

**Evaluating cardiovascular
associations to affective states in
Professional Drivers: A study of
Australian truck and train drivers**

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Under the supervision of

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Thesis Declaration

I, Taryn Chalmers, declare that this thesis is submitted in fulfilment of the requirements for the award of Doctor of Philosophy, in the School of Life Science at the University of Technology Sydney.

This thesis is wholly my own work unless otherwise referenced or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis. This document has not been submitted for qualifications at any other academic institution.

This research is supported by the Australian Government Research Training Program.

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Publications, Presentations and Awards

Publications relevant to thesis

Journal articles

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Invited presentations

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Depression in truck driving: Does depression drive you?

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List of Abbreviations

ABS = Australian Bureau of Statistics

ANS = Autonomic nervous system

BITRE = Bureau of Infrastructure,
Transport and Regional Economics

BMI = Body mass index

Blood pressure = BP

CVD = Cardiovascular disease

DBP = Diastolic blood pressure

DFAT = Department of Foreign Affairs
and Trade

ECG = Electrocardiogram

FFT = Fast Fourier Transform

GVA = Gross value added

HF = High frequency

HPA = Hypothalamic-pituitary-adrenal

HR = Hazard ratio

HR = Heart rate

HRV = Heart rate variability

Hz = Hertz

km = Kilometre

LAQ = Lifestyle Appraisal

Questionnaire

LBP = Lower back pain

LBS = Lower back symptoms

LF = Low frequency

LF:HF = Low frequency to high
frequency ratio (sympathovagal
balance)

MAO-A = Monoamine-oxidase A

NZ = New Zealand

OR = Odds ratio

PNS = Parasympathetic nervous
system

POMS = Profile of Mood States

SBP = Systolic blood pressure

SNS = Sympathetic nervous system

TP = Total Power

UK = United Kingdom

USA = United States of America

UTS HREC = University of Technology
Sydney Human Research Ethics
Committee

WCH = White coat hypertension

WHO = World Health Organisation

Abstract

Introduction: Train and truck drivers experience a myriad of unique occupational workplace factors, such as monotonous driving conditions, long hours spent sitting, the necessity of strict mental alertness, workplace social isolation and the potential for “person under vehicle” events. These conditions have been postulated to contribute to a high incidence of health conditions such as depression, anxiety and cardiovascular disease (CVD) amongst this population. Although often occurring independently of one another, the link between depression and cardiovascular risk is well established.

Methods: 120 professional drivers (60 truck drivers, 60 train drivers) were recruited from the local community. Participants complete a battery of mood state questionnaires to assess levels of negative mood states such as depressive and anxious symptomology, and questionnaires to quantitate lifestyle and workplace risk factors. Participants then completed a baseline (resting) and active (driving) task while concurrent ECG data was collected to obtain HRV parameters.

Results: Truck drivers reported significantly more risk factors for chronic diseases, such as smoking, alcohol use, sedentary activity levels and stress, than the train driving cohort. Truck drivers also reported higher levels of all negative states, including depressive and anxious symptomology, stress, fatigue and anger.

Conclusion: This study highlights important workplace factors that may be linked with negative mental states, and their potential implications within the workplace. The

promotion of improved mental health within this occupation would not only improve the health of the individual drivers but may also mitigate mental health associated absenteeism and improve commuter safety. Buddy driving systems, regular workplace ToolBox talks and forums and a commitment to mental awareness are strategies that have been successfully employed in other industries. Given the societal responsibility of professional drivers, protecting and promoting the psychosocial health of these individuals is paramount to not only a healthy workforce, but a safe community. This study is important, as the psychophysiological health of Australia's professional drivers has been somewhat overlooked in the past. Given the large number of workers employed within this industry, and the potential personal and public implications of a suddenly unwell driver, it is vital that policies and workplace practices are designed to optimise the health of these individuals. Collectively, the findings from the present study provide a novel perspective on the physiological and psychological health of Australian professional drivers.