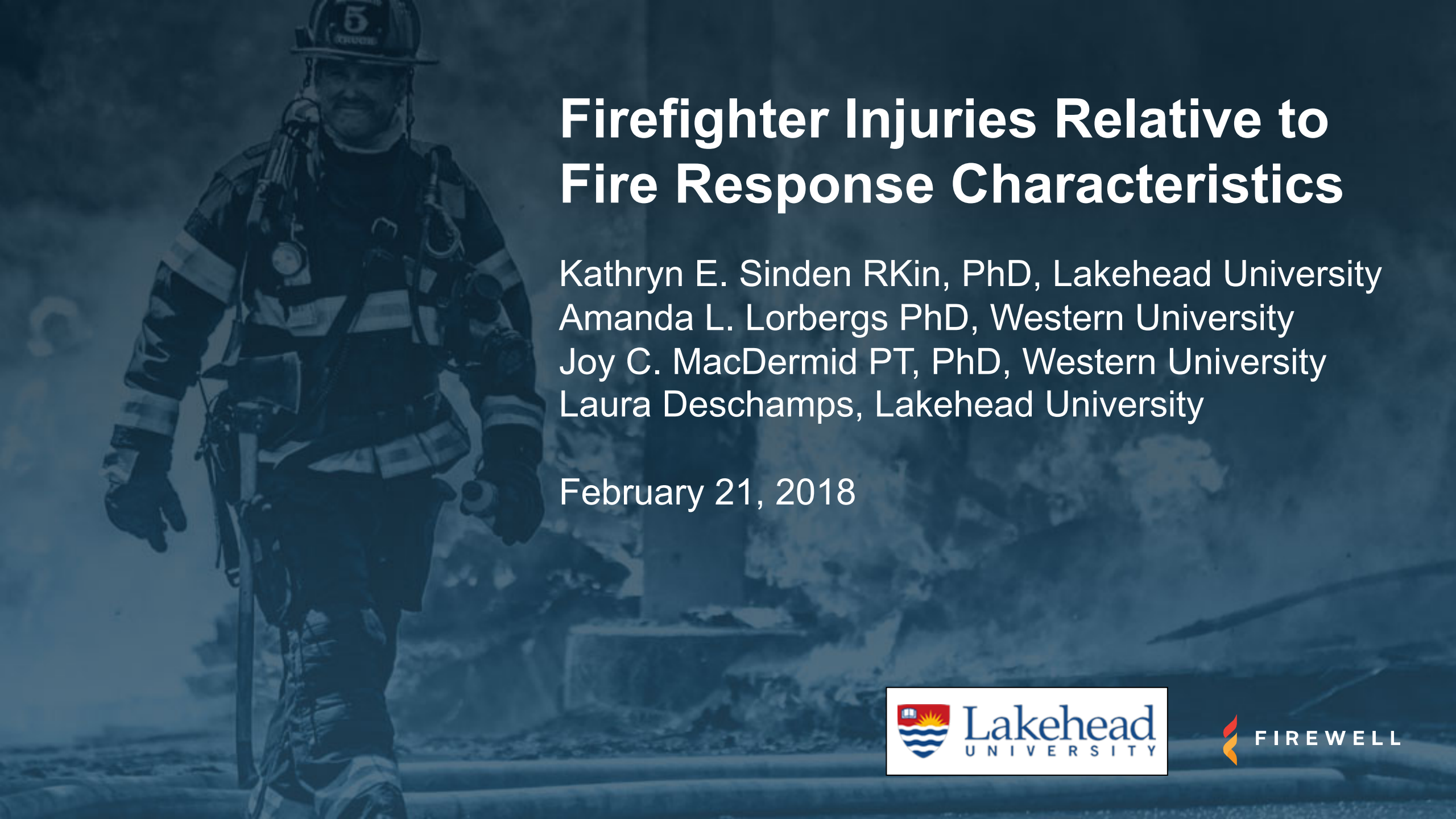

Firefighter Injuries Relative to Fire Response Characteristics

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Our Research Question

OVERARCHING OBJECTIVE:

- To determine the *relationship* between *specific fire response characteristics* (e.g., firefighter personal attributes, personal protective equipment, action taken to manage fire) *and firefighter injuries* (e.g., cause, type) in Canada.

Specific Research Questions:

i. What are the *firefighter injury characteristics* including injury type, injury location, and length of absence from work associated with injury?
ii. How do firefighter *personal attributes* (i.e., height, weight, years of service) relate to firefighter *injury*?
iii. Does firefighter *personal protective equipment* (i.e., helmet, gloves, coat, face shield) worn during emergency response impact firefighter *injury cause and type*?
iv. Do *fire response* characteristics (i.e., crew size, number of victims) impact *firefighter injury*?
v. Does *geographical placement* of the fire service impact *firefighter injury* cause and type?

What Did We Find?

FIREFIGHTER SAMPLE

- 2025 injured firefighters with 14.4 ± 8.6 years of service
- 12% (≤30 years); 51% (31-45 years) and 37% (≥46 years)
- BMI = 27.3 ± 3.6 kg/m^2 (Overweight)

FIREFIGHTER INJURY CHARACTERISTICS

- Most frequent reported *injury type* was 'injury to muscle, ligaments, joints' (45%); *injury location* was the 'head, neck or spine' (11%).

- Over *80% of injuries* reported were categorized as "minor" (injuries requiring less than 1 day off work and / or in hospital) vs. *"serious"* (injuries requiring 16+ days off work and / or hospitalization for 3+ days).

- Longer absences from work appear to be associated with 'head, neck or spine', 'heart attack/stroke', 'bone injury or fracture'

FIREFIGHTER PERSONAL ATTRIBUTES AND INJURIES

- Younger Firefighters (≤30 years) reported more 'wounds, punctures, lacerations', 'asphyxia, respiratory conditions' and 'minor cuts and bruises' vs. middle aged (31-45 years) and older (46 years and older) firefighters

- Younger firefighters reported fewer musculoskeletal injuries vs. older firefighters (36% vs. 47%)

PPE AND FIREFIGHTER INJURIES

- Less severe injuries reported when helmets and boots worn
- Serious injuries reported when boots, helmet and coat worn

FIRE RESPONSE CHARACTERISTICS AND FIREFIGHTER INJURY

- Smaller initial and subsequent crew sizes may be related to more serious injury

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Implications and Next Steps

IMPLICATIONS

- Musculoskeletal disorders (MSDS) represent an important injury burden among firefighters
- Firefighting is an aging workforce
- Differences in injury type and severity may exist across age-groups
- Firefighter PPE may be an important consideration in future injury prevention strategies
- Fire response characteristics (crew size and fire alarm operation) may impact injury severity (length of absence from work)
- Firefighter injuries may increase as the total number of injuries increases at the response scene

NEXT STEPS

- Injury prevention programs for firefighters that target MSD prevention are warranted
  - Impacts on injury type and severity are required
- Contextualize new knowledge with our existing firefighter research partners to verify and incorporate with local data
  - Important as we continue with our research initiatives in development, implementation and evaluation of current evidence-based injury prevention programs.

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