



BCA Seminar 2026

Managing travelator and escalator safety in Changi Airport

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Changi Airport - Key facts and figures in 2025



**≈300 travelators and
escalators**



**≈70 million
passengers**



**>140 incidents per
year**

 Incidents are often user led; but they have bigger than proportional downstream impact



Injuries to self or others



Stress to operations and equipment downtime



Negative user experience



Injuries to self or others

- Incidents have led to injuries, such as open wounds, sprains
- For serious injuries, passengers run the risk of not being able to catch their flight they are not certified fit to fly
- For cases with 'runaway' items like trolley or luggage bags, there is risk to other airport users
- For cases where users fall at the end of the equipment, there is also risk to other airport users behind



Stress to operations and equipment downtime

Follow ups required

- Technicians to investigate, report, and re-activate equipment (for every incident)
- Shift managers to investigate and file initial report
- IFM officer to further follow up with management
- IFM to further follow up with users (in the case of a feedback)
- For near misses (assuming E-stop depressed), technicians are still required on ground to re-activate equipment. Assuming 10 near misses per incident with 50% E-stop activation ~ 750 activations/year



Negative user experience

Imagine...

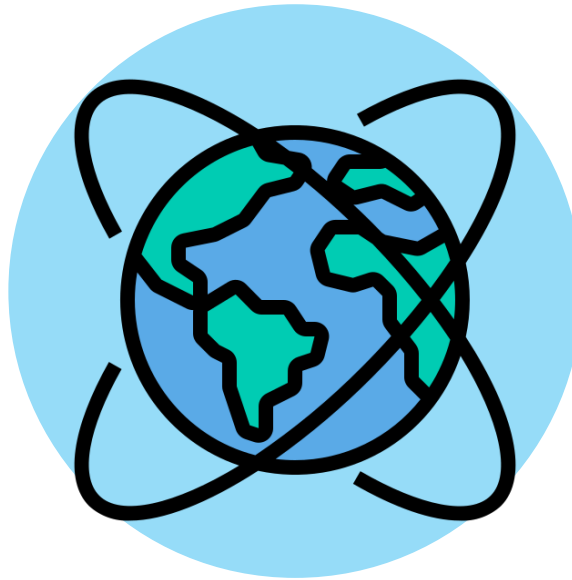
- Families missing their flight because they needed to seek medical attention for one of their family members
- Passengers cannot enjoy their holiday proper with an injury even if they make their flight
- Getting struck by a falling luggage bag from another careless user
- Stressful experience when user approaches the end of a moving travelator with a congestion



Unique challenges for Changi



Bags and trolleys



Diverse user profile



User state of mind



Root causes are mapped for analysis and solutioning

REDUCE FAULTS



Equipment Fault

Technical issues

ENHANCE MEASURES + NEW MEASURES



Misuse of Facilities

Unfamiliar use of trolley

Unsafe user behaviour

Mischief

(running, playing or people on trolley)

Difficulty in pushing off

Attention diverted

Wheelchair on escalator/travellator

Did not engage/release brake

Backfacing/sidefacing

Trolley on escalator

Belonging fell off trolley (not overloaded)

Mishandling of belongings

Overloaded trolley

Boarding opposite direction

Delayed in response

REDUCE IMPACT



Unforeseen Circumstances

Loss of balance

Tripping

Item stuck

Luggage/bag fell



Targeted solutions were developed for different root causes

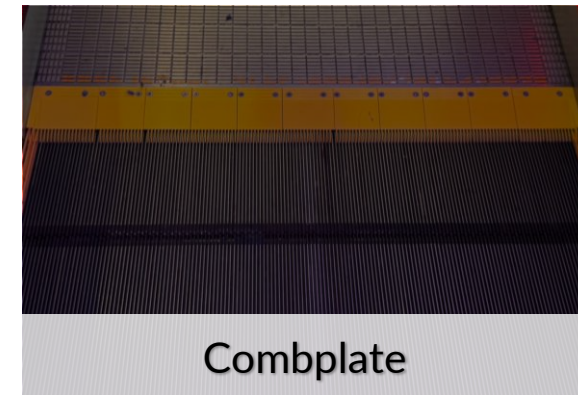
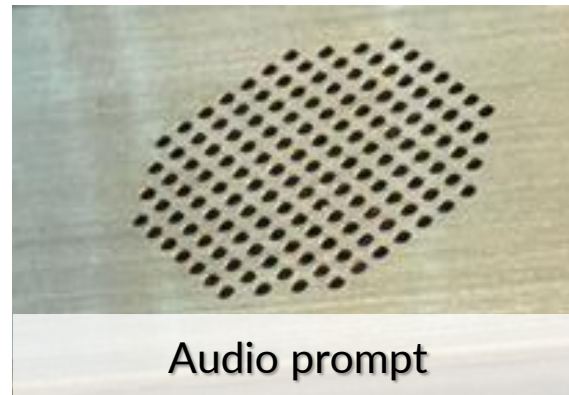
Top root causes on inclined travelators

- #1 Did not engage/release brake
- #2 Difficulty in pushing off
- #3 Overloaded trolley
- #4 Wheelchair on traveller



Top root causes on flat travelators

- #1 Backfacing/sidefacing
- #2 Mischief
- #3 Delay in response
- #4 Item stuck





Safety interventions is an ongoing and iterative process

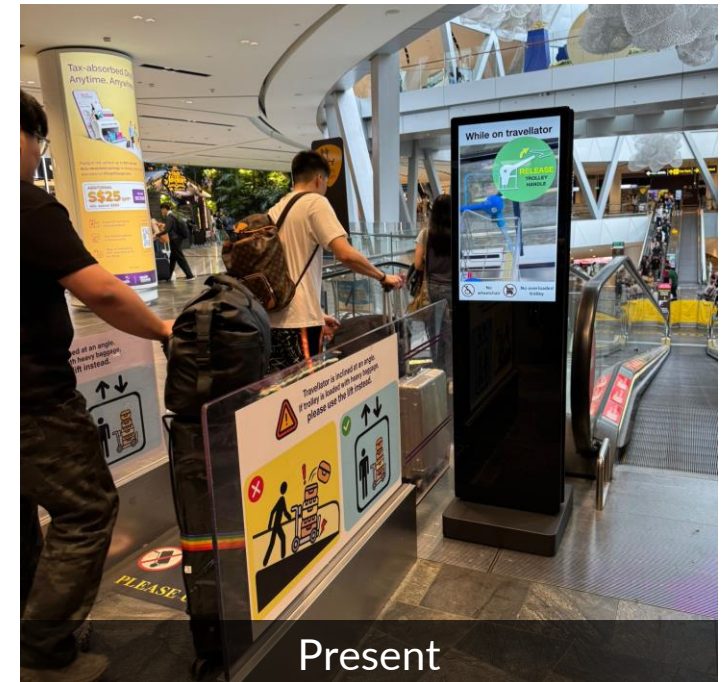
Case study: trolley related incidents on inclined travellers



One-side signage, only provided at the entrance of travelator



- Dual-side signage to provide visual guidance on usage of trolley
- Barricades to improve trolley alignment



- Dual-side digital standee for language agnostic guidance on usage of trolley
- Improved barricades with advisory to inform the risk of overloaded trolley



Safety interventions is an ongoing and iterative process

Case study: Audio prompts on flat travellators



Using temporary power supply for trial

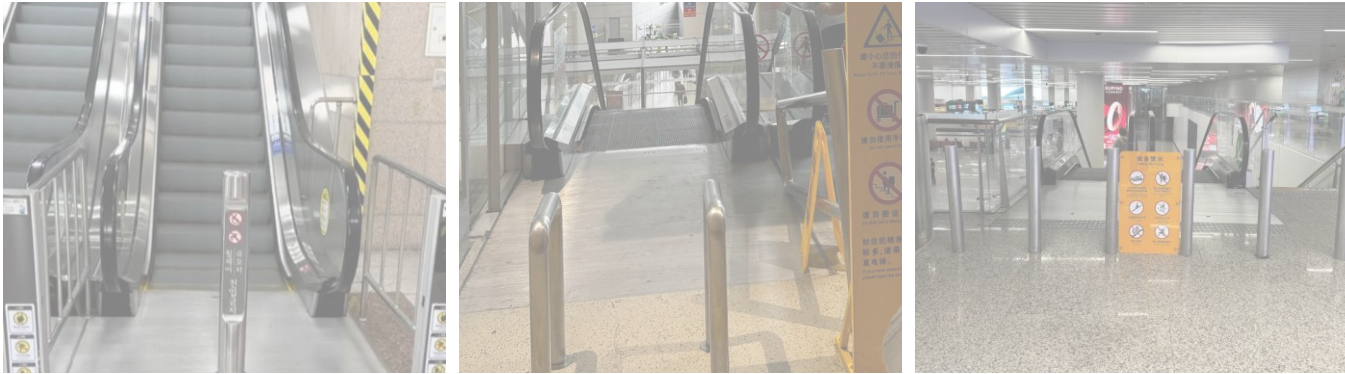


- Concealed cables within decking and
- Direct power source tapped from pit



- Relocated speaker within decking and
- Modified decking to be perforated

Best practices were adopted – targeted deployment of bollards



Bollards are commonly seen at escalators in airports, train stations, and commercial malls.



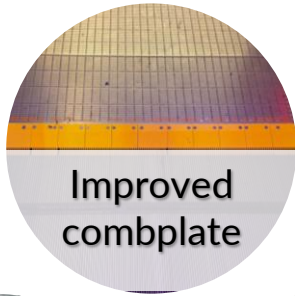


Overview of current intervention measures in Changi

COMPLETED



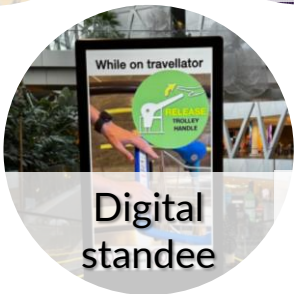
Signage on trolley



Improved combplate



Bollard



Digital standee



Improved wayfinding

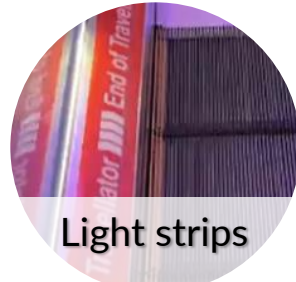


Advisory barricades



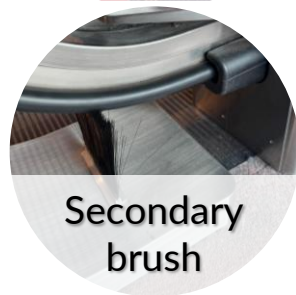
Audio prompt

ONGOING



Light strips

Exploring solution that incorporates wording to the LED strips



Secondary brush

Limited data points to demonstrate its effectiveness



Community Engagement

Curating educational video

DISCONTINUED



Caution flap

Not feasible as high maintenance required and hinders the visibility of light strips



Projection

Insufficient to increase alertness and image quality deteriorates rapidly

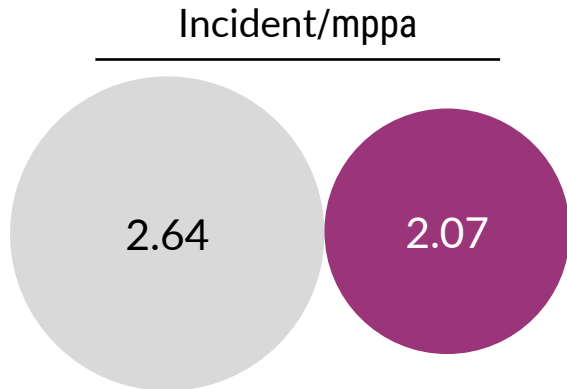


20% reduction in cases achieved in 2025, but new challenges emerge

2024 statistics
2025 statistics

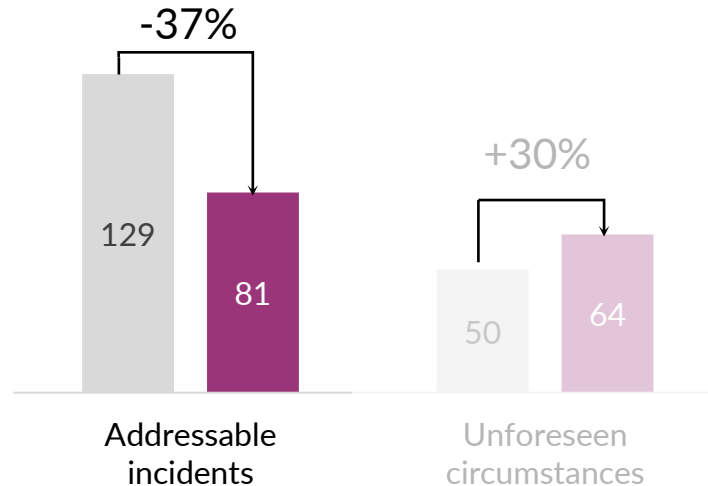
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20% reduction in cases



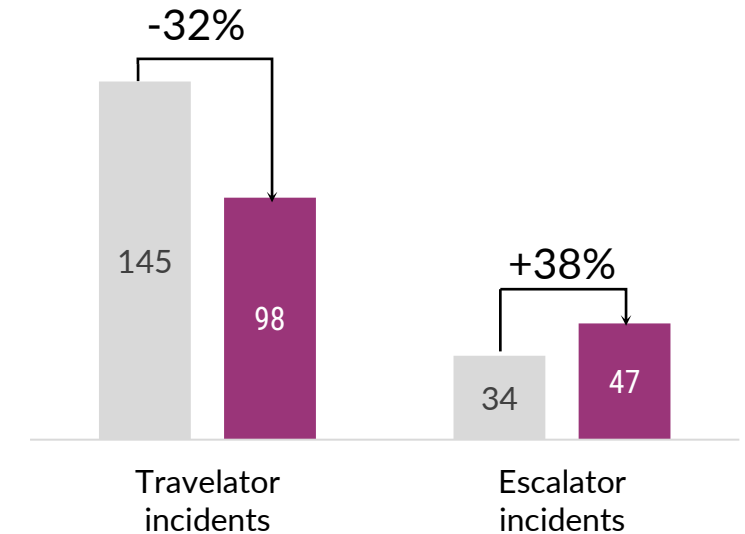
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Almost 40% of the addressable incidents were reduced in 2025



3

Travellator incidents decreased whilst escalator incidents increased



Special mention to
our partners in this
journey:

- BCA
- Hitachi
- Mitsubishi
- Schindler
- TK Elevator



♥
THANK YOU