



THE MODERN-DAY FIRE PROBLEM IN AGING HIGH-RISE BUILDINGS

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Tall Building/High Rise
Fire Safety Conference

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PRESENTER – TERIN HOPKINS



Terin is currently the Manager of Public Fire Protection in Codes, Standards, Public Fire Protection and Training Department, for the National Fire Sprinkler Association (NFSA), headquartered in Baltimore, Maryland.” Terin has 34 years in public safety beginning his public safety career in 1981 as a Volunteer Firefighter/EMT and then serving 25 years with the Prince George’s County Maryland Fire/EMS Department, retiring in 2009. He then went to work for the Howard County Department of Fire Rescue Service, Office of the Fire Marshal.

In 2018 he was hired as the Mid-Atlantic Field Service Coordinator with NFSA. Terin represents NFSA on several NFPA technical committees including, NFPA 1 *Fire Code*, NFPA 14 *Standard for the Installation of Standpipes and Hose Systems*, UL 47 *Standard for Standpipe Devices* and the eight fire service training standards covered by NFPA 13E *Recommended Practice for Fire Department Operations in Properties Protected by Sprinkler and Standpipe Systems*.

HIGH(ER) RISK – LOW FREQUENCY EVENTS

Gordon Graham – Lexipol

“Predictable is preventable”



TODAYS LAYER APPROACH TO FIRE PROTECTION

Passive fire protection

Construction materials
Fire ratings/separation
Door Closers

Active fire protection

Automatic
Alarm systems
Sprinklers
Smoke detection
Voice Evacuation

Emergency Response

Fire department

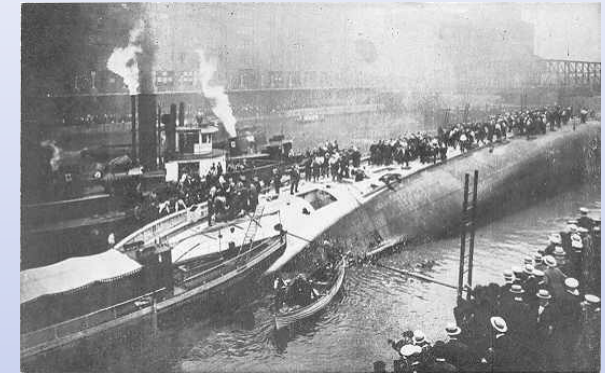


EASTLAND – CHICAGO JULY 24, 1915

Missing links in safety

844 lives lost

Lifeboat retrofit



FLASHOVER

Flashover is the simultaneous ignition of most of the directly exposed combustible material in an enclosed area

NFPA 555 A stage in the development of a **contained fire** in which all exposed surfaces reach ignition temperatures more or simultaneously and fire spreads rapidly through the space.

Flashover is not a survivable event



PRE-1975 HIGH-RISE - FEATURES

- **Multiple alarm fires** – Lower the floor the more significant the fire
- Manual notification (fire alarm) = Delayed response
- No automatic sprinkler = No containment
- Communication systems = No shelter in place
- Pre-1993 standpipe flow 65psi = Reliant on redundant supply (FD)
- Inefficient or no fire pumps = Bad
- Concrete/steel construction containment (**Fireproof?**) = Nothing is fireproof!
- No smoke detection or alarms = Lacks early warning
- Poorly maintained = Unreliable systems
- No smoke ventilation systems/control = Deadly fires
- **Occupant behavior – Poor!**

TWIN PARKS – THE 333 BRONX FIRE

NYC Class I (**Fireproof**) incombustible materials and assemblies with specific fire-resistive ratings for walls, structural members, and other features, such as exterior walls, fire walls, and floors



US HIGH-RISE BUILDING FIRES DATA

National Fire Incident Reporting System (NFIRS)

Limitations

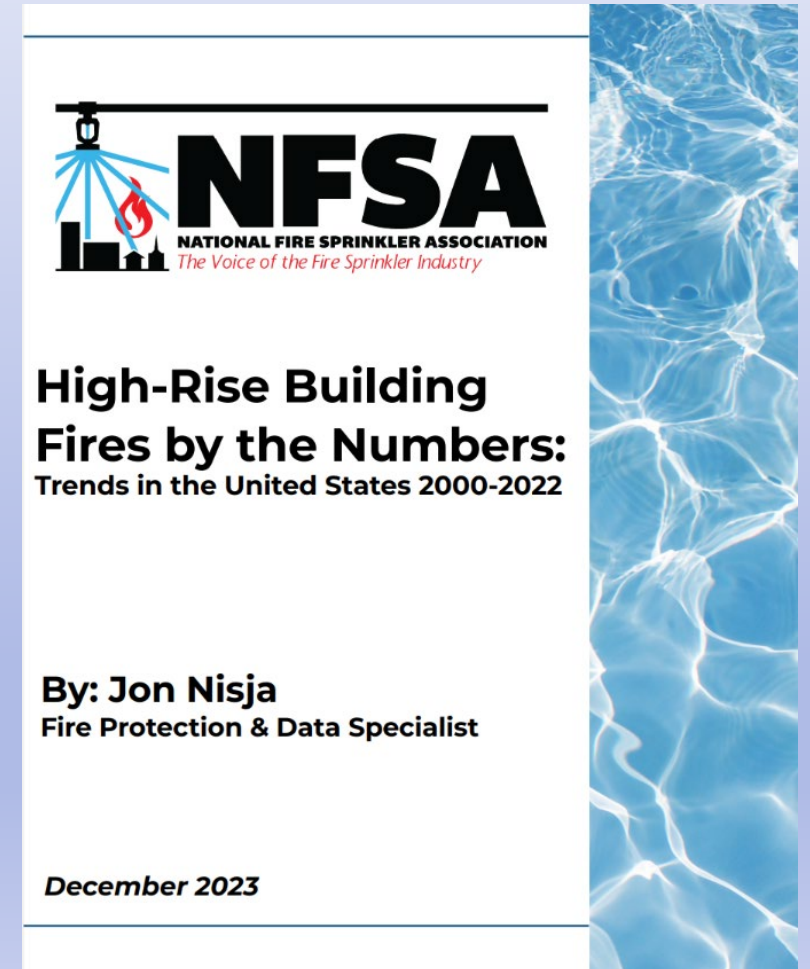
>6th floor

Confined Fires –No Spread

Alarm Activations

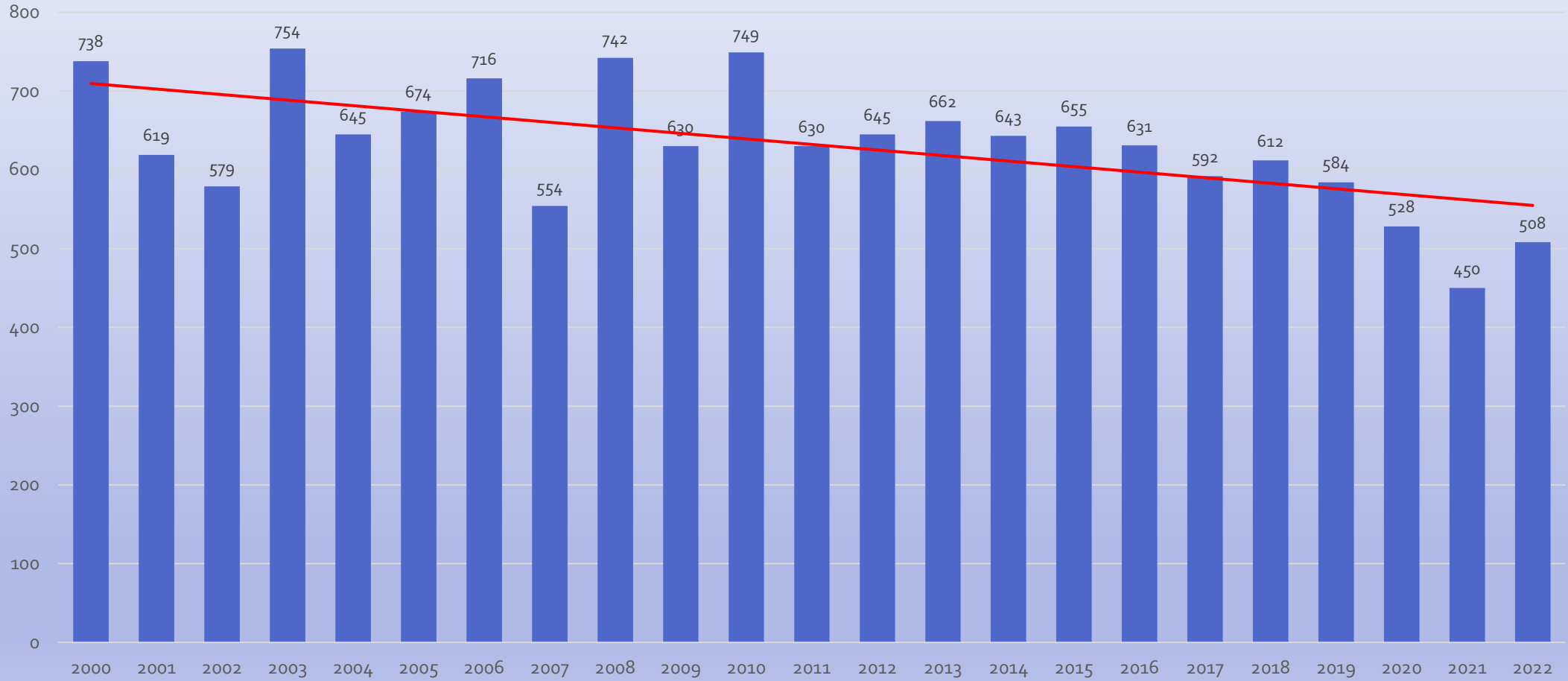
Hazard Calls

False Alarms



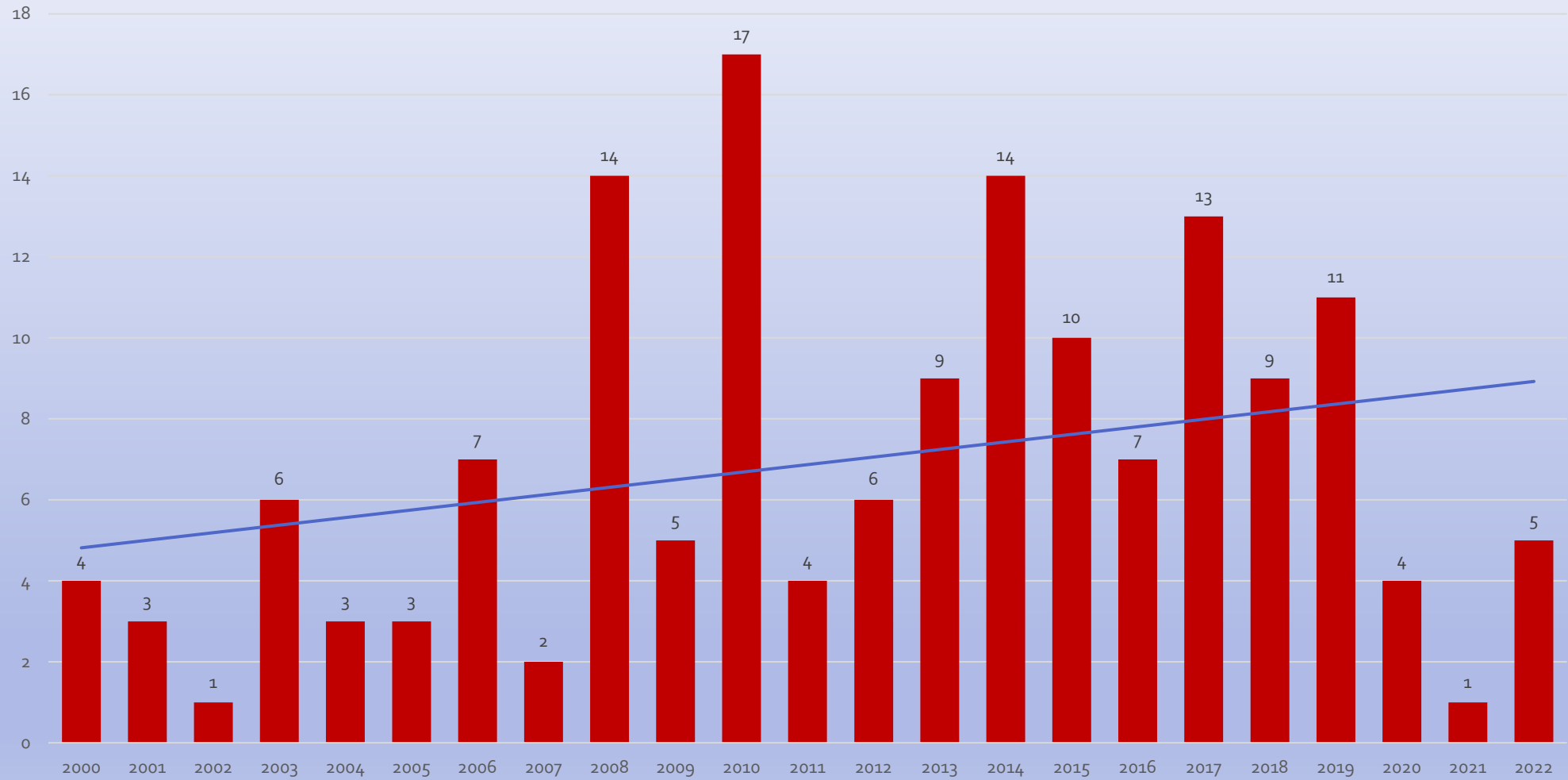
SIGNIFICANT FIRES - 632 PER YEAR

Chart 1 - High Rise Fires by Year



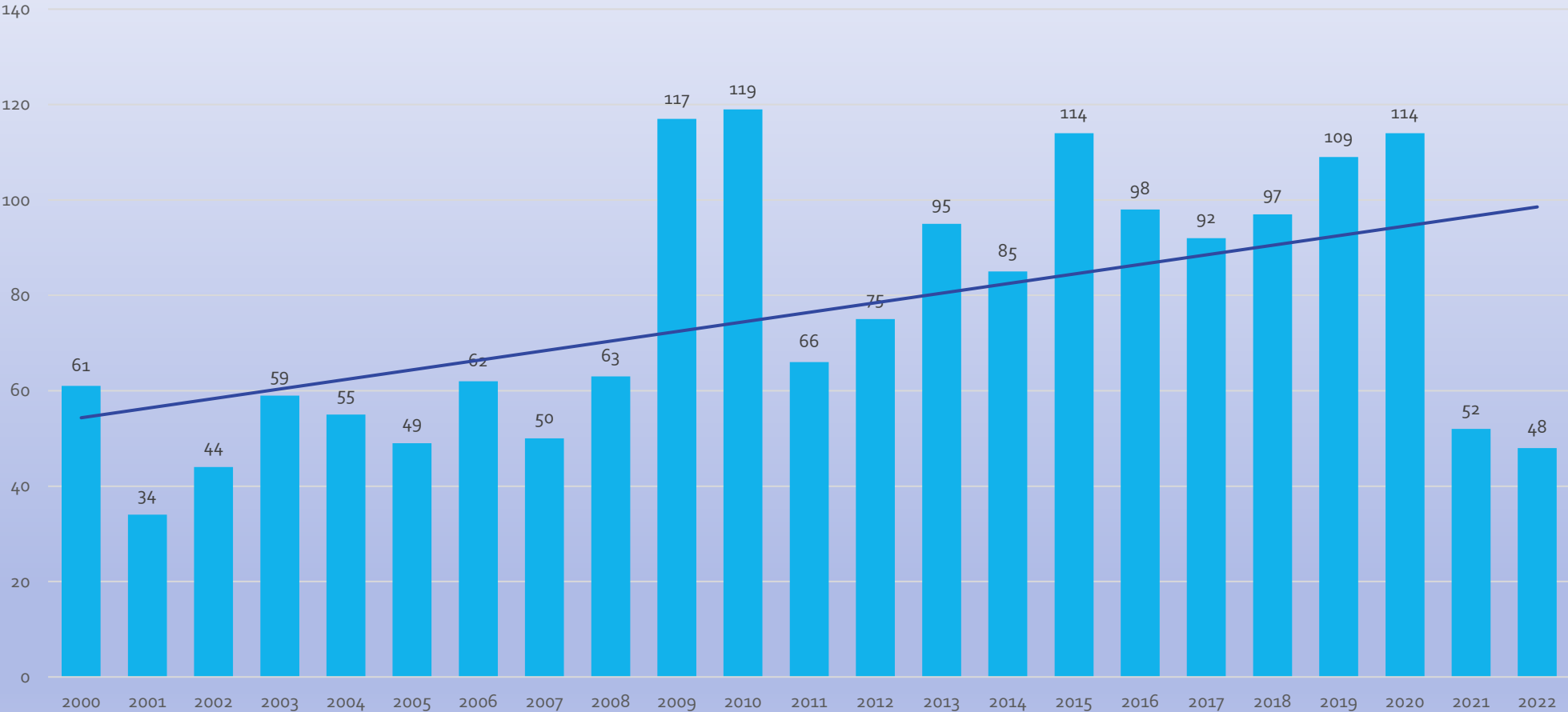
158 FATALITIES / 7 PER YEAR

Chart 5 - Fire Deaths in High-Rise Building Fires



INJURIES

Chart 7 - Civilian Injuries in High-Rise Building Fires



DEATHS AND INJURIES!

Chart 6 - Deaths Based on Sprinkler Activation

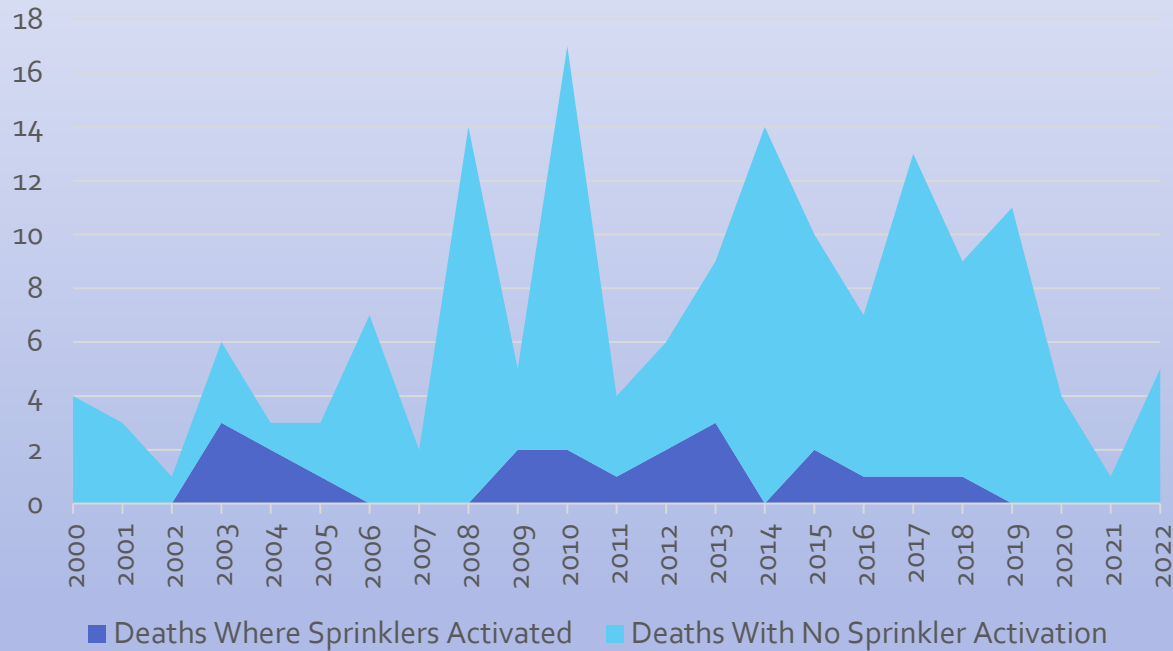
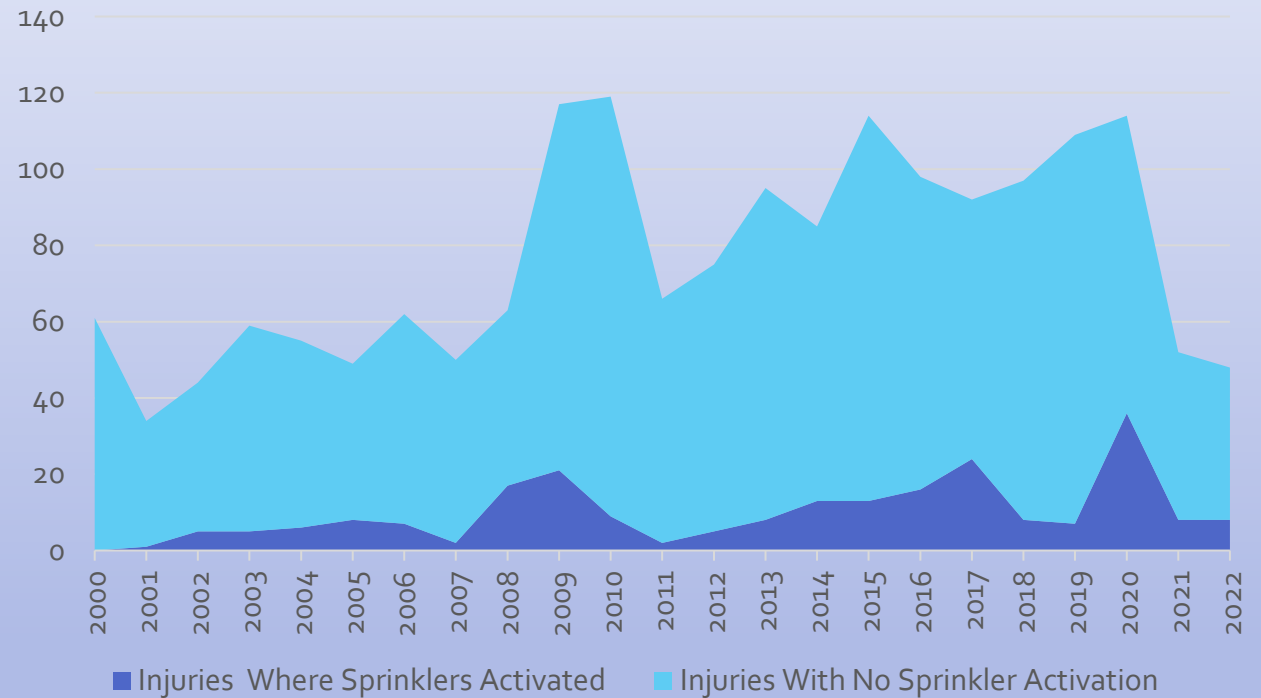


Chart 8 - Injuries Based on Sprinkler Activation



MODERN DAY - FIRES

Modern-Day Fires

Flashover 3-5 mins

Synthetic Materials

Burning **8x** faster

200x more smoke

Higher amounts of **toxic gas**

Aging structures lacking basic automation and maintenance

Grandfathering

ITM

Life safety upgrades

~~cost vs safety~~

Legislative action

KENWOOD HIGH-RISE FIRE CHICAGO 2023



KENWOOD HIGH-RISE FIRE CHICAGO 2023



- Fire on floors 15-24
- **80 units/300 firefighters**
- 4850 S. Lake Park Ave
- 25-Stories -298 units
- 1 fatality/8 injuries/1 FF injury
- **Failed inspections (x7)**
- Fire Pump **OOS**
- Elevators **OOS**
- **Manual Alarms**



275 BLEEKER STREET - TORONTO

3-Alarm Fire

February 2025

21-story

Fire on 6th floor

20 injuries/12 transported to the hospital, one critical.

Heavy fire w/heavy smoke on upper floors



OCCUPANT BEHAVIOR DURING EMERGENCIES

Occupants

*"I was **panicking**, and I was **stressing** because a lot of people were **yelling**."*

*"When I opened the door, I just saw a lot of black air, so I just **ran out the staircase**"*

*"People were **claim** at first and **suddenly**, they were **pushing and shoving**"*

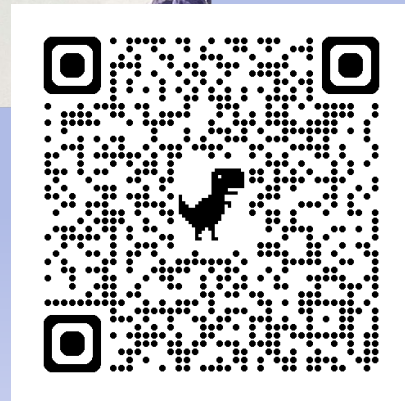
Toronto Fire Chief Jim Jessop

*"Not only were we **fighting the fire**, we were **performing multiple exterior rescues** as well as **interior rescues**, while at the same time starting to **ventilate smoke**, and then **concurrently responding to numerous 911 calls** from people that were in their units where smoke was migrating in,"*

ACTION – COST ~~VS~~ SAFETY



NFPA Jesse Roman



Legislative Action

Delaying the adoption of Codes & Standards

North Carolina 2031

Mandatory intervals 6-15 years apart

Amending out safety requirements

Cost vs Safety approach

Elimination of enforcers, plans review and permitting requirements

Prohibiting local jurisdiction from amending or adopting codes

QUESTIONS/ANSWERS?

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