A Health Promotion Strategy for Long-Haul Truck Drivers in Manitoba

Final Report

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Acknowledgements

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A sincere thanks to the participants for sharing their stories, their insights, and their time.

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TABLE OF CONTENTS

Executive Summary

Background. Long haul truck drivers have been identified as a high-risk population for obesity, cardiovascular disease, diabetes, sleep apnea, musculoskeletal injuries, and stress (Crizzle, et al., 2017; Crizzle, 2020, Crizzle et al., 2020). Sedentary work, number of hours of sleep, limited opportunities for physical activity and unhealthy eating patterns all contribute to the onset of chronic conditions among truck drivers (Apostolopoulos et al., 2011, Puhkala et al., 2015). Workplace health promotion programs have largely focused on changing individual worker behaviours, with less emphasis placed on the broader contextual factors within the environment that contribute to poor health practices (Chu et al., 1997). There is growing evidence however, that effective health promotion strategies must consider both individual and environmental factors (Lemke, et al., 2015). Currently, no research has been conducted in Manitoba examining the health practices of truck drivers in Canada. Research is needed as driver obesity and associated chronic illnesses (cardiovascular diseases and diabetes) have been linked to increased absenteeism, driver turnover, lost time injuries, and higher crash rates (Crizzle, et al., 2018; Lemke, et al., 2016).

The purpose of the project is twofold:

1. Examine how the mobile work environment supports or hinders the health promotion practices of long-haul truck drivers.
2. Explore truck drivers' perceptions of barriers and facilitators to adopting and maintaining healthy lifestyle practices while at work.

The research objectives were:

1. To describe how the mobile work environment supports or hinders healthy lifestyle practices amongst long haul truck drivers.
2. To identify and describe the current health practices of long-haul truck drivers while at work.
3. To identify and describe long haul truck drivers' perceptions of the barriers and facilitators to adopting and maintaining healthy lifestyle practices while at work.

Methods. A mixed-methods design was used, and data were collected from several sources that included an environmental assessment of the mobile work environment, in-depth semi-structured interviews and diet and activity logs.

Mobile work environment. The mobile work environment assessment explored the amenities that were available/accessible to long-haul truck drivers at truck stops along the TransCanada highway between Winnipeg and Calgary. A total of 20 truck stops, that were accessible to LCVs (Long Combination Vehicles) were included. An adapted version of the National Institute for Occupational Safety and Health (NIOSH) observational checklist of truck stop resources (Lincoln et al., 2018) was developed and used to assess truck stop amenities. The final checklist consisted of items to assess outdoor amenities, indoor amenities, dietary amenities, and non-dietary amenities.

Diet and Activity Logs. A total of nine participants completed diet and physical activity logs recording their food intake and physical activity while driving a route between Manitoba and Alberta.

Semi-Structured Interviews. Semi-structured interviews were conducted with 13 long-haul truck drivers who drove a route between Manitoba and Alberta. Interviews were conducted in either English or Punjabi. Those participants who completed diet and activity logs (n=9) participated in a second interview conducted after the trip to review the data entered in the logs.

Sample Characteristics. The average age of participants was 48 and 100% of participants self-identified as male. Six drivers drove as part of a team (of 2 drivers) and seven drivers drove alone. Years of experience as a truck driver ranged from 5 years to 50 years. Self-reported Body Mass Index data revealed that 77% of participants were in the overweight to obese category, and the remaining 23% were categorized as having a healthy weight.

A parallel approach to data analysis was used. Each source of data were analyzed independently and brought together once the analysis of each component was complete. Qualitative interview data was transcribed verbatim and a framework approach to qualitative analysis was carried out. Framework analysis provided a structured and rigorous process for conducting qualitative data analysis while maintaining the flexibility required to identify and characterize themes that emerged from the data (Goldsmith, 2021). Descriptive statistics (frequency distributions) were tabulated for the quantitative data from the environmental assessment tool, interview guide, and the diet and activity logs. Nutrient analysis of the diet log data was carried out using the Diet and Wellness Plus Software Program.

Key Findings

Box 1. Key findings from Mobile Environment Assessment: Truck Stop Amenities

Truck stops provide many of the key food items [fruits and vegetables, meat, wholegrains] that contribute to a healthy diet, although there is a limited variety of options available.

- 90% of locations had entrees or sandwiches (note: these were defined as entrees or sandwiches containing one or more of: fresh produce, healthy protein, and/or whole grains (e.g., whole grain bread, tortilla, pasta, rice, quinoa, etc.).
- Less than ½ of locations sampled had fresh salads available for purchase.
- Plant based products were lacking.
- Non-dairy plant-based alternatives were not available.
- High fibre cereals were not offered.
- Snacks are readily available at truck stops. However, healthier options for snacks are limited.
- While almost all locations had a microwave and sink available, none had designated kitchenette space for truck drivers.
- Access to functioning restaurants at truck stops limited.
- The availability of healthy food options at truck stop restaurants was limited.

The lack of parking for trucks outside of truck stop locations prevents truck drivers from accessing other locations [e.g. grocery stores, restaurants]. This limits the food available for purchase to what can be found at truck stops alone.

Amenities to support physical activity and exercise for long-haul truck drivers is lacking at truck stop locations.

Box 2. Key Findings In-transit Assessment

In-transit Assessment

- Accessibility for Long Combination Vehicles (LCVs) is limited at many in-transit locations due to negligible anticipatory signage for LCVs and inadequate entrance and exit lanes.
- The length and availability of entrance/exit lane is not standardized and not consistent in highway infrastructure.
- The number of rest stops and turnouts accessible to LCVs is extremely limited in Saskatchewan and Manitoba.
- Roadside turnouts, though helpful for easy access and temporary parking, are least safe for drivers who remain directly exposed to highway traffic.
- The number of roadside turnouts is inadequate. As a result, drivers of LCVs and other trucks are forced to stop on the shoulder of the highway to conduct required vehicle checks directly exposing drivers to highway traffic and associated hazards.

Box 3. Key Findings Diet Logs

Food Sources. All participants (n=9) brought food from home to consume during their driving route. For one participant this was the only food that was consumed, for all others they identified consuming a mix of home food and purchasing some foods while on the road.

Purchased items that were identified as "Other" foods according to Canada's Food guide, were primarily sweet, as opposed to salty options. This list includes cookies, donuts, muffins, fruit pie, and soda pop. As well as added cream and/or sugar to coffee or tea for more than half of the participants (n=5).

Coffee Consumption. Participants (n=9) had a range of coffee consumption while working on the road. Ranging from 0 cups in a day, upwards of 15 cups.

Based on an average intake, study participants consumed:

- 12% of daily vegetable requirements.
- 11% of daily fruit requirements.
- 21% of daily whole grain intake requirements.
- 15% of daily protein requirements (non-dairy).
- 5% of daily dairy requirements.

Box 4. Key Findings Physical Activity Logs

A total of nine participants completed physical activity logs. The logs showed that work related tasks accounted for 91% of all physical activity while on the road. Physical activity occurred in short bursts [conducting vehicle checks, securing load etc.] and followed long periods of sedentary sitting [driving]. Participants logged an average of 65.26 minutes of physical activity in a 24-hour period. The majority (62.61%) of activity was categorized as cardio, 20.27% as resistance, and 16.67% as stretching. The intensity of the exercise was rated as light [63.5%], moderate [17.56%], and high [7.66%]. The amount of time spent in physical activity related to leisure ranged from 5-30 minutes in a 24-hour period; however, three participants reported no leisure activity while on the road.

The mobile work environment did not support drivers' ability to meet recommendations outlined in the Canadian physical activity guidelines of 150 minutes of moderate/vigorous aerobic physical activity per week, and muscle strengthening activities two times per week. https://csepguidelines.ca/

Box 5. Key Findings: Barriers and Facilitators to Health Promotion

Interrelated and multi-level influences on health promotion for long-haul truck drivers were identified. These influences were categorized into three levels: Individual and family level influences, occupational level influences, and economic level influences. These influences were evident across all three health behaviors impacting participants ability to sleep, maintain a healthy diet and engage in physical activity.

Individual and Family Level Influences

- Personal Motivation
- Health Status
- Health Literacy
- Cultural Influences
- Family Roles and Responsibilities

Occupational Influences

- Nature of Work
- Mobile Work Environment
- Occupational Stressors

Economic Influences

- Government Policies and Regulations
- Trucking Company Policies and Practices
- Affordability
- Highways and Infrastructure

Conclusions

1. **Health promotion programming for long-haul truck drivers requires a multi-level approach, addressing barriers at each level.**
2. Although healthy food options are available for purchase within the mobile work environment there is limited variety and the cost of healthy food choices is perceived by truck drivers as too high.
3. The majority of long-haul truck drivers bring food from home and store and prepare the food in their trucks.
4. Food and nutrition literacy is an important focus for health promotion programming within this population.
5. The majority (91%) of physical activity truck drivers engage in while working is work related and categorized by drivers as light intensity activity. Work related activity involves sudden bursts of activity (securing load, vehicle checks etc.), and follows long periods of sedentary sitting while driving.
6. The infrastructure to support physical activity for leisure purposes is extremely limited. [For example, no truck stops had exercise facilities and there were limited safe places to walk].
7. The mobile work environment does not support truck drivers' ability to meet the Canadian physical activity guidelines of 150 minutes of moderate/vigorous aerobic physical activity per week, and muscle strengthening activities two times per week.
8. Limited safe overnight parking facilities for trucks (especially LCVs) and poorly maintained highways contribute to poor sleep quality for long-haul truck drivers.
9. Improvements to Infrastructure are needed to the support the **health and safety** of long-haul truck drivers. For example, the lack of roadside turnouts forces drivers to pullover on the shoulder of the highway to conduct required vehicle checks. This exposes drivers to oncoming traffic and associated safety hazards.
10. Long-haul truck drivers report high levels of occupational stressors that has the potential to impact both their physical and mental health.
11. Other drivers, who are not familiar with the stopping time of trucks, are a significant source of stress for truck drivers.
12. Time pressures (scheduling, delivery pressures, compensation, industry culture) contributed to high levels of stress amongst drivers and caused many participants to "push to the limit" on hours-of-service regulations.

Recommendations

1. **A multi-level approach to health promotion programming for long-haul truck drivers is adopted.**
2. The impact on the health and safety of drivers is considered in the development of all policies.
3. Occupation specific health education resources that target the specific needs of long-haul truck drivers are created.
4. A public education campaign on how to safely drive alongside trucks and heavy vehicles is needed to promote safer driving conditions on the highways.
5. An industry culture that prioritizes the health and safety of drivers is important to promote physical and mental health of drivers. It is recommended that:
    a. Trucking companies encourage drivers to take scheduled breaks and adopt a culture that supports health and health promotion.
    b. Trucking companies develop policies that support the drivers right to determine if they and/or conditions are safe to drive.
    c. Delivery times are scheduled for a wider window to allow for delays etc.
6. Government and the private sector work collaboratively to create a healthier mobile work environment that includes increased access to/availability of:
    - Healthy food options
    - Truck accessible parking
    - Showers/exercise facilities and equipment
    - Washrooms
    - Outdoor walking paths
    - Safe overnight parking
    - Truck amenities [amenities to support climate control, safe food storage and food preparation, comfortable mattresses etc.]
7. Infrastructure is improved to promote the health and safety of drivers.
    a. Additional rest stops (with green space, access to walking paths, washroom facilities, entrance/exit lanes & parking designed for LCVs) are developed along the TransCanada & Yellowhead Highways.
    b. Turnouts are placed at regular intervals along all major truck routes.
    c. Safe places for trucks to park [overnight and short stops] are created.
    d. Highway maintenance [snow clearing/road surface] **is prioritized and actioned to ensure** safe highway conditions.

Introduction

Background

Long haul truck drivers have been identified as a high-risk population for obesity, cardiovascular disease, diabetes, sleep apnea, musculoskeletal injuries and stress (Crizzle, et al., 2017; Crizzle, 2020, Crizzle et al., 2020). Sedentary work, number of hours of sleep, limited opportunities for physical activity and unhealthy eating patterns all contribute to the onset of chronic conditions among truck drivers (Apostolopoulos et al., 2011, Puhkala et al., 2015). Commercial truck driving has been described as an "obesogenic" occupation, with multiple risk factors contributing to unhealthy lifestyles (Apostolopoulous et al., 2016). Driver obesity and associated chronic illnesses (cardiovascular diseases and diabetes) have been linked to increased absenteeism, driver turnover, lost time injuries, and higher crash rates (Crizzle et al., 2018; Lemke et al., 2016). Although very little research has been conducted in Canada, Angeles et al., (2014) reported that the prevalence of risk factors for chronic disease was substantial amongst Canadian truck drivers (Angeles et al., 2014).

Although truck drivers have been identified as an at-risk population, only a few studies have examined the health promotion practices of this population (Apoltolopoulos et al., 2011; Boeijinga et al., 2016). Lemke et al., (2015), conducted a phenomenological study examining barriers to health supportive behaviors among long-haul truck drivers in the US. The researchers found that health practices were supported by a combination of both individual factors (individual motivation) as well as environmental factors (access to resources within the mobile work environment). Ng et al., (2015) conducted a systematic review examining the effectiveness of health promotion programs for truck drivers. The researchers noted that the majority of research to date, has focused solely on individual level interventions with little concern for the work environment and organizational factors that may also contribute to the health of truck drivers. The researchers concluded that the small body of literature on health promotion in this population is a concern given the direct impact the health of truck drivers has a on the safety of the driving public.

Workplace health promotion programs have largely focused on changing individual worker behaviours, with less emphasis placed on the broader contextual factors within the environment that contribute to poor health practices (Chu et al., 1997). While individual health practices are important, individual level interventions are often insufficient to sustain the behavior change once the specific period of intervention has come to an end (Lemke et al., 2015). There is a growing body of evidence that the built environment influences diet and exercise and as a consequence health status (Lincoln et al., 2018).

Long-haul truck drivers spend long periods of time away from home and therefore truck stops and rest stops are an important component of their work environment. Lincoln et al., (2018), conducted an environmental assessment of truck stops across the U.S. to determine if the work environment included resources that contributed to the well-being of drivers. The researchers found that 81% lacked a safe walking area, 50% lacked fresh fruit and 37% lacked fresh vegetables in their restaurant or convenience store. These findings were consistent with earlier studies conducted in the U.S. (Apoltolopoulous et al., 2016). No studies have examined the mobile work environment for truck drivers in Canada.

Social Ecological Perspective on Health Promotion

Social Ecological approaches to workplace health promotion are designed to address the complex interdependencies between individual health practices and aspects within the work environment. An ecological perspective that targets both workers' behaviours, as well as environmental determinants of health, has been recommended as a more effective approach to health promotion programming amongst construction workers (Lindgard and Turner, 2017) and long-haul truck drivers (Lemke et al., 2016). The ecological framework described by Lingard and Turner (2017), will guide this research. Determinants of health-related behavior will be examined to identify both 'individual-level influences' as well as 'environmental level influences'.

Project Overview

Purpose

The purpose of the project is twofold:

1. Examine how the mobile work environment supports or hinders the health promotion practices of long-haul truck drivers.
2. Explore truck drivers' perceptions of barriers and facilitators to adopting and maintaining healthy lifestyle practices while at work.

The research objectives were:

1. To describe how the mobile work environment supports or hinders healthy lifestyle practices amongst long haul truck drivers.
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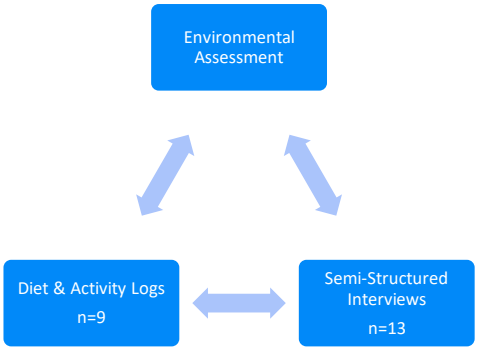
Methods

A mixed-methods design was used, and data were collected from several sources that included an environmental assessment of the mobile work environment, in-depth qualitative interviews and diet and activity logs (Figure 1).

Figure 1: Sources of Data



A parallel approach to data analysis was used. Each source of data were analyzed independently and brought together once the analysis of each component was complete. Qualitative interview data was transcribed verbatim and a framework approach to qualitative analysis was carried out. Framework analysis provided a structured and rigorous process for conducting qualitative data analysis while maintaining the flexibility required to identify and characterize themes that emerged from the data (Goldsmith, 2021). Consistent with the approach described by Richie and Spencer (1994) the framework analysis was carried out in five distinct, yet interconnected stages: familiarization, identifying the thematic framework, indexing, charting, and mapping and interpretation.

Descriptive statistics (frequency distributions) were tabulated for the quantitative data from the environmental assessment tool, interview guide, and the diet and activity logs. Nutrient analysis of the diet log data was carried out using the Diet and Wellness Plus Software Program.

Phase One: Objective 1 Mobile Work Environment Assessment

Truck Stop Amenities

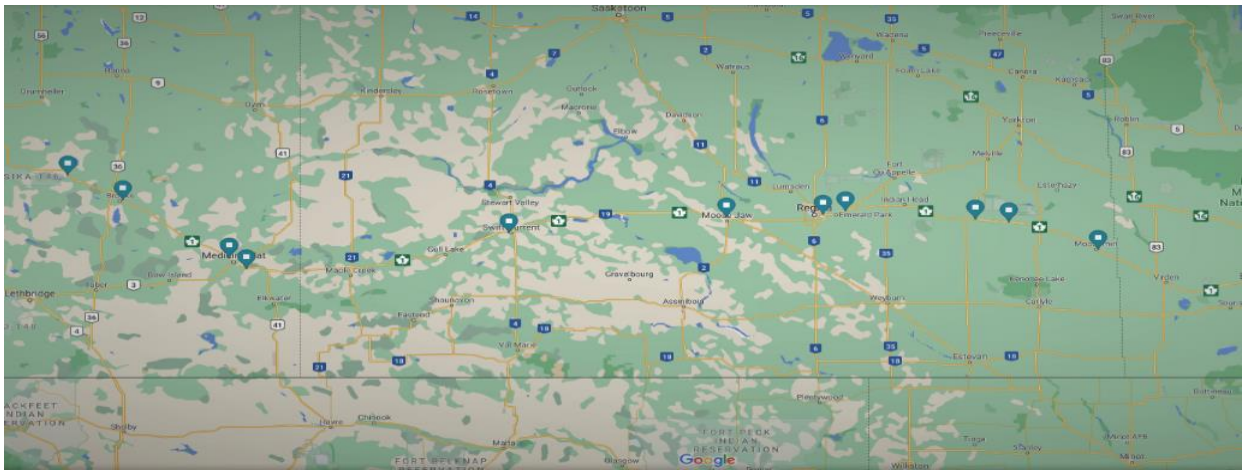
The mobile work environment assessment explored the amenities that were available/accessible to long-haul truck drivers at truck stops along the TransCanada highway between Winnipeg and Calgary. A total of 20 truck stops, that were accessible to LCVs (Long Combination Vehicles) were included. To obtain the sample, the TransCanada highway was divided into 100-kilometre segments and a list of truck stops within each section was created for each direction of travel (East/West). As multiple sites existed within the highway segments, stratified random sampling was used to select a sample of 20 truck stops (Table 1; Figure 2).

An adapted version of the National Institute for Occupational Safety and Health (NIOSH) observational checklist of truck stop resources (Lincoln et al., 2018) was developed and used to assess truck stop amenities. The final checklist consisted of items to assess outdoor amenities, indoor amenities, dietary amenities, and non-dietary amenities (Appendix A).

Table 1. Truck Stops sample by province and direction of travel.

Province	Direction of Travel (Sample)		Grand Total
	East	West	
Manitoba	4	2	6
Saskatchewan	3	4	7
Alberta	5	2	7
Grand Total	12	8	20

Figure 2. Geographical Distribution of Truck Stop Sample Locations between Winnipeg and Calgary.



In-transit Assessment of rest stops, turnouts, truck stops & weigh stations.

An in-transit assessment tool was also developed. This tool assessed turnouts, rest stops, weigh stations, & truck stops that were accessible along the TransCanada highway between Winnipeg and Calgary, and the Yellowhead highway between Portage La Prairie and Edmonton. The tool included items to assess anticipatory signage, entrances/exit lanes, safe temporary parking and safe overnight parking of roadside pullouts (Appendix A).

Phase Two: Objectives Two and Three

Phase two of the data collection phase involved the recruitment of long-haul truck drivers who were assigned to a trucking route between Manitoba and Alberta. Participants were asked to participate in two qualitative interviews (one prior and one after a trip), complete diet and exercise logs and wear a Fitbit device* while on the road. Participants were also provided with a tablet and asked to take photographs of all the food they were consuming to accompany the diet log and assist with analysis.

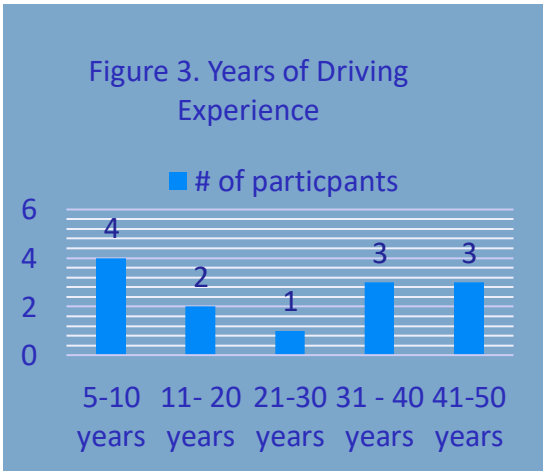
**Fitbit data has yet to be analyzed. Truck vibration significantly impacted the accuracy of the Fitbit data, counting 'steps' during driving. Additional ways to analyze the Fitbit data are currently being explored.*

Recruitment began in the Fall of 2021, and by October 2022, only nine drivers had been recruited. The initial protocol called for the recruitment of 24 drivers, to increase participation, the research team decided they needed to amend the protocol to reduce participant burden to include a single in-depth semi-structured interview. An amendment was submitted to the Brandon University Research Ethics Committee and approved on February 24th, 2023. Under the new protocol an additional four participants were recruited and a final sample of 13 was reached. Interviews were conducted in either English or Punjabi.

A copy of the data collection tools, (diet and activity logs, qualitative interview guides) are included in Appendix A.

Sample Characteristics

A total of 13 long-haul truck drivers who drove between Manitoba and Alberta participated in semi-structured interviews. Of these, nine participants also completed diet and activity logs. The average age of participants was 48 and 100% of participants self-identified as male. Six drivers drove as part of a team (2 drivers) and seven drivers drove alone. Years of experience as a truck driver ranged from 5 years to 50 (Figure 3).



Findings

Objective One: Mobile Work Environment Assessment

Truck Stop Amenities: Dietary

Box 1: Summary of Key Findings Dietary Amenities available at Truck Stops

Truck stops provide many of the key food items [fruits and vegetables, meat, wholegrains] that contribute to a healthy diet, although **there is a limited variety of options available.**

- 90% of locations had entrees or sandwiches (note: these were defined as entrees or sandwiches containing one or more of: fresh produce, healthy protein, and/or whole grains (e.g., whole grain bread, tortilla, pasta, rice, quinoa, etc.).
- Less than ½ of locations sampled had fresh salads available for purchase.
- Plant based products were lacking.
- Non-dairy plant-based alternatives were not available.
- High fibre cereals were not offered.
- Snacks are readily available at truck stops. However, healthier options for snacks are limited.
- While almost all locations had a microwave and sink available, none had designated kitchenette space for truck drivers.
- Access to functioning restaurants at truck stops limited.
- The availability of healthy food options at truck stop restaurants was limited.

The lack of parking for trucks outside of truck stop locations prevents truck drivers from accessing other locations [e.g. grocery stores, restaurants]. This limits the food available for purchase to what can be found at truck stops alone.

Table 2. Key Findings: Fruits & Vegetables

Strengths	Areas for Improvement
• 50% (10/20) offered fresh fruits. • 55% of RS had canned vegetables (however, these were often beans in tomato sauce/ molasses, and there was little variety). • 75% of RS had 100% fruit or vegetable juice.	• 40% (8/20) offered fresh vegetables. • 40% had canned fruit. • While 50% of RS had fresh fruit, the variety was limited. Only one location had ≥ 5 types of fresh fruits available • Similarly for fresh vegetables, only 3 locations had ≥ 5 types of fresh vegetables available.

Figure 4. Fresh Fruit

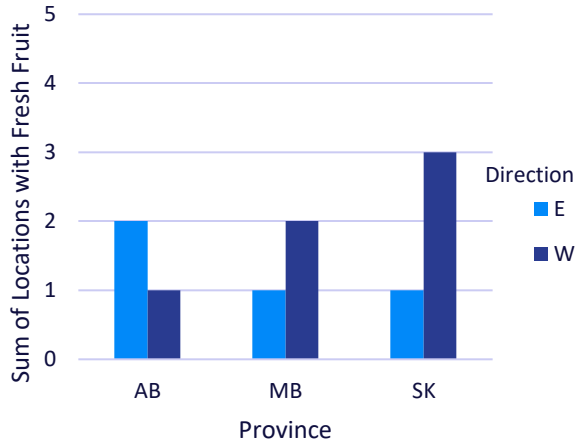
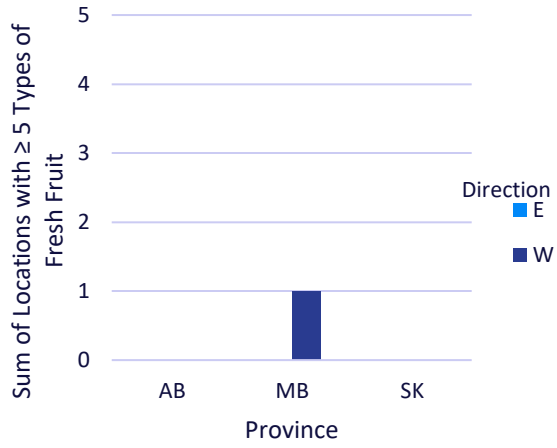
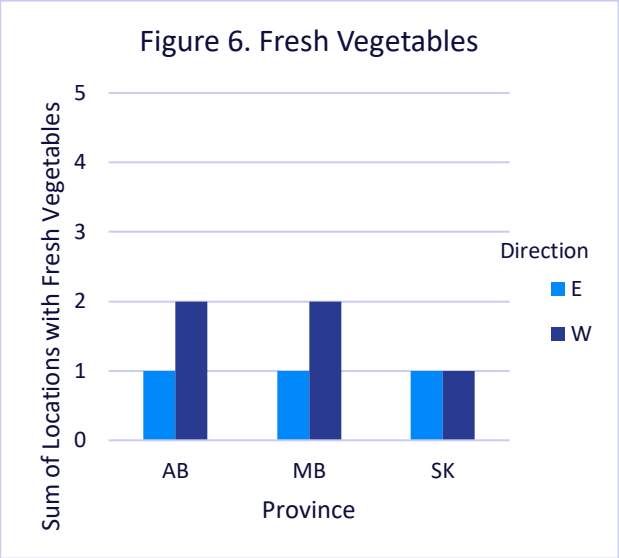


Figure 5. ≥ 5 Types of Fresh Fruit





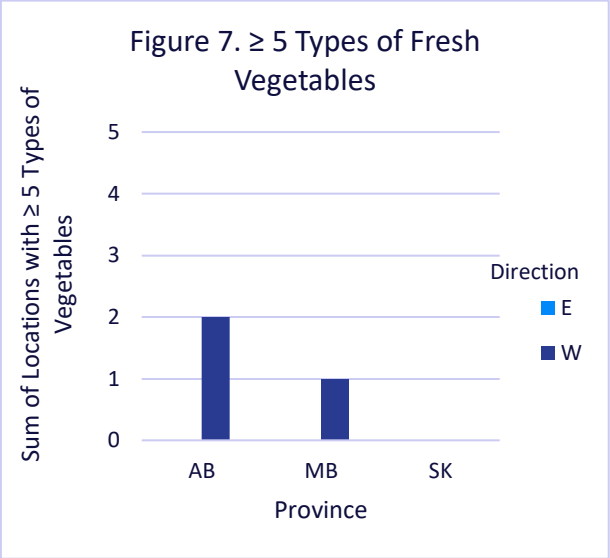


Table 3. Key Findings: Meats & Alternatives

Strengths	Areas for Improvement
• 65% had fish available (typically canned tuna/salmon). • 60% had eggs available (either unprepared, or hardboiled). • 100% had nuts and seeds available. • 65% of RS had nut spreads available.	• 10% had unprocessed meats available. • 0% of locations had plant-based meat alternatives available (i.e., tofu, Beyond Meat).

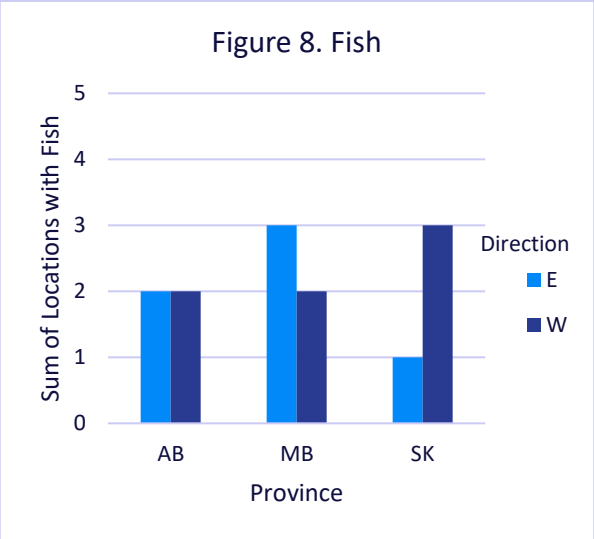


Figure 8. Fish
Sum of Locations with Fish
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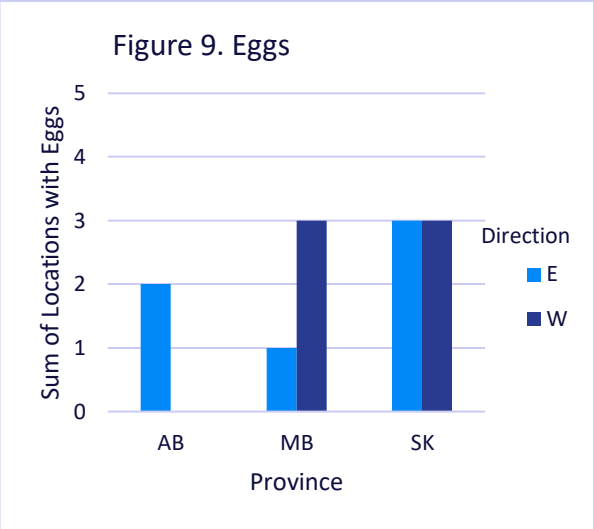
Figure 9. Eggs
Sum of Locations with Eggs
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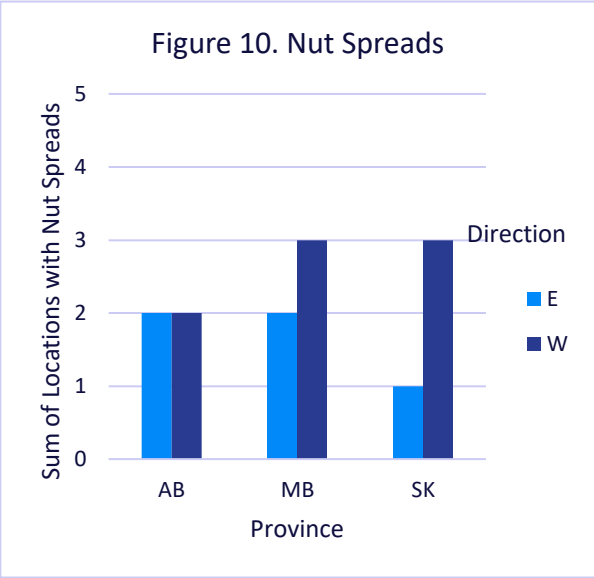
Figure 10. Nut Spreads
Sum of Locations with Nut Spreads
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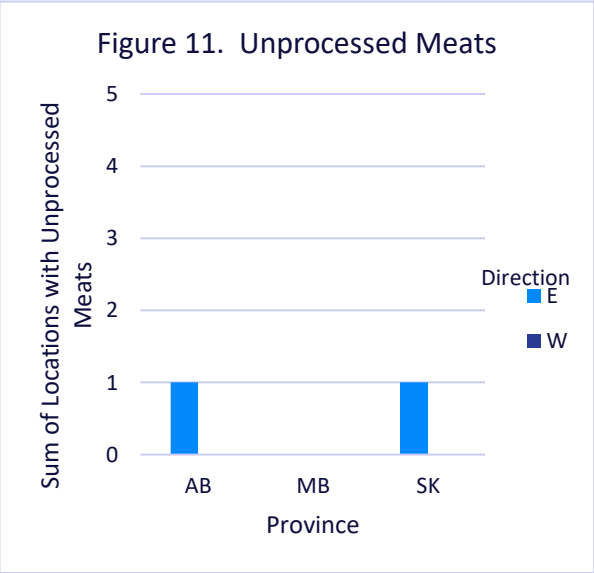
Figure 11. Unprocessed Meats
Sum of Locations with Unprocessed Meats
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Table 4. Key Findings: Milk & Alternatives	
Strengths	**Areas for Improvement**
• 95% of locations had low fat plain milk available. • 95% had hard cheeses available (although, these were often packaged alongside a processed meat stick).	• 35% of RS had yogurt available. • 0% of locations had smoothies (that had ≤ 15g of sugar per smoothie beverage) available. • 0% had non-dairy plant-based alternatives available.

Figure 12. Low-Fat Plain Milk

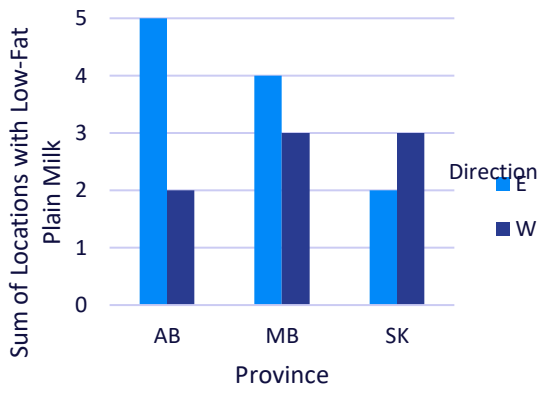


Figure 13 Yogurt

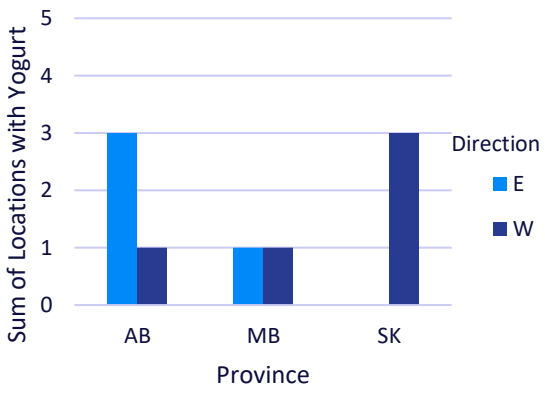


Table 5. Key Findings: Grains	
Strengths	**Areas for Improvement**
• 65% of locations had 50-100% whole wheat/grain flour products (bread was primarily observed in this category)	• 30% had other grains (besides bread, which included items like rice, quinoa, etc.) • 0% had high fibre cereals available.

Figure 14. 50-100% Whole Wheat/Grain Flour Products

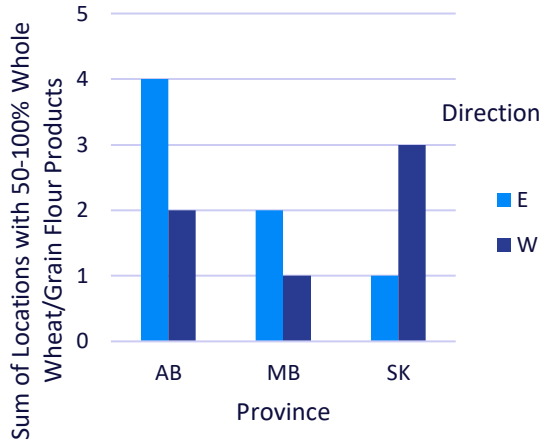


Figure 15. . Other Grain Products

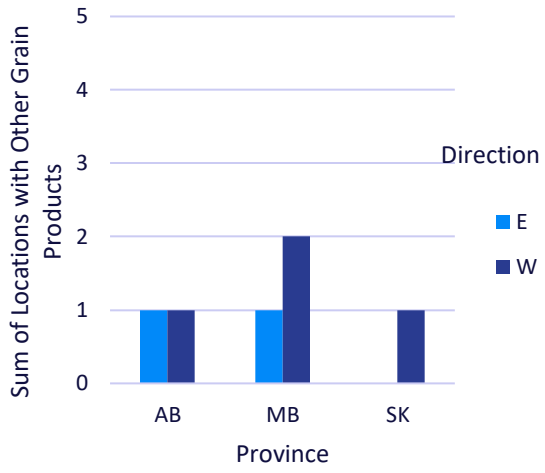


Table 6. Key Findings: Fats and Oils

Strengths	Areas for Improvement
• 55% had heart-healthy spreadable fats available.	• 35% had plant oils available. • 30% of RS had low-fat sauces and dressings available.

Figure 16. Heart Healthy Spreadable Fats

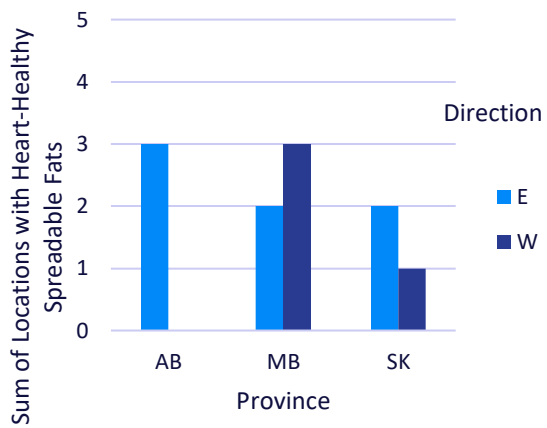


Figure 17. Low Fat Sauces and Dressings

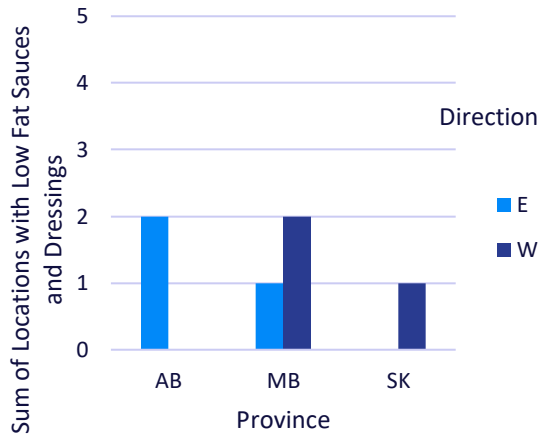


Figure 18. Plant Oils

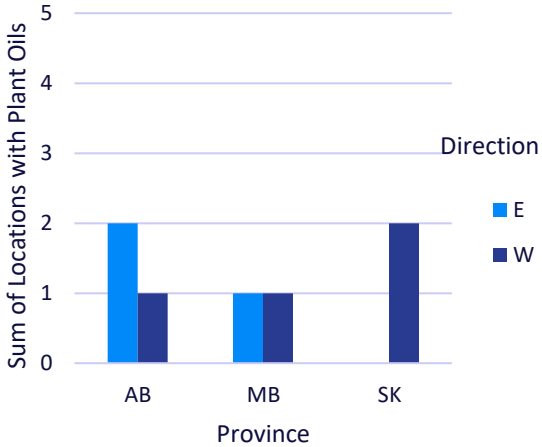


Table 7. Key Findings: Mixed Foods and Entrees	
Strengths	**Areas for Improvement**
• 90% of locations had entrees or sandwiches (note: these were defined as entrees or sandwiches containing one or more of: fresh produce, healthy protein, and/or whole grains (e.g., whole grain bread, tortilla, pasta, rice, quinoa, etc.).	• 0% had frozen entrees (note: these were defined as frozen entrees that had ≤ 15% DV fat and ≤ 15% DV sodium). • 40% had fresh salads.

Figure 19. Healthy Entrees or Sandwiches

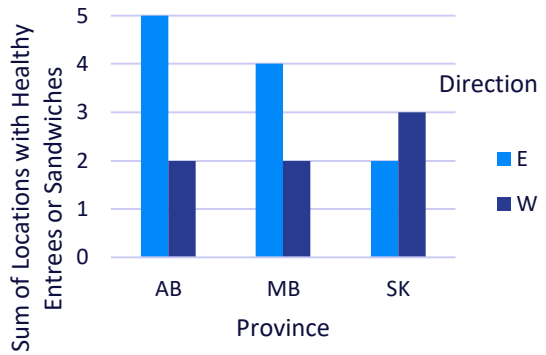


Figure 20. Fresh Salads

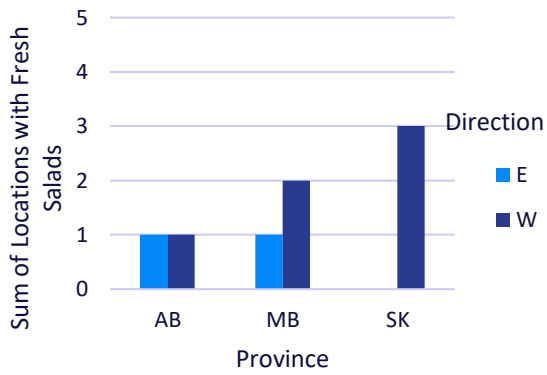


Table 8. Key Findings: Beverages including Energy Drinks	
Strengths	**Areas for Improvement**
• 100% of locations had diet beverages, water, coffee, and tea.	• 100% had ≥ 6 brands of energy drinks available.

Table 9. Key Findings: Protein Energy Products	
Strengths	**Areas for Improvement**
• 95% had prepackaged protein/energy bars. • 85% of locations had prepackaged liquid protein beverages.	• 0% had protein powders.

Figure 21. Protein Bars

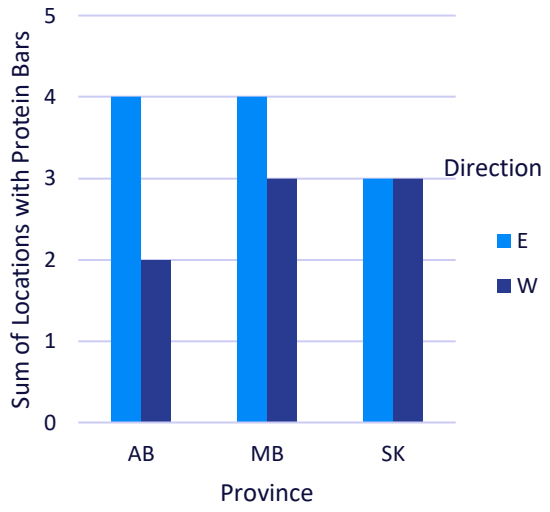


Figure 22. Liquid Protein Beverages

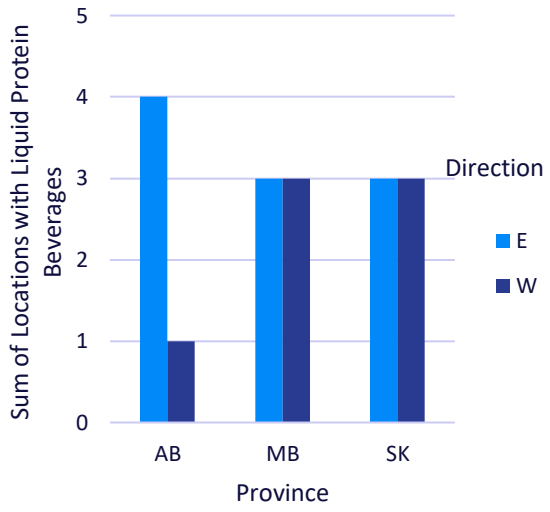


Table 10. Key Findings Cultural Foods	
Strengths	**Areas for Improvement**
	• While 70% of locations had cultural foods available, they were often ultra-processed snack foods.

Table 11. Key Findings Kitchenette	
Strengths	**Areas for Improvement**
• 75% of locations provided access to basic kitchenette amenities.	• While almost all locations had a microwave and sink available, none had designated kitchenette space for truck drivers.

Figure 23. Access to Basic Kitchenette Amenities

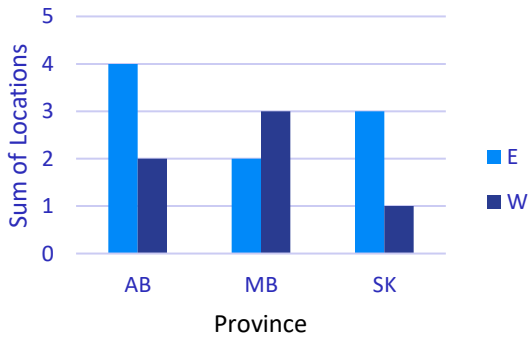


Table 12. Dietary: Truck Stop – Healthier vs. Less Healthy Snacks	
Strengths	**Areas for Improvement**
Savory Snacks: Baked Chips vs. Regular	
• 90% had the healthier option available.	• 100% had the less-healthy option available.
Baked Goods: Low Fat vs. Regular	
	• 0% had the healthier option available, while 100% had the less-healthy option available.
Nuts and Nut Mixes: Plain Unsalted vs. Trail Mix	
• 85% had the healthier option available.	• 75% had the less-healthy option available.
Cream-Based Frozen Treats: Frozen Yogurt vs. Ice Cream	
	• 0% had the healthier option available, while 95% had the less-healthy option available.
Juice-Based Frozen Treats: 100% Fruit Juice Popsicles vs. Regular	
	• 0% had the healthier option available, while 80% had the less-healthy option available.
Fruit: Fresh vs. Dried with Added Sugar	
• 50% had fresh fruit available, while 15% had the less-healthy option.	

Table 13. Truck Stop Restaurants.

Dietary: Truck Stop Restaurants • 12/20 of locations had functioning restaurants.	
Strengths Identified	**Identified Areas for Improvement**
HEALTHY PROTEINS	
ANIMAL-BASED • 75% of restaurants observed had ≥ 7 options available for healthy animal-based proteins.	**PLANT-BASED** • 25% of restaurants observed had 1 option for healthy plant-based proteins, while 75% restaurants had 0 options available.
FRUIT & VEGETABLES	
	• 100% of restaurants had ≤ 2 fruit options available. • 25% of restaurants observed had ≥ 7 vegetable options available. • 8% had 6 options. • 42% had 5 options. • 8% had 4 options. • 17% had 0 options.
GRAINS AND CERALS	
	• 100% of restaurants had ≤ 3 options available.
HEALTHY DESSERTS	
	• 100% of restaurants had ≤ 2 healthy dessert options available. • 25% of restaurants observed had 2 healthy dessert options. • 42% of restaurants observed had 1 healthy dessert option. • 33% of restaurants observed had 0 healthy dessert options.
HEALTHY BEVERAGES	
	• 50% of restaurants observed had 6 healthy beverages options. • 100% of restaurants had ≥ 4 healthy beverages options.

Truck Stop Amenities: Physical Activity

Key finding Physical Activity: Amenities to support physical activity and exercise for long-haul truck drivers is lacking at truck stop locations.

Table 14. Well-Lit Parking

Strengths	Areas for Improvement
• Adequate lighting infrastructure for parking lot observed at 70% of locations.	• While the majority of locations had adequate infrastructure for lighting, numerous parking lots were observed with broken pavement, gravel, or other uneven surfaces making walking especially unsafe at night or during periods of inclement weather.

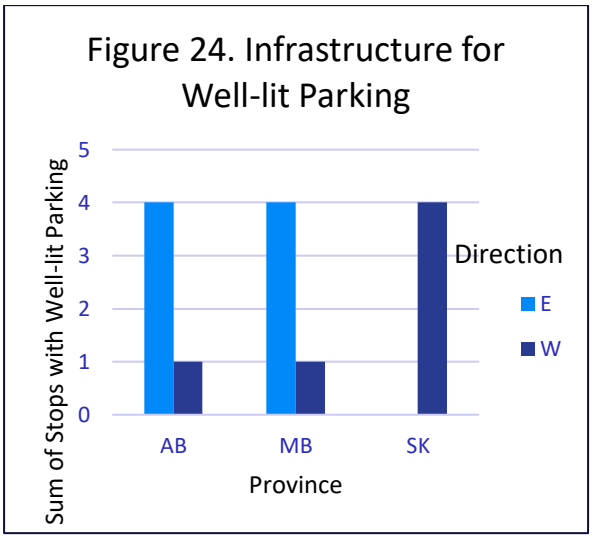


Figure 25: Rest stop parking lot observed with an abundance of lighting infrastructure

Table 15. Walking Paths or Designated Exercise Area.	
Strengths	**Areas for Improvement**
	• 10% provided access to a designated walking path. • 0% had any designated outdoor exercise equipment or area. • 0% had any designated indoor exercise equipment or area.

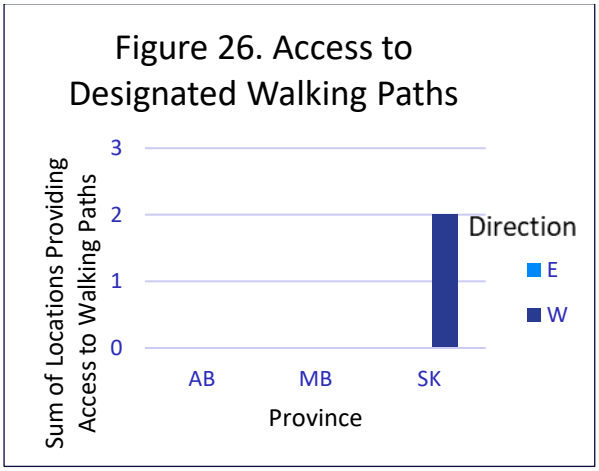
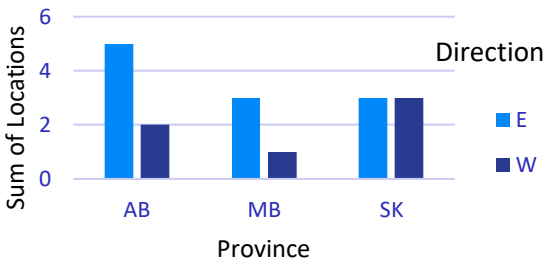


Figure 27. Walking path entrance visible adjacent to paved rest stop parking lot

Table 16. Secondary Roads Safe for Walking	
Strengths	**Areas for Improvement**
• 85% of locations were observed to have access to secondary roads safe for walking.	• While many had secondary roads available for walking, secondary roads could be characterized as quite variable. • Many secondary roads were characterized by congestion, inadequate lighting, or may exist along a service road with few "specialized" amenities such as grocery stores, medical clinics, or accommodations available to provide additional walking incentives.

Figure 28. Truck Stops with Access to Safe Secondary Roads



Key Findings: In Transit Assessment

Table 17. In-Transit Health, Safety, and Well-Being	
Strengths Identified	**Identified Areas for Improvement**
Ease of Accessibility	
	Accessibility for LCVs limited at many in-transit locations due to negligible anticipatory signage for LCVs and inadequate entrance and exit lanes. The length and availability of entrance/exit lane not standardized and not consistent in highway infrastructure.
Availability	
Rest stop locations that include ample entrance and exit lanes, bathrooms, waste/recycling bins, and large parking areas for trucks and trailers are well-utilized by passenger and commercial traffic. Rest Stops and turnouts that are accessible to LCVs are more prevalent in Alberta.	Many roadside turnouts were large enough for one single-trailer truck though not safe/suitable for LCVs. The number of rest stops and turn outs accessible to LCVs is extremely limited in Saskatchewan and Manitoba. Roadside turnouts, though helpful for easy access and temporary parking, are least safe for drivers who remain directly exposed to highway traffic.
Safety of Parking	
Larger rest stop locations that create distance between themselves and the highway, such as those commonly identified throughout Alberta, are accessible by LCVs and can provide safe temporary and overnight parking.	Most in-transit stops offered little safety for overnight parking including direct exposure to elements and other drivers. The number of roadside turnouts is inadequate. As a result, LCVs and other trucks are forced to stop on the shoulder of the highway to conduct required vehicle checks directly exposing drivers to highway traffic and associated hazards.

Objective Two: Personal Health Practices

Perceptions of Physical Health

Participants were asked to rate their current physical health status on a scale of one to ten. Self-reported numbers ranged from a low of 5 [n=3] to a high of 8 [n=1]. The majority of participants [n=7] rated their health as a 7 or 7.5.

All drivers, regardless of their self-rating, felt their overall health status could be improved. When asked to expand on their answers and to provide the rationale for their rating, participant responses fell into three main themes (Table 18).

Table 18. Perceptions of Physical Health Status

Theme	Participant Quote
Presence/absence of health issues	*"Well I don't have any health issues other than a bad back" [Rated health status 7/10]*
Level of Physical activity/health eating	*I don't eat a lot of crap. Like, I'm careful about what I eat and how much I eat, and when I am home, my wife and I we go for walks and I don't like sit in front of the TV all the time." [Rated health status 7/10]*
Ability (or not) to do what they want and need to do at work and at home.	*"For me it's physical mobility and just generally staying on top of the basic health for aches and pains, so that I can still do the physical labour required even through I am not as active as I used to be when I was in my 20's." [Rated health status 5/10]*

Self-reported diet and nutrition.

Body Mass Index

All thirteen drivers who participated in qualitative interviews were asked to provide their height and weight. Based on their self-reported measurements a Body Mass Index (BMI) was calculated. The BMI for 23% of participants fell within the healthy range. The BMI for the remaining participants fell into the overweight category (54%) or obese category (23%).

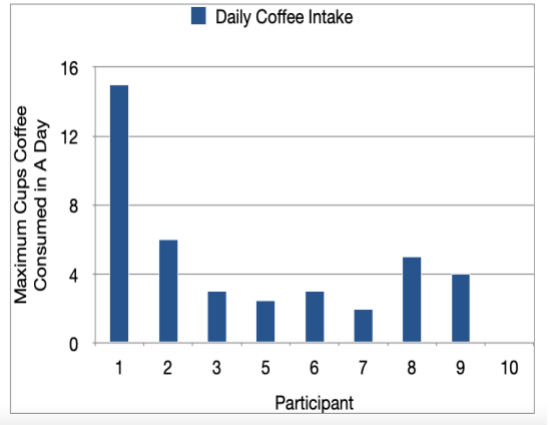
Diet Logs

Food Sources. All participants that provided food logs (n=9) brought food from home to consume during their driving route. For one participant this was the only food that was consumed, for all others they identified consuming a mix of home food and purchasing some foods while on the road.

Purchased items that were identified as "Other" foods according to Canada's Food guide, were primarily sweet, as opposed to salty options. This list includes cookies, donuts, muffins, fruit pie, and soda pop. As well as added cream and/or sugar to coffee or tea for more than half of the participants (n=5).

Coffee Consumption. Participants (n=9) had a range of coffee consumption while working on the road. Ranging from 0 cups in a day, upwards of 15 cups. The figure below indicates the maximum cups of coffee each participant consumed in a one-day period while working on the road.

Figure 29. Coffee Consumption



*The current guidelines by Health Canada states that healthy adults consume no more than 400mg caffeine per day (the equivalent to about three 8-oz cups of coffee). https://www.healthycanadians.gc.ca/recall-alert-rappel-avis/hc-sc/2017/63362a-eng.php?_ga=2.260668495.397117004.1532346577-31168303.1496256160

The dietary intake records for participants were further analyzed using Diet & Welllness+ nutrient analysis software. This software compares dietary intake with the recommendations of the MyPlate guidelines provided by the USDA. An American nutrient analysis program was utilized because at this time, a credible Canadian tool of this calibre does not exist.

Thus, the results reflect the current recommendations for healthy citizens of the United States, which are outlined below and compared against Health Canada's recommendations for healthy eating using Canada's Food Guide.

Table 19. Comparison of Healthy Eating Guidelines between the US and Canada.

USDA: **MyPlate Guidelines**	**Health Canada:** **Canada's Food Guide**
Make Half Your Plate **Fruits & Vegetables**: Focus on whole fruits Dark Green Vegetables = 1 cups weekly Orange Vegetables = 3 cups weekly Dry Beans & Peas = 0.5 cups weekly Starchy Vegetables = 3.5 cups weekly Other Vegetables = 2.5 cups weekly	Try making half of your plate **Vegetables and Fruits**: Eat dark green vegetables every day. Eat orange vegetables a few times a week.
Make Half Your Grains **Whole Grains**: Aim for at least 2.5 oz equivalent	Enjoy a variety of whole **Whole Grain** foods every day.
Go Lean with **Protein**: Seafood = 6 oz weekly Meat, Poultry & Eggs = 19 oz weekly Nuts, Seeds & Soy Products = 3 oz weekly	Eat **Protein** foods: Try to choose protein foods that come from plants every day. Protein foods include beans, lentils, nuts, seeds, lean meats and poultry, fish, shellfish, eggs, lower fat milk and lower fat dairy products.
Move to low-fat or fat-free **Dairy** milk or yogurt.	(Included in the Protein category above.)
Oils: Aim for 4 teaspoons of oil	Choose foods with healthy **Fats**. Limit foods that contain saturated fat.
n/a	Make **Water** your drink of choice.

References:
https://www.myplate.gov/
https://food-guide.canada.ca/en/food-guide-snapshot/

The results generated from Diet & Wellness+ software are summarized for all participants and all food intake records entered. Based on the average intake if the group as a whole:

Table 20. Nutrient Analysis Study Participants

USDA: **MyPlate Guidelines**	**Study Participants**
Make Half Your Plate **Fruits & Vegetables**	12% of daily vegetable requirements were achieved. 11% of daily fruit requirements were achieved.
Make Half Your Grains **Whole Grains**	21% of daily whole grain intake requirements were achieved.
Go Lean with **Protein**	15% of daily protein requirements (non-dairy) were achieved.
Move to low-fat or fat-free **Dairy** milk or yogurt.	5% of daily dairy requirements were achieved.
Oils: Aim for 4 teaspoons of oil	n/a

Self-reported physical activity

A total of nine participants completed physical activity logs. The logs showed that work related tasks accounted for 91% of all physical activity while on the road. Physical activity occurred in short bursts [conducting vehicle checks, securing load etc.] and followed long periods of sedentary sitting [driving]. Participants logged an average of 65.26 minutes of physical activity in a 24-hour period. The majority (62.61%) of activity was categorized as cardio, 20.27% as resistance, and 16.67% as stretching. The intensity of the exercise was rated as light [63.5%], moderate [17.56%], and high [7.66%]. The amount of time spent in physical activity related to leisure ranged from 5-30 minutes in a 24-hour period; however, three participants reported no leisure activity while on the road.

Self-reported Sleep

During the qualitative interviews participants were asked about the quality of their sleep while on the road. As the following quotes demonstrate, drivers' responses varied, with some participants reporting that they were able to achieve good quality sleep, while others reported challenges with both sleep quality and quantity.

> "You're getting sleep, but you're not getting a good night's sleep" [Rated sleep 5/10]

> "Sometimes pretty good, sometimes not so good. It's variable. It all depends on how much Tylenol I take. I take about four Tylenol, I can usually sleep about six hours, six and a half hours nonstop. But if I don't take any, I'll be up at two".

> "I can't say I have any issues related to sleep. Even when I am in the truck, once I eat my meal, once I eat roti, and drink lassi (buttermilk). It takes half an hour - 45 minutes as the food starts to digest and I start feeling lethargic. And soon after I am sound asleep.
> I won't be able to tell you when my partner pulled over, or pressed on the brakes, I am in such deep sleep that I just can't tell what's going on around me.

> I'd say it's the same as if I'm at home. Doesn't matter where I'm sleeping. It's usually around a six. Maybe a seven. I don't sleep very well. I am tired quite often during the day, but not to the point where I feel I'm at risk of dozing off.

Perceptions of Mental Health

Participants were asked about their perceptions of their own mental health. Some participants struggled to answer this question, as they were unsure of how to describe their mental health or felt that mental health was something to be managed on an individual basis. As one participant described,

> *"That's a tough one because I'm a fairly positive guy so I don't rightly have a direct answer for that. I think people get too enveloped in their own issues. I know people that suffer from depression and stuff like but I don't understand it. I don't pretend to try to understand it. I try to wake up every day in a good mood. For me, it's just get over it."*

Participants reported high levels of occupation related stress, and for a number of participants, their mental health was described in terms of their abilities to cope. One driver stated,

> "*Everybody's got stress. It's just trying to figure out how to manage that stress and know when to let it go. And you know, think on the positives and work through the negatives. Just don't sit there and concentrate on all the bad things that are happening. You look on the good stuff too. So I don't know. I guess that's the best way I can describe it for me".*

Two participants highlighted the importance of mental health to maintain their focus and ability to concentrate while driving. *"I think its really important…The reason being that we are pretty much on the road for 24 hours. We drive at 100km/hr, which is a high speed, so if we are mentally healthy the better, we can concentrate when we are on the road and our driving. So, I feel it's really important".*

Objective Three: Perceptions to Barriers and Facilitators to Health Promotion

Through a social ecological lens, the qualitative data analysis revealed interrelated, and multi-level influences on health promotion for long-haul truck drivers. These influences were categorized into three levels: Individual and family level influences, occupational level influences, and economic level influences (Table 21). These influences were evident across all three health behaviors impacting participants ability to sleep, maintain a healthy diet and engage in physical activity.

Table 21: Multi-level Factors influencing Health Promotion

Individual & Family	Occupational	Economic
• Motivation • Health Status • Health Literacy • Cultural Influences • Family Roles & Responsibilities	• Nature of Work • Mobile Work Environment • Occupational Stressors • Industry Culture	• Government Policies & Regulations • Trucking Company Policies & Practices • Affordability • Highways & Infrastructure

Individual and Family Level Influences

Participants described individual and family factors that influenced their ability to engage in healthy behaviours. These included: Individual motivation, health status, health literacy, cultural practices, and family roles and responsibilities.

Motivation: Participants recognized the importance of personal motivation to engage in health promoting activities. The motivation levels of individual drivers varied with some drivers highly motivated, and others less motivated to engage in health promoting behaviours. As one participant stated, *"I think we should keep moving whenever we can and try to get as much exercise as possible. I will do push-ups, I can do around 25-30 push-ups, I will sometimes use the trailer bumper and do the push up on an angle, up down, up down*". While another noted, ***"****I think about it [health] a lot, whether that is going to the gym or doing this or that to stay fit. But I don't do it."*

Health Status. For some participants their physical health status influenced their sleep patterns, diet and/or level of physical activity. For example, when describing factors that affected their sleep, sleep apnea (n=3) and "leg jitters" (n=1) were identified as impacting sleep quality. In the words of participants:

> *"I have the CPAP machine, and I have a really tough time sleeping with that. I find it very uncomfortable, and I've found that I've actually woken up having a tough time breathing because it tries to keep a positive pressure and everything else, and I've found that it's actually really hard for me to sleep when wearing a mask. And I do toss and turn all night. And I can't sleep with anything like that on. It really bothers me."*

> *I just don't sleep that much. My biggest problem is getting to sleep. Because I've got what they call leg jitters. OK. And the only way you can get rid of that is to take [medication].Sometimes I use it, sometimes I don't. It all depends on how bad the cramp are."*

Health Literacy. Drivers' knowledge of health and healthy lifestyle practices was limited. This was particularly apparent in the area of food and nutrition. A sub analysis was conducted around this theme and four sub-themes were identified: Perceived healthiness of foods and/or nutrients, perceived nutrition knowledge, knowledge about healthy eating, and perceived ability to eat healthy in the mobile work environment. For example, one participant described why they chose chips over a chocolate bar for a snack.

> *"The snacks that I'll get; I'll try and stay away from chocolate bars. I know chips aren't the healthiest thing either but it's not all sugar either, so I'll maybe get a bag of chips or tacos or some sort of meat sticks or something that's just not pure sugar."*

And another participant explained why they chose coffee over tea,

> *"Yeah, they say sometimes when we stop at the Tims, it's better to drink more coffee than steep tea and lower your steep tea intake." Participants were also unsure of which foods were considered healthy. As one participant noted, I don't know what classifies as healthy really like, you know, the healthiest thing I see on a menu in the morning is porridge. I don't even know if that's healthy."*

Cultural Influences. A number of drivers identified that they were vegetarian or had a preference for certain cultural foods. These foods were often unavailable on the road and therefore, drivers chose to bring all their food from home. One participant, who had immigrated to Canada from India commented,

> *"Just like we don't have options like we are Indian, right? We don't have that much Indian restaurants on the road where we can go and grab food like there's I think one or two throughout the trip from Winnipeg to Calgary or Edmonton and that too like we are not sure like is it the quality of the food is fresh, or they are frozen".*

Family Roles and Responsibilities. Family roles and responsibilities influenced health behaviors both positively and negatively. For example, participants described how their partners prepared food for them to take on the road. When asked, several participants were unable to list the ingredients in a meal as they had no part in the food preparation. The meals prepared for participants were varied and would take considerable time to prepare in advance. One participant described,

> *"I bake frozen meals that are home cooked [by my wife], with me in the truck. And there's a wide variety… Right, Zucchini supreme and pork. Korean chicken with asparagus and potatoes. Cabbage rolls. And then we've got Angus burger, vegetables and potatoes. Pork, mash and stir fry. Spaghetti and salmon. Cinnamon chicken, something that my wife invented, I hope it's good. Turkey casserole. stir fry with black pepper sauce. Cabbage, onion, rice. Cinnamon chicken again. Greek fried rice. Dutch oven beef brisket."*

Family responsibilities made it difficult for some drivers to engage in physical activity on their days off. Participants described having to meet family commitments to elderly parents and young children in the few days they had at home.

> *"Most of the truck drivers work for 5 days. Some 4 days and some 5 days. Then everyone has family commitments and needs to spend time with family, I stay away from home for 4-5 days of the week. Then I have my parents who live with me, and I have responsibilities towards everyone and everyone wants me to spend time with them when I am home."*

> *"I have to go with my family, my kids and everyone right? So we have to meet up with the person, my relatives and all. It's really hard to catch up with the exercise as well."*

Occupational Level Influences

The occupational level influences that were identified were captured in four themes. These included, the nature of work, the mobile work environment, occupational stressors, and industry culture.

Nature of Work. Sedentary work, the physical demands of truck driving, long hours away from home and irregular schedules, were all identified as factors that influenced health promotive practices. In the examples provided in Box 6, participants describe how the nature of work for truck drivers influences both sleep and physical activity.

Box 6. Nature of Work

"Hardest thing on the road…. For me it's more along the lines of getting out and actually doing some physical activity…While it's fueling you can walk around the truck, check the tires everything else. It's a little bit, but now for the next seven hours, seven and a half hours I'll be stopping only when I need to use the bathroom and jump out, use the bathroom…jump back in and drive."

"Well, for me, I do flat deck, so you're always strapping loads down or chaining loads down or fighting with tarps. From my side of it, because we've got to check the loads every two to three hours, you're getting out of the seat and you're manually doing a little bit at least.

We drive for 15 hours, in 5 hours shifts. We start from Winnipeg and drive to Calgary, and it takes us 15 hours. We sleep for 5 hours each. Now, I slept in the morning, so I drove till Moosomin, [team partner's name] drove after. Now I am driving again to Calgary so [team partner's name] is sleeping for the next 5 hours. Now, the road conditions are good here in Alberta, so [team partner's name] will sleep well. When it's his turn to drive, he will feel refreshed and he can freshen up at the [company name] yard, the showers there are nice and big there. We stop there for 10 -30 mins, and we will get our back load by then. We'll make ourselves a cup of tea or grab it on our way back to Winnipeg. Since he already slept, then it will be my turn to sleep on the drive back.

"Oh, by far the hardest part about being a truck driver is you spend a lot of time just sitting, and then by the end of the day, if you put in a full day, you got to get some sleep, and you're too tired to get out and do much of anything. And when you're on the road anyway. My wife says I should go for a walk every night, but I tell her by the time I'm done for the day I'm pretty much done in, so I don't get a lot of exercise on the road."

"I was going to go fishing this weekend, on Sunday. But then the schedule that they gave me, wanted me to deliver on Tuesday morning early. Now I cannot drive from Portage to Calgary in one day. So I had to leave on the Sunday to be able to be here on time, which then meant that my fishing trip sort of got cancelled. And that happens regularly".

The Mobile Work Environment.

Truck & Company Amenities were identified as key facilitators to health and health promotion. The presence of a fridge and microwave in the truck allowed participants to bring the majority of their food from home. A comfortable mattress and the ability to control the temperature within the truck were identified as important factors that promoted good quality sleep.

> *"A good climate is... Most new trucks are now all equipped with a thing which will regulate the climate inside the truck. And when it's summer, it keeps you cool. And when it's winter it keeps you nice and warm. These things do help… They keep you nice and comfortable in the night. But nowadays, only the newer trucks are outfitted with those. And we would like to see that sort of outfit in all the trucks. Because it helps to rest better.*

> *"I try to keep some equipment in the truck especially during winters. If I get some time to spare, I don't' like wasting my time and try to get as much activity in as possible. I try to incorporate some dumbbells, and I try to 'stretch' as I perform the vehicle checks.*

Exercise facilities, provided by individual trucking companies for their drivers, were viewed favourably by participants. Although participants acknowledged that the use of the facilities required motivation on the part of the driver, the availability of these facilities was viewed as a facilitator to promote physical activity. *"For me, the company, like for instance my company, I will give you their example, my company has provided us gyms, there are gyms in Calgary location, as well as the Winnipeg location. These are free gyms".*

Private Sector Amenities. Consistent with the findings of the environmental assessment, the lack of amenities available at truck stops to support healthy eating and physical activity was highlighted by participants. Reduced restaurant hours, limited availability of healthy food options and limited access to exercise facilities were considered barriers. As one participant stated, *"There is no access to a gym, if that's what you mean? There is no access to an exercise room anywhere so if you're going to do physical activity you're doing it on your own."* And a second participant noted,

> Interviewer: "And what resources or supports currently exists to help you stay physically active while on the road?
> Respondent: Well, I think you can pretty much figure out things. there's nothing, absolutely nothing. You won't find any treadmills or anything on the parking spaces. No, it's nonexistent."

Occupational Stressors. Drivers reported that occupational stressors were a barrier to health promotion. Delivery pressures, inclement weather, limited temporary and overnight parking, safety concerns, and the transition to e-logs were all identified stressors. Occupational stressors are evident in the following quotes by three participants,

> *"It's one thing when you are sure of where you are going to stop and park for the night. Even if you have half an hour left from your 'driving' hours and you have 10 mins drive ahead of you to get to the location. I am driving in a relaxed state, as there is this sense of surety that when I'll reach the location, I'll have a parking spot available to me. But now let's say if upon reaching the location, I don't find a place to park. I have 10 min of 'driving' time remaining, in that situation it is so stressful as I have two trailers attached to my truck, so I can't just park anywhere."*

> *I've had jobs like that where for an instance and this happens, if you're hauling groceries, and you're going to a wholesaler – say you got a load of cheese, and you're going to [NAME] Grocers or somebody like that. They have you booked in at a specific time. And if you're not there at that time, you might be waiting to get another time because they've got everything booked up so tight that they got to keep things moving. So, depending on what happens, you get bad weather, you get delayed, you still have to try and make that time. So, guys end up pushing really hard to make that delivery time. And sometimes it's just they don't get away early enough that things don't go good, or sometimes it's the dispatchers. They make promises that the driver has to keep."*

> *Other drivers: So, and this is the bit that I would like people to understand. My wife had a good thing about this. She said yesterday when we had company over she said "Every young student driver should have a lesson about trucks."*

Economic Level Influences

The economic level influences that were identified included, Government policies and regulations, trucking company policies and practices, private sector priorities, affordability, and highways and infrastructure.

Government Policies and Regulations. Hours of work regulations were viewed by drivers as facilitators and barriers to health promotion by drivers. On the one hand, participants reported that the hours of work regulations ensured employers could not ask/pressure them to work additional hours, on the other hand, the regulation added to the pressure drivers felt to drive to a specific destination within the allotted hours. The transition to e-logs created additional pressures for drivers. Drivers described the e-logs as inflexible and noted that they were unable to extend their workday by even a few minutes without being in violation. The three quotes provided below capture the drivers' perspectives.

"If I misjudge, and it's within a minute – if we take a break it has to be minimum 30 minutes for it to count for anything as far as time off during the day goes. And if you take a 29-minute break, because it's electronic, if you take a 29-minute break, it flags you as, like, it's a violation, or you're not taking enough time off. Or if you work 14 hours and one minute, it'll get flagged as a violation. So, there's no fuzzy areas with an electronic logbook. It's all right to the minute. And being electronic, I mean, that's the way it is. With the old paper logbooks, like now say I'm going to – and I've had this happen many times, where you're driving along, and you figure I got just enough time to make it to where I'm going to park for the night. And for whatever reason, you get delayed a little bit. If you're five minutes late, whereas with the old paper logbooks, you would just mark it as if you got there on time. So, there's that to consider, but you just learn to deal with it. That's part of the job."

"It's gotten a little bit better since the government – before, you could never stop your clock once you started your day. Before, when it was just paper logs, you could stop your clock and have a two-hour nap and it wouldn't really hinder you. Well, when they went with electronic logs there was no way to stop. Now, they've changed the rule a bit and now you can stop your clock for two hours out of your 14-hour cycle, you can actually stop. So, if you do want to have a nap it doesn't force you to keep going".

"If they had the hours-of-service flexible over a two day period or a three day period like, OK, today it's going to take me 13 and a half hours to get to Regina, OK? Now tomorrow because you worked 13 and a half today you can only work 12 and a half tomorrow. OK, well, that's fine but when it's – so, cut and dried, 13 you're done. There is no –13 hours and one minute; it's 13 hours. So if they had a little bit of give and take and said, OK, well, it's 13 hours a day is what you have to average over a two day period or a three day 1 period, so without it exceeding 13 and a half or 14, then I feel that that would be way safer for everyone involved because now instead of just, OK, well, I'll just have to stop here and there is nothing here. Well, let's see, I've got a little bit Gatorade left and I have some chips in the back over there and you know maybe I'll make something. I don't know. It would be healthier if I could go that extra half hour and get to somewhere where I could have a proper meal, a proper shower; proper washrooms."

Trucking Company Policies and Practices

As with government policies, trucking company policies and practices were described as both facilitators and barriers to health promotion. Policies that supported a driver's right to determine if they were safe to drive, dispatch personnel who respected drivers decisions, and a culture supporting the health and safety of drivers were considered very important to promote driver health and wellbeing. By contrast, when these policies and practices were not present, drivers reported additional occupational stress. The quotes below show how the experiences of drivers varied with different employers.

> *"I mean we can take a nap for 15 minutes if we are feeling sleepy. [Company name] doesn't force you to drive, and if you call them and tell them that you were feeling tired, they won't say anything. Instead, they will ask you to park the truck, take some rest and then drive. But the problem with that is, where do we park? There is no place to park! (Laughs)."*

> *"First, it is difficult to find time specially to exercise, and if you are a single driver, you have 8 hours allocated to sleep and once that time is up you need to start your log and be driving. If after those 8 hours, you want to take time out from driving then the dispatcher at the company says that you have caused a delay with the load delivery. They inquire you about why there was a delay in starting the logbook and driving schedule. There aren't many options available on the road to drivers for staying physically healthy in terms of exercise especially if they are working under a company."*

> *"Right to Decide' we the truckers have the right to decide in case the weather conditions are poor, and the roads are bad, or too slippery, our company has said upfront that it depends on the driver. If the driver is comfortable, he can drive but if not, he can stop as well. So, this is really good."*

> *Interviewer: What factors would you say, support a better sleep in general for you?*
> *Respondent: I think that companies shouldn't rush so much. I think give the drivers more rest. Like me, it's all go, go, go."*

Affordability

The affordability of healthy foods was highlighted by a number of participants. Drivers noted that although healthy options were available, the cost of these items was a deterrent. One driver stated,

> *" A lot of times there is healthy food available. Like a lot of the truck stops, they do have baskets. You have apples, oranges, bananas. They have you know if you want to go for a pizza, vegetarian pizzas they do have options available if you want to do a healthier lifestyle, but those kinds of prices are like three times what you'd pay for at the store. So, a lot of people try to avoid that if possible because of the prices."*

Another driver commented that *"A bottle of pop is a $1 a can. A bottle of water is 2.45 at the store; don't even think about an orange or an apple because you'll never afford it. Just go by the chocolate bar aisle instead."*

The affordability of having two sets of medical equipment, one for home and one in their truck was also discussed. Three participants required CPAP machines for sleep apnea; However, two of the three chose not to use CPAP while away from home due to the cost of the equipment. *"I use a CPAP at home. I don't have it in the truck with me because I can't afford a second one. These things are stupid expensive. But I use it at home and then I generally have a better rest when I'm at home."*

Highways and Infrastructure

"Roads and rest areas. If these two areas are fixed somehow. Everything comes down to these two things. They are partly the reasons behind truck drivers' poor health."

The lack of infrastructure to support the health and safety of drivers was highlighted by all participants. Poorly maintained highways (e.g. snow clearing in winter, potholes in summer), the limited number of rest stops, inadequate access to roadside turnouts, limited walking paths, washroom facilities, and temporary and overnight parking spots were all highlighted as barriers to health and safety. A selection of quotes capturing participants perspectives is provided in Box 7.

Box 7. Highways and Infrastructure

Well, Alberta's got more of them [rest stops & roadside turnouts]. Manitoba's got none, virtually done. I got one in between Brandon and Austin and Spruce Woods but in the wintertime the bathrooms are all closed down, so basically it's a sleeping area off the highway. That's the only one in Manitoba that you could get into. And really for me unless it's on way back I'm not stopping there anyway because I just basically started, it's only two and a half hours into my trip. Saskatchewan, Saskatchewan, I don't remember seeing – there is one, there is one by Caronport, but that's about the only one I've ever seen.

So Alberta's got a lot more of them. But there're still just pullouts, there's no bathrooms. And there too, if you're not in them by 11:00 at night, midnight tops you're not getting into them. And like I said, the rest areas you can't get into them with two trailers, the roadway into them is not wide enough to – on the ramp, you could maybe pull off on the ramp before you get into the rest area or just when you're leaving the rest area, but what does that do? You're still a half mile walk away from the bathroom.

"If there is a space created for truck drivers to promote physical health, then they will most definitely think about it and will be more inclined to use it rather than sitting in the truck for half an hour. The driver will consider that I should go for a walk or exercise especially since there is designated space created just for it. Right now, we can't as these spaces don't exist."

Uh, truck stop [thinking] uh that would be any pull-out or rest areas. If we can have adequate lighting in these areas, that would be really good because if there is proper lighting then we can go for a walk."

***Team Drivers:** "The road conditions are horrible, how is the driver supposed to sleep. If every time the truck goes over a pothole, the driver sleeping in the back is flying like 1 ft up in the air – how is he supposed to sleep?*

***Single Drivers:** And then trying to get a decent sleep, with these LCVs there's nowhere for you to park. You get a couple of pull-offs. Like, right now, I'm on a pull-off on the side of the highway. So, you're not getting a solid eight to ten hours sleep because you have traffic flowing by you, you hear everything, right."*

Like, after every 2 hours we perform a vehicle check to see if there is a flat tire, or if an airline broke, or if there is a leak, or any electrical issues with our truck. So, we stop to perform a circle check for 5-10 minutes when we are on the road. We need areas to stop our truck to do the check, so we don't have to park on the shoulder to do it."

if one day the truck driver is tired and he is feeling sleepy, he wants to stop for a cup of coffee. The main problem is that if we want to pick up a cup of coffee, we don't find a proper place to park. Especially in Manitoba and Saskatchewan, there isn't a proper place to park and this I would emphasize over and over. We run into this problem on a daily basis. In Manitoba, we can park our truck anywhere, and the police will give you a ticket for it. How is the trucker going to stay healthy if he can't find a place to park or pick up a cup of coffee if he is tired. If someone asks, I will say we run into this problem all the time."

"First is that when we start the trip, we perform our first vehicle check. It's to be done either after 1 hour or at the 80 km mark. So, we make a stop and then spend 4-5minutes on a vehicle check. The main problem with the vehicle check is that all the locations, especially in Manitoba. We start out from Winnipeg; we can't find a single safe location where we can stop after an hour of us starting our drive and complete the required vehicle check. We always stop on the shoulder and then perform the vehicle check. Now, I know that it is unsafe, but the check is required."

"Well, when you're sleeping on the side of the road you can have somebody– you know, it's not the safest place to be when you're just sitting on the side of the road sleeping for eight to ten hours, especially in the wintertime. You never know what's going to happen with the guy coming barreling in the wintertime on you. So, that's always in the back of your mind".

Conclusions

1. **Health promotion programming for long-haul truck drivers requires a multi-level approach, addressing barriers at each level.**
2. Although healthy food options are available for purchase within the mobile work environment there is limited variety and the cost of healthy food choices is perceived by truck drivers as too high.
3. The majority of long-haul truck drivers bring food from home and store and prepare the food in their trucks.
4. Food and nutrition literacy is an important focus for health promotion programming within this population.
5. The majority (91%) of physical activity truck drivers engage in while working is work related and categorized by drivers as light intensity activity. Work related activity involves sudden bursts of activity (securing load, vehicle checks etc.), and follows long periods of sedentary sitting while driving.
6. The infrastructure to support physical activity for leisure purposes is extremely limited. [For example, no truck stops had exercise facilities and there were limited safe places to walk].
7. The mobile work environment does not support truck drivers' ability to meet the Canadian physical activity guidelines of 150 minutes of moderate/vigorous aerobic physical activity per week, and muscle strengthening activities two times per week.
8. Limited safe overnight parking facilities for trucks (especially LCVs) and poorly maintained highways contribute to poor sleep quality for long-haul truck drivers.
9. Improvements to Infrastructure are needed to the support the **health and safety** of long-haul truck drivers. For example, the lack of roadside turnouts forces drivers to pullover on the shoulder of the highway to conduct required vehicle checks. This exposes drivers to oncoming traffic and associated safety hazards.
10. Long-haul truck drivers report high levels of occupational stressors that has the potential to impact both their physical and mental health.
11. Other drivers, who are not familiar with the stopping time of trucks, are a significant source of stress for truck drivers.
12. Time pressures (scheduling, delivery pressures, compensation, industry culture) contributed to high levels of stress amongst drivers and caused many participants to "push to the limit" on hours-of-service regulations.

Recommendations

1. **A multi-level approach to health promotion programming for long-haul truck drivers is adopted.**
2. The impact on the health and safety of drivers is considered in the development of all policies.
3. Occupation specific health education resources that target the specific needs of long-haul truck drivers are created.
4. A public education campaign on how to safely drive alongside trucks and heavy vehicles is needed to promote safer driving conditions on the highways.
5. An industry culture that prioritizes the health and safety of drivers is important to promote physical and mental health of drivers. It is recommended that:
    a. Trucking companies encourage drivers to take scheduled breaks and adopt a culture that supports health and health promotion.
    b. Trucking companies develop policies that support the drivers right to determine if they and/or conditions are safe to drive.
    c. Delivery times are scheduled for a wider window to allow for delays etc.
6. Government and the private sector work collaboratively to create a healthier mobile work environment that includes increased access to/availability of:
    - Affordable healthy food options
    - Truck accessible parking
    - Showers/exercise facilities and equipment
    - Washrooms
    - Outdoor walking paths
    - Safe overnight parking
    - Truck amenities [amenities to support climate control, safe food storage and food preparation, comfortable mattresses etc.]
7. Infrastructure is improved to promote the health and safety of drivers.
    a. Additional rest stops (with green space, access to walking paths, washroom facilities, entrance/exit lanes & parking designed for LCVs) are developed along the TransCanada & Yellowhead Highways.
    b. Turnouts are placed at regular intervals along all major truck routes.
    c. Safe places for trucks to park [overnight and short stops] are created.
    d. Highway maintenance [snow clearing/road surface] **is prioritized and actioned to ensure** safe highway conditions.

Knowledge Translation Activities

The Knowledge Translation Steering Committee was formed at the start of the project. Committee membership included the research team, representatives from the Manitoba Trucking Association, Leaders from the trucking industry, a representative health professional, representatives from SafeWork Manitoba and an expert in Mens' health. The steering committee met October 6th, 2021; March 4th, 2022; December 7th, 2022; March 8th, 2023; September 27th, 2023; November 22nd, 2023; January 26th, 2024. A final meeting scheduled for May 8th, 2024.

The Knowledge Translation Committee provided guidance on all Knowledge Translation activities. Consistent with the social ecological model of health promotion, knowledge translation activities were designed to reach truck drivers (individual level), trucking company employers, and government representatives.

Individual Level

Health Education Modules. Four occupation specific health education modules have been created for long-haul truck drivers on topics related to physical activity, food and nutrition, sleep and mental health (focus: occupational stress). The content for the modules was created by the research team and then reviewed by content experts for accuracy and comprehensiveness. The modules will be available for distribution by June 15th, 2024. The modules will be housed on the Manitoba Trucking Association Website, and with the assistance of the Manitoba Trucking Association distributed via email to trucking companies and truck driver training programs.

Podcast. On April 22, 2024, experts on sleep, nutrition and physical activity joined experienced truck drivers to record a podcast at Brandon University's BU Cares Centre. The podcast conversation explored the challenges drivers encounter while on the road related the sleep, physical activity, diet and stress and experts shared strategies that may be helpful for drivers to overcome some of these challenges. The participants in the podcast included: Dr Diana McMillan, a sleep expert, Carla D'Andreamatteo a registered dietitian, and Dr. Joel Krentz a physical activity expert. Drivers who shared their experiences included David Henry, Barry Simon, and Vivian Evens. Danica Fitzsimmons moderated the podcast. A link to the podcast will be made available on the Manitoba Trucking Association Website.

Occupational and Economic Level

Driving Towards Wellness Stakeholders Meeting. The stakeholders meeting, held on April 3rd, 2024, in Winnipeg, gathered a total of 36 stakeholders. Notably, federal government officials from the Department of Labour (Christian Tardi), provincial government representatives from Transportation and Infrastructure (Ryan Klos), and Labour and Immigration (Bernadette Preun) were present, alongside representatives from Manitoba Public Insurance, SafeWork Manitoba and the Workforce Training and Employment Division. Additionally, leaders from various sectors within the transportation industry were in attendance. The Manitoba Trucking Association contributed to the discussions, aiming to foster collaboration and innovation for the advancement of transportation in Manitoba. A complete list of attendees is provided in Appendix B.

RPM Speaker Series. On April 12th, 2024 the research findings were presented at the annual RPM speaker series.

Academic Dissemination

The research findings have been presented at a number of academic conferences and webinars. The detailed abstract for each presentation is provided in Appendix B.

- Brandon University. Centre for Critical Studies of Rural Mental Health & Faculty of Health Studies Seminar Series – March 7th, 2024.
- University of Manitoba - Catalysts for Care: 2024 Nursing Grand Rounds Speaker Series - Presentation - March 12th
- University of Toronto - Community Health Nurses of Canada National Conference- Community Health Nurses: Health for All - Building Health Promotive Environments for Long-Haul Truck Drivers on the Canadian Prairies – April 22 – 24, 2024
- Brandon University - Mental Health on the Prairies: Mental Heath of Long-Haul Truck Drivers: An Unseen Population Driving Through – Presentation – April 26, 2024
- Dietitians of Canada - 19th International Congress of Nutrition and Dietetics - Long-haul Truck Drivers' Mobile Work Environment: Perceptions of Healthy Foods – Poster Presentation - June 12-14, 2024

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Appendix A

Data Collection Tools

Environmental Assessment: Truck Stop

Truck Stop: Healthier Food Items	
Checklist Instructions: 1. For each item available, check off the box to the left of the category. 2. Add any additional notes as needed.	
Fruits and Vegetables	
	Fresh fruit
	≥ 5 types of fruits (fresh)
	Canned fruit
	Dried fruit
	Fresh vegetables
	≥ 5 types of vegetables (fresh)
	Canned vegetables
	100% fruit or vegetable juice
	Dried vegetables (includes dried potatoes)
Meat and Alternatives	
	Fish (e.g., tuna, salmon)
	Meats (not processed)
	Meat alternatives (e.g., Tofu, Beyond Meat, etc.)
	Eggs
	Nuts and seeds
	Nut spreads (e.g., peanut butter, almond butter)
Milk and Alternatives	
	Low fat plain milk (e.g., skim, 1% m.f., 2% m.f.)
	Hard cheeses (not spreadable)
	Yogurt
	Smoothies (≤ 15g of sugar per smoothie beverage). **IF CHECKED YES:** a) WHAT IS THE TOTAL SIZE OF THE SMOOTHIE IN ML: _____ b) WHAT IS THE SERVING SIZE ON THE NUTRITION LABEL: _____

	NOTE: If sugar is ≤ 15g, note the portion size of the smoothie in mL).
	Non-dairy plant-based alternatives (e.g., soy milk/rice milk/almond milk, soy yogurt/coconut yogurt)
Grains	
	50-100% whole wheat/grain flour products (e.g., tortillas, bread)
	Other grains (e.g., pasta, rice, quinoa)
	High fibre cereals (≥ 4g of fibre or more per stated serving size)
Fats and Oils	
	Plant oils (excluding coconut, palm)
	Heart-healthy spreadable fats (e.g., non-hydrogenated margarine)
	Low fat sauces and dressings (e.g., low fat mayonnaise, sour cream, vinaigrette salad dressings)
Mixed Foods and Entrees (e.g., microwaveable dinners, nuts/fruit mixes, etc.)	
	Frozen entrees (has ≤ 15% DV fat **AND** ≤ 15% DV sodium)
	Potato dishes (e.g., baked, mashed, roasted containing ≤ 15% DV fat **AND** ≤ 15% DV sodium)
	Entrees or sandwiches containing one (1) or more of: fresh produce, healthy protein[a,b], and/or whole grains (e.g., whole grain bread, tortilla, pasta, rice, quinoa, etc.)
	Fresh salads
Beverages	
	Diet beverages (e.g., diet soda, sugar-free sports drinks)
	Water (regular or carbonated)
	Coffee (hot or iced, no sugar/additives)
	Tea (hot or iced, no sugar/additives)
Protein/Energy Products	
Protein Products	
	Prepackaged protein/energy bars
	Prepackaged liquid protein beverages
	Protein powders (e.g., whey protein, pea protein, etc.)
Energy Drinks*	
	≤ 5 brands available
	6-10 brands available

	11+ brands available

Other Comments:

- If there's products containing substances (i.e., caffeine) beyond appropriate levels, make note of that here.

[a] Animal-based proteins including: Eggs, poultry (chicken, turkey), lean red meat (lamb, beef/pork: tender or sirloin only) including wild game (venison, bison, rabbit, duck, emu, goat, ostrich), lower fat milk, lower fat yogurts, lower fat kefir, and cheeses lower in fat and sodium. Seafood: Fish, shellfish.

[b] Plant-based proteins including: Legumes, nuts, seeds, tofu, tempeh, fortified soy beverage.

[*] Beverages containing a high percentage of sugar and/or caffeine or other stimulant.

Availability of Healthier and Corresponding Less-Healthier Quick Stop Snack Food Items		
Instructions: 1. For each category, circle the available items, whether that is the healthier snack food items, the less-healthier snack food items, or both. 2. Add any additional notes as needed.		
Savory Snacks	Baked chips, pretzels, low sodium popcorn (≤ 140 mg sodium per serving size)	Chips
Baked Goods	Low fat (≤3g of fat per reference amount) baked goods, whole grain baked goods (e.g., whole grain muffins)	Regular baked goods
Snack Mix/Nuts	Plain unsalted nuts (e.g., almonds, cashews, peanuts)	Trail mix (includes chocolate)
Frozen Treats (cream-based)	Yogurt	Ice cream
Frozen Treats (juice-based)	100% fruit juice popsicle	Regular popsicle
Fruit	Fresh fruit	Dried fruit with added sugar
Beverages	Diet	Regular
Other Comments:		

Cultural Foods Available	
Checklist Instructions: 1. For each category, check off the box to the left based on the amount of cultural food products available. 2. Add any additional notes as needed.	
	Yes
What general cultural food(s) are available? (E.g., Halal, kosher, jahtka, etc.):	
Other Comments:	

Qualitative section for additional comments: Does anything stand out in the truck stop?

Restaurant/Fast Food Healthy Food Options		
Checklist Instructions: 1. Go through the checklist and score each category based on the availability of the food items. 2. If the scoring of the category notes that it is question specific, ensure to make note of the specific items sought in the "healthfulness of foods" category in addition to scoring the numeric value of options available for that category. 3. Add any additional notes as needed.		
Category	Healthfulness of foods	Scoring
Healthy Proteins: Animal-Based	Eggs, poultry (chicken, turkey), lean red meat (lamb, beef/pork: tender or sirloin only) including wild game (e.g., venison, bison, duck), lower fat milk, lower fat yogurts, lower fat kefir, and cheeses lower in fat and sodium = one option toward total. [c] *Seafood:* Fish, shellfish [c]	None available to ≥ 7
Healthy Proteins: Plant-Based (Vegan)	Legumes, nuts, seeds, tofu, tempeh, soy, veggie burgers. [c] *Labeled:* "Vegan, or Meatless." Vegan is defined as no dairy, egg, or any animal products).	None available to ≥ 7
Fruit	*Fruit:* type and extent of fruit options available: • None • Processed (added sugar/syrup); and • Fresh.	*Question specific* None available to ≥ 7
Vegetables	*Vegetable sides:* healthy descriptors [c] and/or broth-based; labeled low-fat. Include hot vegetables, vegetable soups, prepared salads, vegetable toppings for pizza = one option.	*Question specific* None available to ≥ 7

Grains and Cereals	*Labeled Whole Grain options:* bread products: (bagels, bread, English muffins) count as one option or a maximum or two options if there are extensive variety. Count each unique option available in main or side dishes: amaranth, barley, buckwheat, millet, oats, quinoa, teff, triticale, sorghum, brown or wild rice, wheat. You may also find these in pancakes, pizza, or tortillas. *Cereals:* High fibre cereals (≥ 4g of fibre or more per stated serving size). Examples of acceptable cereals include Fiber One, and plain oatmeal.	None available to ≥ 7
Healthy Beverages	The number of healthy beverage categories (not individual flavours) offered: • Milk: low fat plain milk (e.g., skim, 1% m.f., 2% m.f.) • Non-dairy plant-based milk alternatives (e.g., soy/rice/almond). • Diet beverages (e.g., diet soda, sugar-free sports drinks). • Water: regular or carbonated. • Coffee (hot or iced, no sugar/additives) • Tea (hot or iced, no sugar/additives) • 100% fruit or vegetable juice. • Smoothies	None available to ≥ 7
Healthy Desserts	The number of healthy dessert categories (not individual flavours) offered: examples: • Fresh fruit • Soft-serve frozen yogurt • 100% fruit juice popsicles • Yogurt • Low-fat baked goods • Whole grain baked goods (e.g., whole grain muffins) • Sherbet • Low-fat ice cream novelties • Low-fat non-dairy desserts • Low-fat cookies/cakes • Angel food cake • Mini dessert sizes; nutrient dense (at least three food groups: healthy fats, whole grains, legumes, fruits, vegetables, low-fat dairy)	None available to ≥ 4
Other Comments:		

[c] Healthy descriptors: baked, broiled, roasted, grilled, smoked, sauteed, stir-fried, steamed, boiled, poached, labeled: lean or extra lean, no breading or sauce, not fried, light or no mayo/sauce, broth based.

Environmental Assessment: Non-Dietary Amenities

LCV Rest Stop Tool	
Checklist Instructions: **1.** Complete the general rest stop information as indicated below. **2.** For each item on the checklist, write the assigned indicator (y/n) to indicate that that item is present and available to patrons of the truck stop. **3.** Add any additional notes as needed	
Date	
Truck Stop	
Hours of Operation	
Location (Coordinates)	
Mileage from Previous Stop	
Turn-in/pull-out lane	
GPS Point Retrieved	
Images Retrieved	

Truck Stop Outdoor (Non-Dietary) Amenities				
Theme	**Code**	**Amenity**	**Present (Y/N)**	**Notes**
Safety/Security	**11**	**Well-Lit Parking Area**		
	12	**Prime Parking (Reserved)**		
Leisure/Physical Activity	**13**	**Walking Path (Safe? Y/N)**		

	14	Secondary roads (Walking)		
	15	Designated Picnic/Seating Area		
	16	Designated Exercise Area		Type: • Resistance ____ • Cardio ____ • Stretching ____
Hygiene/comfort	17	Designated Smoking Area		
Health Care	18	Accessible Medical Clinic		
Connectivity	19	Truck Hook Ups – Shorepower		
	20	Certified Scale		
Nutrition	21	Accessible Grocery		

Truck Stop Indoor (Non-Dietary) Amenities				
Theme	**Code**	**Amenity**	**Present (Y/N)**	**Notes**
Hygiene/Comfort	**23**	**Showers**		**Number of Showers:** **M: ____** **F: ____**
	24	**Laundry**		
	25	**Lounge Area**		
	26	**Motel/Hotel on-site or nearby**		
Nutrition	**27**	**Kitchenette**		
Safety/Maintenance	**28**	**Truck Wash**		
	29	**Truck Supplies (DEF)**		
Connectivity	**30**	**Payphones**		
	31	**Load Database/Computer Access (TRANSFLO Express)**		
	32	**WiFi Access**		
	33	**ATMs**		
Health Care	**34**	**Health Clinic**		
	35	**Medications/First Aid Supplies**		
Physical Activity	**36**	• **Designated Exercise Area**		**Type:** • **Resistance ____**

				• **Cardio ____** • **Stretching ____**
Other comments:	**37**			

Environmental Assessment: In transit tool

In-Transit Environmental Assessment Tool			
Checklist Instructions: 1. Complete the general rest stop information as indicated below 2. For each item on the checklist, write the assigned indicator to indicate that that item is present and available to patrons of the truck stop. 3. Add any additional notes as needed			
Date			
Truck Stop			
Location			
Direction (W = west/E = east)			
Highway (D = double/S = single)			
GPS Point Retrieved			
Amenities Visible In-Transit			
Code	**Amenity**	**Present (Y/N)**	**Additional Notes**
01*	**Entrance/Exit Lanes Available (need definition)**		
02	**Anticipatory Fuel Signage**		
03	**Cardlock Availability**		
04	**Washroom/waste/recycling**		
05	**Picnic/Lounge Area**		
06	**Motel/Hotel**		
07*	**Safe parking**		
08	**Weight-accessible signage**		
09	**Quick Pullouts (Mile-marker)**		
10	**Additional Comments (points of increased risk):**		

Physical Activity Log

Physical Activity Log: Sample										
Day 1	**Date: July 6, 2022**									
Time	**Duration**	**Type**			**Intensity**			**Purpose**		**Description**
	Minutes	**SG**	**RS**	**CD**	**Light**	**Moderate**	**High**	**Work**	**Leisure**	
10:40am	20	X	X	X		X	X	X		Strap down cargo; Pre-trip vehicle inspection
12:30pm	30	X	X			X		X		Vehicle-inspection; Repair air lines on trailer
1:00pm	20			X	X				X	Walk to restaurant and back
5:00pm	30			X	X			X		Post-trip vehicle inspection

Diet Log

Diet Log Sample		
Day ___	**Date:**	
Time of Meal/Snack	**Type of Food or Beverage Consumed** • **If the food has a brand name, make note of it** • **Note the method of preparation if possible** • **Make note of any beverages consumed with each meal/snack**	**Photo Complete**
Breakfast		
AM Snack		
Lunch		
PM Snack		
Dinner		
Evening Snack		
Other Food/ Beverage Consumed Not Included Above		

Semi-Structured Interview Guide

Initial Interview

Date: _____

Demographic Information

1. Age
2. Sex
3. Number of years as a truck driver
4. Self-reported height
5. Self-reported weight
    a. When did you last weigh yourself?

Health Promotion and LHTD

1. On a scale of 1 to 10, with 1 being not at all healthy and 10 being extremely healthy, how would you rate your current health status?
    a. Can you please elaborate on your choice?
2. What do physical health and health promotion mean to you?
3. What do mental health and mental health promotion mean to you?
4. What is the hardest thing about staying healthy as a truck driver?
    a. What challenges do you face which make it difficult to stay healthy while on the road?

5. **How do you /what helps you stay healthy while working on the road as a truck driver?**
    a. **Healthy Food**
        i. How do you maintain a healthy diet?
            1. Please explain.
                a. Are food options adequate to maintain a healthy diet?
                b. Other strategies used to maintain a healthy diet?
                    i. Do you bring food from home?
                        1. If so, can you please elaborate?
                c. What are your food preferences?
                d. What resources/supports currently exist to help you maintain a healthy diet while on the road?
                e. What would help you maintain a healthy diet while on the road?
                f. What would need to change to maintain a healthy diet?
                    i. Scenario-based question
                    ii.

b. Physical Activity

i. How do you engage in physical activity?
   1. Leisure
      a. Please explain.
         i. Walking paths
         ii. Stretching
   2. Occupational/Safety
      a. Please explain.
         i. Truck/trailer checks
         ii. Repairs
         iii. Truck/trailer washes

   3. What resources/supports currently exist to help you stay physically active while on the road?
   4. What would help you to be more physically active while on the road?
   5. What would need to change for you to engage in physical activity?

c. Safe/secure sleep

i. How well do you sleep while on the road?
ii. What helps you sleep while on the road?
   1. Please elaborate.
   2. What factors support a better sleep?
   3. What would need to change to best support your sleep?

d. Technology

i. How does technology support your health?
   1. For example, do you wear a fitness tracker ie. Fitbits or use any apps..
ii. Do you have adequate Wi-Fi access while on the road?
iii. What apps do you currently use?
   1. If you had apps on your tablet, would you find this useful?
iv. Where do you get your health information from?

6. If you could change one thing in your truck stop environment to help you stay healthier while on the road, what would that be?

Final: Do you have any final thoughts or comments I may have missed related to your health practices as a long-haul truck driver?

Final Interview

Date: _____
Interview Number: _____
Participant ID: _____
Location of Participant: _____
Type of Interview: _____

1. Can you begin by telling us a little about the trip you took from MB to AB?
    a. Was it a typical trip?
    b. Did anything happen that altered your usual pattern of eating, sleeping and exercising on the road? [If yes, please explain]
2. Thinking about the trip you recently took between MB and AB, what challenges did you encounter that made it difficult to stay healthy on the road? [probes -Can you tell me more, please explain]
3. Thinking about the trip you recently took between MB and AB, what resources/supports/strategies did you use to help you stay healthy while on the road?
4. I would just like to take a few minutes to review your diet and exercise log. [Review the log and clarify any data that is not clear].
5. Is there anything else you would like to add?

Appendix B

Knowledge Translation Activities

Policy Infographic

List of Attendees for Stakeholder Workshop

1. Michelle Mialkowski
2. Franco Greco
3. Richard Quenelle
4. Ryan Klos
5. Manny Thandi
6. Christian Tardi
7. Bernadette Preun
8. Cole Rak-Banville
9. Erin Lubinski
10. Jacquelyn Oduro
11. Pauline Wiebe Peters
12. Erin Russell
13. Jacqueline Carleton
14. Norman Blagden
15. Darrin Fiske
16. Brad McCarthy
17. Lynn Houghton
18. Jason Gerylo
19. john curcio
20. Frank Hellmann
21. Rachelle Baker
22. Lisa Bellingham
23. Peter McDonald
24. Colin Van Den Driessche
25. Arina Johnson
26. Lee Rosenberg
27. Neal C
28. Rajnish Kaushal
29. Bryan Horst
30. Janice Miller
31. Christine Waytiuk
32. Troy Mercer
33. Neil Cooke
34. Joel Krentz
35. Catherine Baxter
36. Caroline Mullins

Titles and Abstracts of Academic Presentations

Centre for Critical Studies of Rural Mental Health & Faculty of Health Studies: Seminar Series Session

Title: A Multi-level Approach to Health Promotion for Long-Haul Truck Drivers in Manitoba.

Abstract:

Long-haul truck drivers have been identified as a high-risk population for obesity, cardiovascular disease, diabetes, sleep apnea, musculoskeletal injuries, and stress. Workplace health promotion programs that largely focus on changing individual worker behaviours have had limited success. A social ecological perspective that targets both workers' behaviours, as well as environmental factors, has been cited as a more effective approach to health promotion. **Purpose.** The purpose of this mixed methods study was to examine how the mobile work environment supports or hinders the health promotion practices of long-haul truck drivers, and to explore truck drivers' perceptions of barriers and facilitators to adopting and maintaining healthy lifestyle practices while at work. **Methods.** Data were collected from three sources: Semi-structured qualitative interviews with 13 participants, diet and physical activity logs maintained by 9 participants and an environmental assessment of the TransCanada and Yellowhead Highways between Manitoba and Alberta. Framework Analysis was used to conduct the thematic analysis. **Findings.** Individual, occupational, and economic level influences were identified as impacting the health and health behaviours of participants. This presentation will discuss the need for a multi-level approach to health promotion for this population.

University of Manitoba- Catalysts for Care: 2024 Nursing Grand Rounds Speaker Series.

Title: A Multi-level Approach to Health Promotion for Long-Haul Truck Drivers in Manitoba

Abstract: Long-haul truck drivers have been identified as a high-risk population for obesity, cardiovascular disease, diabetes, sleep apnea, musculoskeletal injuries, and stress. Workplace health promotion programs that largely focus on changing individual worker behaviours have had limited success. A social ecological perspective that targets both workers' behaviours, as well as environmental factors, has been cited as a more effective approach to health promotion. Purpose. The purpose of this mixed methods study was to examine how the mobile work environment supports or hinders the health promotion practices of long-haul truck drivers, and to explore truck drivers' perceptions of barriers and facilitators to adopting and maintaining healthy lifestyle practices while at work. Methods. Data were collected from three sources: Semi-structured qualitative interviews with 13 participants, diet and physical activity logs maintained by 9 participants and an environmental assessment of the TransCanada and Yellowhead Highways between Manitoba and Alberta. Framework Analysis was used to conduct the thematic analysis. Findings. Individual, occupational, and economic level influences were identified as impacting the health and health behaviours of participants. This presentation will discuss the need for a multi-level approach to health promotion for this population.

Community Health Nurses of Canada 2024 National Conference.
Community Health Nurses: Health for All

Title: Building Health Promotive Environments for Long-Haul Truck Drivers on the Canadian Prairies

Abstract:
The Issue. Long-haul truck drivers have been identified as a high-risk population for obesity, cardiovascular disease, diabetes, sleep apnea, musculoskeletal injuries and stress. Health promotion programs have largely focused on changing individual behaviours, with less emphasis placed on the broader contextual factors within the environment that contribute to health and health practices. However, there is growing evidence that effective health promotion strategies must consider both individual and environmental factors. The Purpose. Through a social-ecological lens this mixed methods study explored how the mobile work environment supports or hinders health and health behaviours amongst long-haul truck drivers in Manitoba. Methods. Data were collected through semi-structured interviews with 13 participants, diet and activity logs, and a mobile work environment assessment of the TransCanada and Yellowhead Highways between Manitoba and Alberta. Framework Analysis was used to conduct the thematic analysis. Findings. Individual, occupational and policy level influences on the health and health practices of truck drivers were identified. Actions. This presentation will highlight how Community Health Nurses can incorporate a multi-level social-ecological approach into health promotion planning and programming.

Mental Health on the Prairies

Title: Mental Heath of Long-Haul Truck Drivers: An Unseen Population Driving Through

Abstract:
Mental health challenges can look unique in long haul truck drivers (LHTD). Social isolation, loneliness, and high stress have been recognized as compounding factors that lead to poor mental health; and may contribute to high rates of suicide among young transport workers. The goal of this research was to explore how the mobile work environment supports or hinders health behaviours amongst long-haul truck drivers. Thirteen participants participated in the study. Data sources included qualitative interviews, activity logs and diet logs. The influences on health behaviours were identified through a modified socio-ecological model, focusing on individual, occupational, and policy level drivers to diet, sleep, and physical activity. Mental health was not a focus of this study, but stress, loneliness, and social isolation arose as key findings. Mental health contributors were rooted in the solo nature of the trucking work with limited opportunities to connect to others. Drivers reported stressors that included road conditions, delivery pressures, and regulations that were perceived to restrict their driving autonomy. As truck drivers are the second most common occupation among Canadian men, and the rates of mental health challenges climbing. This study shows a need for targeted mental health promotion efforts to truck drivers to prevent avoidable injuries rooted in poor mental health and improve quality of life for LHTD.

19th International Congress of Nutrition and Dietetics

Title: Long-haul Truck Drivers' Mobile Work Environment: Perceptions of Healthy Foods

Abstract

Commercial truck driving has been described as an "obesogenic" occupation, with multiple risk factors contributing to unhealthy lifestyles. The prevalence of risk factors for chronic disease is substantial amongst Canadian truck drivers.

Objectives: To identify and describe current perceptions of the barriers and facilitators to healthy nutrition practices of the mobile work environment of long-haul truck drivers. To utilize results to inform knowledge exchange activities for drivers based in a Canadian prairie province. Methods: A concurrent mixed methods design was utilized with a convenience sample of long-haul truck drivers that are employed to drive a trucking route between Manitoba and Alberta. Participants(n=13) took part in individual, semi-structured interviews using open-ended questions that aimed to examine truck drivers' perceptions of the barriers and facilitators to healthy dietary practices while at work. All interviews were recorded and transcribed.

Study participants (n=9) maintained an electronic diet log listing all intake while working one long-haul route. A framework approach to qualitative analysis was applied to identify and characterize themes that emerged from the data. Quantitative data analysis was carried out using EXCEL to generate descriptive statistics and summarize dietary intake data.

Results: Food and nutrition literacy was a key theme identified as a barrier to healthy eating for the study participants. Nutrition education was further perceived as a means to facilitate healthier eating for participants. Discussion: Nutrition and food literacy underpin health literacy. Addressing food and nutrition literacy is paramount for improving the work environment and health of Canada's long-haul truck drivers. Meeting individuals where they are at with learning needs is critical to uptake of healthier eating behaviours. The long-haul truck driver would benefit from credible, relevant knowledge about healthy food choices. Tailored nutrition messages using appropriate platforms (i.e. podcasts, portable truck-friendly education materials) will aid in facilitating healthier eating in the mobile work environment of the long-haul truck driver.

Master Slide Deck for Presentations

1

Land Acknowledgment

We respect the treaties that were made on these lands and acknowledge that Brandon University is located on Treaty 2 Lands. On behalf of Brandon University, I welcome you to the traditional homelands of the Dakota, Anishanabek, Oji-Cree, Cree, Dene and Metis peoples. Brandon University has campuses on both Treaty 1 and Treaty 2 territories.

2

Acknowledgments

WCB Workers Compensation Board of Manitoba

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A sincere thanks to the participants for sharing their stories, their insights, and their time.

3

Research Team

Catherine Baxter RN. PhD, Neil Cooke M.Ed., Carla D'Andreamatteo RD. MSc., Joel Krentz PhD.

Research Assistants: Danica Fitzsimmons, Caroline Mullins, Jasmine Bhasin, Jesse Windsor, Tara Lynn Frykas, Riley Hammond

4

Advisory Committee

Aaron Dolyniuk
David Linton
Danielle Tyszuk
Garth Pitzel
Jake Sticka
Michelle Mialkowski
Gail Archer-Heese
Laura Harder

Manitoba Labour Market

- Transport Truck Drivers – one of the top 10 occupations with the highest number of openings and highest labour market gap. (Government of Manitoba, 2024)
  - In 2021, 17,200 transport truck drivers were employed.
  - Estimated openings between 2022-2026
    - Expansion demand: 2,320 + replacement demand: 1,980 = 4,300
    - Expected annual shortage = 470
- Demographics:
  - 97% of drivers are male (Canadian Trucking Alliance, 2019)
  - Average age in 2021: 47 years old (Government of Canada, 2023)

Background

- Long-haul truck drivers have been identified as a high-risk population for obesity, cardiovascular disease, diabetes, sleep apnea, musculoskeletal injuries depression and stress (Batson et al., 2022 Crizzle, et. al., 2017, Crizzle, 2020, Crizzle et al., 2020).
- Sedentary work, number of hours of sleep, limited opportunities for physical activity and unhealthy eating patterns all contribute to the onset of chronic conditions among truck drivers (Apostolopoulos et. al. 2011, Puhkala et. al. 2015).
- Workplace health promotion programs have largely focused on changing individual worker behaviours, with less emphasis placed on the broader contextual factors within the environment that contribute to poor health practices (Chu et al. 1997; Lindgard & Turner, 2017).

7

Ecological Approach

Ecological approaches to workplace health promotion are designed to address the complex interdependencies between individual health practices and aspects within the work environment.

An ecological perspective that targets both workers' behaviours, as well as environmental determinants of health, has been recommended as a more effective approach to health promotion programming amongst construction workers (Lindgard and Turner, 2017) and long haul truck drivers (Lemke et. al. 2016).

The ecological framework described by Lingard and Turner (2017), will guide this research. Determinants of health-related behavior will be examined to identify both *individual-level influences* as well as *environmental level influences*.

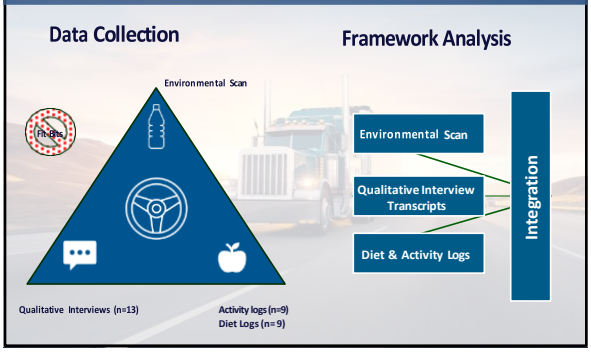
8

Research Objectives

1. To describe how the mobile work environment supports or hinders healthy lifestyle practices amongst long haul truck drivers.
2. To identify and describe the current health practices of long-haul truck drivers while at work.
3. To identify and describe long haul truck drivers' perceptions of the barriers and facilitators to adopting and maintaining healthy lifestyle practices while at work

9

Mixed Methods Design



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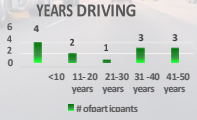
Demographics

Average Age: 48 years

100% self- identified as Male

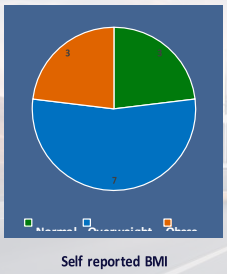
Team Drivers: n=6

Solo Drivers: n=7

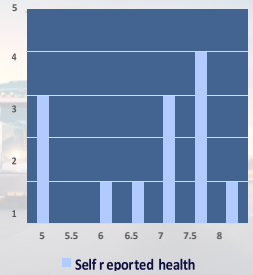


11

Self-Report



Self reported BMI



Self reported health

12

Interviews

- Truck Drivers who drove between Manitoba-Alberta
- Telephone interviews conducted with 13 participants
  - 8 participated in two interviews
    - Initial interview: In depth, qualitative
    - Second interview: Primarily to review diet and activity logs. One participant declined the 2nd interview
  - 5 participated in a single in-depth interview
- Interviews conducted in English & Punjabi

13

Themes

Individual & Family
- Motivation
- Health Status
- Health Literacy
- Cultural Influences
- Family Roles & Responsibilities

Occupational
- Nature of Work
- Mobile Work Environment
- Industry Culture
- Occupational Stressors

Environmental
- Government Policies & Regulations
- Trucking Company Policies Practices

14

Environmental Scan

15

Environmental Scan: Protocol

- TransCanada
  - Two research assistants conducted the Environmental Scan over 4 days.
  - Data collected from a sample of 20 truck stops along the corridor between Winnipeg and Calgary.
  - Truck stops were accessible to LCVs
  - Sampled according to geographic region and direction of travel (East or West) & if they were accessible in the direction of travel.

16

Environmental Scan: The Sample

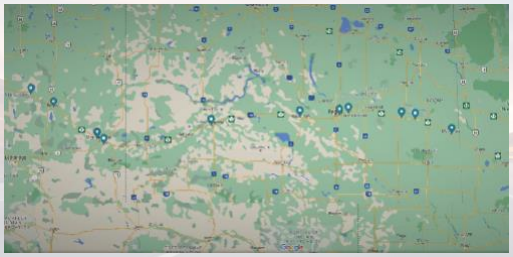
- The TransCanada highway between Winnipeg and Calgary was to divided into highway segments.
- Each segment was comprised of approximately 100 km of highway. Once highway segments were selected, a list of all truck stops was created.
- As multiple sites exist within some highway segments, stratified, random sampling

Province	Direction of Travel		Grand Total
	East	West	
Manitoba	4	2	6
Saskatchewan	3	4	7
Alberta	5	2	7
Grand Total	12	8	20

between Winnipeg and Calgary

17

Geographic Location of Truck Stops



Geographical Distribution of Rest Stop Sample Locations between Winnipeg and Calgary

18

Environmental Scan: Instrument Development

- Data on the mobile work environment was collected using an adapted version of the National Institute for Occupational Safety and Health (NIOSH) observational checklist of truck stop resources (Lincoln et al., 2018).
- The final check list included:
  - Truck stop
    - Indoor amenities
      - Dietary & Non-dietary
    - Outdoor amenities
- In-transit tool
    - Anticipatory Signage; Entrance/exit lanes; Turnouts; Safe temporary parking; Safe overnight parking

19

Environmental Scan

- **The environmental scan addressed the following research question:**
  - **How does the mobile work environment support or hinder healthy lifestyle practices amongst long haul truck drivers?**

20

Overview of Environmental Scan Truck Stop Amenities

- **Dietary Component**
  - **Availability of Healthy Food Items**
    - **Fruits/Vegetables**
    - **Protein Foods**
    - **Grains**
  - **Meals/Meal Ingredients for Purchase**
    - **Prepared meals for purchase**
    - **Restaurants**
    - **Grocery Stores**
- **Non-Dietary Component**

21

Dietary Component
Availability of Healthy Food Items

Fruit and vegetables available, but variety lacking

- 50% (10/20) of truck stops offered fresh fruits, and 40% (8/20) offered fresh vegetables
- Only 5% of rest stops (1/20) had ≥ 5 types of fresh fruits available, and 15% (3/20) had ≥ 5 types of fresh vegetables available

Meat and alternatives available, but variety and plant-based products lacking

- Canned fish (65%; 13/20), eggs (60%; 12/20), nuts and seeds (100%; 20/20), and nut spreads (65%; 13/20)
- Only 10% (2/20) of rest stops offered unprocessed meats, while plant-based meat alternatives were never offered (0%; 0/20)

Whole grains available, but high fiber cereals never offered

- 65% (13/20) or rest stops offered whole wheat/grain flour products which were primarily observed as bread products.

22

Dietary Component
Access to Purchasing Healthy Meals/Meal Ingredients on the Road

Pre-made quick stop meals available, yet limited in variety

- 90% (18/20) of truck stops had entrees or sandwiches that met our criteria (being defined as entrees or sandwiches containing one (1) or more of: fresh produce, healthy protein, and/or whole grains)
- 40% (8/20) of truck stops offered fresh salads
- No truck stop (0; 0/20) had frozen entrees that met our criteria for % daily value of fat and sodium (≤ 15% DV fat and ≤ 15% DV sodium)

Access to functioning restaurants sometimes limited

- 60% (12/20) of rest stops had functioning restaurants

Access to grocery stores missing

23

Dietary Component
Access to Cooking Facilities

Access to Kitchenette/Microwave

- While almost all truck stops had microwave and sink available, none had designated kitchenette space for drivers

24

Dietary Component Key Takeaways

- **While the truck stops observed contained several of the key food items that contribute to a healthful diet, variety was limited amongst these items.**
- **The foodscape for long-haul truck drivers often remains limited to what can be found within the truck stops alone.**

25

Physical Activity & Safety

Figure 2: *Rest stop parking lot observed with an abundance of lighting infrastructure*

- Physical Activity
  - While 10% of truck stops (2/20) provided access to a designated walking path, no truck stops provided any outdoor exercise equipment or exercise area.
- Safety
  - Several key metrics provide the basis for a discussion of driver safety
    - Adequate lighting infrastructure for parking lot was observed at 70% (14/20) of truck stops
    - 85% (17/20) of truck stops were observed to have access to secondary roads safe for walking

26

Physical Activity & Safety

- No truck stops sampled had any designated indoor exercise equipment or area
- Few opportunities for indoor activities during off hours reinforces rest stop "desert"
- Welcoming environment experienced as a blend of site cleanliness, staff friendliness, and amenities available

27

In-Transit Assessment

Sample: Amenities Visible In-Transit			
Code	**Amenity**	**Present (Y/N)**	**Additional Notes**
01*	Entrance/Exit Lanes Available		
02	Signage [fuel, turnouts, rest areas]		
04	Washroom/waste/recycling		
05	Rest Areas		
07*	Safe parking		
09	Roadside turnouts		
10	Additional Comments		

28

Turnouts

29

Rest Areas

30

Parking

31

Physical Activity

32

Physical Activity

Work related activity accounted for 91% of PA

- Average of 65.26 minutes/24 hours

Leisure activity

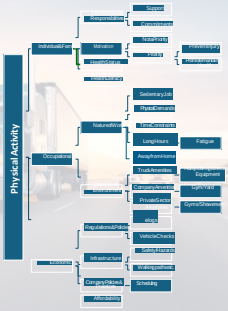
- Range 5-30 minutes/24 hours [n=6]
- No leisure activity [n=3]

Intensity

- 63.5% of activity rated as light
- 17.56% of activity rated as moderate
- 7.66% of activity rated as high

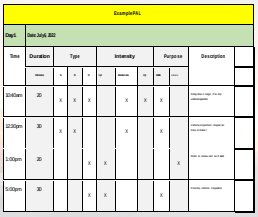
Type of Activity

- 16.67% of Activity described as Stretching
- 20.27% of activity described as resistance
- 62.61% of activity described as cardio



33

Diet & Physical Activity Logs



34

Perception Physical Health

"What does physical health mean to you?

Presence/absence of health issues

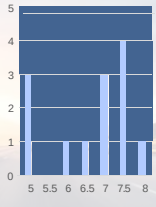
"Well, I don't have any health issues other than I have a bad back." [P01] [7]

Level of physical activity/healthy eating

"I don't eat a lot of crap. Like, I'm careful about what I eat and how much I eat, and when I'm at home, my wife and I we go for walks and I don't like to sit in front of the TV all the time". [P12] [7]

Ability (or not) to do what they want and need to do

"For me it's physical mobility and just generally staying on top of the basic health for aches and pains, so that I can still do the physical labour required even though I'm not as active as I used to be when I was in my 20s." [P11] [5]



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- While 10% of truck stops (2/20) provided access to a designated walking path, no truck stops provided any outdoor exercise equipment or exercise area.
- 85% (17/20) of truck stops were observed to have access to secondary roads for safe walking.
- No truck stops sampled had any designated indoor exercise equipment or area
- Few opportunities for indoor activities during off hours reinforces rest stop "desert"

36

Physical Activity

Truck stop parking lot observed with an abundance of lighting infrastructure.

Truck stop with washroom &shower facilities.

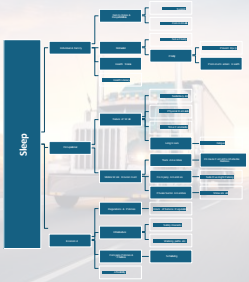
- Individual & Family
  - Motivation
  - Family responsibilities/family support
  - Health literacy
- Occupational
  - Sedentary job
  - Work related activity
  - Time pressures
  - Truck stop amenities
  - Employer supports
- Economic
  - No safe place to walk [Rest stops]

37

Sleep

38

Sleep



39

Sleep

- "You're getting sleep, but you're not getting a good night's sleep" [PA] [Rated sleep 5]
- "Sometimes pretty good, sometimes not so good. It's variable. It all depends on how much Tylenol I take. I take about four Tylenol, I can usually sleep about six hours, six and a half hours nonstop. But if I don't take any, I'll be up at two". [PD]
- "I can't say I have any issues related to sleep. Even when I am in the truck, once I eat my meal, once I eat roti, and drink lassi (buttermilk). It takes half an hour - 45 minutes as the food starts to digest and I start feeling lethargic. And soon after I am sound asleep. I won't be able to tell you when my partner pulled over, or pressed on the brakes, I am in such deep sleep that I just can't tell what's going on around me. [PE]
- I'd say it's the same as if I'm at home. Doesn't matter where I'm sleeping. It's usually around a six. Maybe a seven. I don't sleep very well. I am tired quite often during the day, but not to the point where I feel I'm at risk of dozing off. [PC]

- Individual/Family
  - Health Status (Sleep Apnea)
  - End of day routine
- Occupational
  - Truck Amenities
  - Irregular Schedules
  - Team/Solo Drivers
- Economic
  - Safe Overnight Parking
  - Hours of Work

40

Nutrition

41

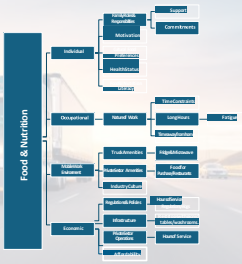
Diet & Physical Activity Logs

Day	Date:	
Time of Meal/Snack	Type of Food or Beverage Consumed If the food has a brand name, make note of it Note the method of preparation if possible Make note of any beverages consumed with each meal/snack	Photo Complete
Breakfast		
AM Snack		
Lunch		
PM Snack		
Dinner		
Evening Snack		
Other Food/ Beverage Consumed Not Included Above		

42

Food & Nutrition

- **Drivers brought the majority of food from home & reported purchasing very little food on the road.**



43

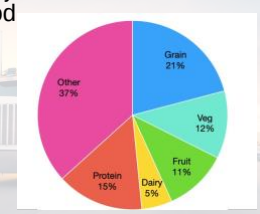
Food & Nutrition

- Individual
  - Food & nutrition literacy
  - Partners often cooked meals
  - Motivation
  - Cultural food preferences
- Occupational
  - Fridges & microwaves in trucks
  - Limited variety of healthy choices available
  - Time pressures
- Economic
  - Parking challenges
  - Limited hours of restaurants
  - Affordability of healthy food choices

44

Food & Nutrition

- Summary (n=9) of dietary intake based on food categories:
  - Protein
  - Grain
  - Vegetables
  - Fruit
  - Dairy
  - Other



45

Food & Nutrition

Key to understanding nutrition choices and knowledge translation needs based on the results of this project:

Food and Nutrition Literacy

Nutrition literacy: the degree to which individuals have the capacity to obtain, process, and understand nutrition information and skills needed in order to make appropriate nutrition decisions.

Taylor, et al. Nutrition literacy predicts adherence to healthy/unhealthy diet patterns in adults with a nutrition-related chronic condition. Public Health Nutr. 2019 Aug;22(12):2157-2169.

Food literacy: the knowledge, skills, and attitudes necessary to make informed decisions about food and its impact on health.

Silva, et al. Nutrition and Food Literacy: Framing the Challenges to Health Communication. Nutrients. 2023; 15(22)4708.

46

Food & Nutrition Literacy

- Perceived Healthiness of Foods/Nutrients

  "The snacks that I'll get; I'll try and stay away from chocolate bars. I know chips aren't the healthiest thing either but it's not all sugar either, so I'll maybe get a bag of chips or tacos or some sort of meat sticks or something that's just not pure sugar." (P11)

- Perceived Barriers to Healthy Eating (Mobile Work Environment)

  "…there aren't enough options available…if you want to buy healthy diet options, it isn't cheap and is very costly. Everyday every driver can't afford it." (P06)

47

Food & Nutrition Literacy

- Nutrition Knowledge (Food and Behaviours)

  "I don't know what classifies as healthy really like, you know, the healthiest thing I see on a menu in the morning is porridge. I don't even know if that's healthy." (P01)

  "By eating home cooked, I never ever, I mean ever, eat in a restaurant...restaurant food as we all know, is certainly not classified as being very healthy…as a way of avoiding that…started cooking…All cooked in a way that is a lot healthier I would say, than it is when it comes out of a restaurant." (P02)

  "Yeah, they say sometimes when we stop at the Tims, it's better to drink more coffee than steep tea and lower your steep tea intake." (P08)

48

Mental Health

49

Mental Health Background

- Long haul truck drivers can be seen as a vulnerable population for mental health concerns like depression, anxiety, and suicide (Xia et al., 2020, Apostolopoulos et al., 2016, & van Vreden et al., 2022)
- Inconsistent sleep routine, high and chronic stress, extensive social isolation, and disconnect from the truck driving community and one's family, creates circumstances for mental health challenges to arise (Apostolopoulos et al., 2016, Johndon, 2021, Guest et al., 2020, & Shattell et al., 2012.).
- Workplace health promotion programs have largely focused on changing individual worker behaviours, with less emphasis placed on the broader contextual factors within the environment that contribute to poor health practices (Chu et al. 1997; Lindgard & Turner, 2017).

50

Mental Health

- **Solo drivers spent the majority of their off-duty time alone in their truck.**
  - Screen time, truck self contained
  - Truck stops: restaurant hours reduced & lounges were not being utilized [Environmental Scan]
- **Some drivers spent hours on the phone talking to spouse while driving.**
- **Several drivers "pushed" to the limit of the allowed hours of service.**
- **Worked as many hours as possible to**

51

Influences on Mental Health Promotion

Individual
- Family Roles and responsibilities
- Motivation
- Health Status
- Mental Health Literacy

Occupational
- Nature of Work [Time pressures; Long hours of driving [Fatigue & Stresses of Driving]; Time away from home
- Mobile Work Environment [Truck Amenities – Entertainment; Private Sector Amenities [Hours of Operation/Lounges etc.]; Trucking Company Amenities – Safe Parking/gyms]
- Industry Culture: [Trucking community/masculine work culture]

Economic
- Government Policies & Regulations [Hours of Service Regulations/elogs]
- Private Sector Services
- Infrastructure [Parking/Road Conditions]
- Employer Policies and Regulations [Scheduling/Policies to Support the driver's right to decide.

52

Perceptions of Mental Health

Unsure/Knowledge Gap

"That's a tough one because I'm a fairly positive guy so I don't rightly have a direct answer for that. I think people get too enveloped in their own issues. I know people that suffer from depression and stuff like but I don't understand it. I don't pretend to try to understand it. I try to wake up every day in a good mood. For me, it's just get over it"

Stress & Coping

"Everybody's got stress. It's just trying to figure out how to manage that stress and know when to let it go. And you know, think on the positives and work through the negatives. Just don't sit there and concentrate on all the bad things that are happening. You look in the good stuff too. So I don't know, I guess that's the best way I can describe it for me"

Cognitive Abilities

"I think its really important The reason being that we are pretty much on the road for 24 hours. We drive at 100km/hr, which is a high speed, so if we are mentally healthy the better, we can concentrate when we are on the road and our driving. So, I feel it's really important"

53

At Risk for Loneliness

- Truck Drivers are at risk for loneliness and social isolation (especially solo drivers)
- Driven by: (Menec et al., 2019; Kening et al., 2020; Liu et al., 2021)
  - ☐Industry culture/ Masculine work culture
  - ☐Low health literacy
  - ☐Age

54

Stress

- Driver's reported high levels of stress associated with work.

"*It's one thing when you are sure of where you are going to stop and park for the night. Even if you have half an hour left from your 'driving' hours and you have 10 mins drive ahead of you to get to the location. I am driving in a relaxed state, as there is this sense of surety that when I'll reach the location, I'll have a parking spot available to me. But now let's say if upon reaching the location, I don't find a place to park. I have 10 min of 'driving' time remaining, in that situation it is so stressful as I have two trailers attached to my truck, so I can't just park anywhere" [PI].*

55

Barriers to Maintaining a Healthy Lifestyle

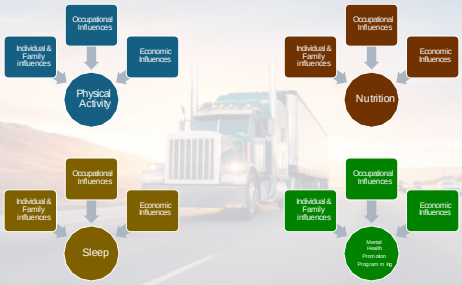
56

Mental Health Discussion

- Our research validates previous research that mental health challenges are grounded in occupational drivers like time away from home, time pressures, driving conditions and social isolation (Heaton et al., 2017 & Shattell et al., 2012).
- Our participants used coping strategies like calling a friend, while other studies identified the use of illegal stimulants and engaging with sex workers to combat the stress of driving (Apostolopulos et al., 2016).
- This research adds to the literature by identifying unique characteristics of the Canadian work culture

57

Implications for Health Promotion Programming



58

Implications

- Health promotion requires a multilevel approach.
- Health in all Policies
- Knowledge Translation Activities directed to all three levels.
  - Individual [Education Modules, Podcast, Newsletters]
  - Occupational [MTA/RPM Trucking Safety]
  - Economic [A Forum for Government, Trucking Companies, & relevant stakeholders].

59

Conclusions & Recommendations

Conclusion: Improvements to infrastructure are needed to support the health & safety of long-haul truck drivers.

- **Recommendation**: Additional rest stops (with green space, access to walking paths, washroom facilities, entrance/exit lanes & parking designed for LCVs) are developed along the TransCanada & Yellowhead Hwys.
- **Recommendation:** Turnouts are placed at regular intervals along the all major truck routes.
- **Recommendation:** Safe places for trucks to park [overnight and short stops] are created.
- **Recommendation:** Highway maintenance [snow clearing/road surface] **is prioritized and actioned to ensure** safe highway conditions.

60

Conclusions & Recommendations

Conclusion: Amenities that support health & health promotion within the mobile work environment are not always available &/or accessible to truck drivers.

Recommendation: Government & the private sector work collaboratively to create a healthier mobile work environment that includes increased access to/availability of:

- Healthy Food Options/Accessible Parking
- Showers/Gyms/Outdoor walking paths
- Safe overnight parking
- Truck Amenities – Eg. Food Prep/Comfortable Mattress/CPAP machines…

61

Conclusions & Recommendations

Conclusion: Many truck drivers "push to the limit" on hours of service.

- **Recommendation:** Education on the hours-of-service regulation, is included in all truck driver training programs.
- **Recommendation:** Trucking companies encourage drivers to take scheduled breaks and adopt a culture that supports health and health promotion.
- **Recommendation:** Trucking companies develop policies that support the drivers right to determine if they and/or conditions are safe to drive.
- **Recommendation:** Delivery times are scheduled for a wider window to allow for delays etc.

62

Conclusions & Recommendations

Conclusion: "Other drivers" are a significant source of stress for truck drivers.

- **Recommendation**: Provide education to the general public on safe driving around trucks & heavy vehicles.

63

Limitations

- Recruitment Challenges
  - Small sample size; All Male
  - Revise Research Protocols
    - Diet & Exercise logs
- Self-reported Data

64

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