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AI Analysis Trial

An analysis using Artificial Intelligence (AI) algorithms of Mirvac's OHS incident reports and Post Occupancy surveys. (7 min read, not including appendix)

The cost to produce this preliminary report has been waived, with the intention to demonstrate the value of this newly discovered technique and discuss a fee proposal for ongoing work.

Monash University is in the process of patenting this algorithm.

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Background

Goal : “Are there locations where slips or trips occur repetitively?”

This seemingly trivial question is actually difficult to answer. OHS incidents are recorded in OHS management systems. These systems record thousands of incidents a year and describe the incidents in “free text” or “natural language” making it difficult to analyse.

Monash University has developed an AI algorithm that can analyse large volumes of free text. Mirvac has asked Monash University to trial it on their OHS data. This preliminary report is the outcome of this trial.

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The Data & Definitions

Monash University were given 2159 OHS incident reports recorded between Jan 2017 to Feb 2018 for the purposes of the trial.

To be considered a "repetitive incident" there must be at least 2 occurrences of a similar slip or trip type in a given location. For example, if there are two incidents at the bottom of a travelator, one due to slipping the other due to a trolley getting stuck they will not be considered repetitive incidents, only incidents that are similar in nature and in the same location will be grouped as "repetitive incidents"

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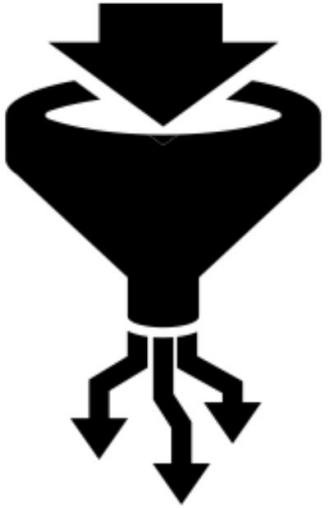
How it works

The algorithm is able to determine location information that is embedded in the free text i.e. “outside woolworths” or “at the entrance”. It can also determine the nature of the slips and trips i.e. “there was a trolley involved” or “tripped on a mat”.

This allows us to analyse all 2159 incidents and place them into “repetitive incident” groups.



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What we found

The algorithm discovered 39 repetitive incident groups. Out of the total 2159 incident reports, 716 were slips and trips, of which 139 were repetitive incidents clustered into 39 groups. This means 1 in 5 slip and trip incident reports are repetitive incidents. An example of a repetitive incident group is shown in the following table :

Location Site	Event ID	Date	Event Description Extract
Kawana Shoppingworld	E-0151068	21/02/2018	"she had slipped over earlier outside woolworths"
Kawana Shoppingworld	E-0147871	11/01/2018	"code blue outside Woolworths ... he had slipped over and landed on his left knee"
Kawana Shoppingworld	E-0144814	05/12/2017	"Unknown Customer Slips outside Woolworths"
Kawana Shoppingworld	E-0144767	04/12/2017	"call from Woolworths to attend a slip and fall outside their store"
Kawana Shoppingworld	E-0142583	09/11/2017	"walking past the self-checkout area of Woolworths, when her right foot slide forward causing her to fall"
Kawana Shoppingworld	E-0136231	18/08/2017	"code blue in front of Woolworths ... slipped on a puddle of water and fell landing on her knee"
Kawana Shoppingworld	E-0132790	06/07/2017	"walking pass Woolworths entrance ... her right foot slip from underneath her and landed on floor"
Kawana Shoppingworld	E-0127389	13/05/2017	"Woolworhts staff member who said Ashley (Woolworhts manager)took details of a young boy who hit his head on the ground when his father slipped"
Kawana Shoppingworld	E-0127289	13/05/2017	"call from the woolworths desk informing me of a code blue just outside their store ... slipped over in a patch of water outside the trolley bay"
Kawana Shoppingworld	E-0118940	22/02/2017	"slip and fall opp Woolworths"
Kawana Shoppingworld	E-0115126	19/01/2017	"slipped and fallen outside Woolworths"

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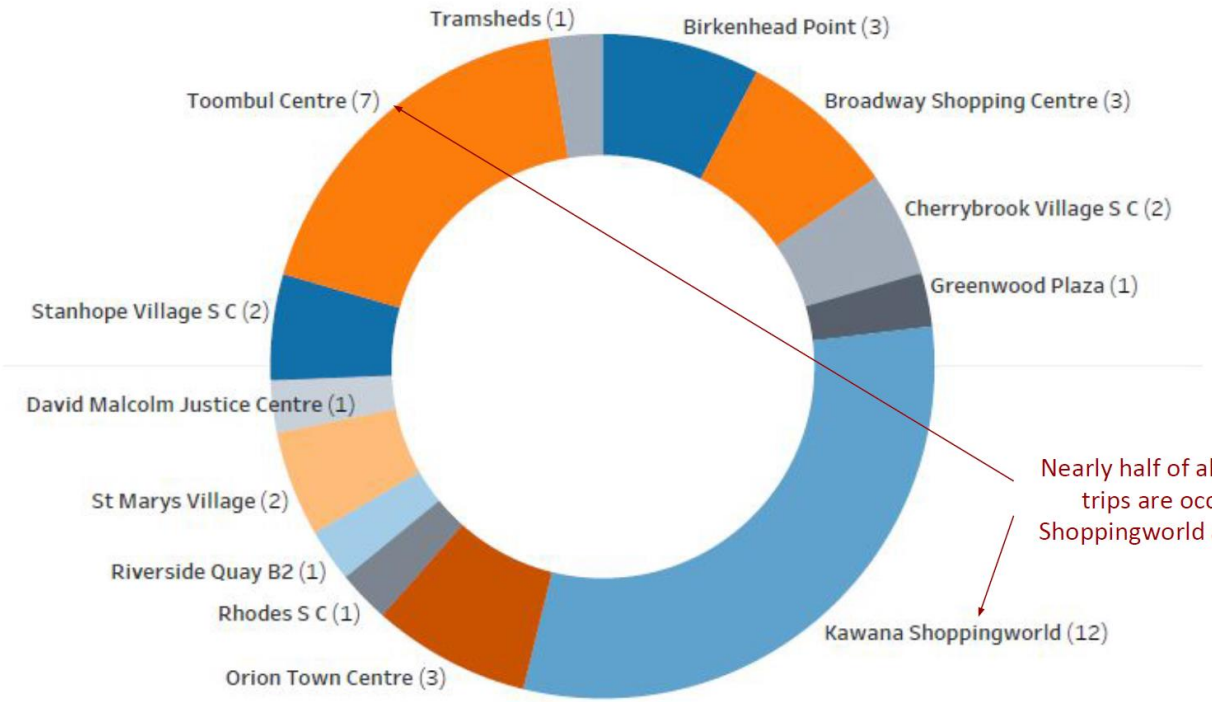
Where are these 39 repetitive incidents occurring?



Nearly half of all repetitive slips and trips are occuring at Kawana Shoppingworld and Toombul Centre

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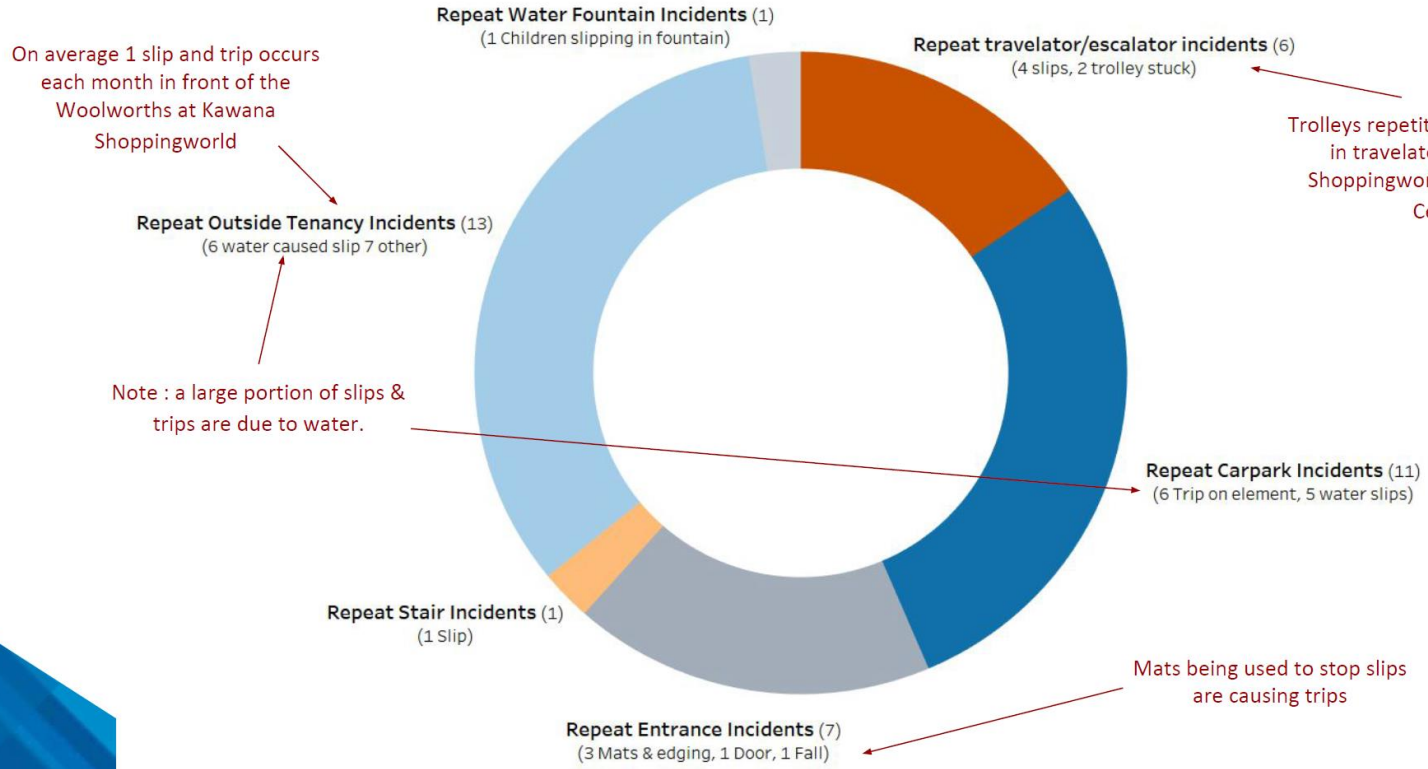
What type of repetitive incidents are occurring?



On average 1 slip and trip occurs each month in front of the Woolworths at Kawana Shoppingworld

Trolleys repetitively getting stuck in travelators at Kawana Shoppingworld and Toombul Centre

Note : a large portion of slips & trips are due to water.

Mats being used to stop slips are causing trips

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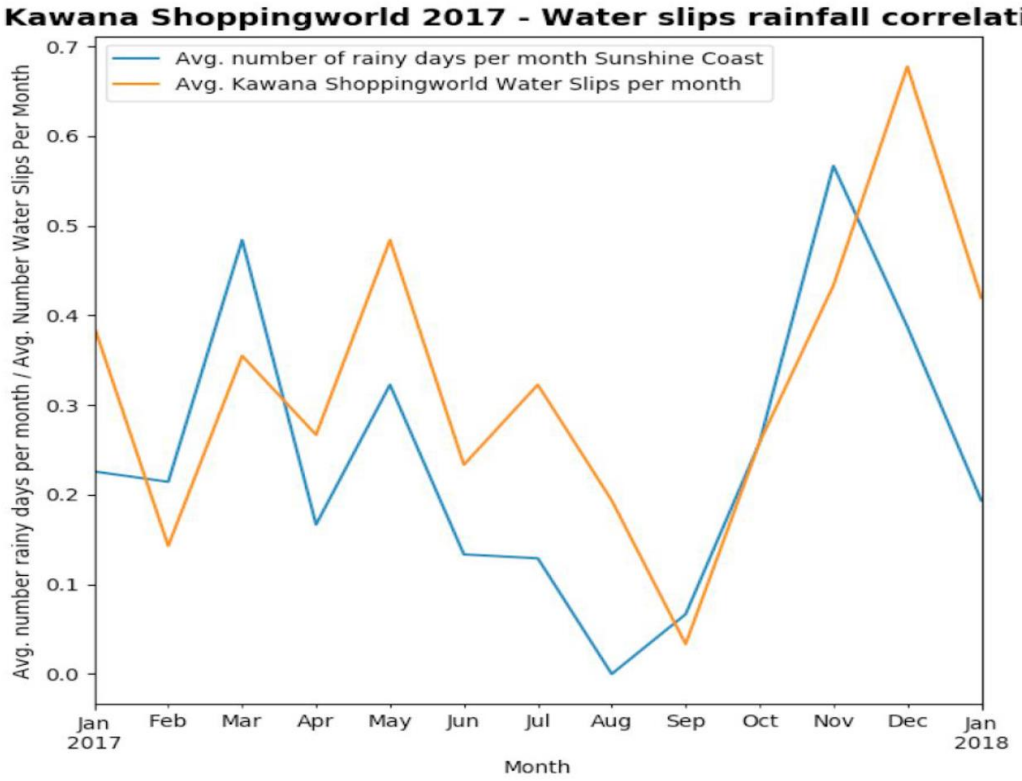
Do slips at Kawana Shoppingworld correlate with rainfall?



"Centres can develop solutions to address root causes, and mitigate risks proactively ahead of rain events"

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Proactive Insight Report Pricing

Our reports are charged per topic for example “Slips and Trips” or “unsafe landscaping” is considered one topic. Analysing power outages would be another topic. The first report would cost $14,923, a subsequent quarterly update would be $1,998 or an annual update would be $7,990.

If you need help in determining what topics to analyse we can perform an exploratory analysis for you at $9,988. If you require us to present the report in a workshop this would cost an additional $1000 in Melbourne or $2500 outside Melbourne. A breakdown of this pricing can be found on the next page. If we find you are requesting many topics we will arrange a volume discount.

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