



WASHINGTON STATE UNIVERSITY
College of Nursing

Employer Perspectives on Wildfire Smoke Hazards in the Agricultural Workplace

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UW Professional Training Opportunities Program (PTOP)
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Introduction

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Faculty support:

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- Julie Postma, RN, PhD, WSU CON
- Eddie Kasner, PhD, UW, PNASH

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Program of research

STUDY 1:

- *Agricultural worker perspectives on climate-related occupational hazards and protections*

STUDY 2:

- *Monitoring and communicating wildfire smoke hazards in the agricultural workplace*
⑩ **PTOP Activity:** Employer perspectives on smoke hazards in the agricultural workplace (SURVEY DESIGN & ANALYSIS)

Background

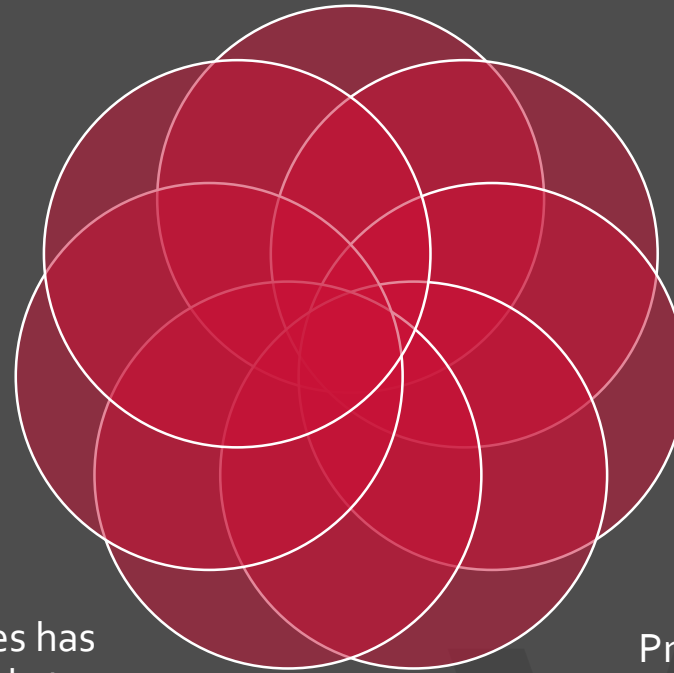
Increased heat, drought and wildfires in the Pacific Northwest.

Particulate Matter 2.5 from wildfire smoke has multiple adverse health implications.

The rule is relatively new, rule has yet to be evaluated, implications are unknown

Workers, employers, and supervisors have unique perspectives on the efficacy, adoption, and implementation of the rule.

WA Dept of Labor & Industries has enacted a Wildfire Smoke Rule to encourage occupational safety and health regarding smoke exposure



Outdoor workers are at increased risk for smoke exposure due high levels of exertion and nature of the work being outdoors.

Proper protective equipment, exposure controls, and training are needed for employees working in wildfire regions

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Study & PTOPT Project Purpose/Aim

Purpose:

- To determine the perspectives of agricultural employers on the source, adoption, and communication of AQI readings, hazardous work conditions, and rule components.

Aim 3: (PTOPT focus)

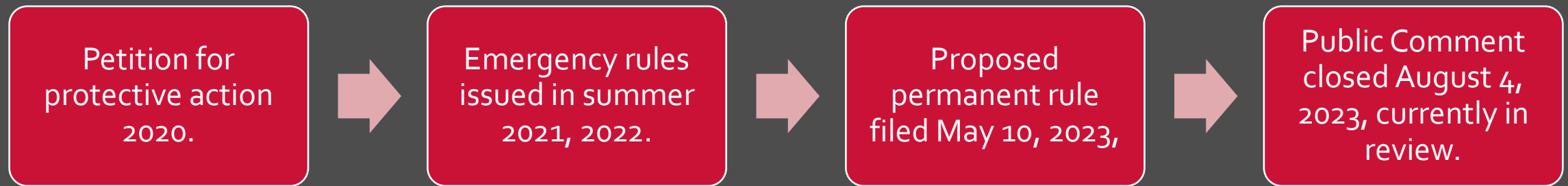
- Characterize factors associated with the likelihood of agricultural employers taking protective action
- Compare workplace roles and predictors of knowledge, education and training related to smoke rule components

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Research Design & Timeline: Exploratory Sequential Mixed Methods



Timeline: WA L&I Wildfire Smoke Rule



Key Components of the Smoke Rule



- Identification of harmful exposures
- Hazard communication
- Information and training
- Exposure symptom response
- Exposure controls
- Respiratory protection

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KI interview prompts:

Ag industry leaders, employers, academic partners

1. *How do you represent agricultural growers in WA?*
2. *Have you heard of the L & I Smoke rule?*
3. *Which sources for Air Quality Monitoring appeal to you/your stakeholders and why?*
4. *How do you/ your stakeholders plan to communicate wildfire smoke hazards to agricultural employees?*
5. *How do you/ your stakeholders plan to train supervisors, field crew chiefs and workers?*
6. *How will you/ your stakeholders know if an employee is showing signs of injury or illness?*
7. *Which of these exposure controls do you think is most realistic to implement in an agricultural work setting (i.e., enclosed structure w/ filtered air, portable HEPA filters, relocation, changing schedule, reducing work intensity, more rest periods)?*
8. *How would you recommend we evaluate if the rule is working for employers and employees in the agricultural industry?*

KI interview findings:

Ag industry leaders, employers, academic partners (N=7)

Attitude & Culture

1. *Owners, growers, managers care about worker well-being*
2. *Personal values indicate how one treats and protects workers*
3. *Agriculture in general is a culture, agricultural labor is also a culture*
4. *Workers take pride in their work and want to be viewed as hardworking*
5. *Workers must be responsible for their own health and safety and not push too hard*
6. *Employers and supervisors should encourage self-care and reporting of symptoms*
7. *There is general fatigue within the industry from so many regulations, trainings, requirements and changes*

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KI interview findings:

Ag industry leaders, employers, academic partners (N=7)

Workplace Logistics

- 1. The demand for agricultural products does not stop for COVID-19 or environmental changes*
- 2. Air Quality readings are known to be inaccurate, but are sufficient for making judgement calls*
- 3. The L & I rule limits employers' ability to act on their best judgement during hazardous conditions*
- 4. Agricultural employers and supervisors deal with multiple problems every day, and often don't have the time to address the smoke hazard issue unless it is happening*
- 5. If the rule is to be enforced as written, then accurate AQI readings are necessary*
- 6. Currently employers are using various sources to obtain AQI readings*
- 7. Suggested exposure controls would be helpful but are not feasible due to remote work locations, access to power, and cost*
- 8. Substandard housing and exposure to poor air quality at home is also an issue*

Survey design & distribution

SURVEY DETAILS

- Inclusion criteria:
 - Work in WA
 - > 18 yrs. old,
 - Supervises outdoor workers >50% of the week
- ~60 questions
- Face and content validity via KI feedback
- Recruitment via AgWeatherNet list serv
- Qualtrics link sent via email



SURVEY CATEGORIES

- Your workplace & role
- Wildfire smoke exposure
- Health & hazards of smoke exposure
- Occ. Health & Safety Regulations
- Air quality monitoring
- Hazard communication
- Symptom recognition & management
- Protective controls & equipment
- Education & training
- Culture of safety
- Demographics

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RESULTS:

Demographics (N=133)

Personal Characteristics of Respondents:

Language:

- 81% reported English as their primary language

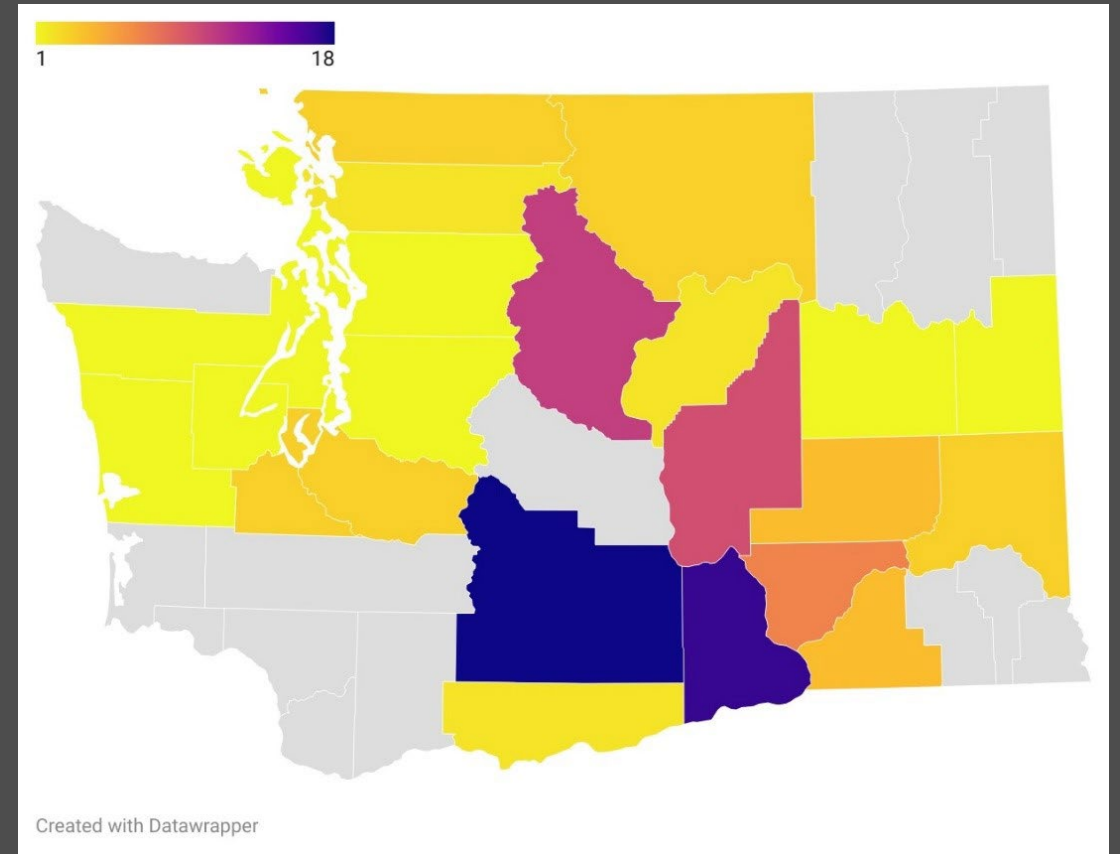
Race/ Ethnicity:

- 63% of our respondents identified as white
- 10% identified as Hispanic

Role:

- 42% identified as owners or growers
- 37% identified as supervisors or managers

All 4 DOH Regions of WA represented



Descriptive statistics

Employment Characteristics:

Crop:

- 28% tree fruit
- 14% potato or row crops
- 13% wine or grapes
- 58% have worked for over ten years with that crop

Outdoor work:

- 48% spend 75-100% of the workweek outdoors June-Sept
- 28% spend 50-74% of the workweek outdoors June-Sept



Descriptive statistics (cont'd.)

Smoke Exposure & Health:

- 87% reported personal exposure to wildfire smoke at work
- 84% reported exposure wildfire smoke exposure among workers they supervise

Conditions impacting respondent health:

- 16% Hypertension
- 11% Asthma

Reported feeling these symptoms after smoke exposure at work:

- 50% irritation of the eyes, nose, throat, or similar
- 23% headache, fatigue, or similar
- 12% respiratory, cough, shortness of breath
- 4% chest pain, irregular heart rate, or similar cardiovascular

Descriptive statistics (cont'd.)



Knowledge Related to Smoke Exposure:

- 30% had not heard of the L&I smoke rule
- 17% reported not knowing where to find the most accurate AQI reading for their workplace
- 13% felt that their AQI reading does not accurately reflect the air quality conditions that those they supervise are experiencing

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Descriptive statistics (cont'd.)

Experiences with Training & Education:

- 35% reported that they have not received training on how to check the AQI
- 28% reported that they have not received training on implementing protective controls
- 33% reported that they have not received training on the health effects of wildfire smoke exposure
- 47% reported that they have not received training on managing workers with smoke-related symptoms

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Next steps

Hypothesis

- There is a difference between growers, managers, and frontline supervisors in knowledge, perception and training on exposure, training and the various components of the wildfire smoke rule.

Analytic plan: Comparative analysis

- Logistic Regression to look at associations between roles and experience with exposure and rule components.

Dissemination:

- Complete manuscript for publication
- Report findings to key informants and stakeholders
- Repeat survey in Spanish targeting mid-level supervisors, crew chiefs, foreman

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Impact & Value

- Inform policy makers on what is working and realistic within the rule
- Identify education and training gaps
- Inform development of training and education tools
- Encourage communication between workers, supervisors and employers
- Washington State can establish itself as a leader in climate adaptation for outdoor workers.



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Knowledge gained as PTOP awardee

- Occupational Health
- Survey design/ Qualtrics
- Research methods
- Data analysis
- Policy evaluation and analysis
- Behavioral change theory
- WA state rulemaking process

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Thank you!

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