

The skin cancer burden from occupational sun exposure in Canada

Cheryl E. Peters^{1,2,3}, Joanne Kim⁴, Paul A. Demers⁴

¹Department of Health Sciences, Carleton University

²Institut Armand-Frappier, Institut National de la Recherche Scientifique

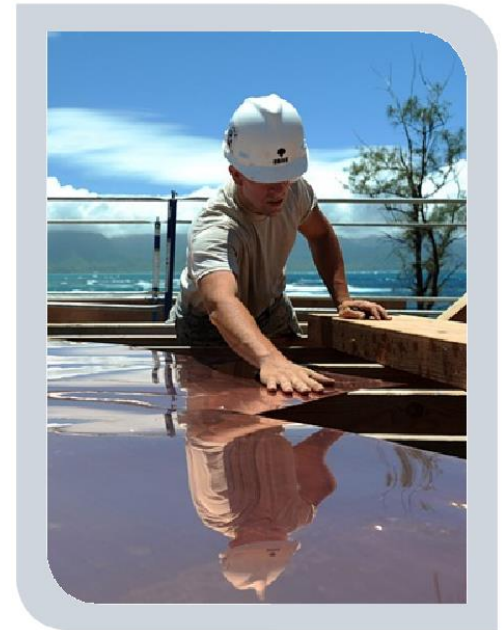
³CAREX Canada, Simon Fraser University

⁴Occupational Cancer Research Centre, Cancer Care Ontario



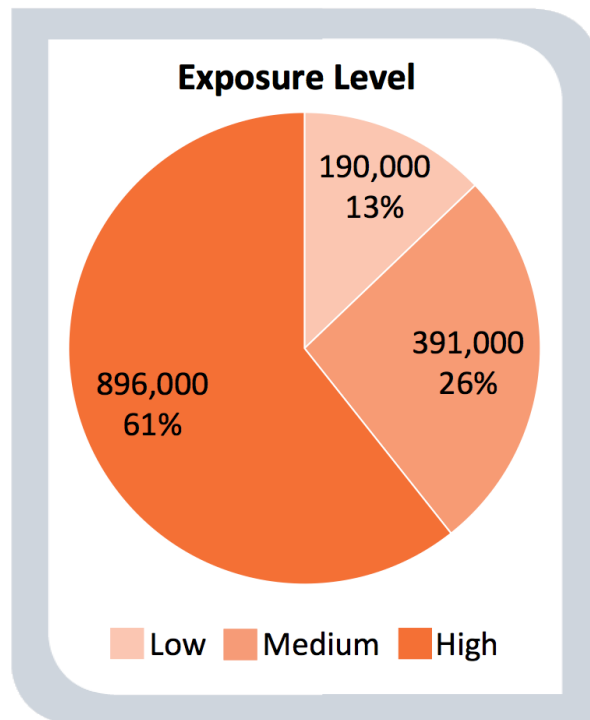
Solar UV Radiation

- Main source of naturally occurring radiation exposure
- IARC Group 1 (definite) skin carcinogen
- Other health effects:
 - Skin cancer
 - Sunburns
 - Heat stress/stroke
 - Thick, scaly skin patches
 - Cataracts
 - Eye lesions and cancer



Who is exposed? What levels are they exposed to?

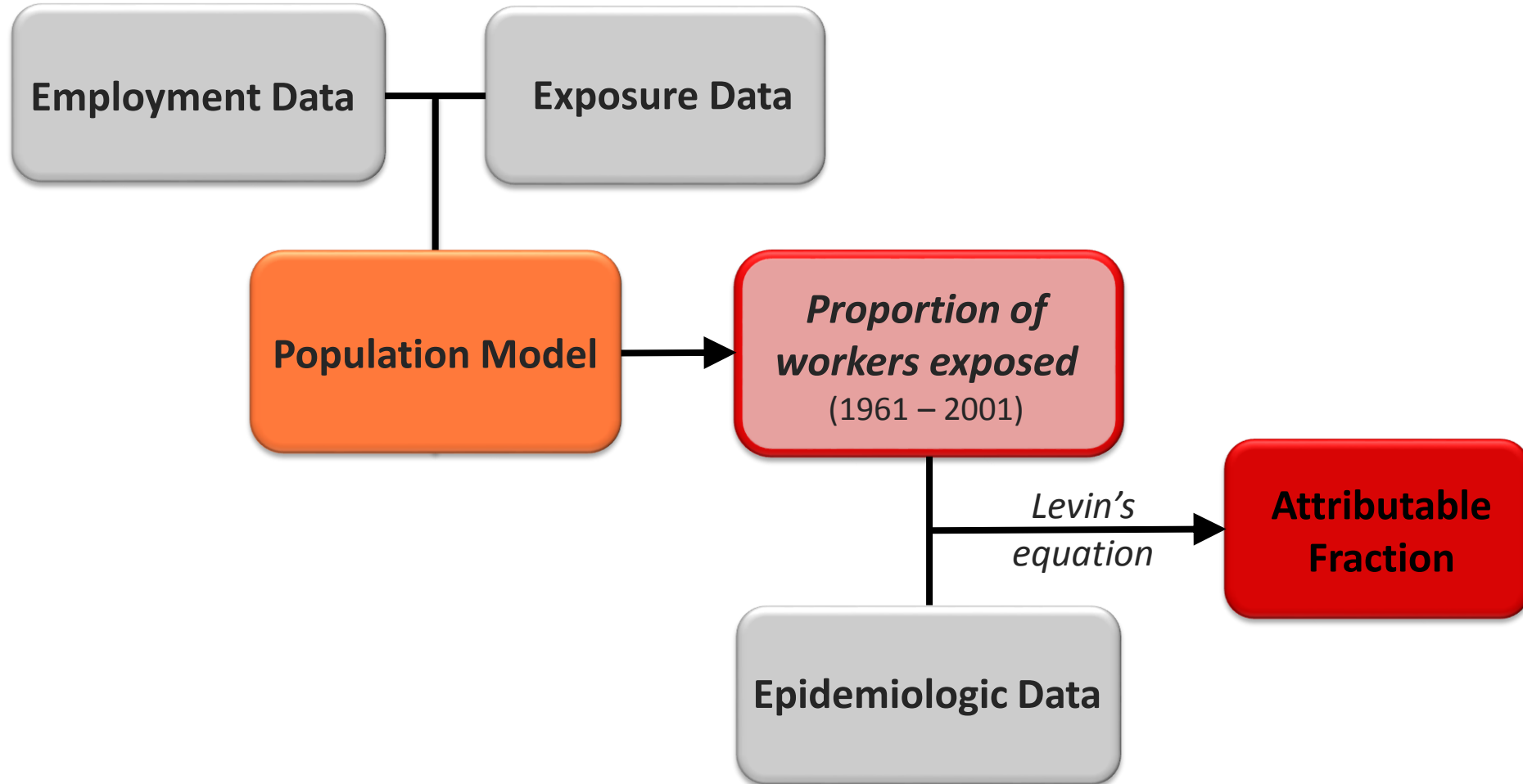
1.5 million workers exposed in Canada (2006)



Levels of Exposure

- **Low:** Outdoor work uncommon
– e.g. Truck drivers, paramedics
- **Medium:** Mixed indoor and outdoor
– e.g. Couriers, some construction trades
- **High:** Outdoors $\geq 75\%$ of the work day
– e.g. Farmers, roofers

Burden Estimation Methods



Epidemiologic Data: What is the risk of cancer?

- **Risk varies by subtype of non-melanoma skin cancer**
 - Basal Cell Carcinoma: $RR = 1.43$ (*Bauer et al., 2011*)
 - Squamous Cell Carcinoma: $RR = 1.77$ (*Schmidt et al., 2011*)
- **Melanoma not conclusively linked to occupational exposure**

Results: Solar UV

Exposure Assessment

*Proportion of
workers exposed*
(1961 – 2001)

11% of the 2011 population, or
2.6 million current or former workers

Attributable Cancers

4556

Non-melanoma
skin cancers

AF = 6.3%



4140

AF = 4.7%



415

AF = 0.3%

Results: Solar UV, by subtype

Basal Cell Carcinoma

2845 BCC

AF = 5.3%



2551 BCC

AF = 9.0%



295 BCC

AF = 1.2%

Squamous Cell Carcinoma

1710 SCC

AF = 9.2%



1589 SCC

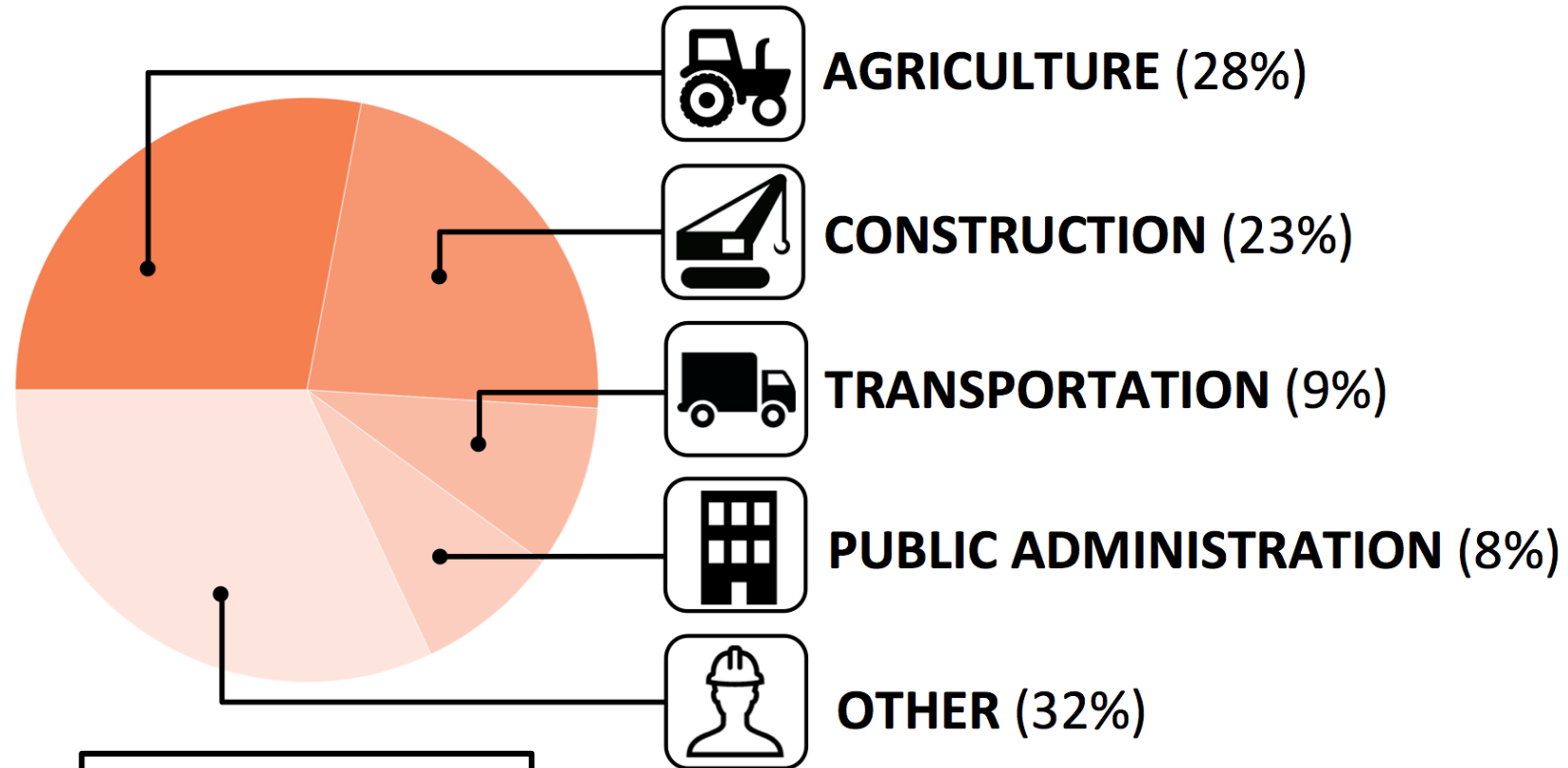
AF = 14.0%



121 SCC

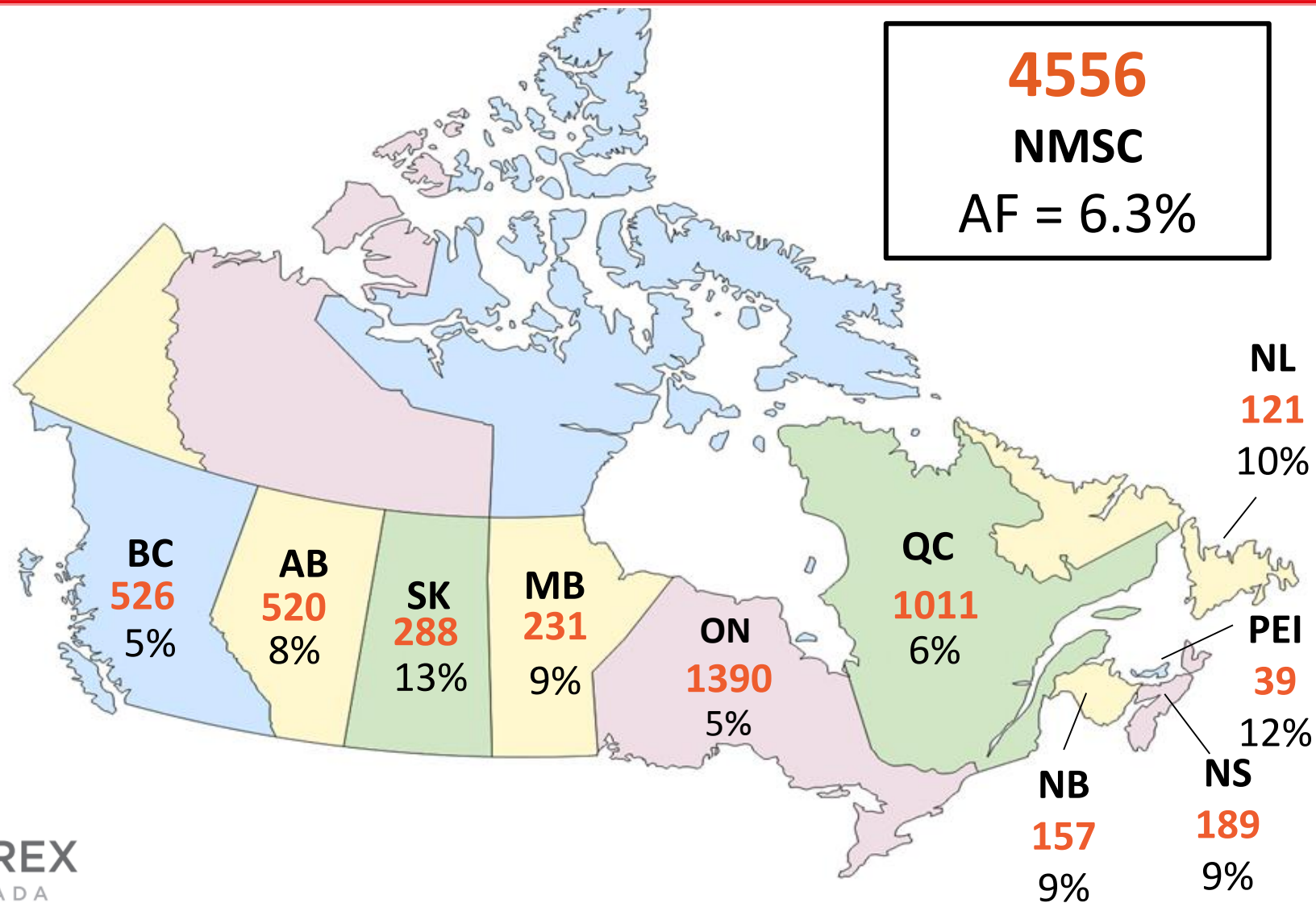
AF = 1.7%

Results: Solar UV, by industry



4556
NMSC
AF = 6.3%

Results: Solar UV, by province



Summary

- **Human burden:** Occupational exposures to solar UV cause an estimated **4560 non-melanoma skin cancers** in Canada, annually
- **Economic burden:** Pending

Thank-you!

