

Methodology & Notes on Data

1. We utilized the Royal Life Saving National Fatal Drowning Database (RLSNFDD). In some years, state-level raw counts are missing for certain states. The RLSNFDD omits between 1 and 4 cases for data de-identification purposes. In such instances, we referred to several years of the National Drowning Report published by Royal Life Saving, Australia.

2. Drowning Death Rate = (raw death count in the year/population of the year) * 100,000

3. CAGR = $((\text{End}/\text{Start})^{(1/n)} - 1) * 100$.

4. For sports and activity-related data, we used the AusPlay Survey data for the financial year 2023-24. AusPlay changed its methodology, making previous years' data incomparable with the current data. Consequently, no comparisons have been made.

5. We utilized the ERP by SA2 (ASGS Edition 3), Age and Sex, 2001 Onwards, for population data from the Australian Bureau of Statistics.

6. We use the 8165.0 Counts of Australian Businesses, including Entries and Exits (CABEE) datasets. They were published on December 17, 2024. This data helps us explore access. The ANZSIC code 8211 refers to 'Sports and Physical Recreation Instruction.' This includes units that provide non-vocational instruction in sports and physical activities. Primary activities include 'Swimming Instruction,' among others. We use these business counts as a proxy for the number of swimming instruction schools in each state and territory. We exclude the business category with over 200 employees, although the number is small (only three).

7. The Swim Safety & Access Gap Index (SSAGI) combines three critical dimensions:

- Drowning risk
- Lesson capacity (access)
- Swimming participation

These highlight where the gaps in safety and access are greatest across Australian states and territories. A higher SSAGI score indicates a larger gap between safety needs and capacity to meet them.

Indicator

A. Risk

- Measured as the 3-year average drowning death rate per 100,000 population.
- A 3-year mean reduces volatility from year-to-year fluctuation.

B. Access Shortage (Capacity)

- Providers per 10,000 children (0-14 years).
- Convert to a shortage measure using the inverse.
- Access Shortage = $1 / \text{Providers per 10,000 children}$.

C. Demand

- Equal-weight composite of adult and child swimming-participation rates. Used only as a component of SSAGI, not a population-weighted overall participation rate.

Note: AusPlay publishes participation rates and estimated participation numbers. This edition reports Demand as an equal-weight composite of adult and child rates. A true population-weighted overall participation rate would require raw cohort counts or survey weights, which are not uniformly available.

Normalisation

Since each indicator is on a different scale, all three were converted to a 0–100 index using min - max scaling.

$$X \text{ norm} = ((X - \min(X)) / (\max(X) - \min(X))) * 100$$

Index Formula

The SSAGI combines the three normalised indicators using weighted averages

$$SSAGI = (0.5 \times RISK_{norm}) + (0.3 \times ACCESS_{norm}) + (0.2 \times DEMAND_{norm})$$

0 = best performer (lowest risk, lowest shortage, lowest demand)

100 = worst performer (highest risk, highest shortage, highest demand)

Rationale of Weights

A.Risk

50% Drowning outcomes are the primary concern.

B.Access Shortage (Capacity)

30% Capacity gaps are the most actionable driver.

C. Demand

20% Ensure states with high participation are recognised.

A sensitivity test with equal weights ($\frac{1}{3}$ each) was also conducted. Results are robust, the top and bottom ranked states remain unchanged.