Financial Impact of Climate Change

Case Study 4: Windsor Care Centre[A]

Hazard:	**EM-DAT classification:** Meteorological/Extreme Temperature/Heat wave
Contributing Climate Factors:	Probability of Heat Wave
Exposure:	Windsor has the fourth highest average temperature in Canada. According to Point2Homes, "Summers in the city are exceptionally hot and humid, with the humidex—a measurement that indicates how hot weather feels by combining the effects of heat and humidity—reaching 30 or above more than 70 times during an average summer." (https://www.point2homes.com/news/canada-real-estate/which-warmest-cities-canada-here-best.html)
Vulnerability:	Heat wave is associated with a 28% increase in mortality among the elderly. Altered cardiovascular functioning associated with aging results in greater challenges responding to the stress created by heat wave.
Loss potential:	Higher mortality and morbidity among residents; costs of emergency response to evacuate

https://marketingdonut.co.uk

Windsor Care Centre houses 85 elderly people, average age of 86 years, many with underlying cardiovascular health issues and/or dementia. It provides a range of healthcare services from assisted living to full residential care. It is staffed by professional care aides, under the supervision of medical staff.

Windsor Care Centre meets all provincial HVAC requirements, and has a cooling system that meets both local building standards and provincial health standards.

[A] Some details have been estimated or fictionalized for educational purposes

Seniors are particularly at risk when exposed to heat waves. The aging of their cardiovascular systems makes it difficult for their bodies to cope with the physical demands of heat stress. As a result, mortality rates during heat waves are highest among the elderly.

www.nrcan.gc.ca

Heat waves can jeopardize the electricity grid, due to the dual pressures of higher demand as air conditioner use increases, and lower transmission capacity brought about by additional heat in transmissions lines. During heat waves, excessive loading of the system, combined with lowering capacity has led in the past to significant power outages (e.g., the Northeast US blackout of 2003).

Should a heat wave occur, and the electricity grid fail, the 85 residents of the Windsor Care Home would be at risk. In a similar situation in New York City in 2019, 300 seniors had to be evacuated from their seniors centre during a heat wave when the centre was unable to cool its facility due to a heat-related power outage. If a heatwave were to coincide with a power outage, and evacuation options were unavailable, the residents of Windsor Care Home would face excessive risk.

Case problem: Given Windsor Care Home's exposure and vulnerability, how will climate-induced changes in hazard levels affect its capacity to care for its residents and manage the risks they face?

Analytical approach: What changes are anticipated to climate factors contributing to heat wave, and how might those changes alter: (1) the frequency and intensity of hazard; and (2) probable loss of life at the Care Home?