THE MATHEMATICAL
ASSOCIATION OF VICTORIA

INVESTIGATIONS

MELBOURNE'S ICONIC FERRIS WHEEL by Lindy Sharkey

The Melbourne Star is the 120m tall Ferris wheel located in Docklands. It has been plagued with controversy since opening in 2008 before eventually closing permanently in 2021. A ride on the Southern Star boasted 30 minutes of 360 degree panoramic views of the city, Port Phillip Bay and the Dandenong Ranges. The Skyline Melbourne is a newly constructed Ferris wheel located at the Melbourne Convention and Exhibition Centre. It is 35m tall and the ride is 8-10 minutes with views of the city.

ROTATION RATES

Draw a diagram of each Ferris wheel. Determine the relationship between the height of the passenger cabins, the radius of the Ferris wheel and the distance travelled by the passengers.

Compare the time and speed of travel in each Ferris wheel.

As an extension, determine the theoretical travel speeds of each Ferris wheel if a passenger were to be travelling at the same maximum height of the other Ferris wheel.

MAPPING MOTION

Graph and compare the functions modelling the height of a passenger (or passenger cabin) of both the South Wharf Skyline Ferris Wheel and the Melbourne Star, extend by comparing the frequency and amplitude of the functions.

As an extension, analyse and compare ticket prices, waiting times, number of passenger carts and operating hours to determine which is the most profitable opportunity and strategies to maximise capacity.

CURRICULUM CONNECTIONS

Level 7: VC2M7M03 describe the relationship between π and the circumference, radius and diameter of a circle.

Level 8: VC2M8M05 recognise and use rates to solve problems involving the comparison of 2 related quantities of different units of measure.

Level 10: VC2M10ASP03 use the unit circle to define the simple trigonometric functions of $y = \sin(x)$, $y = \cos(x)$ and $y = \tan(x)$ as functions of a real variable, and graph them with and without the use of digital tools.