



Evaluating the Effectiveness of Queensland's Enhanced Smoke Alarm Legislation

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House fires lead to devastating loss of life and property

Fire destroys Portsea home on the Mornington Peninsula, south of Melbourne

House Fires

Person dead and four others rushed to hospital after north Brisbane house fire

By Shari Hams House Fires

Sat 22 Nov

Slacks Creek house fire a tragic accident - investigator

THE police officer in charge of investigating the Queensland house fire that claimed 11 lives says it was nothing more than a tragic accident.

less than 2 min read September 9, 2011 - 1:29PM AAP



Woman dies in house fire in Elizabeth Vale

House Fires

Wed 10 Dec

with antiques go up in flames on Christmas Day

By Anna Cox and Andrew Chounding

ABC South West WA House Fires

Fri 2 Jan



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This tragedy created a pathway to legislative reform in Queensland regarding residential smoke alarms



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Project Goal

To evaluate the effectiveness of Queensland's unique smoke alarm legislation in order to inform possible expansion of legislation in Queensland and other highly populated Australian jurisdictions



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Background



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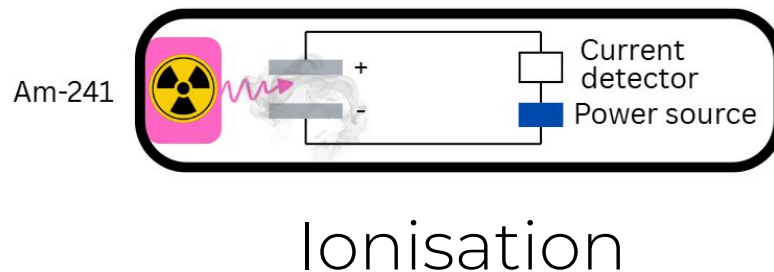
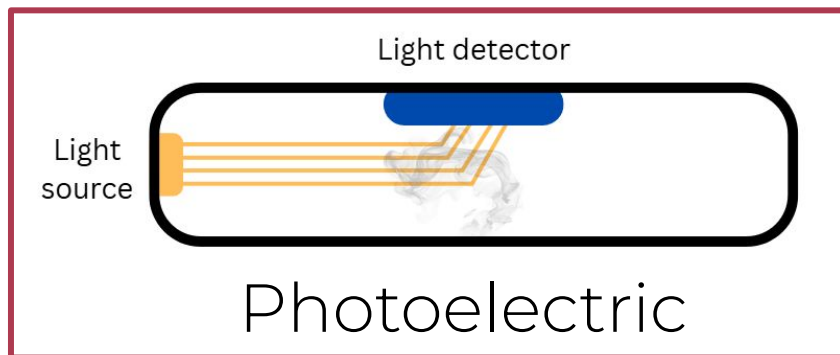
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Certain smoke alarm systems are necessary to prevent catastrophes



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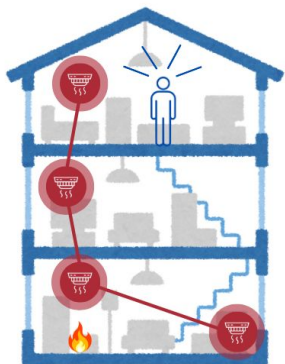
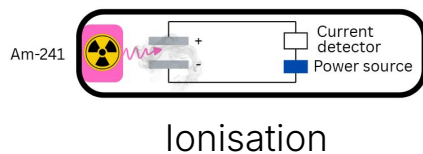
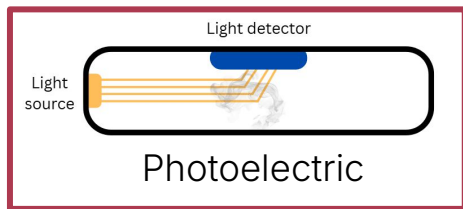
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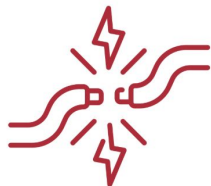
Certain smoke alarm systems are necessary to prevent catastrophes



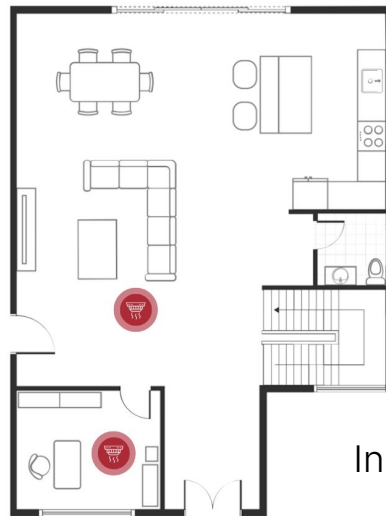
Interconnected



10-year battery



Hardwired



In all bedrooms and living spaces



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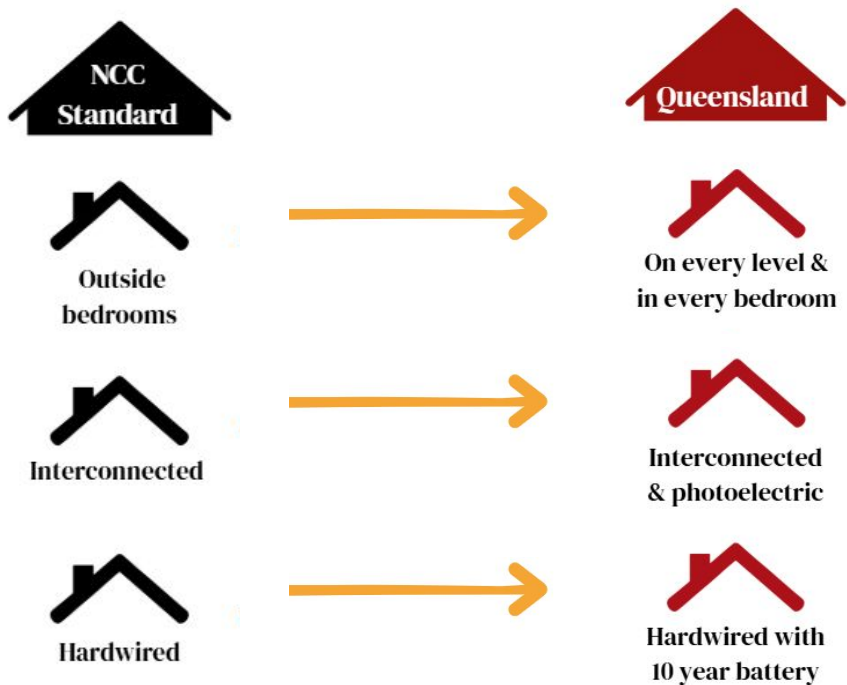
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In 2016, Queensland passed legislation that goes well beyond the national standard



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FIRE
AUSTRALIA2026

Queensland's legislation utilised a phased rollout process for homeowner compliance



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Results



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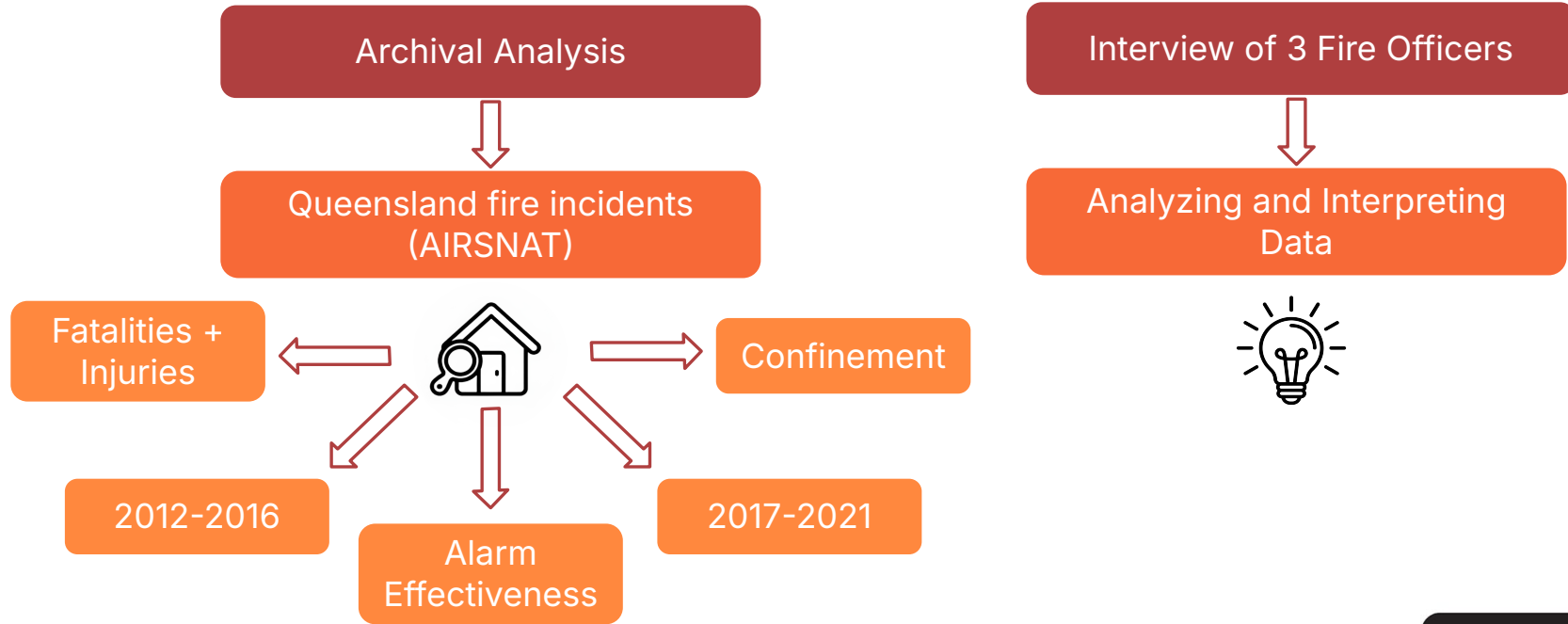


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Determine if there is a significant difference in residential fire outcomes in Queensland before and after 2017



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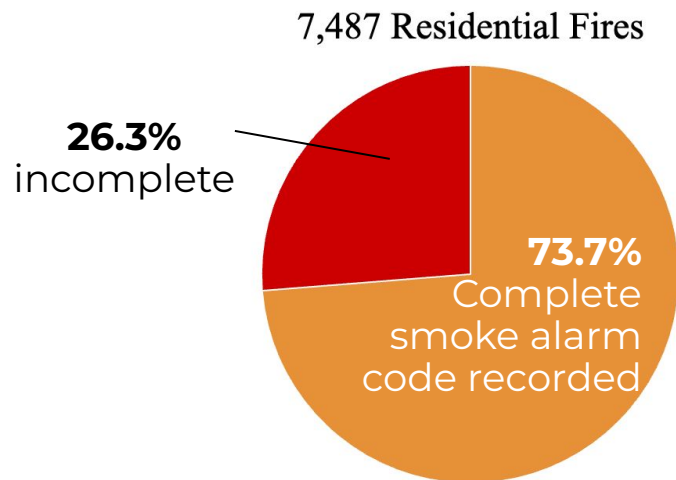
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Incidental fire data is limited

National RoGS data (2024-2025)



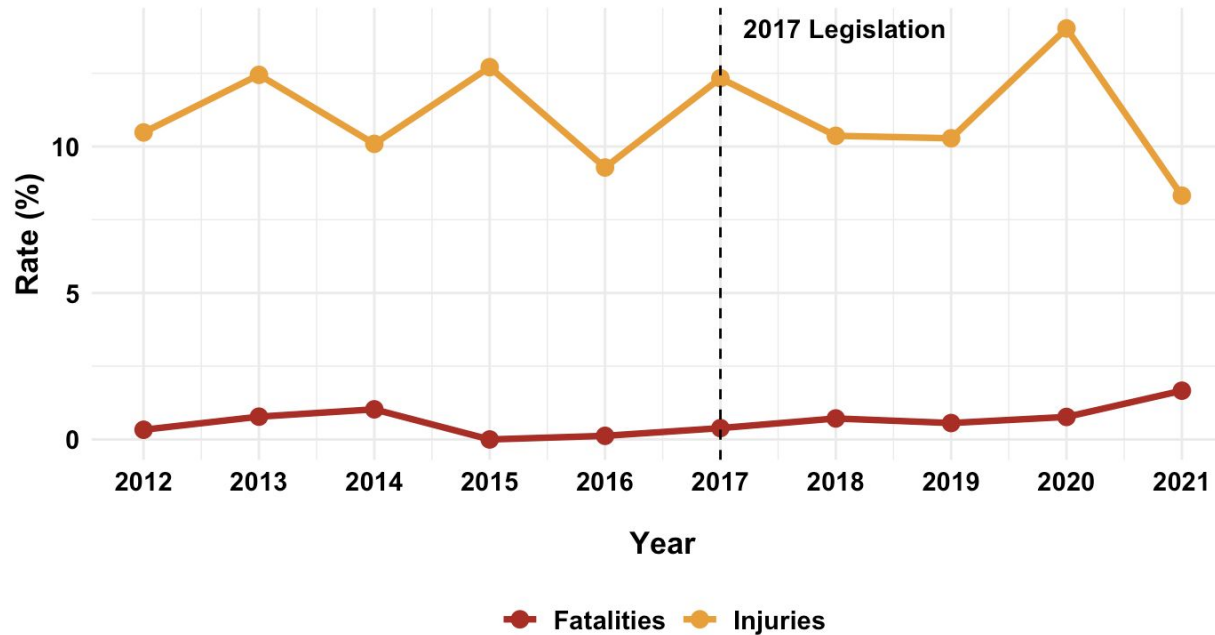
QLD RoGS data (2024-2025)



Fatality and injury rate in Queensland remained unchanged from 2012-2021

Fatality and Injury Rate (per 100 Incidents)

Analysis of Queensland residential fires (2012-2021)



Source: AIRSNAT Data (AFAC)



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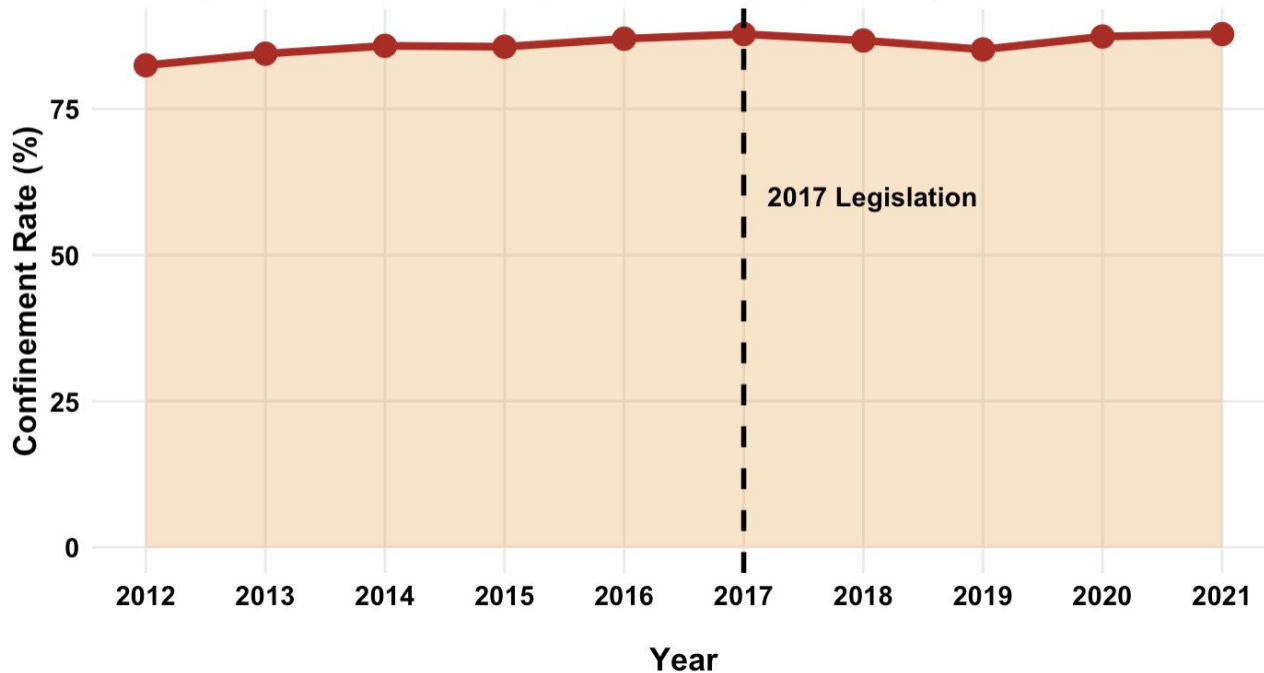
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Confinement has remained unchanged

Fire Confinement Rate (Per 100 Incidents)

Percentage of fires confined to the object or room of origin (2012-2021)



Source: AIRSNAT Data (AFAC)



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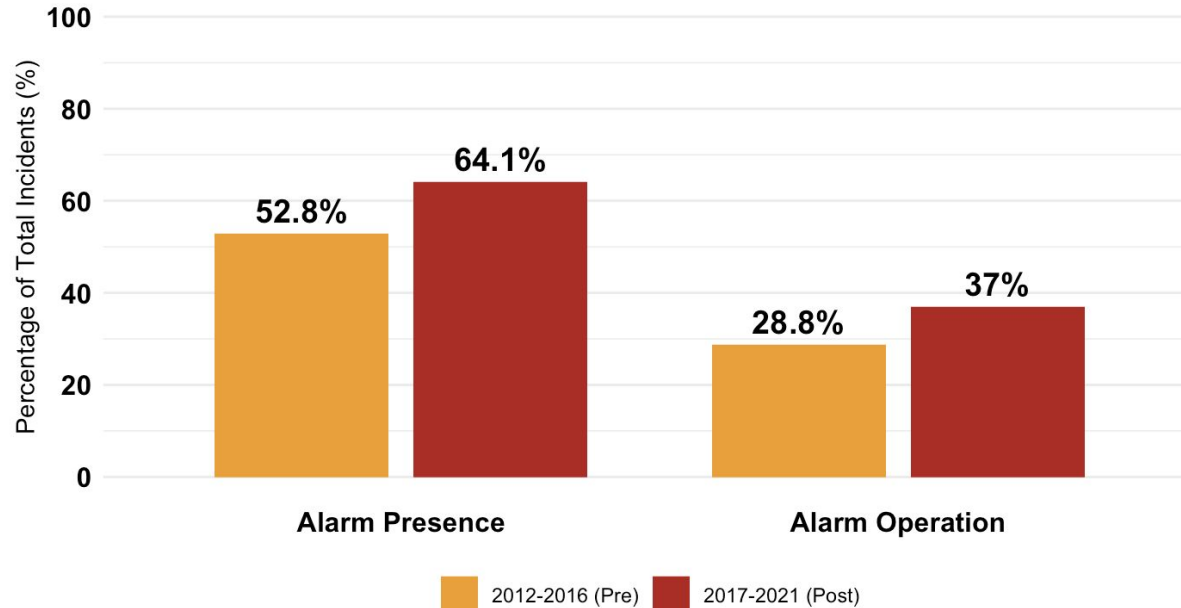
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Working smoke alarms have been reported in more incidents

Comparison of Alarm Presence and Operation Success

Analysis of Queensland residential fires (2012-2021)



Source: AIRSNAT Data (AFAC)



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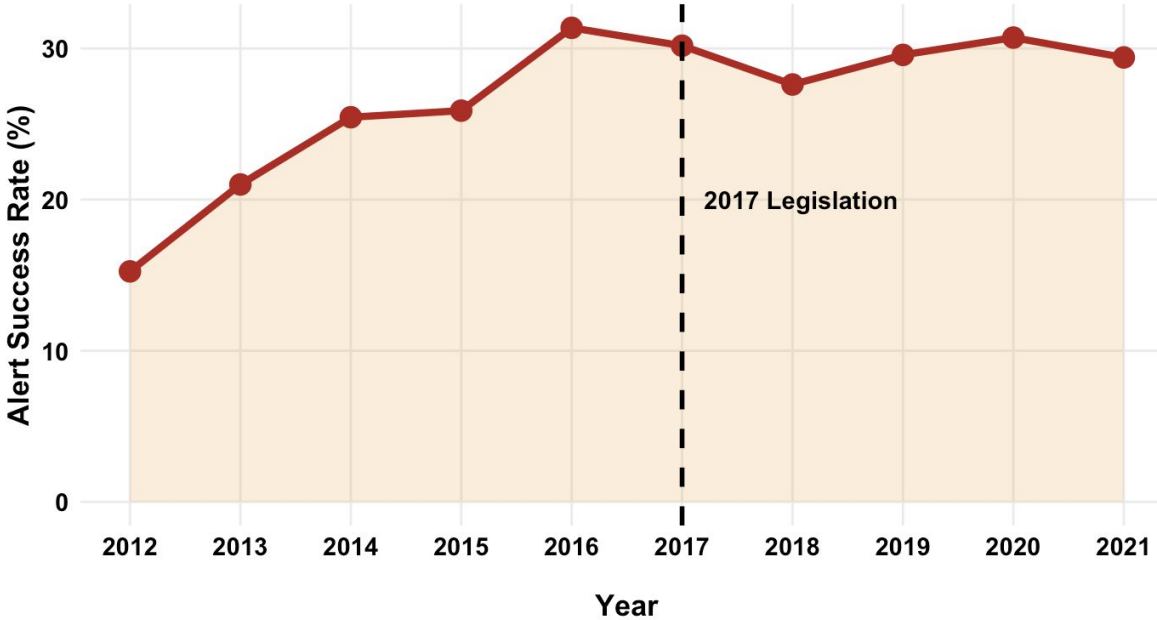


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Alarm effectiveness has remained unchanged since 2016

Alarm Effectiveness

Percentage of QLD fire incidents where the alarm alerted the occupants (2012-2021)



Source: AIRSNAT Data (AFAC)



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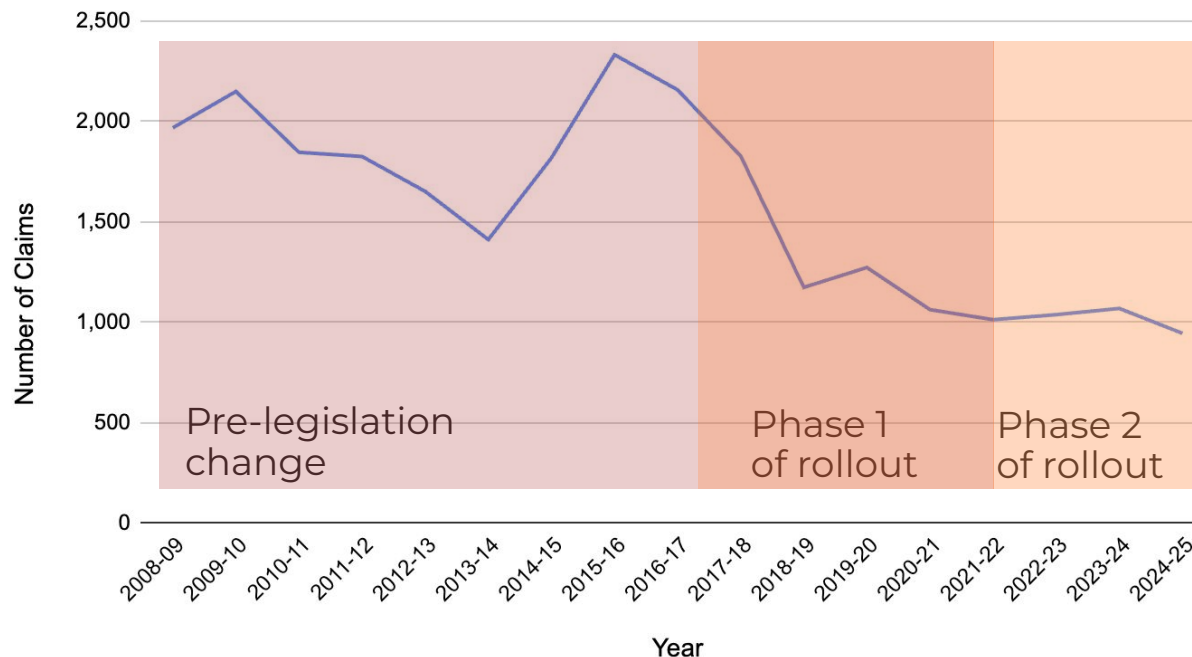


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Number of fire insurance claims* in Queensland have decreased

Fire event insurance claims in QLD



*excludes bushfires

Source: Report on Government Services



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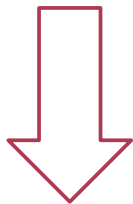


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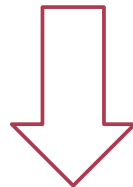
Assess current compliance rates and common reasons for non-compliance

Interview of 3 fire officers & 2 inspectors



Learn about how often compliance issues are seen

Interview of 3 smoke alarm manufacturers and technical experts



Learn how outside components may aid compliance

Archival analysis of AIRS data from QLD

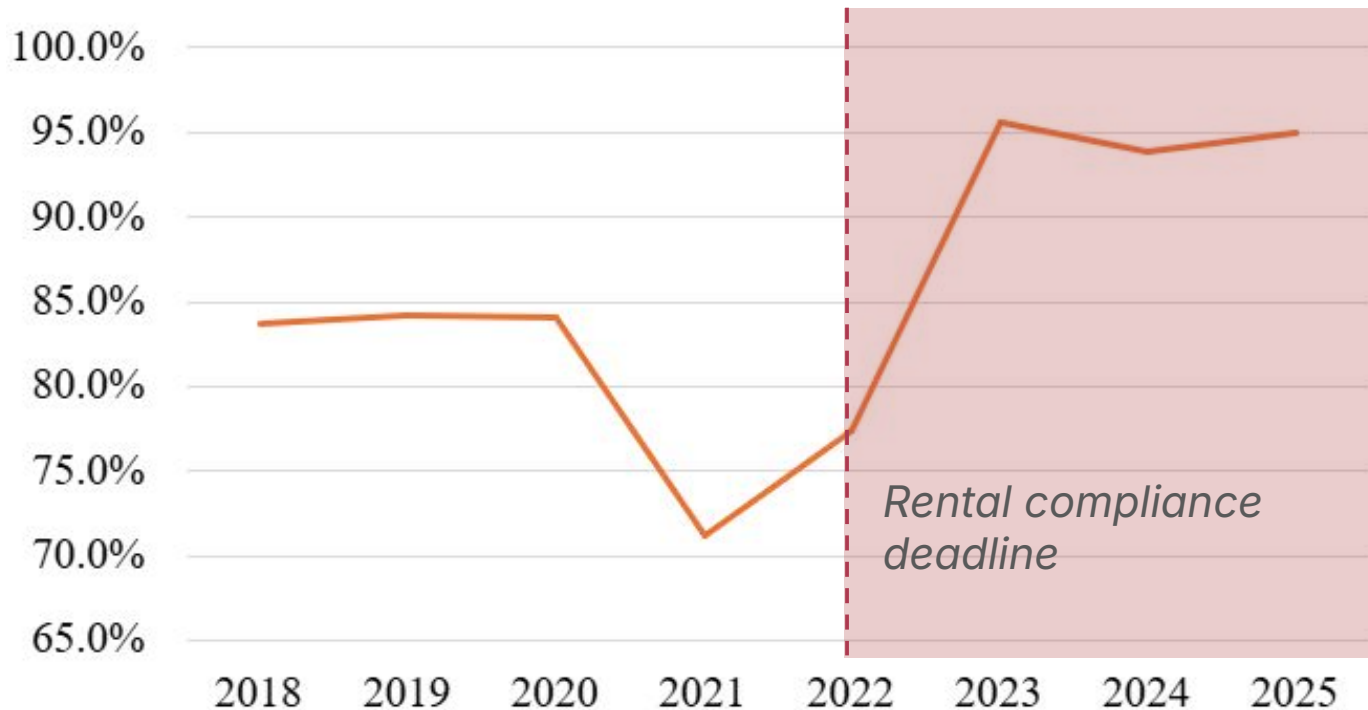


Learn how often working alarms are not present



Queensland is on track with deadlines of phased rollout

Compliance for
smoke alarm
presence



Source: Detector Inspector



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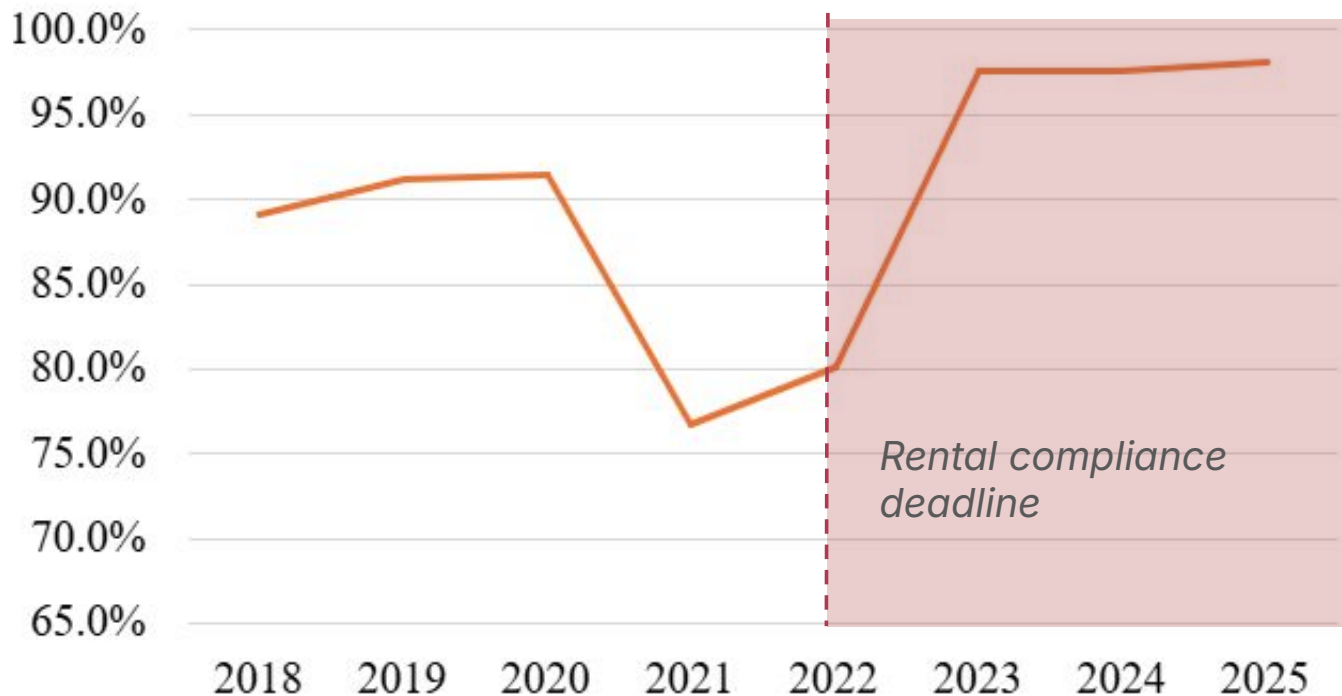


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Queensland is on track with deadlines of phased rollout

Compliance for
smoke alarm
location



Source: Detector Inspector



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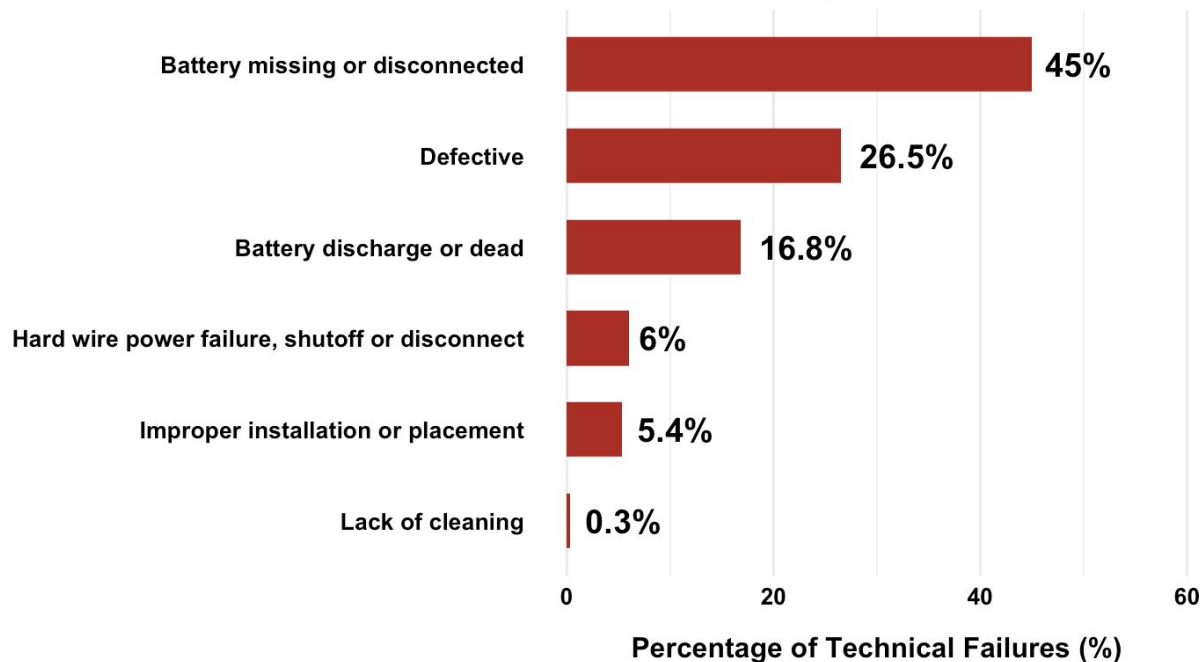


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In Queensland, human interference is the most common reason for failures in alarms

Reasons for Smoke Alarm Failure

Analysis for Queensland (2012-2021)



Source: AIRSNAT Data (AFAC)



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Combating nuisance alarms is key for maintaining high compliance rates



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Improvements in smoke alarm technology can help aid compliance



A wide variety of educational resources are necessary to make a lasting impact



Examine the relationship between different characteristics of smoke alarms and the resulting outcomes



Archival analysis



AIRS data from QLD



Smoke alarm
reliability

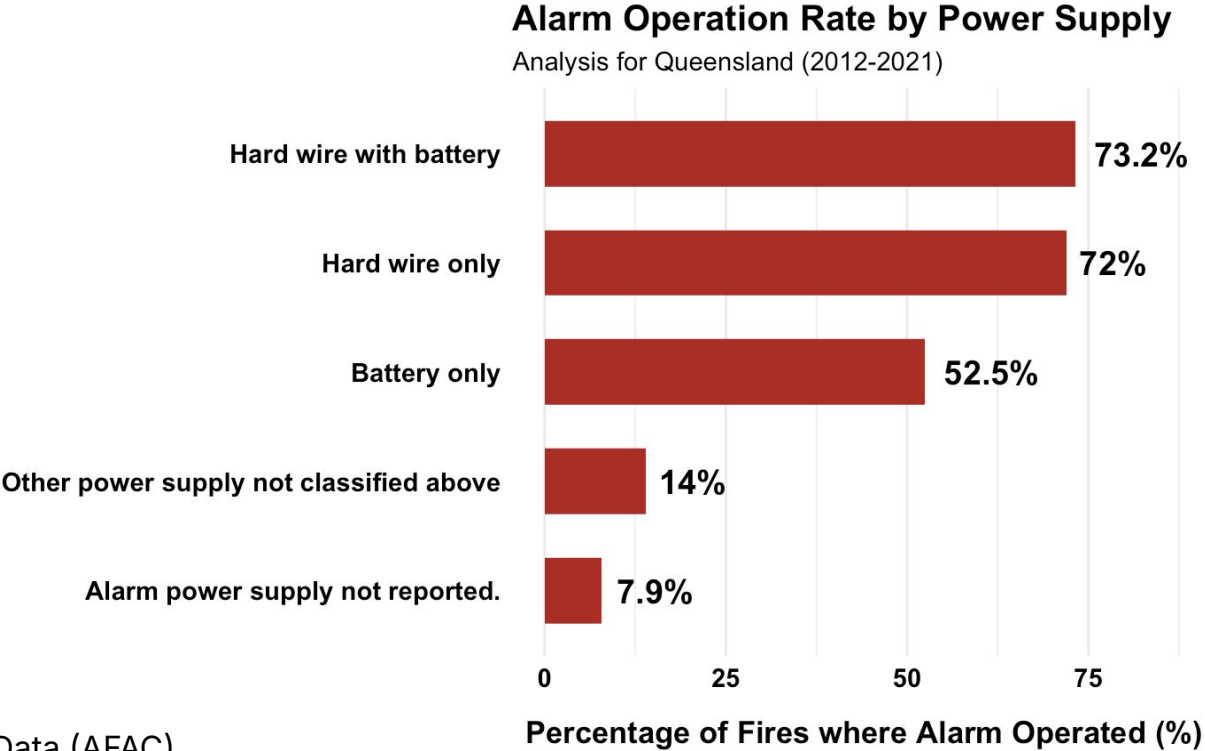


Power supply



Fire containment

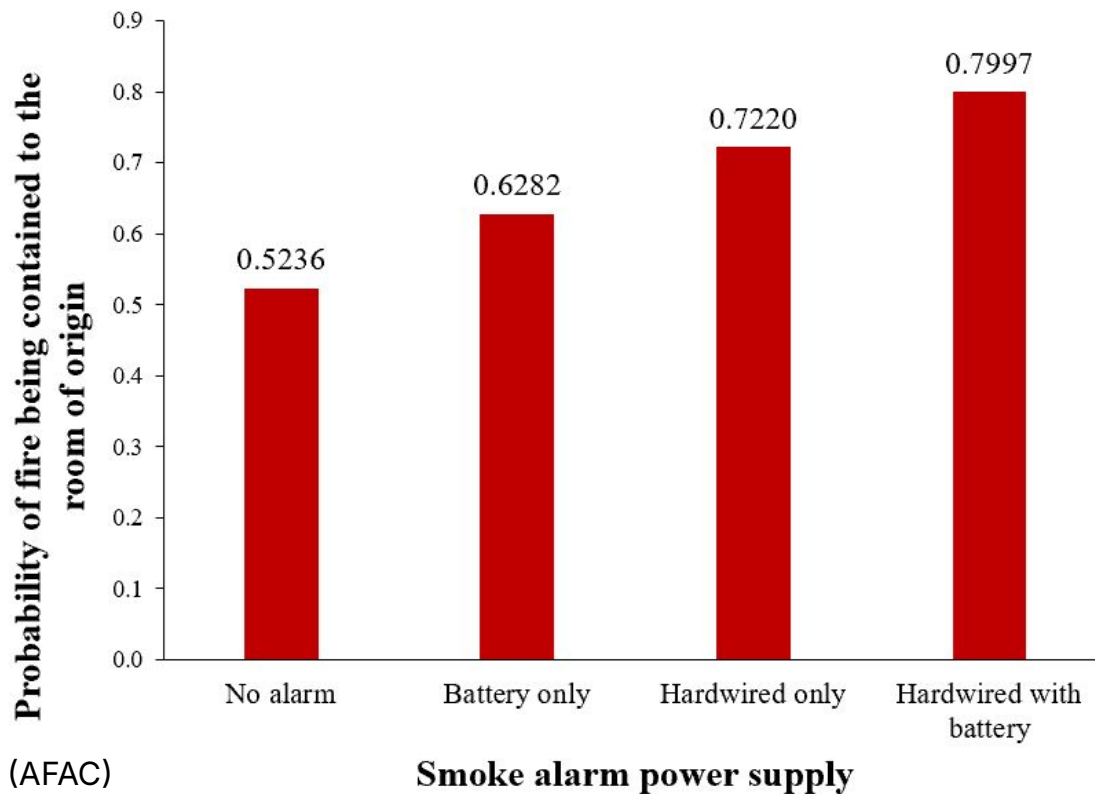
Hardwired alarms are more likely to work in a fire incident



Source: AIRSNAT Data (AFAC)



Hardwired alarms with backup batteries had the highest probability of fire containment



Source: AIRSNAT Data (AFAC)



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Share opportunities and challenges for expanding smoke alarm legislation in highly populated Australian jurisdictions

Interview of 7 smoke alarm reform advocates



Gain insight on

Current legislative gaps

Legislation process

Barriers to change



Share key findings



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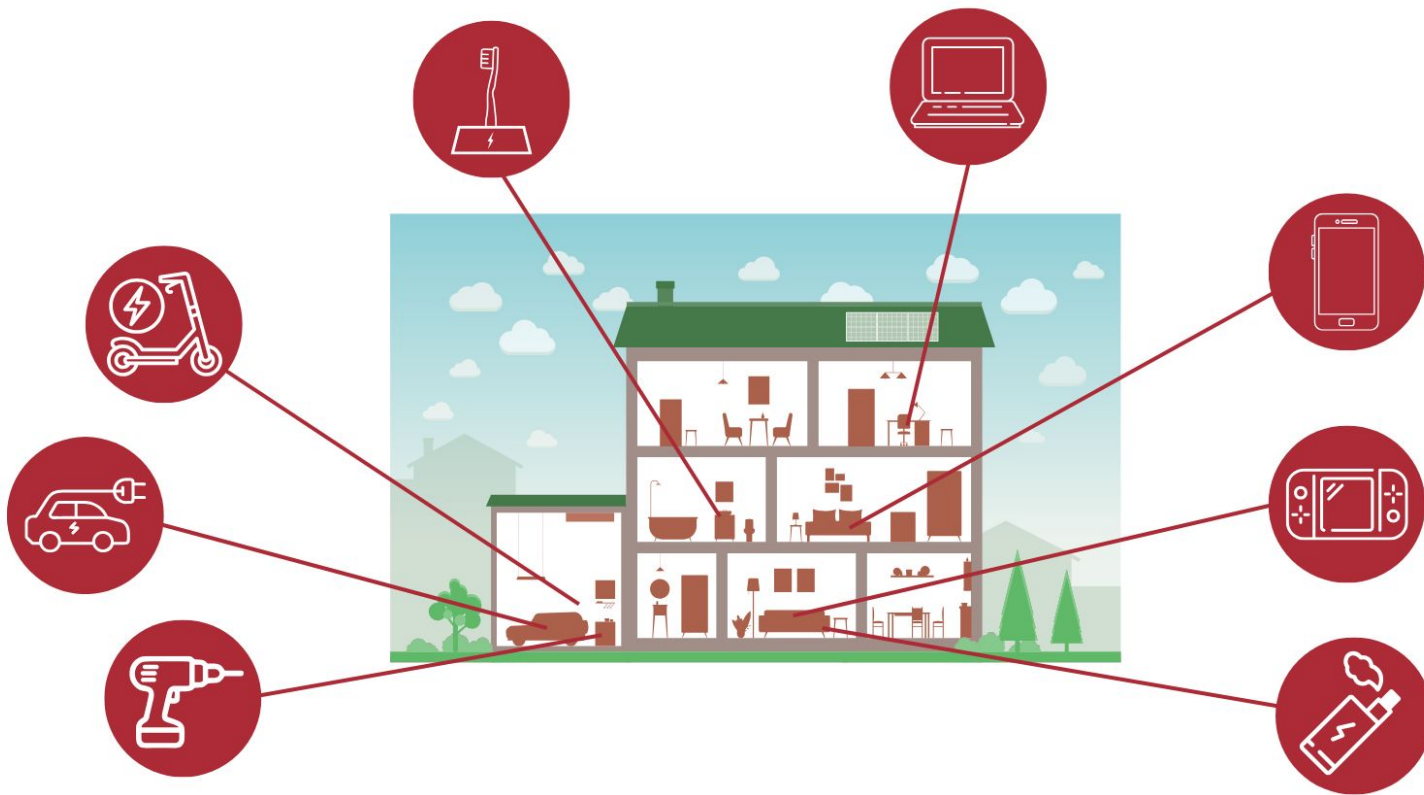


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Modern fire hazards are not considered in current legislation



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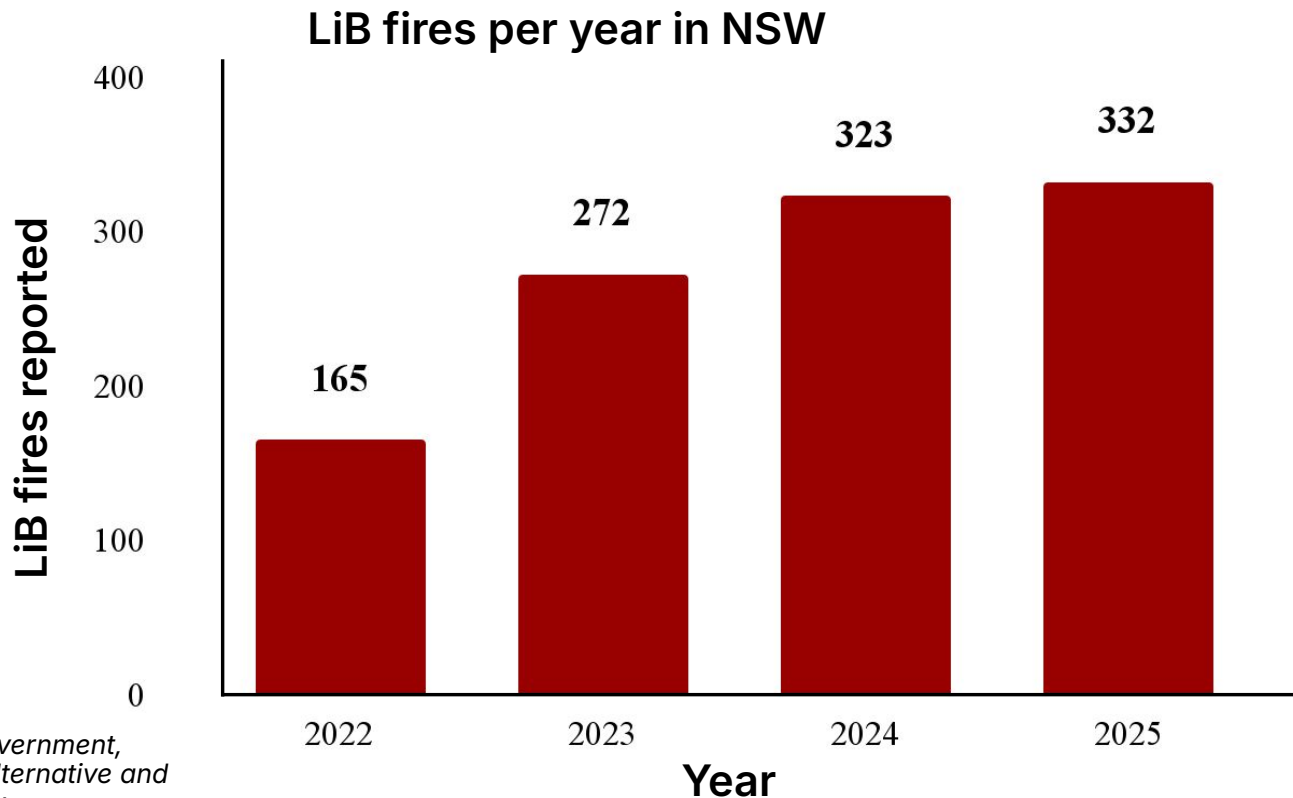


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Lithium ion batteries fires are on the rise



Sources: NSW Government, 2026; Safety of Alternative and Renewable Energy Technologies Research Team, 2024; Dhir, 2025



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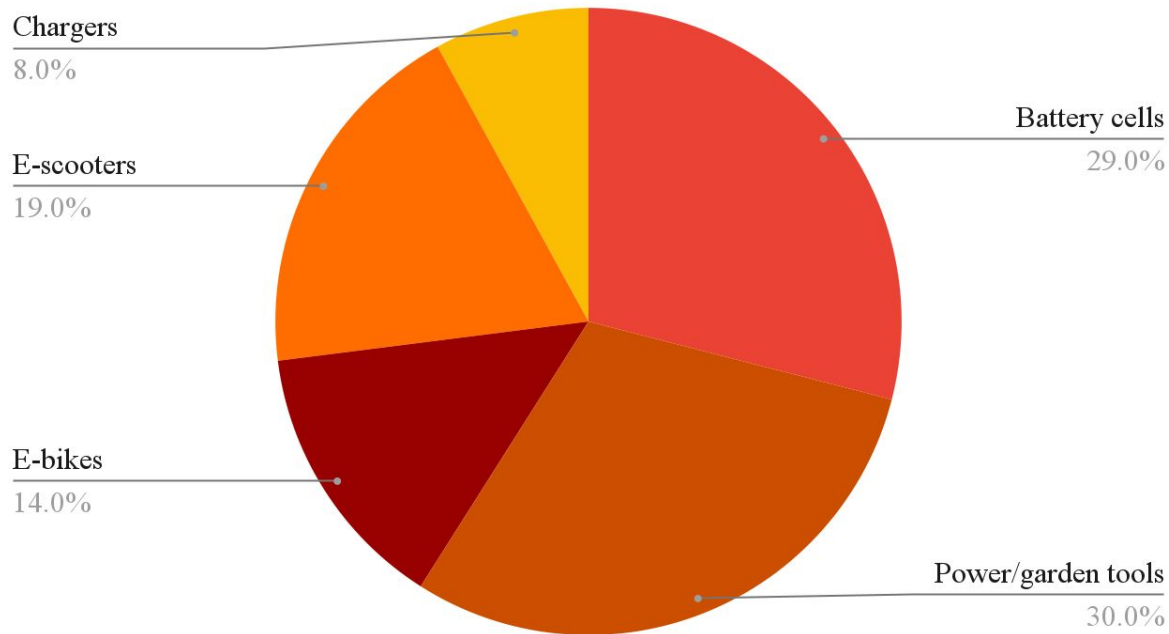


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Many LiB sources contribute to increased fires

Nearly **\$16.7 million** in claims for damages

Sources of LiB incidents in Australia from Allianz Insurance claims in 2025



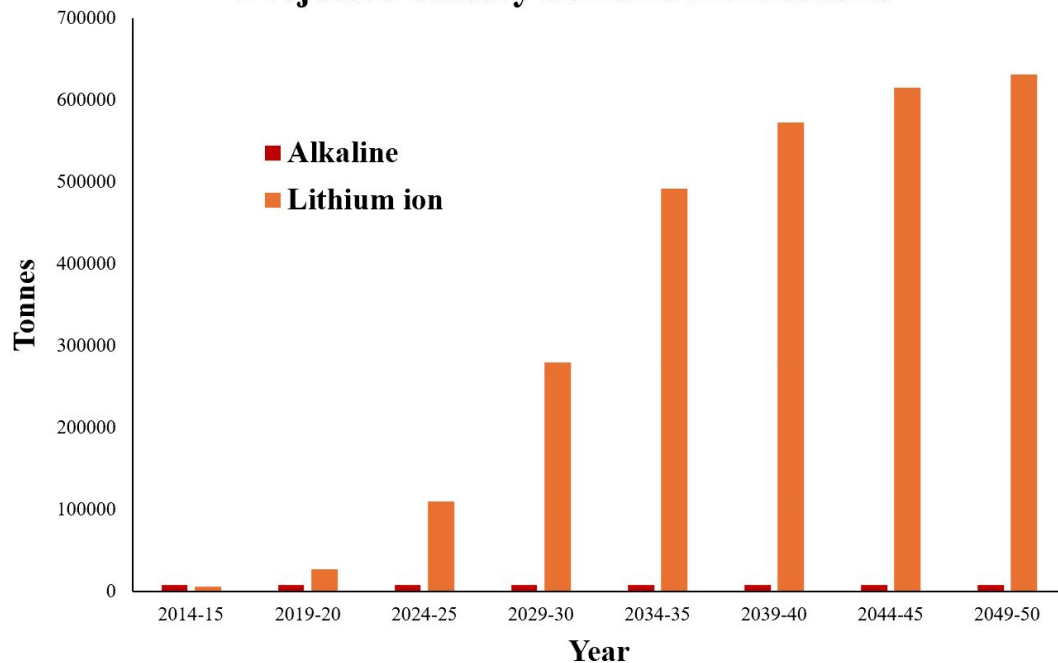
Demand for LiBs will only grow

Period	Electric Vehicle Demand
First six months of 2024	58,507
First six months of 2025	72,758

24.4% ↑

Source: Electric Vehicle Council

Projected battery demand in Australia



Source: O'Farrell et al., 2020



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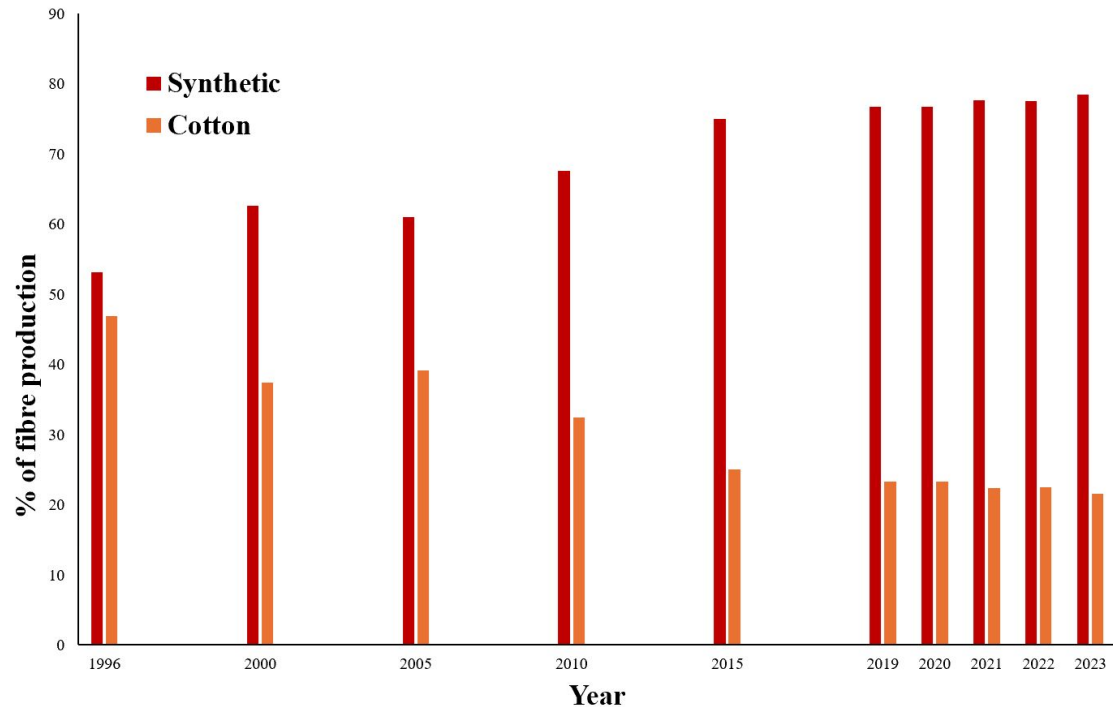


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Shifts from natural to synthetic materials pose new threats



Source: adapted from UN Trade & Development



Natural materials

Slower and cleaner burn



Synthetic materials

Faster burn and releases more toxic smoke



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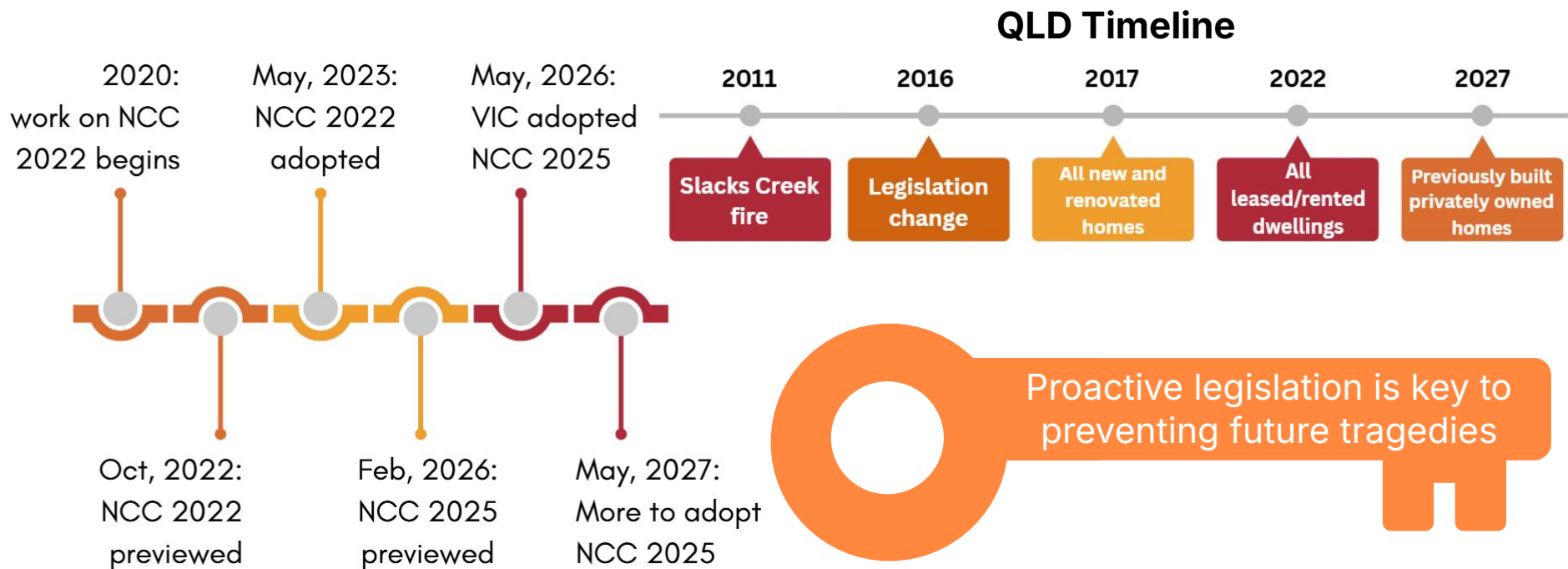


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Legislation hasn't been able to keep up with new hazards

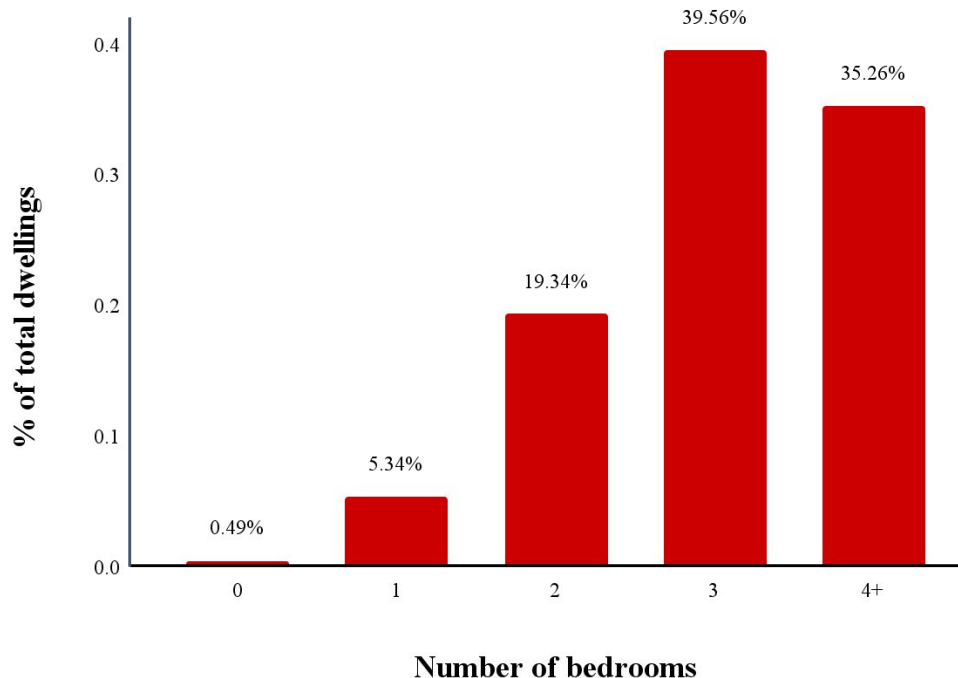


Cost remains a major barrier in updating smoke alarm legislation

	1 year battery powered alarm	10 year battery powered alarm	Hardwired alarm	Interconnected alarm
Cost per unit (\$ AUD)	15-25 \$	25-50 \$\$	50-150 \$\$\$	100-250+ \$\$\$\$
Installation	Homeowner can install 	Homeowner can install 	Electrician required 	Electrician required 



Cost remains a major barrier in updating smoke alarm legislation



Average number of bedrooms per dwelling: 3.1

Total number of bedrooms in Australia:
 $3.1 \times 11 \text{ million dwellings} = 34 \text{ million bedrooms}$

34 million bedrooms x \$150 per alarm = **\$5.1 billion**
to install an alarm in each bedroom

Source: Australian Bureau of Statistics, 2021 Census



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Significant funds would be needed to ensure government housing compliance

Public housing dwellings in 2024



Adapted from Australian Institute for Health and Welfare, 2024

Average number of bedrooms per public housing dwelling: 2.2

297,684 dwellings total

$297,684 \times 2.2 = 654,905$ bedrooms

$654,905 \times \$150$ per alarm =

\$100 million to install a smoke alarm in each bedroom



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Was Queensland's smoke alarm legislation effective?



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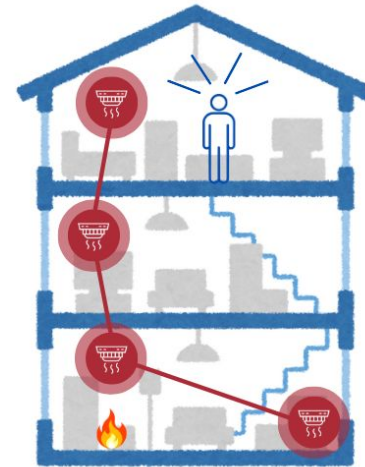
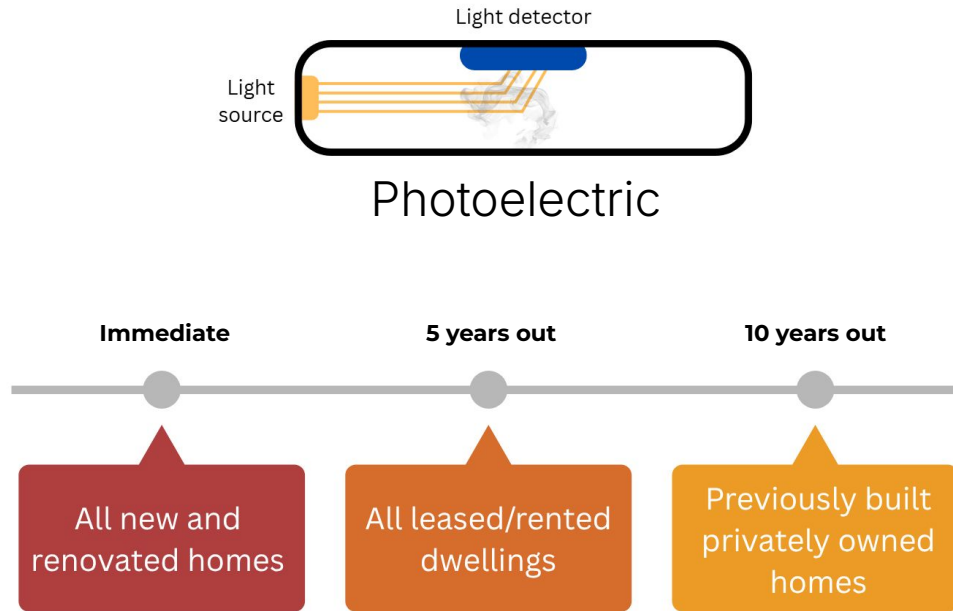
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Queensland's smoke alarm legislation has demonstrably improved occupant safety



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Recommendations



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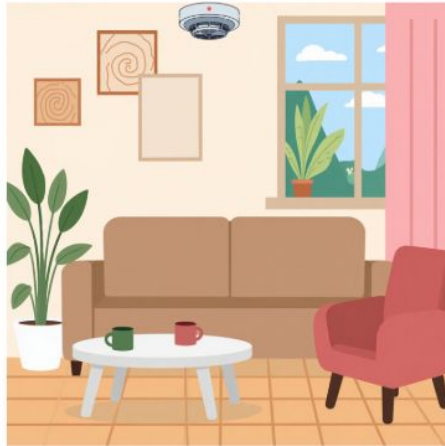


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Despite recent reforms, Queensland's legislation still leaves critical gaps in smoke alarm requirements

Photoelectric



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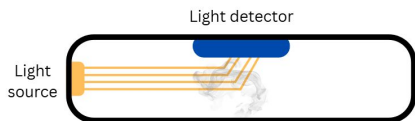
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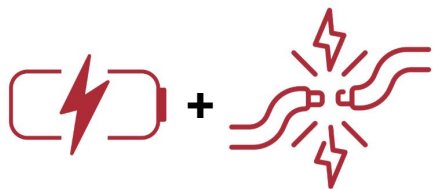
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Other jurisdictions can follow QLD's lead in reforming smoke alarm legislation

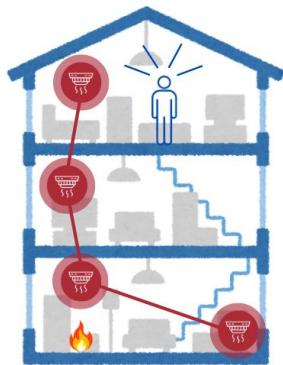


Photoelectric



10-year battery

Hardwired



Interconnected



In all bedrooms and living spaces



Thermal alarms in garages



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Phased rollout of new requirements will be necessary to keep up with increased demand



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Direct interaction and demonstration are critical to ensuring compliance



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Many jurisdictions can improve their fire data recording process

Residential Fire Reporting across Australia



Source: Report on Government Services, 2024-2025



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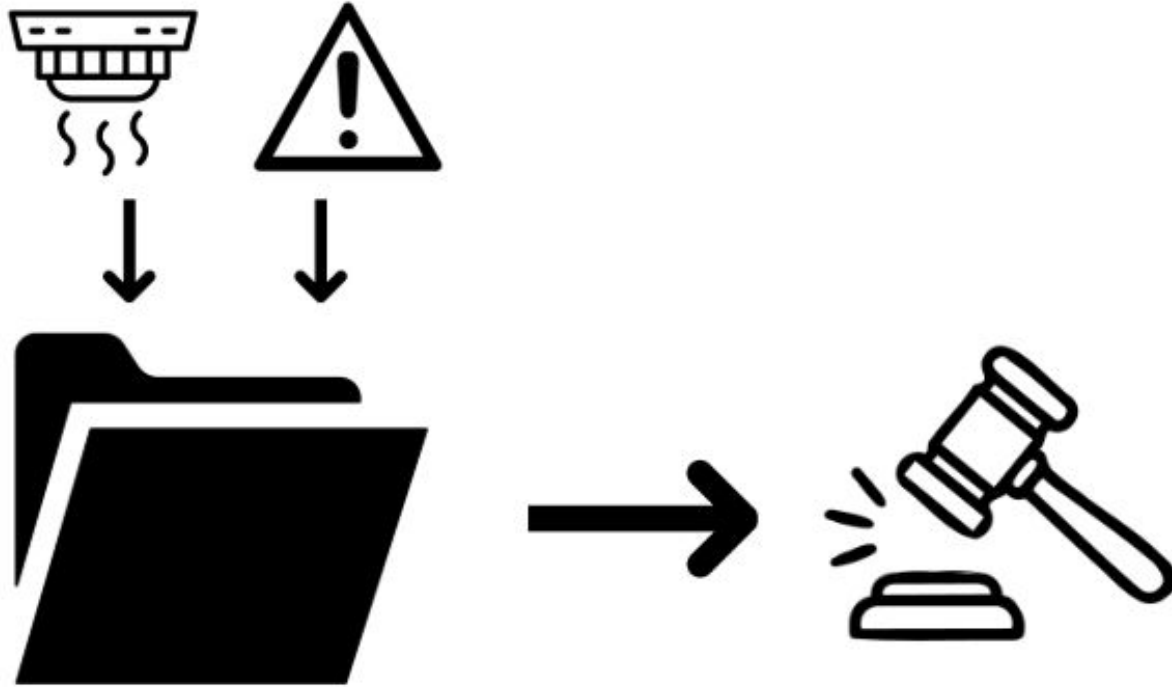
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Data collection is vital to evaluate new fire hazards and update recording systems and legislation accordingly



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Additional improvements in all Australian jurisdictions smoke alarm legislation is vital to ensure occupant safety



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Authorities Council (AFAC)





Thank You!

Questions?

Please contact Kayla Roks-Webb with further questions
or you wish to read our final report:
kayla.webb@fpaa.com.au



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