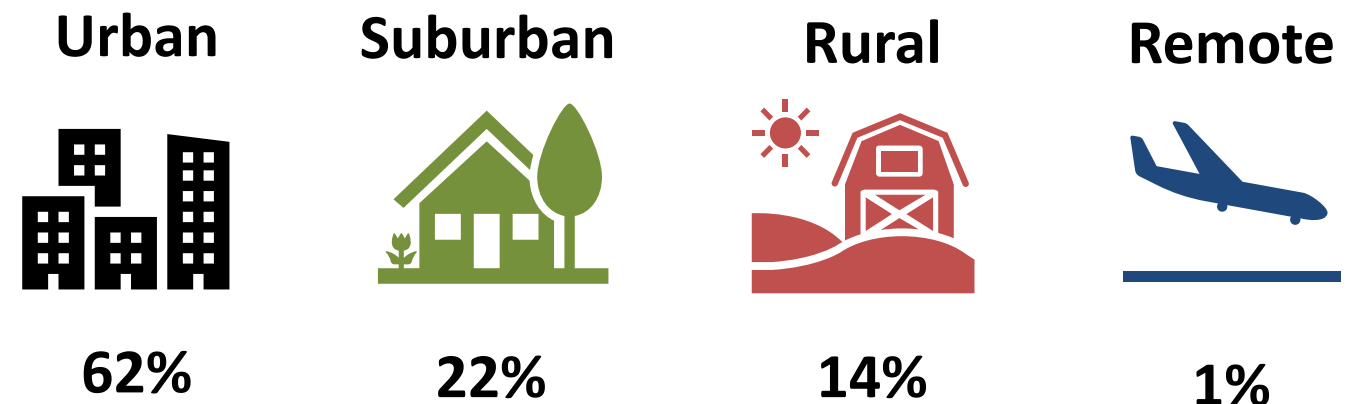
Job Title



Work Experience (M = 11, IQR = 13)



Location



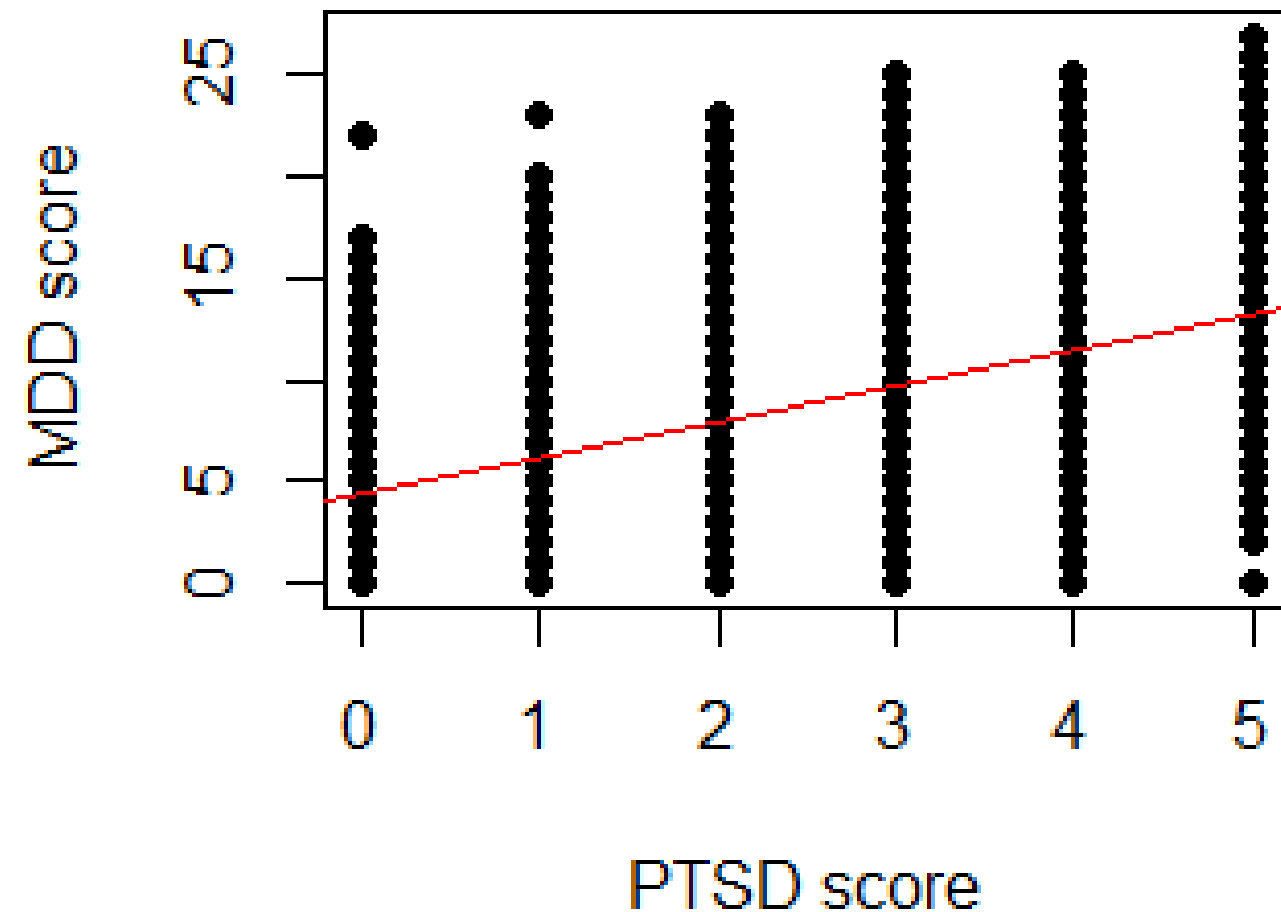
Prevalence Rates for MDD and pPTSD

%(n)	MDD	pPTSD during COVID-19	MDD + pPTSD during COVID-19
Overall	32% (n=794)	41% (n=690)	23% (n=358)
Male	30% (n=420)	36% (n=341)	20% (n=175)
Female	35% (n=371)	47% (n=338)	26% (n=173)

Depression and PTSD Severity

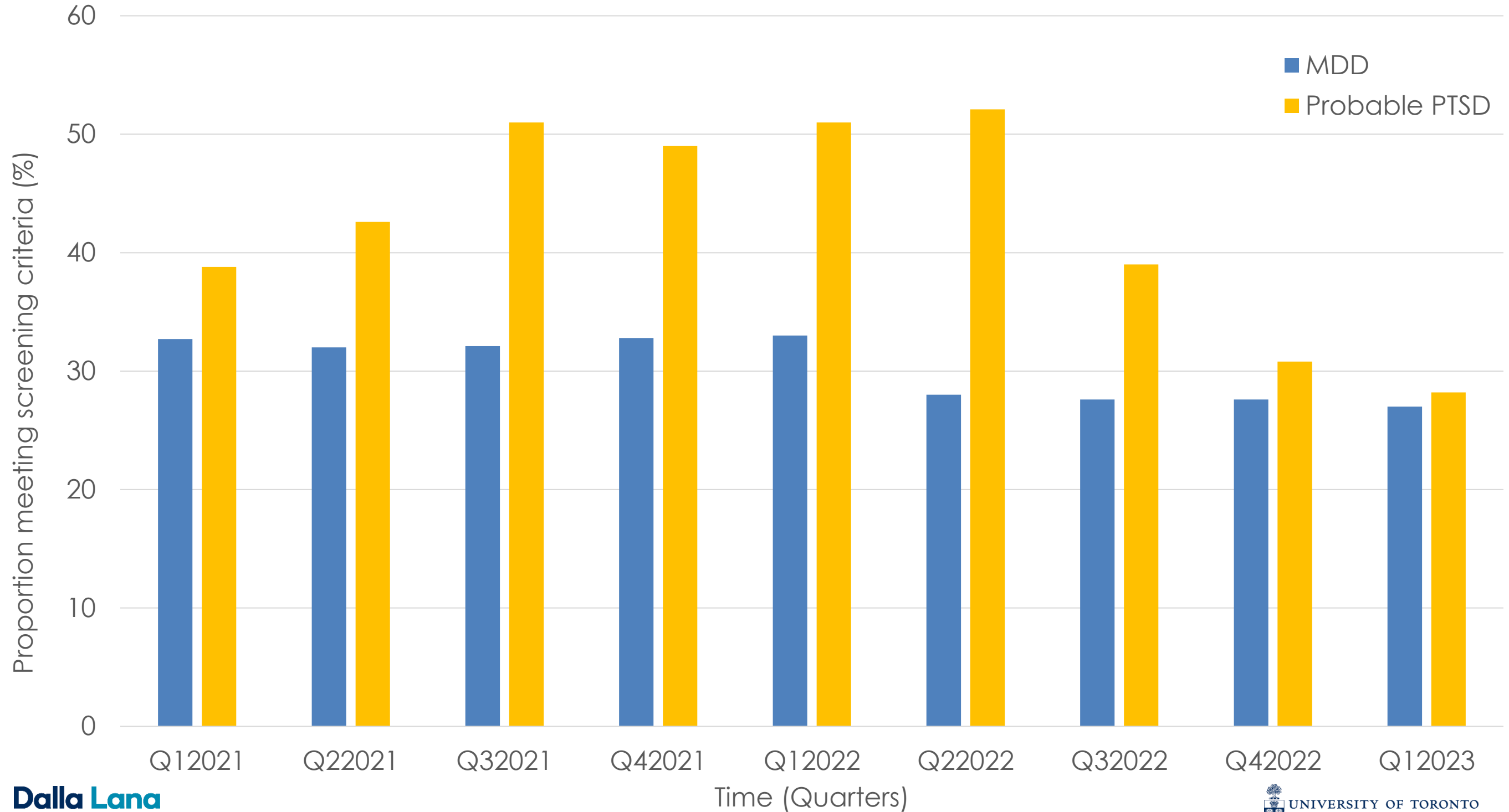
Predictor	Depression Severity	pPTSD Severity
Gender	$p=0.003$	$p<0.001$
Age	$p<0.001$ ($T_b = -0.08$)	
Education		$p=0.02$
Fulltime employment	$p=0.002$	$p=0.01$
Work experience	$p<0.001$ ($T_b = -0.06$)	

Plot of PTSD and MDD scores

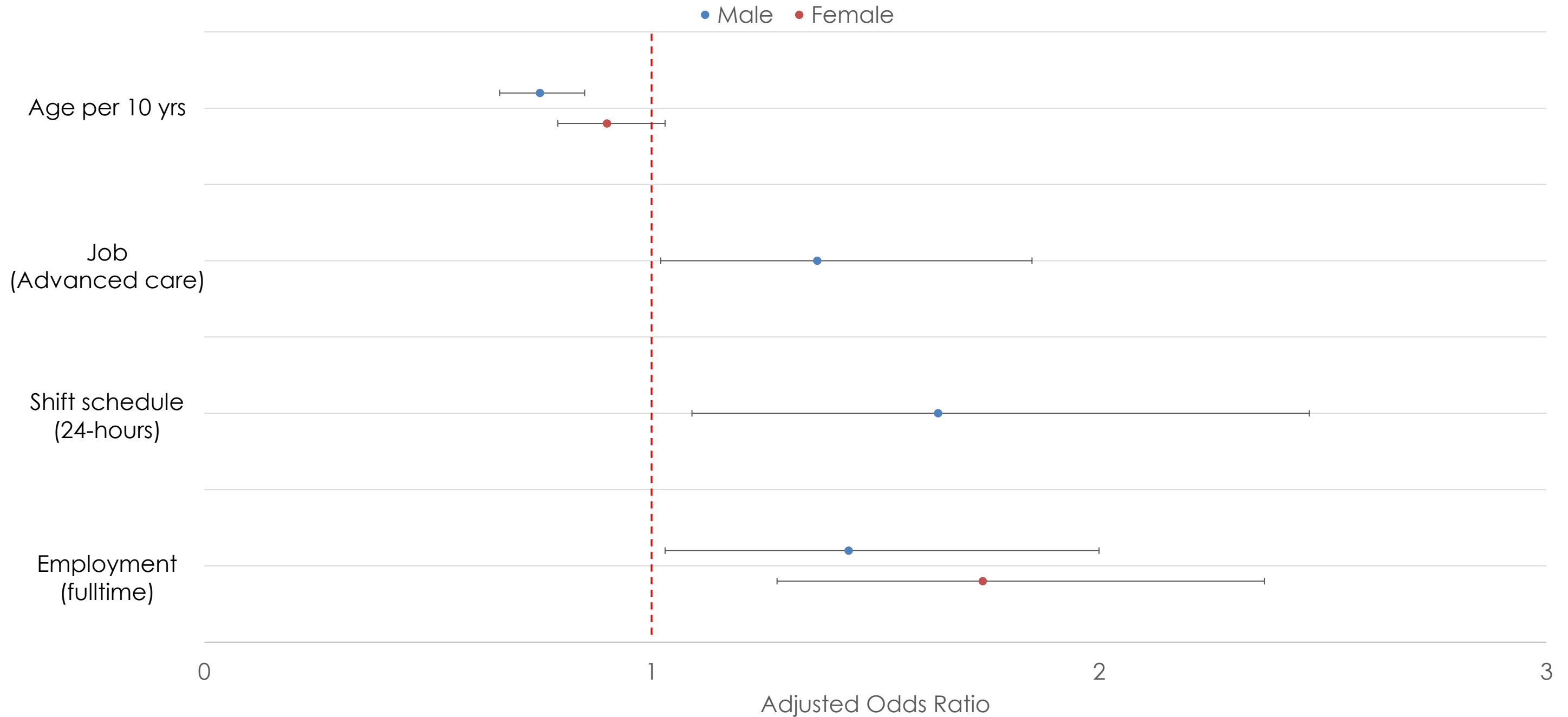


- Strong positive correlation between depression and pPTSD severity ($T_b = 0.41$ ($P < 0.001$)).

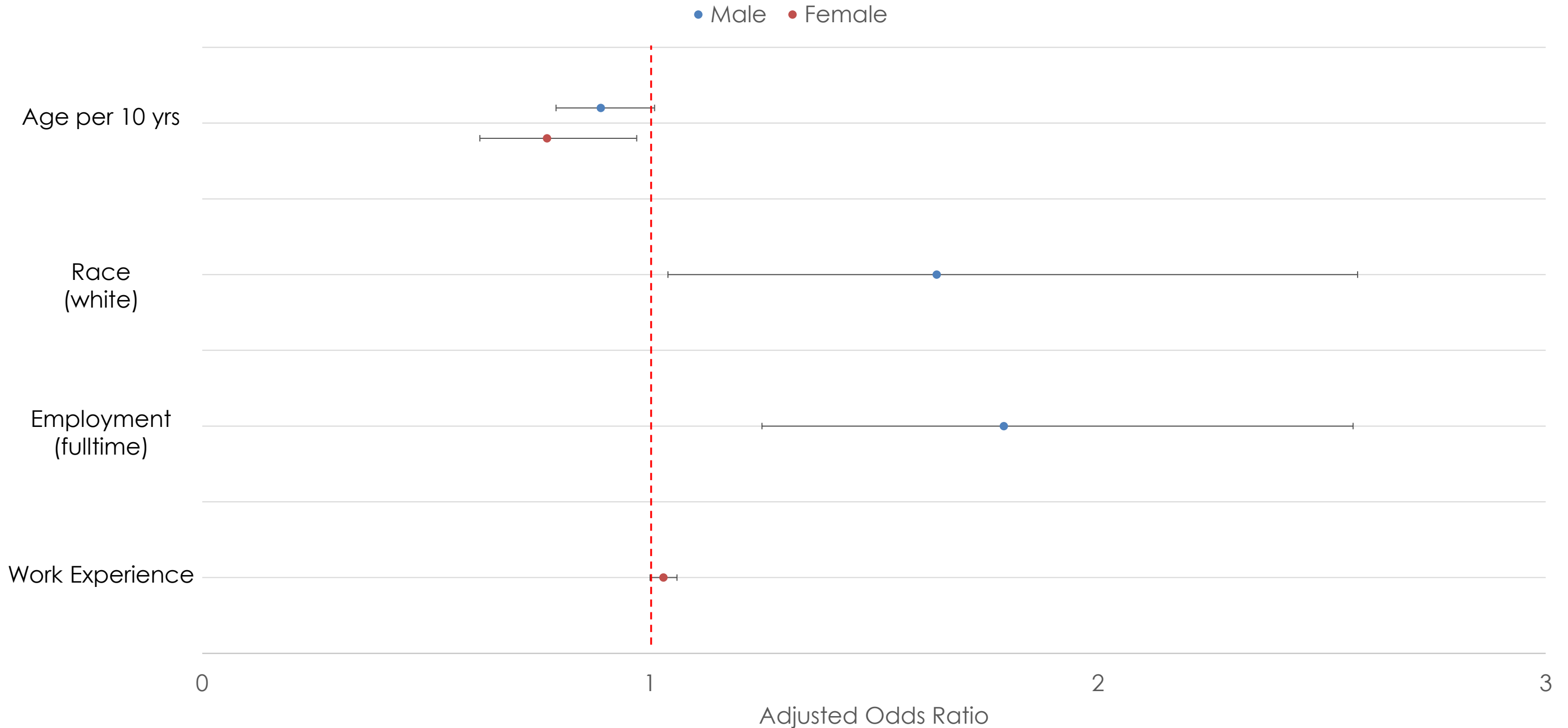
MDD and pPTSD Prevalence by Time of Intake Questionnaire



Forest plot from multivariate logistic regression of factors associated with meeting screening criteria for MDD

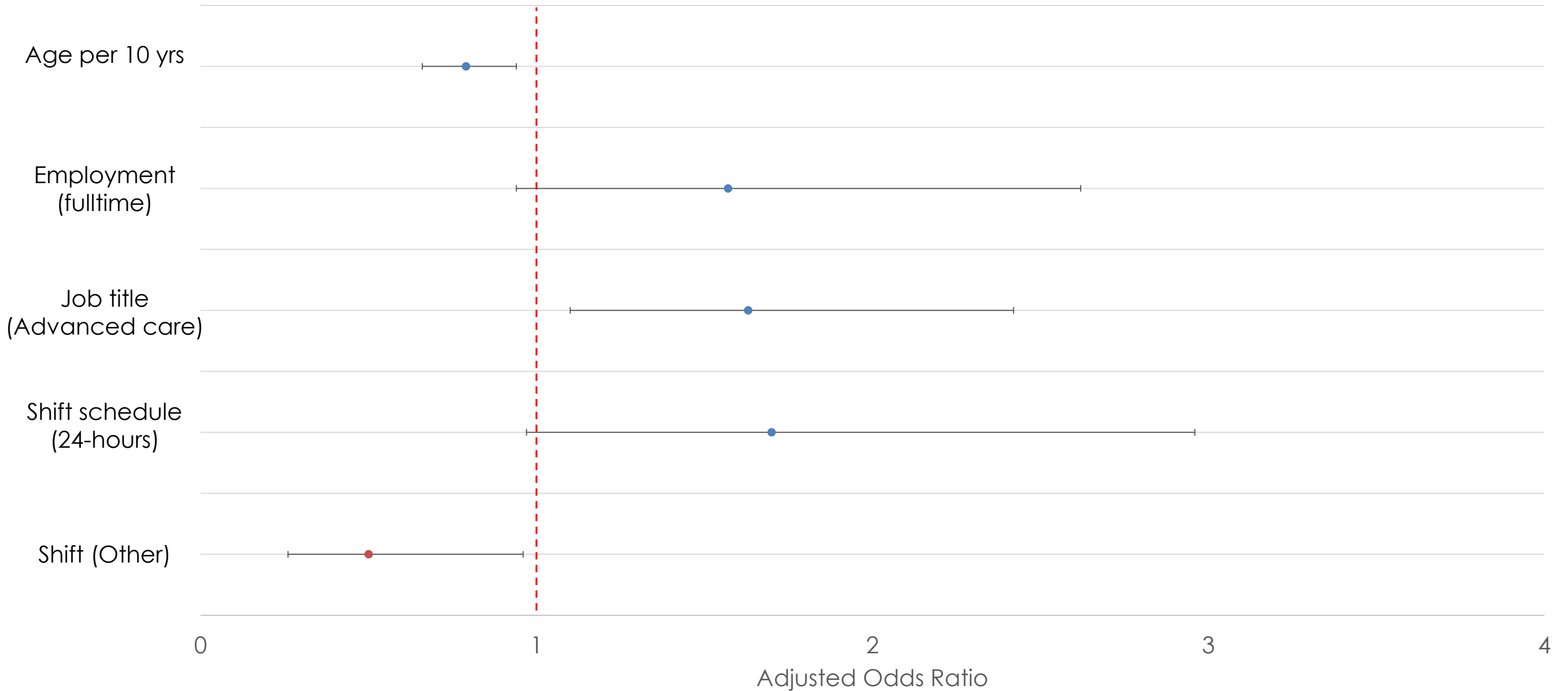


Forest plot from multivariate logistic regression of factors associated with meeting screening criteria for probable PTSD



Forest plot from multivariate logistic regression of factors associated with meeting screening criteria for both MDD and probable PTSD

• Male • Female



Factors associated (p<.05) with MDD and pPTSD

Predictor (p<0.05)	Female			Male		
	MDD	pPTSD	Both	MDD	pPTSD	Both
Age per 10yrs	0.90 (0.79-1.03)	0.77 (0.62-0.97)		0.75 (0.66-0.85)	0.89 (0.79-1.01)	0.79 (0.66-0.94)
White race					1.64 (1.04-2.58)	
Advanced care				1.37 (1.02-1.85)		1.63 (1.10-2.42)
Fulltime	1.74 (1.28-2.37)			1.44 (1.03-2.00)	1.79 (1.25-2.57)	1.57 (0.94-2.62)
Experience		1.03 (1.00-1.06)				
24-hr shifts				1.64(1.09-2.47)		1.70 (0.97-2.96)
Other shifts			0.50 (0.26-0.96)			

Summary

- CORSIP paramedics had high prevalence rates for MDD and pPTSD during the COVID-19 pandemic.
 - The COVID-19 pandemic may have impacted mental health risk.
 - Lacking data on baseline risk during non-outbreak conditions.
- Female paramedics have disproportionate risk ($p < 0.05$) for both disorders.
 - Factor that were associated with MDD and pPTSD screening risk differed by gender.
- Age, fulltime employment, and shift schedule were common predictors regardless of gender.

Policy Implications

- *“Mental health injuries are the new back pain.”*
 - *Paramedic Service Leader*
- Despite increasing pay and benefits in the past decade, career longevity remains problematic.
 - High rates of turnover and low rate of retirement
- Paramedic employers should consider strategies to better support the mental health needs of their workers.
 - Gender, age, fulltime employment, shift schedule, and infectious disease outbreaks are important factors that should be considered.

Thank You!

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