



**Can Truckers
Maintain an Active
Life? Multistakeholder
Partnerships for
Environmental
Interventions**

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BACKGROUND

- **Employment in the trucking sector has been linked to particularly high morbidity and mortality rates**
- **The importance of environmental determinants in shaping health behaviors is well established**
 - Yet, the role of the transportation work environment **(TWE)** remains neglected
 - TWE: government regulations, trucking operations, corporate policies, built environment
 - TWE: labor intensive, highly-sedentary, high-stress → an overall health-compromising context
- **TWE impacts truckers' physical/recreational activities **(PRA)**, and eating behaviors, which affect personal health and public safety**



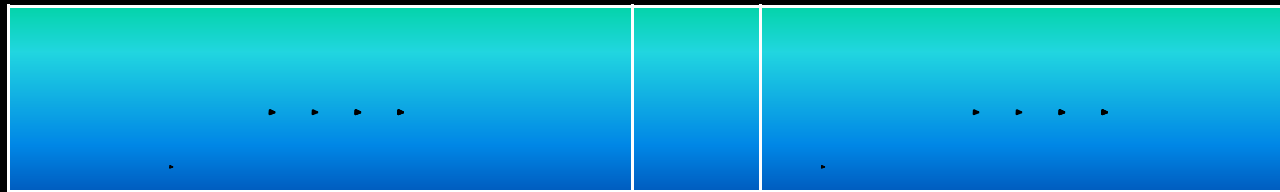
BACKGROUND

- **Truckers are at high risk for excess weight-gain, obesity, and associated comorbidities**
- **Cross-sectional studies have corroborated these risks:**
 - ***85% are overweight or obese***
 - ***83% of truckers have unhealthy eating patterns***
 - ***54% are hypertensive***
 - ***8% exercise regularly***



BACKGROUND

- Many truckers suffer from hyperlipidaemia, CVD, type-2 diabetes, metabolic syndrome, and cancer
- High on-the-job fatality rates:



- Links established between truckers' BMI and accidents/crashes
- Life expectancy:

(unionized drivers = 63 yrs, independent drivers = 57 yrs)

- Limited access and utilization of healthcare



BACKGROUND

- **Exposure to the TWE and obesity are driving forces behind disease and injury for truck drivers**
- **Elevated BMI and associated comorbidities negatively impact work performance (i.e., medical claims, absenteeism)**
- **Understanding how TWE influences truckers' work and health is critical to the delineation of:**
 - **excess weight gains**
 - **obesity-associated comorbidities,**
 - **accidents and crashes, and**
 - **diminished work productivity**



BACKGROUND

CENTRAL WORKING HYPOTHESIS

Truckers' **excess weight gains** and associated adverse outcomes—such as **obesity-associated comorbidities, accidents/crashes,** and **diminished work productivity**—are predominantly attributable to a modifiable TWE, which severely **hinders chances for reasonably active/healthy living.**



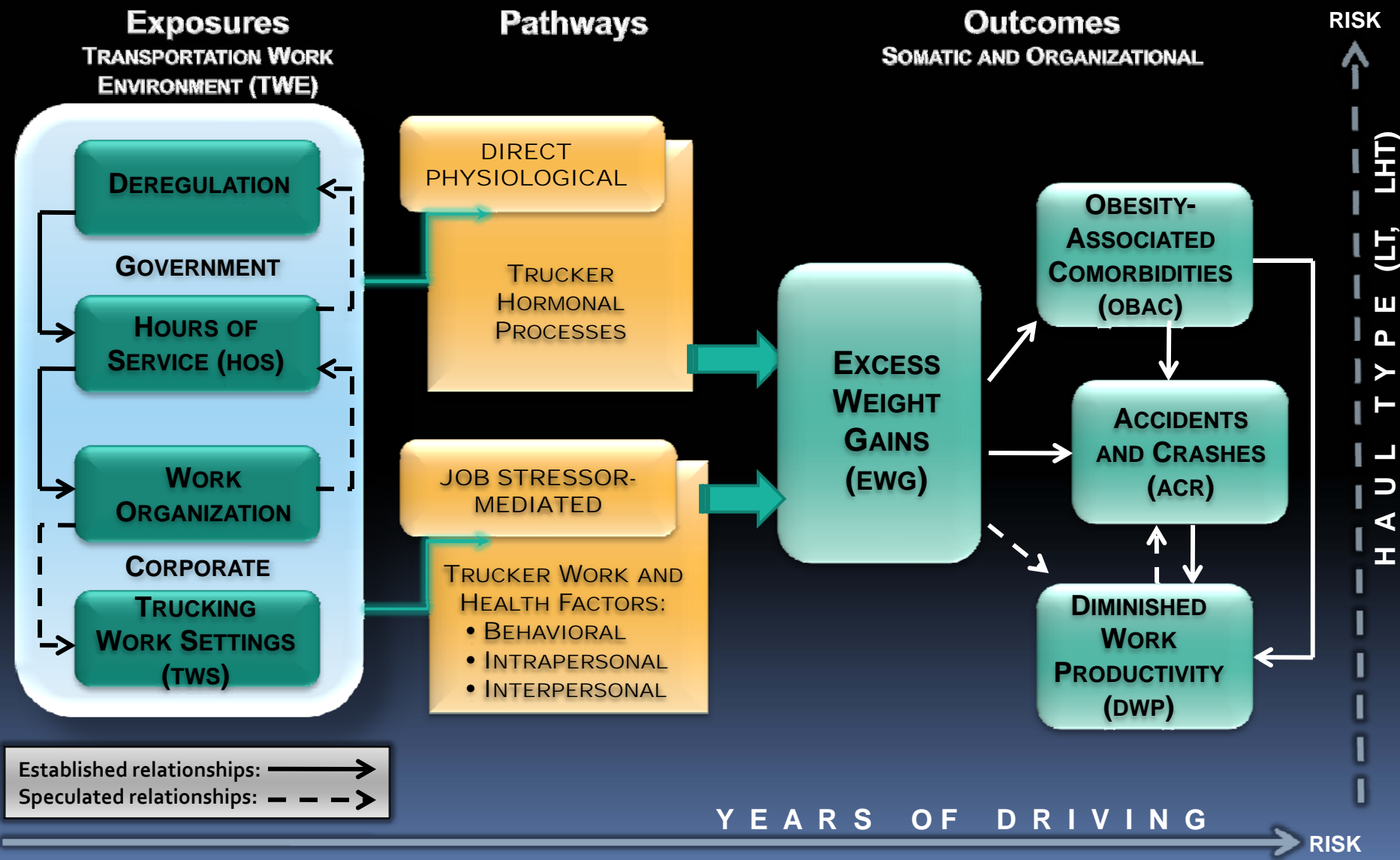
OBJECTIVES

Grounded in ecosocial perspectives, this work aims to:

- 1. Examine how the environmental attributes of trucking work settings (TWS), influence truckers' PRA**
- 2. Introduce a multilevel health promotion paradigm that is tailored for truckers**
- 3. Propose new directions for epidemiological research on trucker obesity and related adverse outcomes**

CONCEPTUAL FRAMEWORK

Trucker Obesity, Safety, and Performance





CONCEPTUAL FRAMEWORK

Trucker Obesity, Safety, and Performance

TRANSPORTATION WORK ENVIRONMENT

GOVERNMENT:

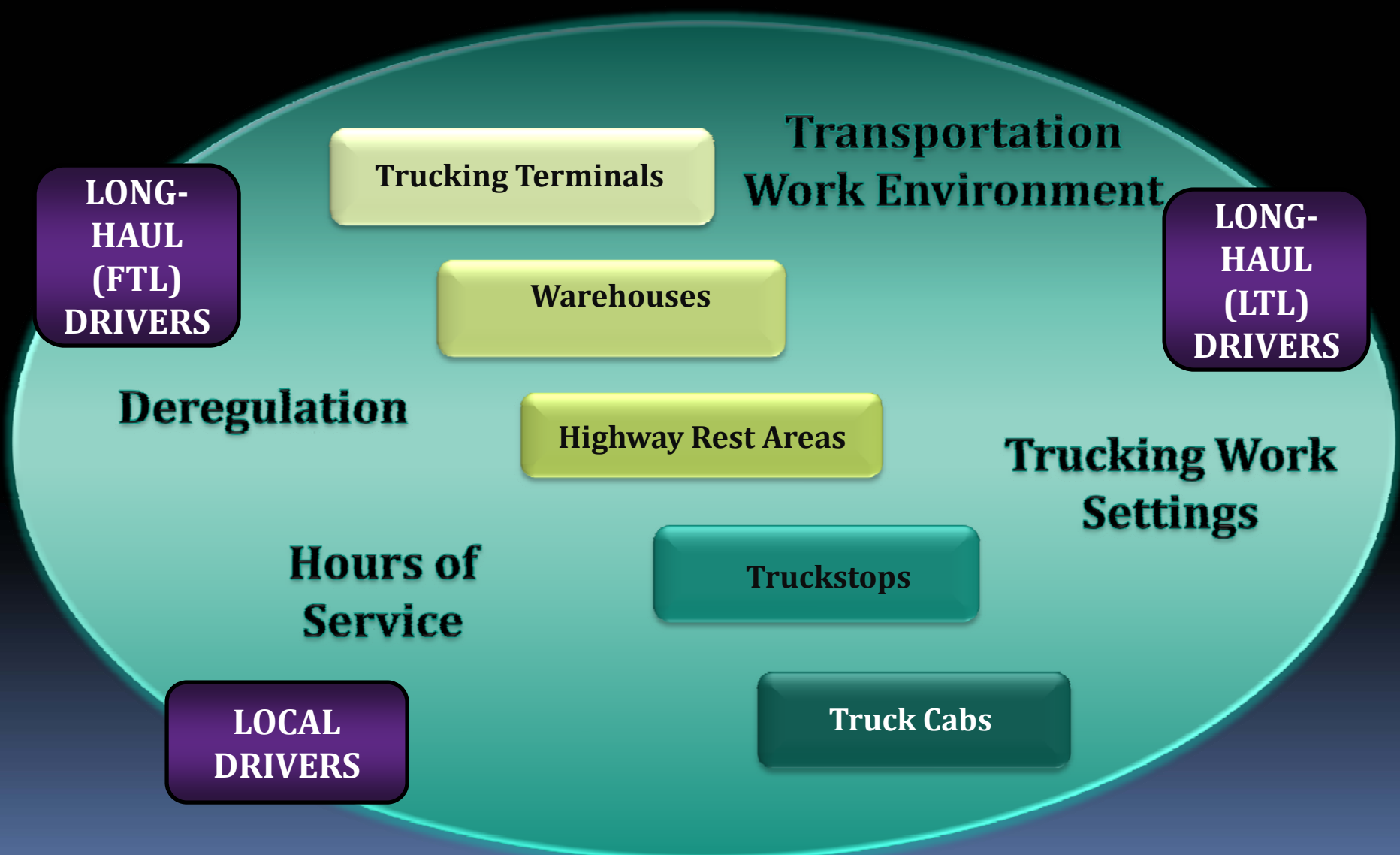
- **Deregulation (led to intense competition among freight companies)**
- **Hours of service (based on 70 hr/8 day limit, driver can work 14 hrs for 5 days in a row = 70 hrs on duty)**

CORPORATE:

- **Trucking work organization (corporate policies, high job demands/low control)**
- **Trucking work settings (main focus of this presentation, include trucking terminals, warehouses, truckstops, highway rest areas, truck cabs)**

RESULTS

Transportation Work Environment and Trucking Work Settings



**Transportation
Work Environment**

Trucking Terminals

Warehouses

Highway Rest Areas

Truckstops

Truck Cabs

**LONG-
HAUL
(LTL)
DRIVERS**

**LONG-
HAUL
(FTL)
DRIVERS**

**LOCAL
DRIVERS**

Deregulation

**Hours of
Service**

**Trucking Work
Settings**



METHODS

- **Sites:** Data collected in south-central NC, near I-85, I-40
- **Sample:** N=25 TWS (8 trucking terminals, 7 warehouses, 8 truckstops, 2 highway rest areas)
- **Instrument:** Healthy Trucking Work-Settings Audit Instrument (HEATWAI)
 - *based on social ecological models and existing tools that assess AL and healthy eating environments*
 - *measures presence of corporate, social, and built environment attributes of TWS that promote PRA/healthy eating behaviors*
 - *5 sections, 250-items in all*
- **Preliminary data analysis:** descriptive statistics, interrater correlation analysis ($K=.87, p<0.0001, CI=0.760, 0.980$)



METHODS

HEATWAI Scales and Subscales

Section 1. Active Living Environment (ALE)	Items (65 total)
ALE <u>Subscale 1</u>: Supports for PRA in natural environments and grounds surrounding TWS (e.g., green space, vegetation in surrounding areas)	13 items
ALE <u>Subscale 2</u>: Supports for PRA in built environment (e.g., building design, stairs)	14 items
ALE <u>Subscale 3</u>: Resources and facilities that encourage PRA (e.g., outdoor walking areas)	19 items
ALE <u>Subscale 4</u>: Exercise and fitness facilities (e.g., dual use spaces with exercise equipment)	19 items



METHODS

HEATWAI Scales and Subscales

Section 2. Healthy Food Environment (HEFE)	Items (128 total)
HEFE <u>Subscale 1</u> : Healthy menu items/options in restaurants with waiters or cafeteria style venues	25 items
HEFE <u>Subscale 2</u> : Healthy menu items/options in fast food restaurants	18 items
HEFE <u>Subscale 3</u> : Healthy items/options in vending machines	50 items
HEFE <u>Subscale 4</u> : Healthy items/options in convenience stores/mini marts	21 items
HEFE <u>Subscale 5</u> : Healthy-diet-supportive resources in lunch/break rooms/driver lounges	14 items



METHODS

HEATWAI Scales and Subscales

Section 3. Health Supportive Social Environment (HESSE)

Items
(15 total)

HESSE Subscale 1: Social and policy supports for PRA (e.g., opportunities for onsite physical or recreational activities, ping-pong table)

7 items

HESSE Subscale 2: Social and policy supports for healthy eating and weight management (e.g., affordable and healthy options)

8 items



METHODS

HEATWAI Scales and Subscales

Section 4. Health Information Environment (HEIE)	Items (11 total)
HEIE <u>Subscale 1</u>: Evidence of media promoting PRA (e.g., bulletin boards, flyers, brochures on PRA opportunities/benefits)	5 items
HEIE <u>Subscale 2</u>: Evidence of media promoting healthy eating and weight management (e.g., same for healthy eating, weight management)	6 items



METHODS

HEATWAI Scales and Subscales

Section 5. Health Supportive Community Environment (HESCE)

Items
(24 total)

HESCE Subscale 1: PRA amenities and opportunities in community surrounding TWS (e.g., walking designated areas)

13 items

HESCE Subscale 2: Healthful food options in community surrounding TWS (e.g., greengrocers, healthy take-out options)

11 items



METHODS

Healthy-Living Support Rating

- Resources and environmental characteristics that were considered to promote PRA and healthy eating were recorded in terms of their number and condition
- Points were assigned to a particular category for presence of characteristics
- Scorecard was created to permit total score for entire TWS and for summary scales and subscales

HEATWAI score ranges

90-100% of max possible score

75-89.9% of max possible score

50-74.9% of max possible score

35-49.9% of max possible score

<35% of max possible score

Support rating

Fully supportive of active/healthy living

Mostly supportive

Partially supportive

Scarcely supportive

Not-at-all supportive

RESULTS

Active-Living-Promotive Attributes of TWS

HEATWAI Scales/Subscales	TRT	WAR	TRS	HRA	Total/ Max Score	AL Support Rating
<i>ALE Subscale 1: PRA-promotive attributes of natural environment and grounds (green spaces, vegetation)</i>	24	14	40	16	94 out of 325	28.9% <i>not at all supportive</i>
<i>ALE Subscale 2: PRA-promotive attributes of built environment (buildings, parking lots, loading docs)</i>	40	28	16	4	88 out of 330	26.7% <i>not at all supportive</i>
<i>ALE Subscale 3: PRA-promotive resources and facilities (walking/running trails, recreational facilities)</i>	24	14	72	16	126 out of 469	26.9% <i>not at all supportive</i>
<i>ALE Subscale 4: Equipment/exercise/fitness facilities (dual-purpose spaces, exercise equip)</i>	0	0	0	N/A	0 out of 437	0% <i>not at all supportive</i>
ACTIVE LIVING INDEX						20.6%
<i>HESSE Subscale 1: Health supportive social environment (fitness memberships, health risk appraisals)</i>	16	7	0	N/A	23 out of 276	8.2% <i>not at all supportive</i>
<i>HEIE Subscale 1: Health information environment (bulletin boards, brochures, fliers with PRA messages)</i>	8	0	16	0	24 out of 125	19.2% <i>not at all supportive</i>
<i>HESCE Subscale 1: Health supportive community environment (neighborhood with PRA amenities)</i>	16	14	16	0	46 out of 325	14.2% <i>not at all supportive</i>



RESULTS

Do TWS Promote Active Living?

TWS	Total/ Maximum Possible Score	AL Support Rating
Highway Rest Areas	36 out of 102	35.3%
Truckstops	160 out of 760	21.1%
Trucking Terminals	128 out of 760	16.8%
Warehouses	77 out of 665	11.6%
ALL TWS	401 out of 2,287	17.5%

*Not-at-all
Supportive*



DISCUSSION

- **REPORT CARD for TWS = F**
 - not all are the same , but the trucking sector emerges as an overall underserved workplace
 - provide poor access to resources and facilities for PRA
 - offer poor supports for healthy eating
 - rank very low in environmental supports for healthful living (food and physical activity)
 - healthy living ‘deserts’ and not conducive to healthy behaviors



DISCUSSION

- **While some improvements might be prohibitive for small companies, larger truckstops or warehouses could provide them**
- **Trucking companies also stand to benefit greatly by making improvements:**
 - **healthier human resources**
 - **more productive human resources**
 - **lower medical expenses**
 - **lower turnover**
 - **fewer accidents and crashes**
 - **fewer workman's comp/insurance claims**



DISCUSSION

- **Trucker obesity:**
 - ✓ **Complex problem that needs holistic approaches**
 - ✓ **Understanding complexity is necessary for sustainable solutions**
- **Needed: move *away from* looking at truckers' individual risk factors *to* understanding environmental barriers to truckers' active and healthy living**
- **Needed: prospective and quasi-experimental designs to explore causal pathways toward truckers' ill health**



DISCUSSION

This study is part of a prospective project (both ongoing and planned) that examines:

how possible changes among multilevel environmental (trucking) and individual (trucker) domains affect the incidence and progression of truckers' risk for:

- excess weight gain,***
- obesity-associated comorbidities,***
- accidents and crashes, and***
- diminished work productivity***



DISCUSSION

Integrated HP Paradigm for Trucking

- The current narrow paradigm is based on the individual, fragmented, reactive ('solution packages'), meso-level interventions – primarily focused on safety
- These type of interventions **do not** produce sustainable changes in PRA/dietary patterns and weight management or safety, regardless of workplace
- Needed: environmental-level interventions that focus concurrently on trucker health, safety and performance



DISCUSSION

Integrated HP Paradigm for Trucking

- Workplace health promotion programs—that enable or constrain behaviors—are very promising, offer high return on investment (ranging from \$3.48 to \$5.82 per \$1 spent over a 2-5 year period), lead to healthier employees, and yield a healthier bottom line
- Several trucking companies (Schneider, JB Hunt) have initiated a number of wellness programs
 - While not well-funded, small-scale, compartmentalized, and inefficiently run, they have led to improved individual health, reduced healthcare costs, etc.
 - Many have been discontinued
- *Getting' in Gear* (Federal Motor Carrier Safety Administration) focuses on lifestyle changes
 - **4Rs**: Refueling/nutrition, Rejuvenating/exercise, Relating/social health, Relaxing/mental health



DISCUSSION

Integrated HP Paradigm for Trucking

- The “multi” approach to trucker health promotion programs is comprehensive and delves concurrently into the health, safety, and productivity of truckers. This paradigm is grounded in:
 - ✓ Ecosocial perspectives of occupational health
 - ✓ Sorensen & Barbeau (OHS + WHP)
 - ✓ Goetzel (health, safety, and productivity)
 - ✓ Belzer, Mayhew & Quinlan (competitive pressures, supply chain rationalization, economic organization)

Approach is:

- Multistakeholder: unions, trucking companies, employees, health insurance firms, NIOSH, FMCSA, etc.
- Multilevel: trucker, TWS, corporate, government, etc.
- Multicomponent: health, safety, productivity
- Multirisk: diet, exercise, stress, posture, accidents, sleep, HOS, total work hours, smoking, alcohol, drugs, etc.

PROPOSED Trucker Health-Safety-Productivity (THSP) paradigm:
coordinates and integrates 3 parallel pathways to promote trucker health and lay the groundwork for a health supportive TWE



CONCLUSIONS

- **Trucking work settings → healthy living ‘deserts’**
- **We need cohort and experimental designs that incorporate individual and environmental domains**
- **We need new intervention paradigms that incorporate health, safety, and productivity**

THANK YOU!

