

# BLACKOUT: Exposing the Hidden Risks in Lift Passenger Emergency Systems

September 2024

d2e

**Paul Burns**  
D2E International VT Consultants



# Current requirements for battery backed safety systems

01

Any alarm should not be lost in cases of electrical power supply switching or failure

02

*There shall be emergency lights with an automatically rechargeable emergency supply*

03

The machine shall be capable of having the brake released...or electrical powered by an automatically rechargeable emergency supply.

04

...battery health checked as part of a schedule of regular checks by the designated maintenance provider

EN81-28

EN81-20

EN81-20

LEIA  
ML01:  
2013



# In 2023, we audited 2,600 lifts across 20 client portfolios

574



Hazard and Incident (H&I) Reports were raised

22%



1 in 5 lifts were found to have faults

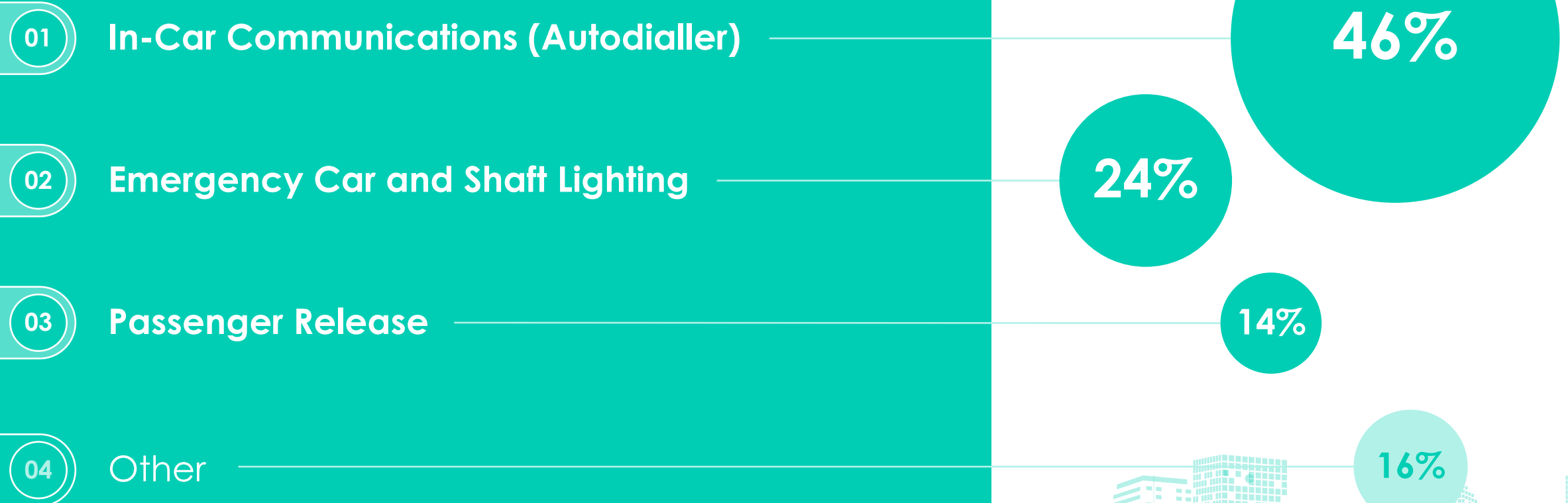
84%



84% of faults were due to **battery power failures**

# Three main safety-critical functions are affected by battery power failure

Analysis of the 574 H&I reports

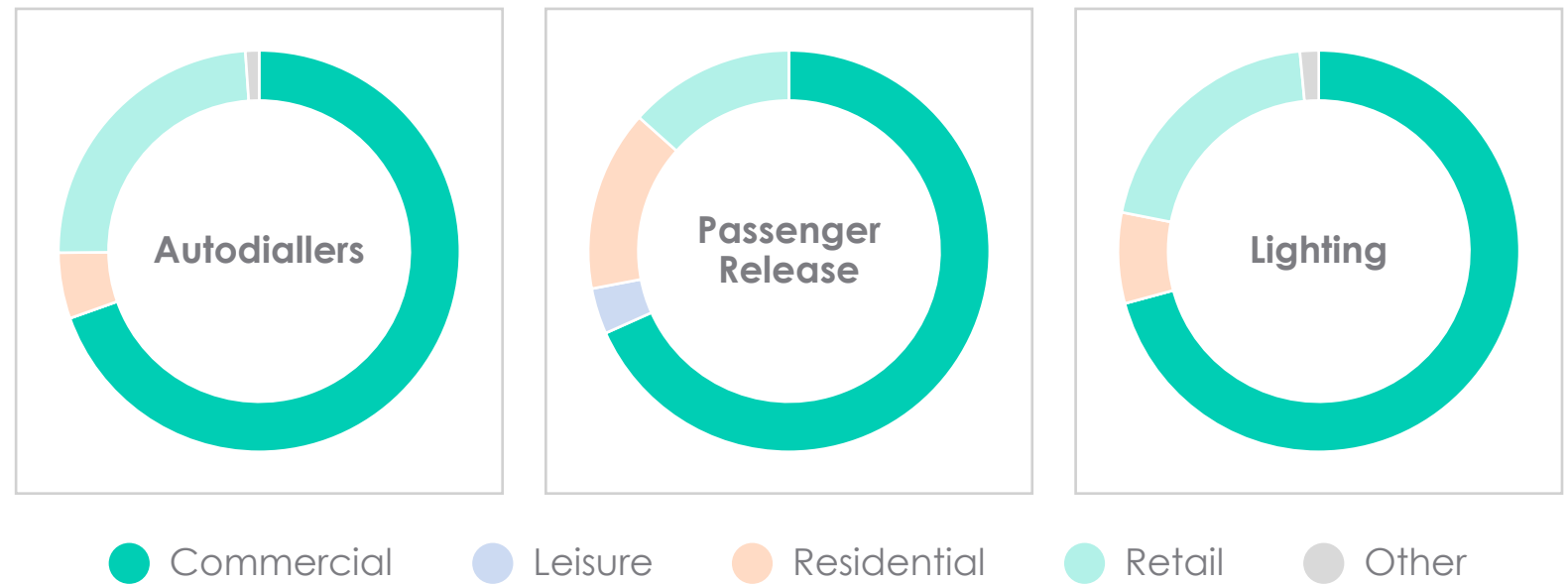


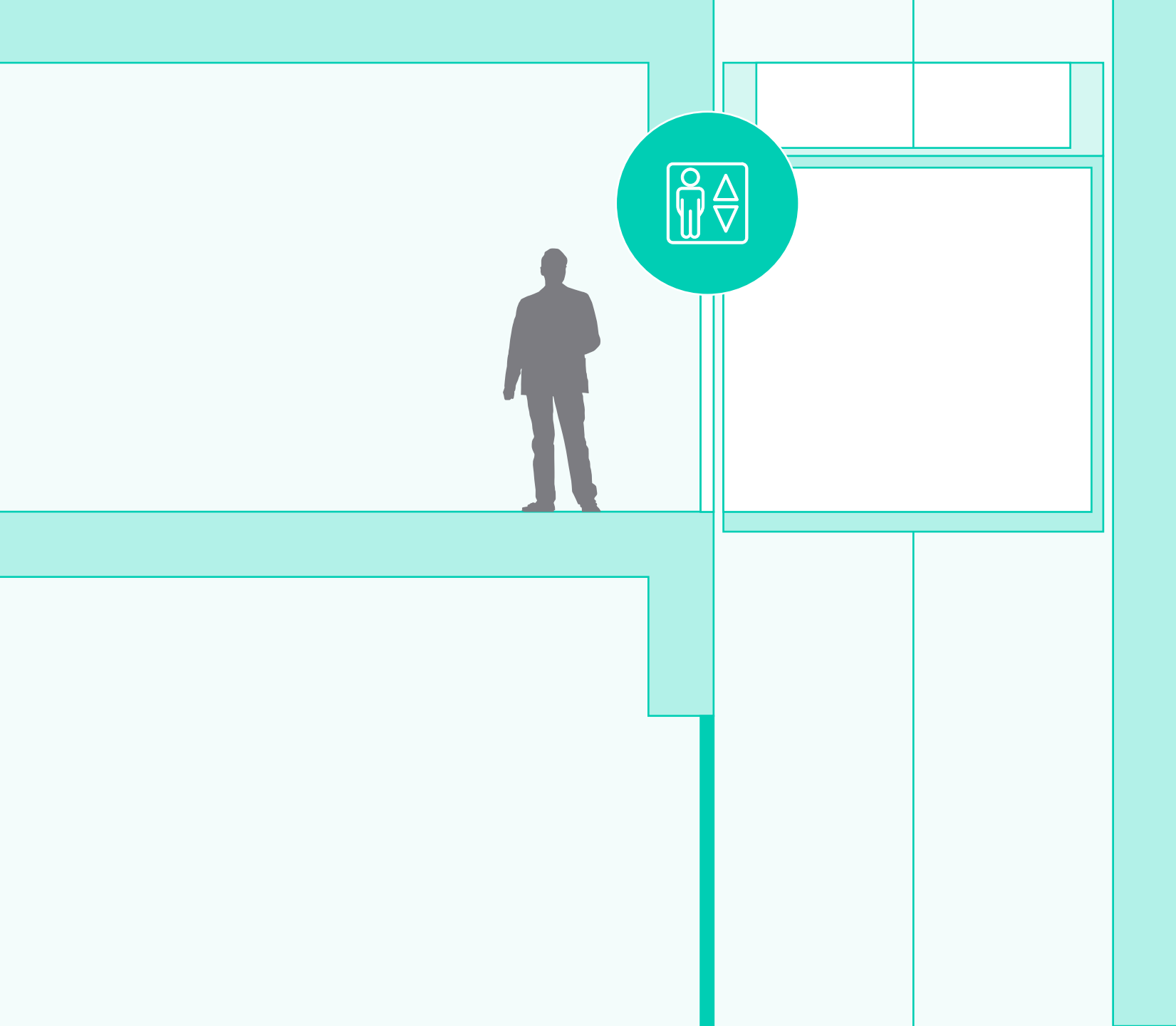
# 70% of battery failures came from commercial offices

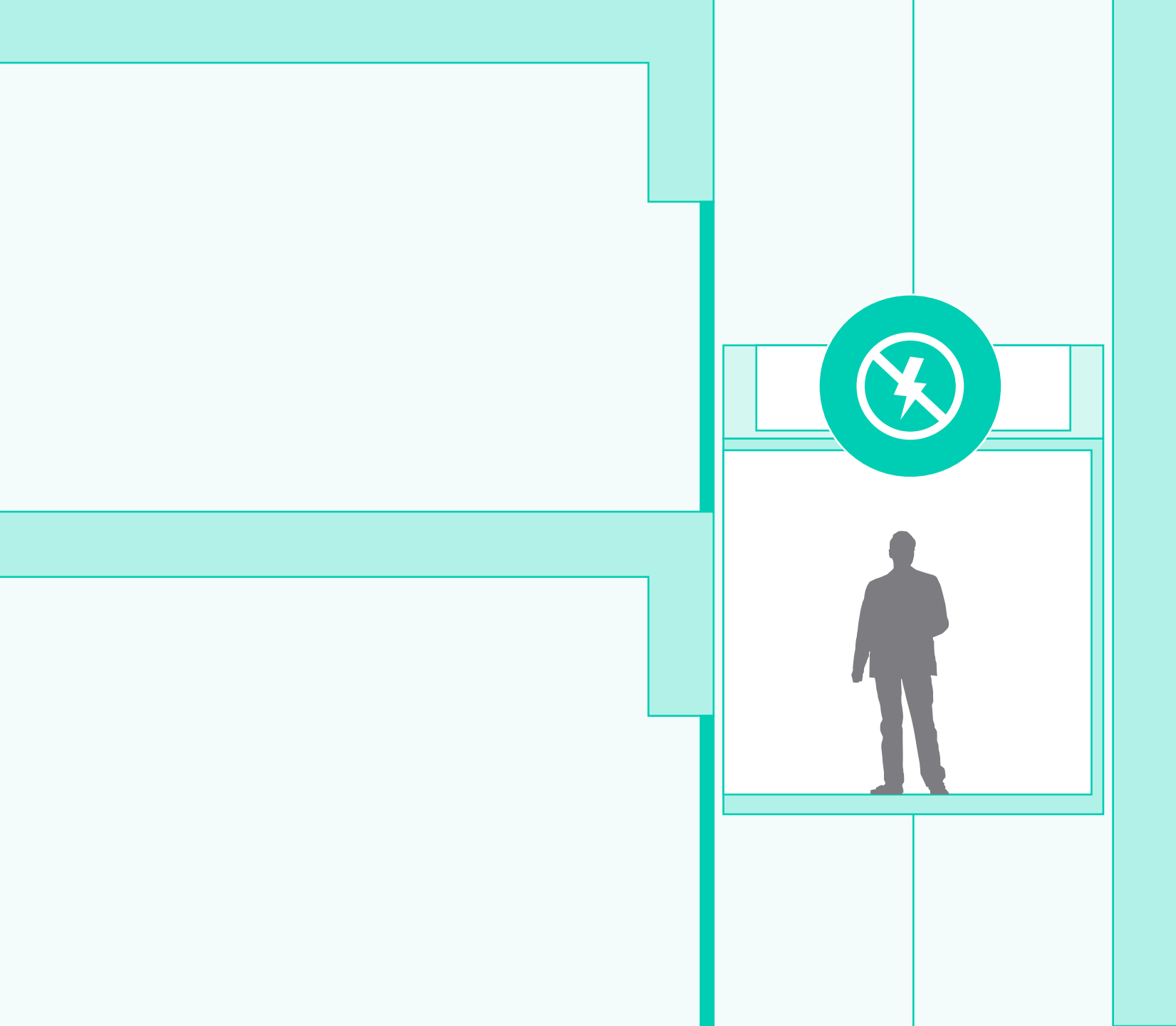
\*Offices make up around 55% of the portfolio

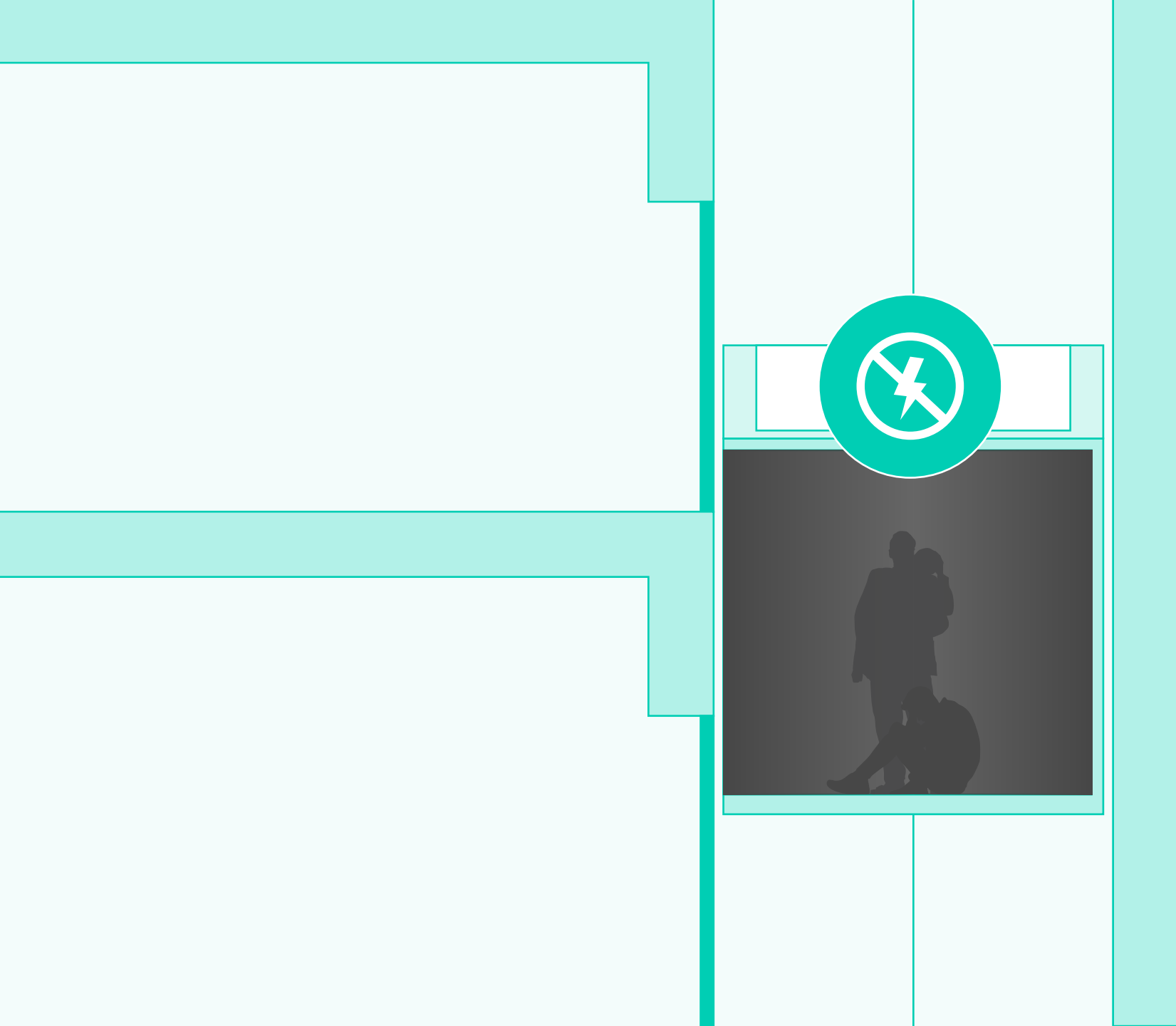
Residential buildings are typically less populated during working hours: **entrapments could go un-identified.**

Commercial was the most common building type











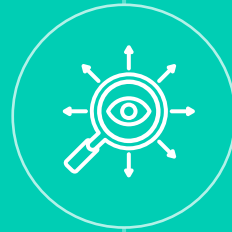
# 3 key recommendations to mitigate the risks of battery failure

01



Improve  
accessibility

02



Improve  
monitoring

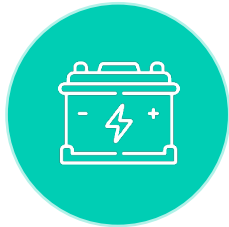
03



Improve fault  
response

## RECOMMENDATION

01



**Improve  
accessibility**

01

High proportion of failure reports found systems to be in **'hard to reach' locations**

02

Location decisions **influenced by MRL products** in the UK market

03

**"Human factors"** play a role in failure to resolve battery failures

**High effort = low success:**

When battery status or batteries themselves are harder to test or access, they are less likely to be adequately monitored or replaced

# RECOMMENDATION

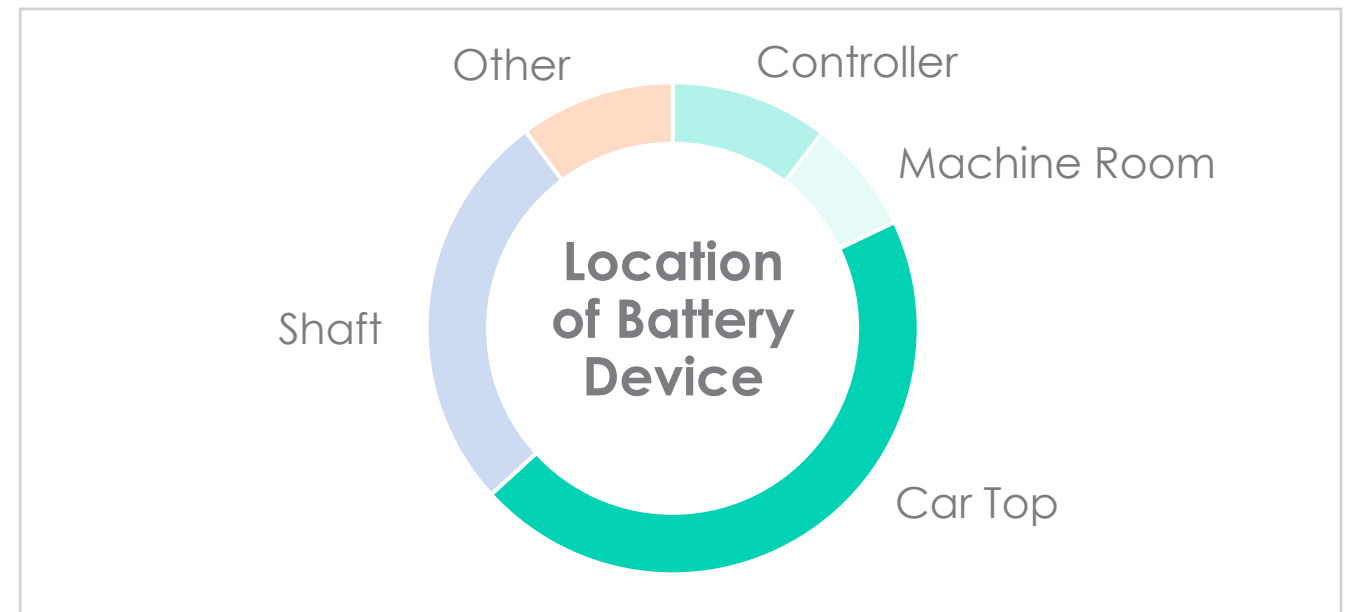
01



Improve  
accessibility

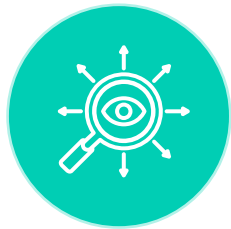
## Considerations

- **MRL's:** 67% of battery failure H&I's were from MRL's
- **Location:** 72% of failure reports had batteries in locations needing more effort to access
- **Location:** 18% of failure reports had batteries in landing access controller cabinets or separate machine rooms



## RECOMMENDATION

02



### Improve monitoring

01

Global suppliers promoting cloud-based remote monitoring through IoT devices

02

A high-proportion of failures were from 'own brand' systems

03

This suggests either an equipment problem or a service and maintenance problem

04

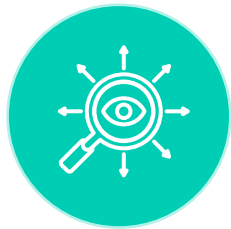
A focus on mandatory isolation of the lifts during servicing to test the battery-backed safety features

05

A focus on a real time monitoring solution at the local site, transmitting an alarm when needed - Report co-author Osama Alshhoumi developed a concept system

## RECOMMENDATION

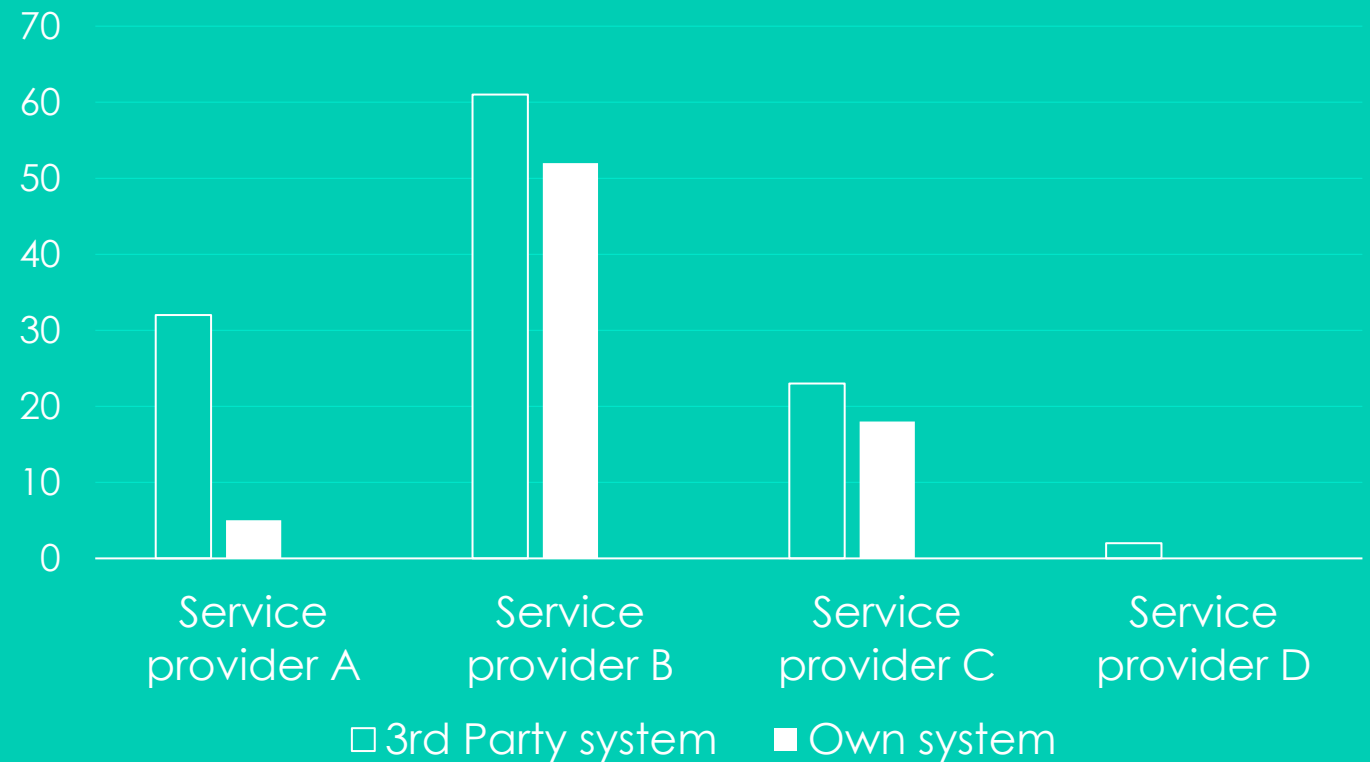
02



Improve  
monitoring

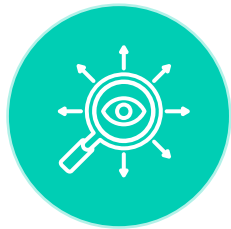
## Global service providers autodiallers

**Autodiallers:** absolute numbers of reports by 3rd party equipment vs own system



## RECOMMENDATION

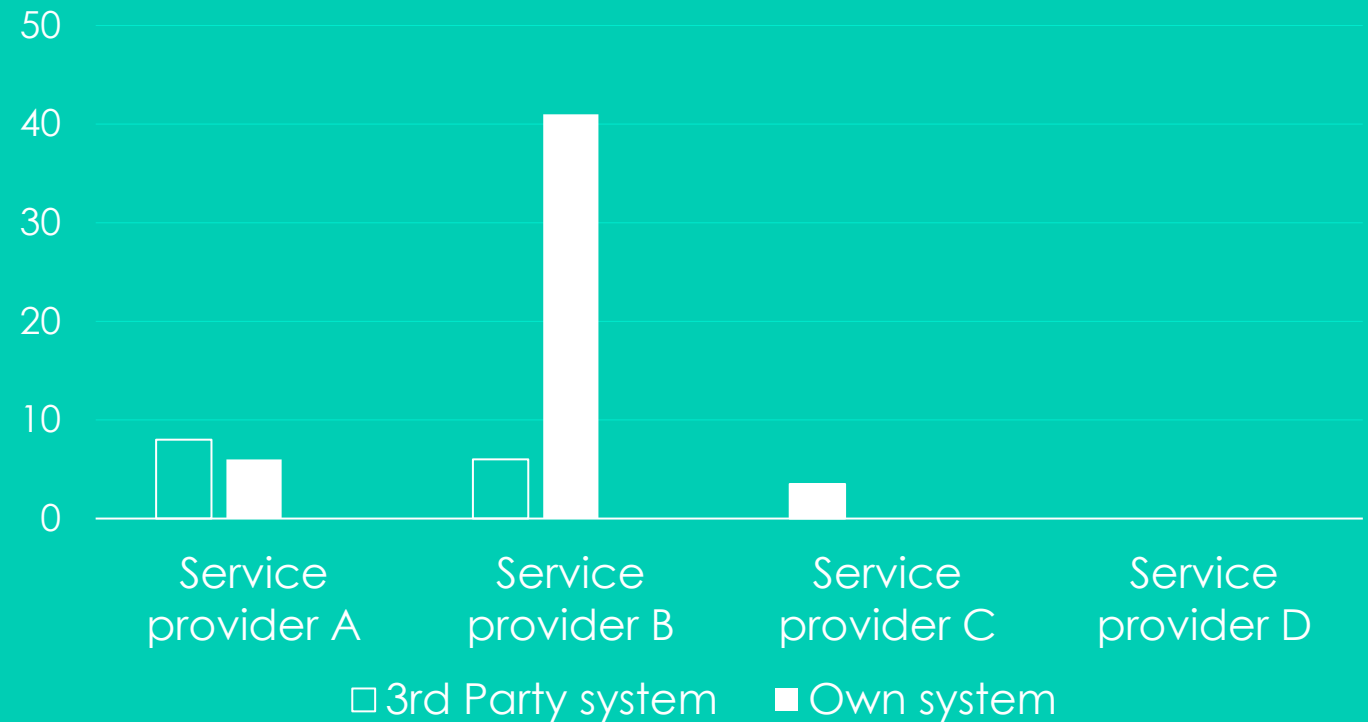
02



**Improve  
monitoring**

## Global service providers passenger release

**Passenger release:** absolute numbers of reports  
3rd party equipment vs own system



## RECOMMENDATION

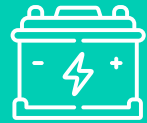
03



### Improve Fault Response



High numbers of **faults** relate to **autodiallers**



**Replacement** of copper PSTN with **FTTP** is likely to exacerbate the situation



**Monitoring systems need to be fail-safe** by taking the lifts out of service, until the battery systems have been returned to a satisfactory condition

**We have the  
knowledge,  
now it's time  
to act.**

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What do we know?



**01**

**Battery power failures  
make up 84% of cases in  
2023's 574 H&I Reports**



**We have the  
knowledge,  
now it's time  
to act.**

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What do we know?



**02**

**In-car communication  
systems represent 46%  
of emergency backup  
battery failures**

**We have the  
knowledge,  
now it's time  
to act.**

---

What do we know?



**03**

**18.5% of this portfolio's  
emergency batteries  
currently ineffective and  
10% of autodiallers  
potentially inoperative  
during a mains power  
failure**

# A reminder of our **recommendations**

**01**



**Improve  
accessibility**

**02**



**Improve  
monitoring**

**03**



**Improve  
fault response**

The background of the slide is a white wireframe architectural drawing of a multi-story building, showing structural elements like beams, columns, and floor slabs. The drawing is set against a solid teal background.

When we know better,  
we need to do better

Q&A

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