



BENCHMARKING AUSTRALIAN CHILDRENS' SWIMMING AND WATER SAFETY SKILLS: SWIM SCHOOL DATA

Part 1: Primary School
children aged 5-12 Years



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DID YOU KNOW?



53% of children attending private lessons in this study are aged between 5 – 7 years old



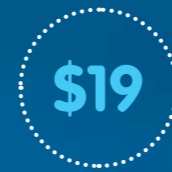
An equal number of males and females attend private lessons



57% of children attending private swimming lessons are from higher socio-economic areas (decile 7 – 10)



Children from higher socio-economic areas are attending private swimming lessons at a younger age than children from lower socio-economic areas



Lesson cost in NSW is higher per lesson at \$19.00, compared to \$15.50 in Victoria and South Australia



At least 50% of 11 and 12 year old children could achieve the 'Benchmark' in freestyle, backstroke, survival backstroke and breaststroke



The average age of achieving 50m freestyle is at 9.2 years and 25m survival backstroke at 10 years



Swim schools are predominately teaching freestyle and backstroke, with a lesser focus on water safety skills such as survival backstroke, treading/sculling and rescue techniques

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DID YOU KNOW?

- Children who regularly attend swimming lessons should be able to achieve the Year 4 benchmark skills before leaving primary school, regardless of age, sex and socio-economic status
- 71% of children attending private lessons are aged between 5 – 12 years old
- Children from higher socio-economic areas were more likely to be attending lessons at a younger age than children from lower socio-economic areas
- The average cost of lessons was \$15.50 per lesson, when broken down by state NSW had a higher charge per lesson of \$19.00
- Swim schools are predominately teaching the traditional strokes of freestyle and backstroke, with a lesser focus on water safety skills such as survival backstroke, treading/sculling and rescue techniques
- More children were learning to swim breaststroke compared to survival backstroke, and more were learning butterfly compared to rescue techniques
- 21% of swimming levels did not contain any water safety or survival skills
- The average age of achieving 50m freestyle is at 9.2 years and 50m backstroke at 9.8 years
- For children 12 years old, 60% were able to swim 50m freestyle and backstroke, 68% could swim 25m breaststroke, 77% could swim 25m survival backstroke, 32% could tread/scull for 2 minutes and 29% could perform a rescue over 5m
- 65% of children have been in private lessons for an average of 16 lessons before entering 50m swimming level, of which 50% had been taking lessons between 6 – 15 months (not continuously)
- The average number of lessons required to achieve 50m freestyle differed by experience and age, the average number of lessons was 11 for children who had been in lessons previously to the 50m level and 16 lessons for those without any private swimming lessons recorded
- At least 80% of children across all ages could achieve 50m within 30 lessons regardless of experience
- Of children that are accessing swimming and water safety skills on a regular basis, there is still a proportion that are not achieving these minimum competencies by the end of primary school

EXECUTIVE SUMMARY

This report provides a situational analysis of the swimming and water safety skills of Australian children attending private learn to swim programs. The level of children's swimming ability has been the subject of much research and debate in recent years from within the wider swimming and water safety industry and at a political level. As a result, this report is part of a broader project investigating Australian children's swimming and water safety ability, including the social context, the economic implications and overall health and wellbeing benefits. The Australian Water Safety Strategy 2016-2020 [1] prioritises reducing drowning deaths in children aged 0 – 14 (Goal 1), particularly focusing on advocacy for compulsory aquatic education for children 5 – 14 years and developing a mechanism for regularly measuring children's swimming skills [1].

This paper specifically addresses the swimming and water safety skills of children attending private swimming lessons outside of school-based programs, from Victoria, South Australia and New South Wales (NSW). This research adds to the existing knowledge base of children attending government, school, vacation and Royal Life Saving Society - Australia (RLSSA) Swim and Survive program [2 - 4]. The National Swimming and Water Safety Framework [5], endorsed by the Australian Water Safety Council is the guiding strategy by which to measure children's swimming and water safety skills, aligned to school years 1 - 7. The Year 4 standard skills have been determined as the minimum competencies a child should be able to adequately perform prior to leaving primary school (around 11 or 12 years of age), hereafter referred to as the 'Benchmark'.

Data was obtained from a national database of private swim schools, consisting of student records from July 2014 to December 2016. All information provided was anonymous, therefore individuals and swim schools were unable to be identified. Data was cleaned in Microsoft Excel and data was analysed using SPSS.

A total number of 61,260 individuals were included in the database, ranging from 0 – 15 years of age, with an average age of 6.5 years (mean 6.0 years, S.D 2.7), 51% were male. Children aged 5 – 12 years made up 71% of total records, and the majority (78%) were from Victoria. Most children were from major cities (94%), 61% of children were living in decile areas ranked 7 – 10 on the Index of Relative Socio-economic Advantage and Disadvantage (IRSAD). The average cost per lesson was \$15.50. When broken down by State, the average cost in NSW was found to be \$19.00 per lesson compared to \$15.50 in Victoria and South Australia.

For the purpose of this paper, swimming and water safety skills have been measured against the National Swimming and Water Safety Framework Year 4 standard competencies – the national 'Benchmark', therefore a smaller sample size has been analysed of children aged 5 – 12 years (N = 43,201). The analysis has been broken down into four sections: 1) what children are learning in private swimming lessons; 2) key swimming and water safety milestones being achieved; 3) achieving the benchmark skills; 4) investment required to acquire the benchmark skills.

Overall, the most widely taught skills primary school aged children are learning are: freestyle (87%) and backstroke (84%), followed by treading/sculling (53%), breaststroke (52%), survival backstroke (46%), butterfly (14%) and rescue techniques (9%). Of the 136 swim school levels recorded, 21% did not contain any water safety or survival skills.

In relation to the Benchmark, the average age for achieving 50 metres (m) freestyle was at 9.2 years and 50m backstroke is at 9.8 years, 25m survival backstroke at 10.4 years and 25m breaststroke 10.4 years. In regards to survival skills, the average age that children can tread or scull for at least 2 minutes is at 8.9 years. Due to the small number of children competent in a rescue, average age was not calculated. Children are being taught rescues from the age of 5 years, and are more competent in reach rescue compared to any other rescue.

These results suggest that the average age of children achieving the Benchmark skills ranges from 8.9 years to 10.5 years. Analysis of 12 year olds suggest that 60% can swim 50m freestyle and backstroke, 76% can swim 25m survival backstroke, and 32% can tread/scull for at least two minutes. Interestingly, more children aged 11 years could perform a throw rescue over 5m, compared to those aged 12 years (25% vs. 16%).

When analysing the investment required to achieve 50m freestyle as being a key benchmark skill, prior experience did influence the number of lessons needed to achieve 50m freestyle. Nearly two thirds (63%) had been attending lessons with the same swim school and had taken an average of 16 lessons. Females and children aged 5 and 6 years were most likely to have attended lessons previously. Unsurprisingly, children who had not attended lessons previously took longer to achieve 50m; the average number of lessons for these children was 16 compared to 11 lessons for children with experience. Most (80%) children required 30 lessons to achieve 50m freestyle.

For a child with no previous swimming experience it took approximately 16 lessons to achieve 50m freestyle, at an average cost of \$248.00 (\$15.50 per lesson). For children who had attended approximately 16 lessons prior to the 50m level, plus 11 lessons in their 50m level, this equates to a total cost of \$418.50. At least 80% could achieve within 30 lessons regardless of previous swimming experience, at a cost of \$465.00. The exact number of lessons required will differ for each individual depending on ability, skill development, exposure and experience.

This snapshot confirms previous findings that children should theoretically be able to achieve the Year 4 standard Benchmark skills, when given the opportunity to regularly attend lessons irrespective of age, sex and socio-economic status. Whilst children of all ages are achieving the benchmark skills, getting to this point requires a considerable amount of time, energy, resources and money over a sustained period of time by children and their parents, and even more so for the children not achieving. Additionally, this study does highlight that swim schools should be focussing more on water safety skills. Industry and government bodies will need to take this into consideration when contemplating new or reviewing existing strategies to enable all children across Australia to learn vital swimming and water safety skills.

NEXT STEPS

Policy, Programs and Advocacy

- Continue to advocate for all children being able to access swimming and water safety education.
- Consider the development of a national online database for all swim school providers (commercial, education bodies, and management agencies) to input their students' data to measure against State/Territory and national averages, including a mechanism for parents to track the progress of their children against key milestones outlined in the National Swimming and Water Safety Framework.
- Utilise this data, along with previous benchmarking research to advocate for State/Territory and Federal Government renewed investment in swimming and water safety programs to:
 - 1) enable access to quality swimming and water safety education for all Australian children and;
 - 2) provide primary school children with an opportunity to develop and enhance their skills over time in preparation for a range of situations that can arise when enjoying the diverse range of aquatic environments.
- Consult with key industry bodies regarding the revised National Swimming and Water Safety Framework to better reflect the skills and development of children and the expectations of children's ability on a national scale, with a stronger emphasis on achieving essential water safety and survival skills.

Research Agenda

- From this research, select case studies as a representative sample across age, state, region and deciles to observe if there are any differences in rates of achievement
- An in-depth analysis of children aged 0-4 years in private lessons is required to estimate the parental investment and skills children gain during pre-school years
- An in-depth analysis of secondary school age children is required to further understand who is missing out on aquatic education and the barriers for this particular population before they reach the higher risk ages associated drowning and risk taking behaviour
- Explore the factors of why some children in regular lessons are not achieving key skills (e.g. medical or developmental reasons)
- Conduct qualitative research with parents to further understand what parents understand to be "swimming and water safety ability" and how they assess this for the purposes of ceasing their child's enrolment in formal learn to swim
- Investigate the distance parents are travelling to attend swimming lessons and if there are any differences between or impacting on those living in high and low decile areas
- Explore different methods of program delivery and rates of achievement e.g. 30 minute lessons vs. 45 minutes or 1 hour
- Explore and contrast the retention rate of swimming, survival skills and water safety knowledge taught in primary school years with high risk aquatic behaviour of youth and young adults

BACKGROUND

Recently, concern has been raised within the water safety industry, government bodies, parents and the media regarding the state of Australian children's swimming and water safety ability and water safety knowledge. Children aged between 0 – 14 years account for 15% of all drowning deaths in Australia, therefore reducing drowning among this age group is a high priority in the Australian Water Safety Strategy 2016-2020 [1].

There are two key objectives focusing on school aged children 5 – 14 years:

- promote compulsory swimming and water safety education for school-aged children to parents.
- schools and policy makers, and; create and evaluate systems to benchmark children's survival swimming skills [1].

Children aged 5 – 14 experience the lowest drowning rate before rising again in adulthood; this is when the location for drowning changes from a domestic environment to an open water environment, emphasising the importance of learning swimming and survival skills in childhood. In recent years, much effort and investment has been targeted towards pre-school water familiarisation and learn to swim lessons, as well as a strong emphasis on primary school children. The Australian Water Safety Council have developed minimum competencies within the National Swimming and Water Safety Framework [5] for children to develop and gain during primary school years. The Year 4 standard, also known as the 'Benchmark', has a target of 100% of children being able to achieve all swimming and survival skills before leaving primary school (around 11-12 years old) (Table 1).

Previous research of Australian school and vacation based swimming and water safety programs indicate that the Year 4 Benchmark can be achieved prior to leaving primary school; however it is not currently being achieved by 100% of children for a variety of reasons. The next section will provide an overview of research conducted pertaining to children's swimming ability, and will consider some of the reasons why some children may not be accessing programs (i.e. not able to achieve the Benchmark), along with a comparison of international swimming 'Benchmarks'.

Table 1: Year 4 Standard of the National Swimming and Water Safety Framework

1. Entry and Exit	Compact Jump Safely perform a compact jump, a fall in entry and exit from deep water
2. Sculling and body orientation	Scull – feet first Demonstrate sculling feet first on the back Body Rotation Demonstrate rotation of the tucked body, keep the face above the surface of the water
3. Movement and swimming strokes	Swim Swim continuously: • 50 metres of strokes(s) with above-arm recovery and • 25 metres of strokes (s) with underwater arm recovery Recognised stroke technique must be used
4. Survival and lifejacket skills	Survival Skills Dressed in swimwear, shorts and a t-shirt, demonstrate the following as a continuous sequence: • Sculling, floating, or treading water for 2 minutes • Swim slowly for 3 minutes using actions which resemble 3 recognised survival strokes, changing after each minute to another stroke Float with a buoyant aid Float for 1 minute using an open-ended flotation aid thrown to the candidate
5. Underwater skills	Underwater Search Demonstrate a surface dive, swim underwater, search for and recover an object from water of depth equivalent to the candidate's height
6. Rescue skills	Throw Rescue Throw a rescue flotation aid to a partner at 5 metres distance and instruct the partner to kick to the edge
7. Water safety knowledge	Answer questions about dangers in the aquatic environment
8. Extension skills	Butterfly Demonstrate introductory butterfly arm action for a distance of 5 metres.

Background literature

Royal Life Saving Society – Australia (RLSSA) has conducted a range of benchmarking studies of children attending school-based, vacation and Swim and Survive programs across the country, including from Australian Capital Territory (ACT), South Australia (SA), Tasmania and Victoria.

Overall swimming ability of Australian children and achievement of the benchmark skills

A 2012 study utilising participation data from ACT, SA and Tasmania estimated that at least 1 in 5 children cannot swim 50m by the time they leave primary school [2]. A study from Victoria estimated that 20% of Year 6 students are unable to swim 50m, implying that children's ability may be poorer than previously reported [4]. Teachers in Western Australia estimated that 30% of Year 8 students were weak or non-swimmers [6]. Consistent across all studies showed that children who are Aboriginal and/or Torres Strait Islander, from rural and remote areas, of culturally and linguistically diverse backgrounds (CALD), and those from low socio-economic areas less likely to achieve the benchmark. Yet, research has suggested that when given the opportunity to participate in swimming and water safety education, children from these communities can and do achieve well compared to their more advantaged peers [3-4].

When comparing rates of achievement, studies have shown that females and private school children were more likely to be achieving the benchmark, compared to males and children attending public schools [3-5]. In SA, children that attended vacation programs (intensive 5 – 7 days over the school holidays) compared to those just attending school based programs, were more likely to achieve the benchmark at a younger age, with 85.4% of 11 year olds able to achieve the Year 4 benchmark skills [7].

Participation in swimming programs

Based on a nationwide survey of swim schools (n = 834) and 2011 Australian Bureau of Statistics estimates, private swim schools are teaching between 0.74 and 1.01 million (or 17-24%) Australian children aged 0 – 14 years annually [2, 8]. South Australia participation data suggests that a large proportion of primary age children do access some form of swimming and water safety education outside of school programs [9]. Additionally, 60% of Victorian children receive swimming and water safety lessons through school, with up to 81% estimated to be participating in external programs [4]. The highest proportion of students participating in ACT school swimming programs are aged 6-8 years old (equivalent to school years Kindergarten to Year 2), with participation progressively decreasing as they get older [2].

Barriers to participation in swimming and survival programs are well known and have been discussed at length in previous papers. Common barriers cited by schools include program cost, crowded curriculum, transport costs, and risk management procedures [2-4, 6]. Specific issues include a lack of qualified aquatic teachers, particularly in regional areas [3, 4]; cultural barriers have emerged as an issue in metro areas [4]. Anecdotal evidence suggests that lack of facilities in regional and remote areas may be an issue as pools may only be open on a seasonal basis in some areas [3-4].

Water safety skills and knowledge

Recent studies have consistently reported a lack of water safety knowledge and awareness among primary school children, including resuscitation knowledge [3, 4, 7, 8, 10, 11]. A survey of Victorian primary school teachers estimated that 39% of Year 6 students leave primary school without the awareness and knowledge required to make personal safety decisions when around the water, especially those from low-socio economic areas [4].

Research suggests that up to 82% of swim schools may not be including essential water safety and survival skills [3, 8, 11]. In an attempt to address water safety and survival skills of Victorian primary school children, a 10 lesson intensive water safety and survival program targeted to Year 5 - 6 students has been trialled. Results reported between 75 - 98% of children could achieve the prescribed skills at the end of the program, with non-swimmers showing a marked improvement pre- and post program. Parent's reported a positive response to the program, with the majority stating that they were willing to pay for such programs, however to a much lower cost than the full value [12].

Water safety knowledge in previous benchmarking research has been based on the National Water Safety Quiz, an online quiz that assesses children's water safety knowledge; the first year approximately 4,200 children across Australia participated, most were 10 – 12 years old. Children's knowledge increased as they aged and females scored better than males in every section [10]. Overall water safety knowledge in aquatic environments (e.g. beach, river, lake) were satisfactory, however knowledge was particularly lacking in the areas of resuscitation, personal awareness and swimming [10]. With regards to this research, water safety knowledge is included in all levels of the National Swimming and Water Safety framework 'Answer questions about dangers in the aquatic environment'. Many children in the dataset were assessed as meeting this outcome, however information was not available on how or what children were actually assessed on, whether questions were asked verbally, or based on practical skills demonstrated. As a result, water safety knowledge was not included in this analysis.

An international comparison of swimming and survival skill benchmarks

High-income countries with similar drowning statistics have also developed swimming and water safety 'benchmarks' that primary school aged children should be able to achieve. In the United Kingdom (UK), swimming is compulsory within the national primary school curriculum. A current nationwide school swimming campaign sets the target for all children being able to swim 25m of any stroke and have the ability to demonstrate a safe self-rescue in a range of aquatic situations, with a recommendation of 25 teaching hours [13]. Despite swimming being a statutory requirement in the national curriculum, 51% of primary school children aged 7-11 years were unable to swim 25m unaided [13].

The Canadian Swim and Survive Standard outlines the minimum skills and knowledge to survive an unexpected fall into deep water, as being: roll into deep water, tread water for one minute and swim 50m and advocates for everyone to know survival skills, not just children (www.lifesaving.ca/position-statement/canadian-swim-survive-standard).

In New Zealand, swimming and water safety competencies for children aged 5 – 13 years have recently been reviewed, resulting in the Water Skills for Life Framework [14], consisting of seven skill sets; 21 in water practical skills and 6 water safety awareness modules. The target is to have children competent in all of skills by the end 13 years old (equivalent to school year 8). The program has been developed to encourage critical thinking, risk assessment and personal aquatic survival skills. For assessment, the child chooses two sequences of 5 skills their own choice, with at least one of the following compulsory skills depending on their ability: 1) tread water for at least 3 minutes in deep water; 2) move 50m and/or 3 minutes non-stop, confidently and competently using any stroke on their side, front, back, or a mix; 3) 100m and/or 5 minutes non-stop, confidently and competently using any stroke on their side, front, back, or a mix [14].

AIMS

- To examine the achievement of swimming and survival skills among Australian children attending private swimming lessons
- To provide a situational analysis or 'snapshot' of what children are currently learning in private swim lessons, when they are learning key skills and how this compares to the Year 4 standard 'Benchmark' skills
- To identify and provide a better understanding of achievement levels in relation to demographic factors and participation on a national level
- To estimate how much time and financial investment is required to achieve the 'Benchmark'

METHODS

Data for this research was obtained in July 2016 as a part of a national database of private swim school records of children aged from 0 - 15 years attending private swimming lessons. This data contained assessment information recorded every time a child was assessed for a particular swimming or water safety skill.

It should be noted that this is a sample of records of children enrolled in private swim schools across three States in Australia (New South Wales [NSW], South Australia [SA], and Victoria) who have attended lessons between July 2014 and December 2016 and does not represent the entirety of children participating in private swimming lessons nationwide. All information was de-identified, therefore neither individuals nor swim schools were able to be identified. The data used for this study focused on primary school aged children aged between 5 – 12 years.

Data manipulation

Records were provided and cleaned in Microsoft Excel and then imported into SPSS for data analysis. Due to the scale of the data, manipulation was required to condense it into a workable file for data analysis. The data was transformed a number of times in Excel format from the original file and as a result, a very small amount of data may have been lost during the data manipulation and cleaning process.

Data Analysis

Data was analysed using SPSS Version 24 [4]. Descriptive statistics were utilised, as well as chi squared analysis. Statistical significance was deemed $p < 0.05$. Averages were based on the median to account for skewing of data in such a large dataset. Data has been displayed as bar graphs, stacked bar graphs, pie charts and box and whisker plots. The stacked bar graphs demonstrate the growth in the proportion of children able to swim a distance of a skill by the overall height of the bar and of those able to swim longer distances. The box and whisker plots show the age range and middle 50% of children able to achieve a skill. The thin bars indicate the age range of children that can swim each distance, and the blue box indicates the middle 50% of children able to swim that distance e.g. 50% of children who can swim 25m freestyle are aged between 8 – 10 years. Due to small numbers of records in some skills, these skills were grouped for statistical analysis. For example records over 100m were very small, therefore presented as 100m+ in the results.

Variables

Variables provided were: student ID, sex, age, date of birth, home postcode, medical conditions, swim school state, swim school postcode, remoteness classification, type of program, frequency of lessons, absence, attendance, duration of lesson, cost per lesson, date started in swim level, name of swim level, calendar days in level, date of last assessment, skill name, competent/not competent.

Inclusion criteria

1. Key swimming and water safety skills based on the National Swimming and Water Safety Framework: Movement and swimming strokes (freestyle, backstroke, breaststroke, survival backstroke); Survival and lifejacket skills (treading/sculling water); Rescue skills (be rescued or perform a reach/ throw rescue).
2. Child is assessed as competent in performing the skill, meaning that they have achieved that skill unaided and without support (e.g. without a kickboard or instructor aid).
3. Records were only analysed if a child was assessed as competent in a distance of freestyle, backstroke, breaststroke and survival backstroke between three - 400m, and treading water for set period of time and, could perform a rescue skill.
4. To reduce duplication and gain the most accurate indication of skill attained, only the highest skill achieved by an individual (assessed as competent), was analysed. For example, a child may have assessment records for freestyle 10m competent, freestyle 25m competent and freestyle 50m not yet competent. In this case, only the freestyle 25m record would have been included for analysis.
5. Total days in lessons includes all previous recorded days in swimming lessons in this database to get to their current level or distance (i.e. Total days have been in lessons continuously).
6. No prior experience refers to children with no previous records prior to the 50m swimming level on this database, children with experience are recorded as taking lessons previously (with the same swim school) to reaching the 50m level included in this database.
7. The investment to get to 50m freestyle consists of children who can competently swim a minimum of 50m freestyle, as a proxy for achieving the Benchmark skills - what children should be able to swim by the time they leave primary school.

Exclusions:

Skills were not analysed that did not state a distance or time. Skills were not included if the skills were performed with an instructor, or with flotation aid support such as a kick board (e.g. backstroke kick with a kickboard), breathing skills and kicking/arm strokes in isolation were also not included (e.g. freestyle arms, freestyle breathing), as well as competitive skills such as freestyle starts or basic/introduction to a stroke (e.g. introduction to freestyle/backstroke).

Definitions

The National Benchmark for Swimming and Water Safety

The Australian Water Safety Council outlines the minimum competencies within the National Swimming and Water Safety Framework [1]. The Benchmark is outlined as 100% of the population achieving skills and knowledge equivalent to Year 4 Standard prior to leaving primary school (11 - 12 years old/ Year 6) [1].

These skills include:

- swim continuously 50m of strokes with above-water arm recovery (freestyle or backstroke);
- swim continuously 25m of strokes with underwater arm recovery (survival backstroke or breaststroke);
- dressed in swimwear and clothes;
- sculling, floating or treading water for 2 minutes;
- throw a rescue flotation aid to a partner at 5m distance [2] (Table 1).

Decile rank

Deprivation scale was based on the Index of Relative Socio-economic Advantage and Disadvantage (IRSAD), based on decile level 1 – 10, one (1) being the lowest area of socio-economic status and 10 being the area of highest.

Remoteness classification

The remoteness classification was defined using the Australian Standard Geographical Classification – Remoteness Area (ASGC-RA) system [15].

Number of lessons

Number of lessons were calculated by taking total days in lessons recorded (calendar days) and dividing by 7 days as children are taking one 30 minute lesson on a weekly basis. For the purpose of analysis, number of lessons have been grouped by 10 e.g. 11 -20 lessons, 31 – 40 lessons etc.

Previous experience

Total calendar days been in lessons in other levels prior to 50m level as recorded on this database. Number of previous lessons have been calculated using method above.

Ethics

Ethical approval for the study was received from Children's Health Queensland Hospital and Health Service Human Research Ethics Committee (HREC/17/QRCH/266).

RESULTS

Snapshot of children attending private swimming lessons

Overall, a total of 61,260 individual children were included in the database, 50.9% were males, average age of 6.0 years (range 0 – 15 years, median 6.0 years, SD 2.7). The highest number of children in the dataset were aged 4 years (15.3%), followed by 6 years (13.1%) (Figure 1). Most were from Victoria (77.6%) and 94.4% of children were from major cities. When analysed by deprivation scale, 60.8% of children attending lessons were living in high areas of socio-economic status (ranked decile 7 – 10). Lesson cost ranged from \$15.00 to \$21.83, with 79.1% being charged \$15.50 per lesson. All children were attending one 30 minute lesson on a weekly basis, with 95% classified as after-school lessons.

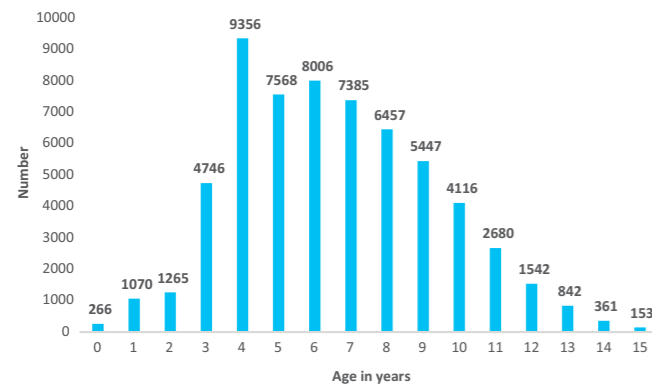


Figure 1: Age of children in private swimming lessons

State Breakdown

In this cohort, 77.6% of children attending private swimming lessons were in Victoria, 14.9% in SA, 7.3% from NSW and 0.2% were in Queensland. When analysed by State and age, age of attending lessons differed between States. In Queensland, children aged 0 - 4 years accounted for 53.9% of total enrolments, 40.0% in NSW, 26.3% in Victoria and 25.8% in SA. For children aged 5 – 10 years, the highest number attending lessons were in SA (67.5%), 63.6% in Victoria and 56.7% in NSW. Only a small percentage of children attending lessons are aged 11 years or older across all states, with Victoria having the highest proportion of children aged 12 – 15 years enrolled in lessons (Figure 2).

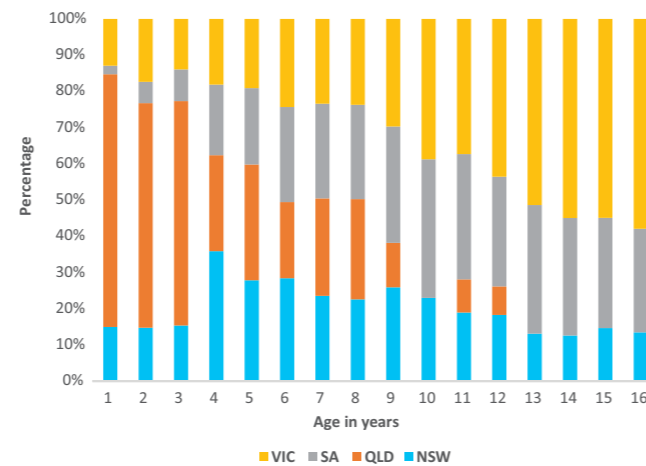


Figure 2: Age of children attending private lessons by state

When broken down by remoteness classification, 96.4% of swim schools were located in major cities, 2.1% in inner regional locations and 1.5% in outer regional areas. In NSW 61.1% were in major cities and 38.9% in inner regional locations. All swim schools in SA and Queensland were in major cities, and 96.4% in Victoria.

When analysed by deprivation scale, children from areas ranked decile 7 – 10 (high areas of socio-economic advantage) accounted for 63.3% in Victoria, 59.1% in NSW and 49.4% in SA. Children from low areas of social deprivation (decile rank 1 – 3) accounted for 19.0% in South Australia, 12.3% in Victoria and 6.9% in NSW. On average, families in NSW are paying more per lesson compared to other States, at \$19.00 per lesson compared to \$15.50 in Victoria and South Australia. Information on children's residential status and cost per lesson was not available for Queensland.

Analysis of children attending private swimming lessons

A total of 43,201 children aged between 5 – 12 years were included in this analysis. Half (50.8%) were males and most (53.1%) were aged between 5 – 7 years, with an average age of 7.6 years (median 7.0 years, SD 1.98). Almost all (94.3%) swim schools were located in major cities (Table 2). When analysed by socio-economic status, 57.0% of children attending lessons were living in higher socio-economic areas (ranked deciles 7 – 10) and 10.7% in lower socio-economic areas (decile 1-3). On average, parents are paying \$15.50 per lesson (68.7%) (Table 2). All children were attending one 30 minute lesson on a weekly basis, 95% were attending lessons outside of school hours.

Variable	Frequency N 43201	100 %
Sex		
F	21254	49.2
M	21947	50.8
Age		
5	7568	17.5
6	8006	18.5
7	7385	17.1
8	6457	14.9
9	5447	12.6
10	4116	9.5
11	2680	6.2
12	1542	3.6
Remoteness		
Inner regional	1779	4.1
Major cities	40737	94.3
Outer regional	685	1.6
Socio-economic status		
Low (decile 1 – 3)	4637	10.7
Mid (decile 4 – 6)	12,351	39.3
High (decile 7 – 10)	24,646	57.0
Unknown	1567	3.6
Cost per lesson (\$)		
15.00	191	0.4
15.50	29694	68.7
15.60	57	0.1
16.00	10	0.0
16.50	1990	4.6
16.60	2684	6.2
17.00	97	0.2
19.00	1423	3.3
21.83	1968	4.6
Unknown	5087	11.8

Table 2: Demographics of primary school aged children attending private swimming lessons

Skills children are learning

The most widely taught skills within this sample of swim schools are freestyle (87.4%, n = 37,758) and backstroke (83.5%, n = 36,073), followed by treading/sculling water (52.7% n = 22,770) and breaststroke (52.1%, n = 22,516).

More children were being taught how to swim breaststroke compared to survival backstroke (45.6%, n = 19,708), and butterfly (14.2%, n = 6,162) compared to rescue skills (9.2%, n = 3,979) (Figure 3). Of the 136 swim school levels recorded, 21.3% did not contain any water safety or survival skills as per the Framework.

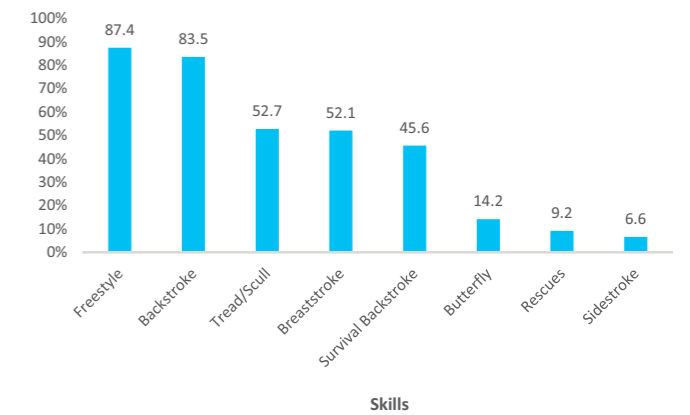


Figure 3: Swimming & water safety skills being taught

Key swimming and water safety milestones children are achieving

Freestyle

- 87.4% (n = 37,758) are learning freestyle skills
- 64.2% (24,250) are competent in at least 1 freestyle skill (any freestyle relevant skills)
- Overall, 18.7% (n = 7,074) are competent in swimming a distance of freestyle

Children can competently swim a set distance of freestyle unaided from the age of 5 years old. Half (50.4%) of all five year olds could swim 10-15m of freestyle (10m 31.1%, 15m 21.1%) and 42.8% could swim less than 10m.

From the age of 10 years, approximately half of children in each age group are achieving a minimum of 50m freestyle: 10 years 49.5%, 11 years 55.1%, 12 years 60.3% (Figure 4).

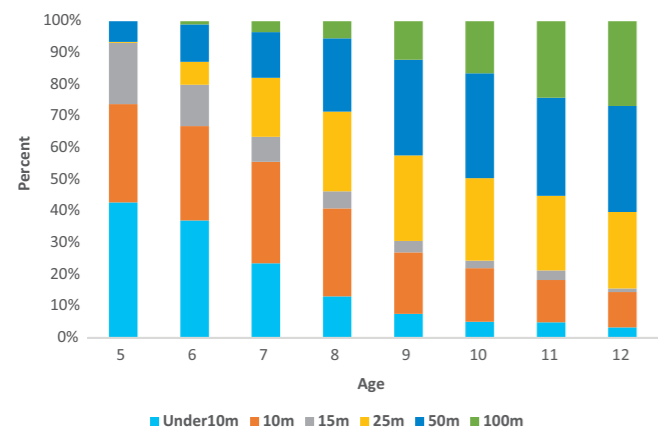


Figure 4: Distance children can swim freestyle by age

The average age of achieving key freestyle distances are: 10m is at 7.8 years, 25m and 50m is at 9.2 years, and 100m at 10.6 years (Figure 5).

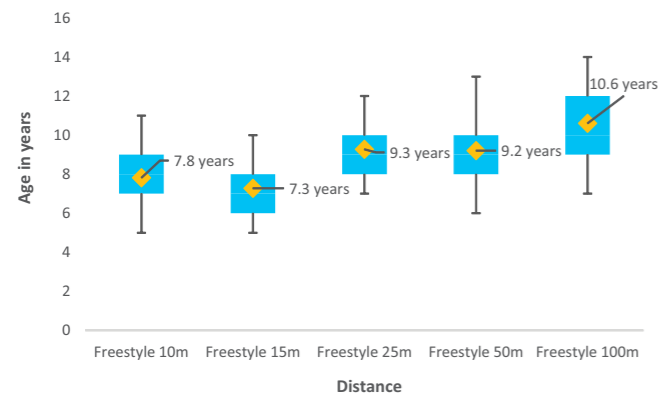


Figure 5: Average age children are achieving key freestyle distances

Backstroke

- 83.5% are learning backstroke skills (n = 36,073)
- 66.0% (n = 23,805) are competent in at least 1 backstroke skill (any backstroke relevant skills)
- Overall, 57.3% of those learning backstroke are competent in swimming a distance of backstroke

Children can competently swim backstroke from the age of 5 years old. Most children aged 5 – 7 years are learning to swim backstroke and could swim less than 10m (5 years 59.9%, 6 years 50.8%, 7 years 34.3%).

Over a quarter of those aged 8, 9 and 10 years could swim 50m (28.1%, 29.8% and 24.5%). The highest proportion that could swim 100m or more was at 12 years (34.3%) (Figure 6).

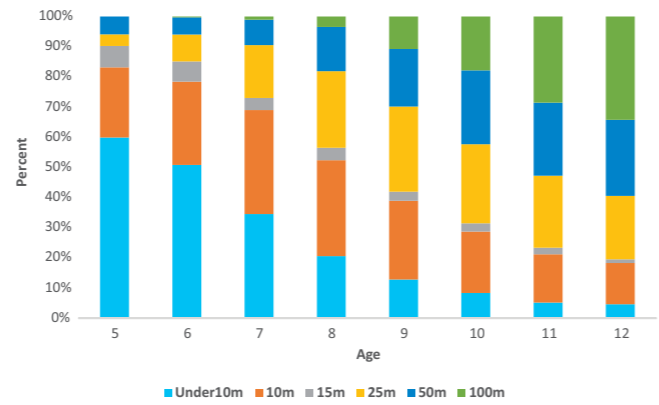


Figure 6: Distance children can swim backstroke by age

The average age children are achieving key backstroke distances are: 10m at 8.4 years, 25m at 9.4 years, 50m at 9.8 years and 100m at 10.7 years (Figure 7).

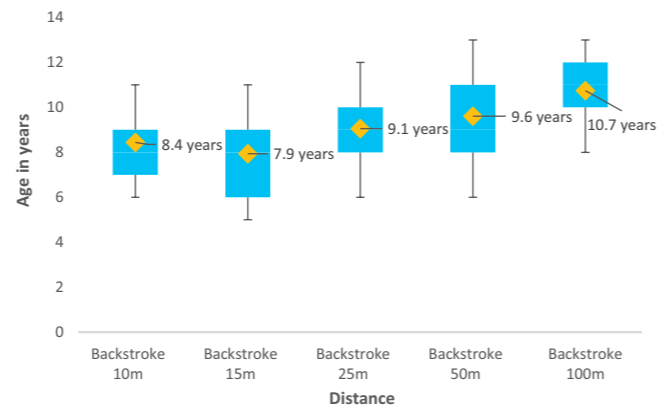


Figure 7: Average age children are achieving key backstroke distances

Survival Backstroke

- 45.6% are learning survival backstroke (n = 19,708)
- 65.5% (n = 12,913) are competent in at least 1 survival backstroke related skill
- Overall, 41.8% of those learning survival backstroke are competent in swimming a distance of survival backstroke

Children can competently swim survival backstroke from the age of 5 years old. Most children aged 5 to 8 years old are learning to swim survival backstroke (<10m and 10m combined): 88.9% 5 years, 88.7% 6 years, 80.6% 7 years, 63.6% 8 years.

From the age of 10 years, over 60.0% of children can swim a minimum of 25m: 60.1% 10 years, 69.0% 11 years, 76.7% at 12 years. Very few children overall were achieving 100m survival backstroke (Figure 8).

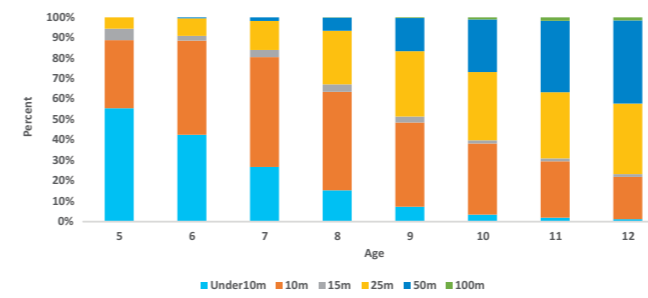


Figure 8: Distance children can swim survival backstroke by age

The average age of children achieving key survival backstroke distances are: 10m at 9.4 years, 25m at 10.4 years, 50m at 10.9 years, and 100m is at 11.3 years (Figure 9).

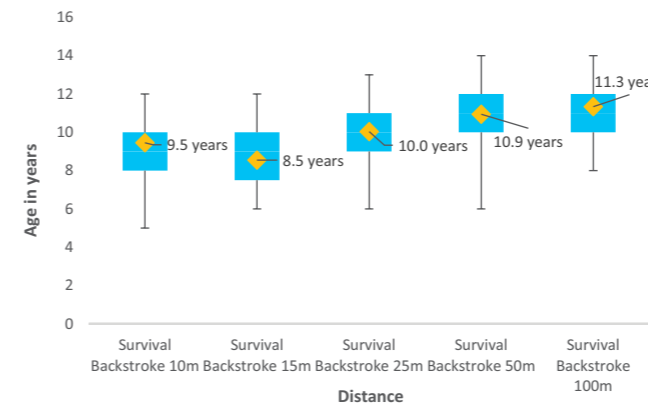


Figure 9: Average age children are achieving key survival backstroke distances

Breaststroke

- 52.1% are learning breaststroke (n = 22,516)
- 56.6% (12,743) are competent in at least 1 breaststroke related skill
- Overall, 18.6% (n = 4,198) of those learning breaststroke are competent in swimming a distance

Children can competently swim a distance of breaststroke from the age of 6 years old only.

From 8 years old, approximately 60% of children could swim a minimum of 25m breaststroke: 59.6% 8 years, 65.9% 9 years, 64.6% 10 years, 61.4% 11 years, 67.7% 12 years (Figure 10).

A small percentage of children could swim 100m of breaststroke (Figure 10).

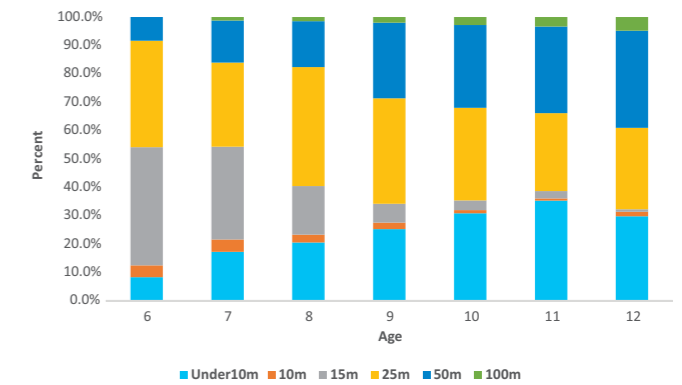


Figure 10: Distance children can swim breaststroke by age

The average age of achieving a key breaststroke distances are: 10m at 9.6 years, 25m at 10.4 years, 50m at 10.6 years and 100m at 10.9 years (Figure 11).

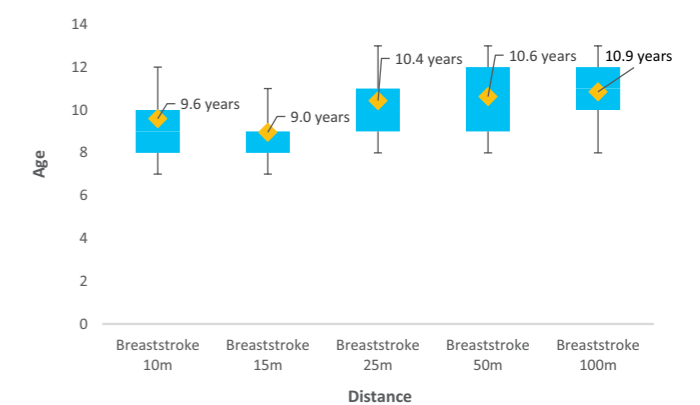


Figure 11: Average age children are achieving key breaststroke distances

Treading/Sculling

- 52.7% are learning to tread/scull water (n = 22,770)
- 68.8% are competent in at least 1 treading or sculling skill (n = 15,655)
- Overall, 46.3% (n = 10,544) of those learning are competent in treading or sculling for set period of time

Of those being taught to tread or scull water, the majority of those aged 5 – 7 years can tread or scull for 30 seconds (5 years 43.1%, 6 years 49.3%, 7 years 46.3%). From 8 years of age, most were achieving 1 minute of treading/sculling (8 years 46.9%, 9 years 48.6%, 10 years 50.6%, 11 years 48.7%, 12 years 47.8%) (Figure 12).

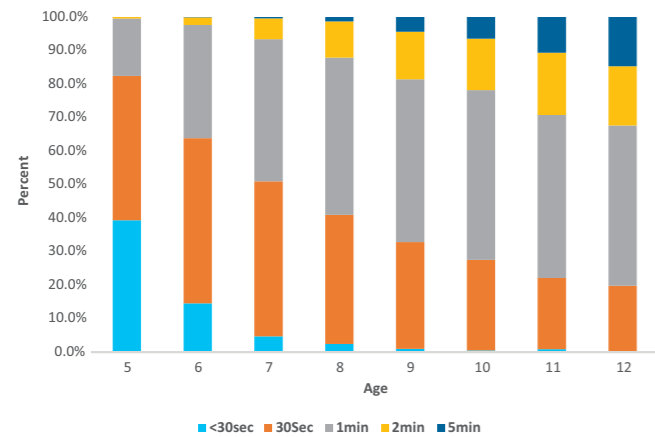


Figure 12: Time children can tread or scull by age

The average age that children are able to achieve treading/sculling for a set time period: Less than 30 seconds is 5.7 years, 30 seconds at 7.1 years, 1 minute at 8.0 years and 2 minutes is 8.9 years (Figure 13).

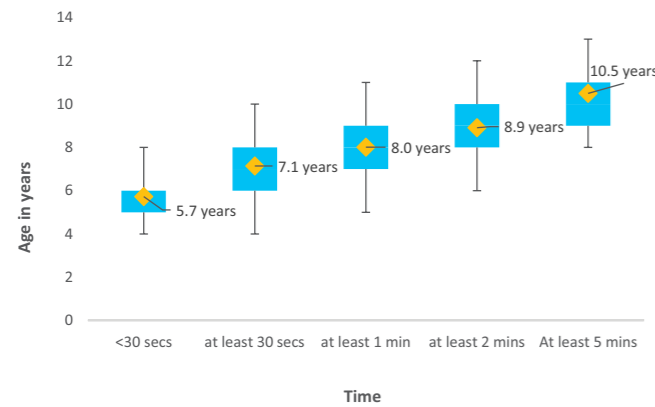


Figure 13: Average age children are achieving times for treading or sculling unassisted

Rescue Skills

- 9.2% are learning rescue skills (n = 3,979)
- 63.0% are competent in at least 1 skill (n = 2,506)
- Overall, 40.4% (n = 1,607) of those learning rescue skills are competent in at least one rescue technique

Children are being taught rescues from the age of 5 years, of which 60.4% of 5 year olds were achieving the skill to 'be rescued'.

Children are competent in reach rescue across all ages, the highest proportion achieving this were aged 6 years (62.4%). Approximately 30.0% of 11 and 12 year olds are competent in performing a rescue over 5m (30.6% 11 years, 29.1% 12 years).

The highest proportion achieving a rescue of 5m was at 11 years (30.6%), 12 years (29.1%). A small percentage of children were achieving a wade rescue (Figure 14).

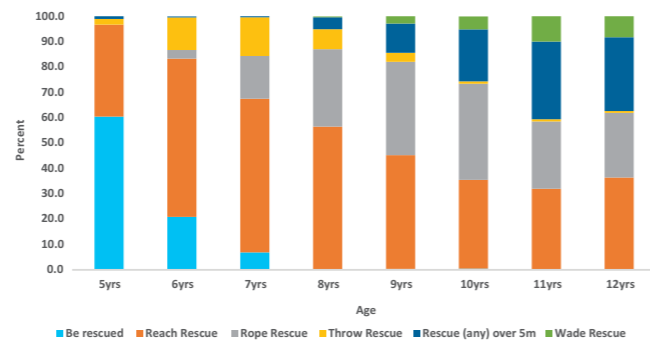


Figure 14: Rescues being achieved by age

Achieving the the Year 4 Standard Benchmark skills

The average age of children achieving the 'Benchmark' skills below ranges from 8.9 to 10.5 years. These results shows that 60.2% of 12 year old children could swim 50m freestyle and backstroke, 76.7% could swim 25m survival backstroke, 67.7% could swim 25m breaststroke, 32.3% could tread/scull for two minutes and 29.1% could perform a rescue over 5m. When analysed by sex and achievement, no significant differences were found across any of the skills.

Movement and Swimming Skills

a) 50 metres of strokes with above-water arm recovery

- The average age at which children can swim 50m freestyle is at 9.2 years and 50m backstroke is at 9.6 years.
- Of those competent at swimming freestyle, 60.0% of 12 year olds are able to swim at least 50m, compared to 12.8% at age 6 years.
- Of those competent at swimming backstroke, 59.5% of 12 year olds are able to swim at least 50m.

Distance	5yr	6yr	7yr	8yr	9yr	10yr	11yr	12yr
Freestyle								
50m	6.5%	11.8%	14.4%	23.1%	30.2%	33.1%	31.0%	33.5%
100m	0.0%	1.0%	3.4%	5.4%	12.2%	16.4%	24.1%	26.8%
Total	6.5%	12.8%	17.8%	28.5%	42.4%	49.5%	55.1%	60.2%
Backstroke								
50m	5.9%	5.7%	8.4%	14.7%	19.1%	24.5%	24.2%	25.2%
100m	0.0%	0.3%	1.1%	3.4%	10.7%	17.9%	28.6%	34.3%
Total	5.9%	6.0%	9.5%	18.2%	29.9%	42.3%	52.8%	59.5%

Table 3: Children achieving the 50m freestyle and backstroke benchmark by age

b) 25 metres of strokes with underwater arm recovery

- The average age at which children can swim 25m breaststroke is at 8.9 years and 25m of survival backstroke is at 10.4 years.
- 67.7% of 12 years olds can swim a minimum of 25m breaststroke and 76.7% could swim 25m survival backstroke.

Distance	6yr	7yr	8yr	9yr	10yr	11yr	12yr
Breaststroke							
25m	37.5%	29.6%	41.9%	37.2%	32.6%	27.5%	28.7%
50m	8.3%	14.8%	16.2%	26.7%	29.2%	30.5%	34.2%
100m	0.0%	1.2%	1.5%	2.0%	2.8%	3.4%	4.8%
Total	9.1%	45.6%	59.6%	65.9%	64.6%	61.4%	67.7%
Survival backstroke							
25m	8.6%	14.2%	26.2%	32.0%	33.4%	32.4%	34.6%
50m	0.5%	1.8%	6.4%	16.2%	25.7%	34.9%	40.7%
100m	0.0%	0.0%	0.1%	0.3%	1.0%	1.7%	1.4%
Total	9.1%	15.9%	32.8%	48.5%	60.1%	69.1%	76.7%

Table 4: Children achieving the 25m breaststroke and survival backstroke benchmark by age

Survival and Lifejacket Skills

Treading, Sculling or Floating unaided for 2 mins

The age at which children can tread/scull for 2 minutes unaided is at 8.9 years, with 32.3% of 12 year olds able to achieve this. When wearing clothes, the average age for treading/sculling for 1 minute is at 8.9 years, 2 minutes is at 9.9 years and 5 - 10 minutes is at 10.5 years (Table 5).

Time	5yrs	6yrs	7yrs	8yrs	9yrs	10yrs	11yrs	12yrs
2min	0.4%	2.2%	6.2%	10.8%	14.2%	15.4%	18.6%	17.7%
5min	0.0%	0.1%	0.4%	1.3%	4.4%	6.4%	10.6%	14.7%
Total	0.4%	2.3%	6.6%	12.1%	18.6%	21.8%	29.2%	32.3%

Table 5: Children achieving the 2 minute tread, scull benchmark by age

Rescue skills

- Throw a rescue flotation aid to a partner at 5 metres distance

The average age at which children can first demonstrate a rescue over 5m is 10.5 years for throw rescue and 11.3 years for a rope rescue.

Rescue	5yrs	6yrs	7yrs	8yrs	9yrs	10yrs	11yrs	12yrs
Rope Rescue 5m	0.0%	0.0%	0.0%	0.6%	4.3%	6.5%	6.1%	12.7%
Throw Rescue 5m	1.2%	0.4%	0.4%	4.2%	7.2%	14.0%	24.5%	16.4%

Table 6: Children achieving the 5m rescue benchmark by age

Investment required to acquire the Benchmark skills

Case study:

Children aged 5 – 12 years achieving 50m Freestyle

A total of 1,584 children aged 5 – 12 years can competently swim a minimum of 50m freestyle, 52.4% were female. The highest proportion achieving were aged 9 years (23.0%), and 8 years (21.5%) (Figure 15).

Only 5.9% of those achieving 50m freestyle were from low socio-economic areas (decile 1 – 3).

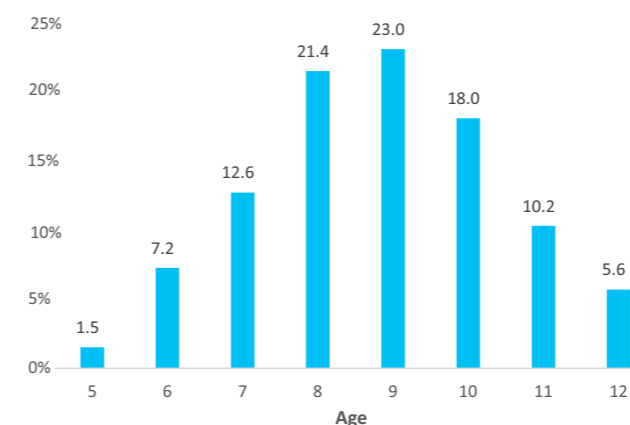


Figure 15: Age of children achieving 50m freestyle

Previous Experience

Almost two thirds (64.6%, n = 1,023) had attended lessons with the same swim school (within this study) prior to reaching the 50m swimming level. 75.0% of 5 year olds and 73.9% of 6 year olds had been attending lessons (Figure 16).

Females were more likely to have been in lessons compared to males (54.5% vs. 45.5%), and 70.4% were from high socio-economic areas (decile 7 – 10).

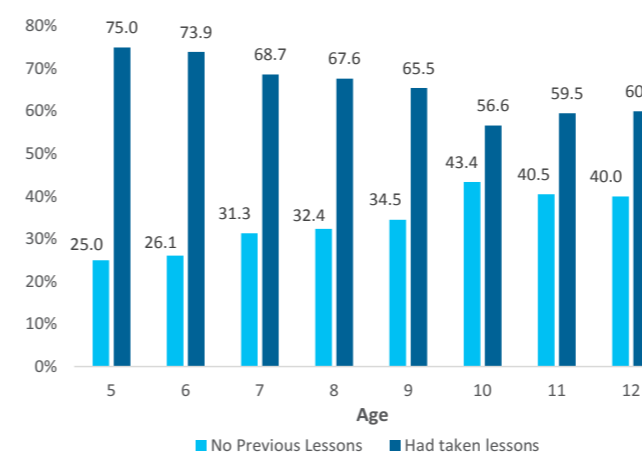


Figure 16: Previous lessons prior to 50m level by age

When analysed by number of lessons, 34.2% had attended 0 - 10 lessons and 28.8% between 11 – 20 lessons prior to the 50m swimming level; the average number was 16 lessons.

Including the lessons attended in the 50m level, the overall time period children had been attending lessons ranged from less than one month up to 36 months (3 years).

Children had been in lessons most frequently between 24 - 30 months (18.5%). The average time a child had been in lessons was between 12 – 15 months (Figure 17).

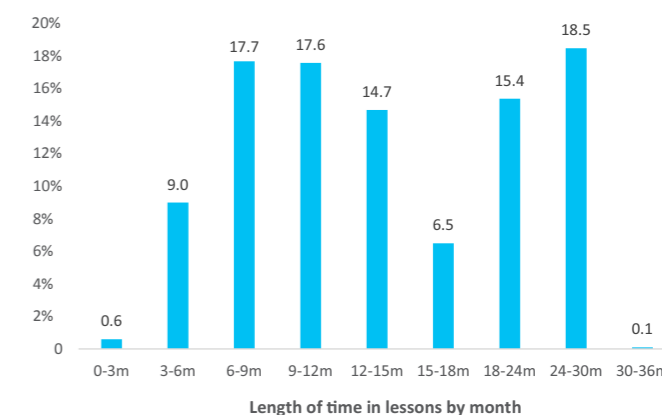


Figure 17: Overall time been in lessons (including 50m level)

Children that had taken lessons previously were more likely to achieve 50m freestyle in fewer lessons (11.7 lessons) than children without swimming experience (16.4 lessons); 45.2% could achieve 50m within 10 lessons compared to 32.9% ($X^2 = 44.638$ p < 0.05).

At least 80% of children could achieve 50m within 30 lessons regardless if they had lessons previously (86.3% lesson prior vs. 80.4% no lessons) (Figure 18).

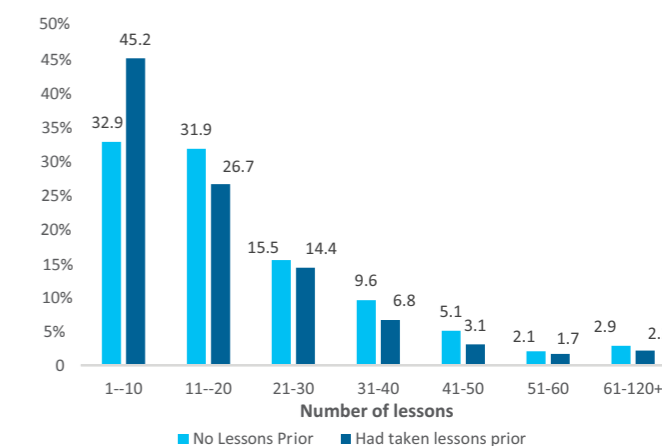


Figure 18: Average number of lessons to achieve 50m freestyle based on experience

Financial Investment

For children who had not attended lessons previously (with the same school), taking 16.4 as average number of lessons and the average cost of \$15.50, the cost to achieve 50m is \$254.20.

For children who have attended an average of 16 lessons before reaching the 50m swimming level, the cost is \$254.20. When adding the 11.7 lessons in the 50m level at \$181.35, the total cost was \$435.55 to attend approximately 28 lessons leading up to and including the 50m level, over an average period of time of 12 – 15 months.

Case study: Children in lessons continuously

A small number of children in the cohort (n = 91) have been in lessons continuously progressing through freestyle milestones of Under 10m, 10m, 25m and 50m freestyle. Over half (52.7%) were female, 53.8% were from South Australia, 44.0% from Victoria, 2.2% NSW. Children from high socio-economic areas (decile 7 – 10) accounted for 62.6%. In this cohort, the most common starting age was at 7 years (30.3%) followed by 8 years (24.0%).

Overall, the highest number of lessons attended by children in this cohort was between 21 – 30 lessons (22.0%) (Figure 19).

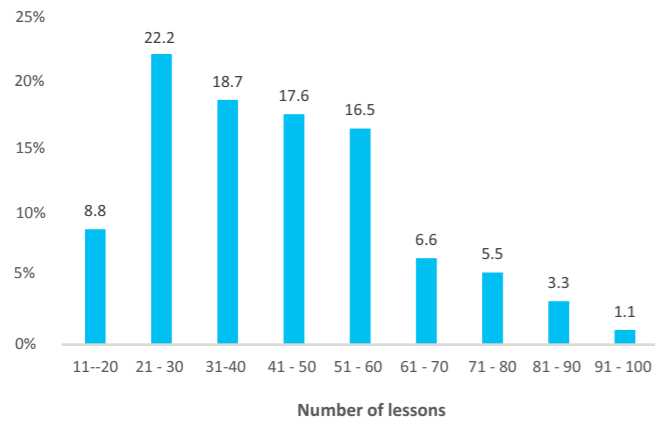


Figure 19: Total number of lessons taken

Generally, children had attended 4 blocks of lessons (or 4 swimming levels) (79.1%), with 50.1% being in and out of lessons between 24 – 30 months or equivalent to 2 – 2 ½ years (Figure 20).

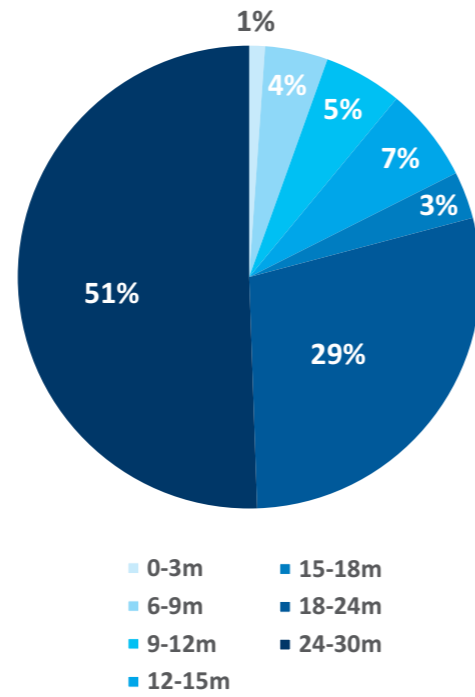
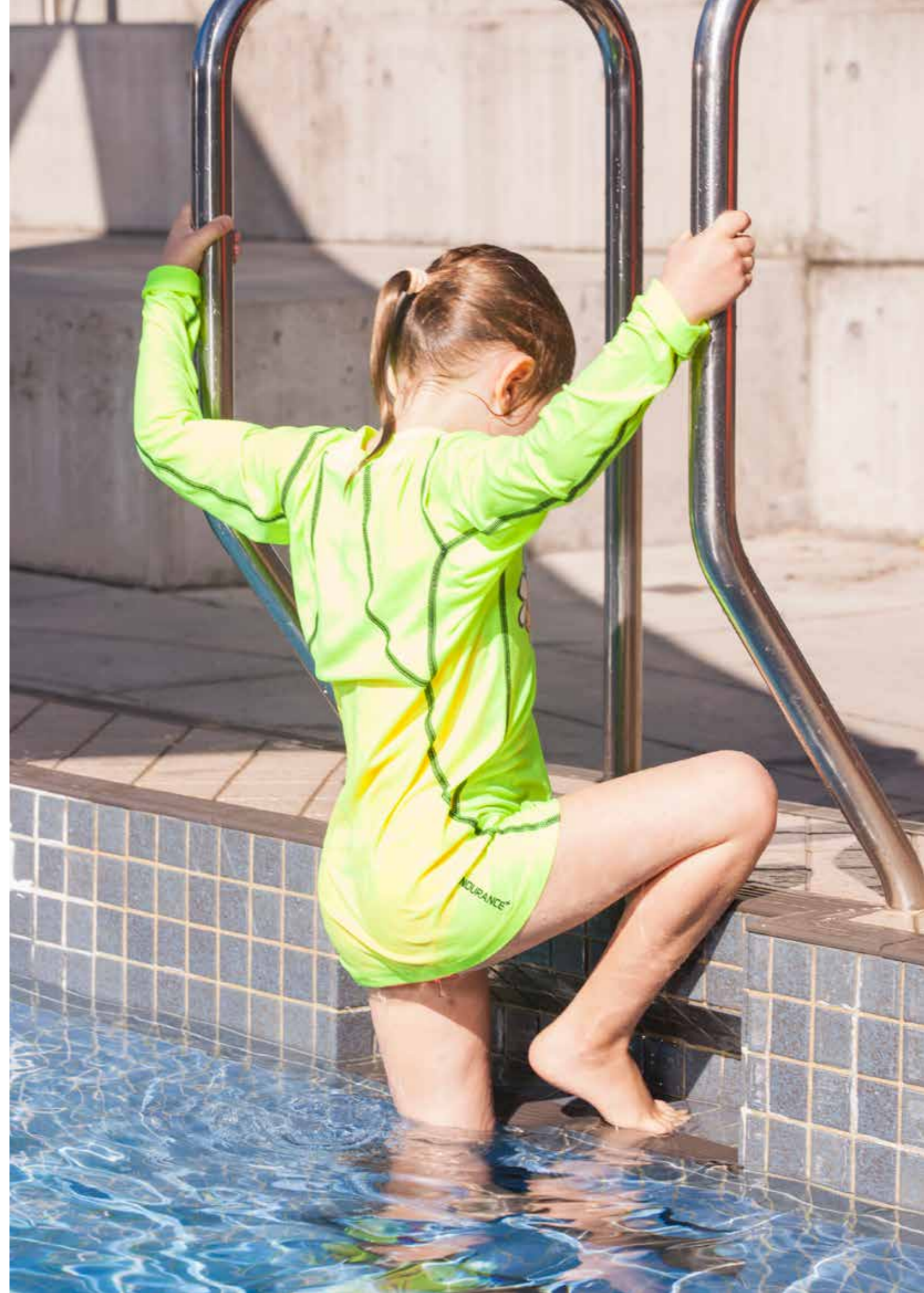


Figure 20: Total period of time in and out of lessons



DISCUSSION

This study presents a snapshot of what school-aged children are learning in private swimming lessons in relation to the minimum competencies or the Benchmark for children leaving primary school as recommended by the National Swimming and Water Safety Framework’.

Whilst this study does not include all children enrolled in private swimming lessons nationwide, this report does fill a previous knowledge gap pertaining to what children attending private swimming lessons are achieving. The results confirm previous findings that when given the opportunity to learn swimming and survival skills on a regular basis, children can achieve or exceed the minimum Benchmark skills before they leave primary school. However, there is still a portion of children not achieving this. Over 50% of 11 and 12 year olds could achieve the ‘Benchmark’ in freestyle, backstroke, survival backstroke and breaststroke. However, only 30% of children aged 12 years could achieve the prescribed water safety skills of treading/sculling water for 2 minutes and performing a rescue over 5m. This may be reflective of the skills swim schools are actually teaching and at what age.

Who is accessing private swimming lessons?

Overall, 73% of children attending private swimming lessons in the entire database were aged between 5 - 12 years old, with an average age of 6 years old. Just under a quarter (24%) were aged under 4 years, indicating that some children are being enrolled in swimming lessons from an early age. Further analysis of this group is required to fully understand the parental investment and skills being taught and developed at this early age, as well as the retention rate and impact in later childhood. Only 3% were aged between 13 - 15 years, suggesting that children have ceased lessons prior to this age and that older children are unlikely to be attending private lessons at all. Unsurprisingly, the majority (57%) of children attending lessons were from higher socio-economic areas (decile rank 7 – 10). South Australia had the broadest distribution of children attending lessons across all deciles areas compared to Victoria and NSW.

These findings did show that children living in higher socio-economic areas (decile rank 7 – 10) are more likely to be attending lessons from a younger age, and are therefore being provided the opportunity to learn to swim earlier than their peers from lower decile areas. The number of children from low decile areas attending swimming lessons corresponds to the higher number of children enrolled in school and vacation programs reported previously [7], indicating that it is not feasible for all parents and their children to access swimming and water safety lessons through the education system and/or subsidised programs.

What are children in private swimming lessons being taught?

Children in private swim schools are being taught a wide range of skills from a young age. Overall, freestyle and backstroke related skills are most commonly being taught across all ages, followed by treading/sculling and breaststroke skills. These findings report that children can competently swim 50m using an above water arm stroke such as freestyle, backstroke and 25m of an underwater arm stroke such as survival backstroke from the age of 5 years old, and breaststroke from 6 years old. School aged children (5 – 12 years) are predominately being taught freestyle (87%) and backstroke skills (84%); just over a half (53%) were being taught how to tread or scull. More children were being taught how to swim breaststroke (52%) compared to survival backstroke (46%) and butterfly (14%) compared to rescue skills (9%). This suggests that water safety skills are not being taught as frequently as the traditional swimming skills.

As discussed earlier, research has reported that swim schools may not be providing adequate teaching of water safety and survival skills thus reducing the opportunity for children to develop and practice these skills [2, 4, 7]. The findings presented further support this notion, 29% of program levels did not have any water safety or survival skills listed. These results suggest that there may be some disconnect between swim schools and parents in what children should be learning and what they are actually learning and achieving. A survey of parents with children attending private swimming lessons reported that they value learning water safety and survival skills more than technique and competitive strokes [16]. Similarly, a nationwide social survey reported that parents primarily enrol their children in lessons for water safety and prevention from drowning and, to learn essential skills to help them survive emergency situations [17].

Is the target for all children to achieve the National Benchmark prior to leaving primary school realistic?

This analysis focused on children aged 5 – 12 years who are accessing swimming and water safety lessons on a weekly basis. In relation to the Benchmark skills, results show that some children are achieving 50m freestyle, 50m backstroke and 25m survival backstroke from the age of 5 years; 25m breaststroke and treading/sculling from the age of 6 years. Children were competent in performing a rescue over 5m in distance from the age of 8 years. No significant differences between males and females achieving the benchmark distances or skills were evident, contradicting previous research that females are more likely to achieve the benchmark [2].

Overall, of all children aged 5 - 12 in this study, 34% could swim 50m freestyle, 28% could swim 50m backstroke, 52% could swim 25m survival backstroke and 60% could swim 25m breaststroke unaided. These numbers could be reflective of the average age children become competent in the skill compared to the average age of children in the dataset. Given that these children are regularly accessing lessons, only 60% of 12 year olds could swim 50m freestyle and backstroke, 76% could swim 25m survival backstroke, less than one third (32%) could tread, float or scull for 2mins and 29% could perform a rescue over 5m. These results may be a reflection of the lower number being taught water safety and survival skills, in combination with skills being taught at an older age or in advanced levels when fewer children are attending lessons.

The results suggest that although children are accessing swimming and water safety skills on a regular basis, there is still a proportion that are not achieving the minimum competencies by the end of primary school. Further research is required to analyse the factors influencing why some children who regularly attend lessons are not achieving these key skills. Possible reasons may include (not limited to); children stopping lessons before they are competent, children changing swim schools or transitioning into squads (and therefore not captured in this data), medical reasons, the cost and time factor for the family, or competition with other extra-curricular activities.

Parents may stop lessons when they consider their child able to swim and not necessarily base it on any set criteria. A recent Australia-wide survey found that parents stopped lessons when they deemed their child to have gained adequate skills and competence in the water [17]. A New Zealand study found that 74% of parents estimated that their child could swim 25m or less, yet almost all of them rated their child’s swimming ability as good or very good [18]. Further qualitative research is required to further understand why and when parents choose to stop swimming lessons for their children, and their perception of their child’s swimming and water safety competency.

It was beyond the scope of this study to investigate how a child’s ability and competence of the Benchmark skills gained in a swimming pool translates to the open water environment. Given that drowning location shifts from the home environment to open water locations as children grow, this is an area worthy of future investigation. One such study in Norway tested the swimming ability of 11 year old children in calm and simulated open water conditions reporting a decline in performance when swimming 200m, performing 3 minute back float, a dive entry and rolling entry between the different water conditions [19]. Further research of this kind would be of value.

Investment to achieve 50m Freestyle

A distance of 50m in freestyle was used as a proxy for achieving the 'Benchmark'. Unsurprisingly, the time and cost required to achieve 50m freestyle differed if a child had attended lessons prior to reaching the 50m swimming level. Of the 65% that had taken lessons previously with the same swim school (within the database), females were more likely to have been in lessons than males (55% females, 46% males). Children had taken an average of 16 lessons prior to the 50m swimming level.

About a third (35%) had been attending lessons for between 6 – 12 months and 19% for over 24 - 30 months. Three quarters (76%) of children aged 5 years and 74% aged 6 years had been attending lessons, suggesting that they started from an early age. Predictably it takes more lessons to achieve 50m if children had not taken lessons previously, 45% of those who had attended lessons could achieve 50m within 10 lessons compared 33% of those without previous swimming experience ($X^2 = 44.638$ (11) $p < 0.05$).

The average number of lessons required to reach 50m freestyle was 11 for those who had been attending lessons regularly over a period of time compared to 16 lessons for those who had not. Interestingly, up to 80% could achieve within 30 lessons regardless of experience.

This study revealed that the average cost of a private swimming lesson is \$15.50. Based on this, the total cost required to achieve 50m without any swimming experience (based on this sample of children) is \$248.00 for 16 lessons and \$465.00 for up to 30 lessons. Two thirds of children who could swim at least 50m had been attending lessons over a time period between 1 - 2 years, with an average of 27 lessons prior to and including the 50m level. The equates of a total cost of \$418.50.

This is a substantial time and financial cost regardless of socio-economic status. The exact number of lessons required will differ for each individual, depending on their ability, skill development, and swimming experience. Further analysis of when children start their formal swimming education and the impact this has on their ability to achieve the benchmark skills are required.

These findings clearly show that children who attend lessons regularly from a young age can achieve the benchmark quicker compared to children without previous experience. A strategy that develops skills and knowledge from a young age and builds up to achieving the Benchmark skills may be beneficial both on the basis of time and financially. There is merit for investigating the impact of intensive programs for shorter periods of time and longer lesson time in the water versus shorter lessons over a longer period of time and the impact on children's ability to attain and retain the desired skills.

Of children enrolled in school and vacation programs in South Australia, children attending vacation programs were more likely to achieve the Benchmark and at a younger age than children attending the school swimming program [7]. An evaluation of a survival swimming program in Victoria comprising of ten 45 minute lessons over 10 consecutive weeks, a total of 7.5 hours lesson time, found favourable outcomes in the water safety and survival skills of year 5 and 6 (10 – 12 years) children, particularly non-swimmers [12].

This paper does not address the swimming and water safety skills of secondary school aged children; those aged 13 – 15 years only made up 2% of overall dataset. Further analysis of this age group is recommended to address Goal 2 of the Australian Water Safety Strategy 2016-2020: Reduce drowning deaths of young people aged 15 – 24 [1]. At this age, an emphasis on teaching broader survival and lifesaving skills would be beneficial as a prevention measure for when young people start to participate in more unsupervised activities and/or risk taking behaviour around natural waterways.



LIMITATIONS

This information was obtained from a third-party database, therefore information was unavailable for a number of variables that restricts the ability to make further assumptions and comparisons against previous benchmarking data that has been collected.

Demographic data such as Aboriginal and Torres Strait Islander status, country of birth and medical conditions are not routinely collected by swim schools, and hence were unable to be included in analysis. Lesson specific information to allow further understanding and, clarification of what and how children are achieving such as how many children per class, how often assessments are being conducted and if children are being tested in all skills in a level before progressing to the next level were also not available.

This study does not provide any information about children who also participate in school based or vacation swimming and water safety programs and the impact of participating in more than one type of program on their swimming competency; nor is exposure to aquatic locations and/or facilities or participation in aquatic activity known. In – depth assessment information on children’s water safety knowledge was also not available and could not be compared to previous benchmarking data.

CONCLUSION

Children aged 0 – 14 years are a priority population for drowning prevention in Australia. Whilst school aged children (5 – 12 years) annually have the lowest rate of drowning compared to any other age group; there has been much debate with the swimming and water safety sector as to the best age, type of program, the frequency of lessons, and cost required for children to achieve the prescribed skills to successfully survive a potential life threatening situation. Benchmarking research investigating the swimming and water safety ability of children attending school-based and vacation programs has previously been conducted in most States.

This study offers information regarding what children in private swimming lessons are achieving in relation to the Benchmark, filling in a previous gap in knowledge. Unfortunately not all children in Australia have the opportunity to access swimming and water safety education, and the overall purpose of this wider project is to provide recommendations advocating for a renewed investment in swimming and water safety education for all children and the revision of the National Swimming and Water Safety Framework.

This research has provided many valuable insights on the type of swimming and water safety skills and knowledge children are acquiring whilst in private swimming lessons and confirms that children can achieve the Benchmark as outlined in the National Swimming and Water Safety Framework when regularly attending lessons. Parental investment to get to this point is substantial both financially and in time, with most children achieving the key skill of 50m freestyle by 30 lessons.

However, there remains a proportion of children who are regularly attending lessons that are not meeting the Benchmark and further in-depth research is required to address the reasons why these children are not improving and gaining the vital skills needed to enjoy the water and reduce their risk of drowning throughout their lives.

REFERENCES

1. Australian Water Safety Council. (2016). Australian Water Safety Strategy 2016-2020. Australian Water Safety Council: Sydney.
2. Franklin, RC., Peden, AE., Hodges, S., Lloyd, N., & Larsen, P. (2015) Learning to swim: What influences success? International Journal of Aquatic Research & Education, 9(3): p. 220-240.
3. Royal Life Saving Society – Australia (2012). No Child To Miss Out: Basic Swimming & Water Safety Education: The Right of all Australian Children. Royal Life Saving Society - Australia: Sydney.
4. Birch, R., & Matthews, B. (2014) Sink or Swim: The state of Victorian primary school children’s swimming ability. Life Saving Victoria: Port Melbourne
5. Royal Life Saving Society – Australia. (2016). Swimming and Lifesaving Manual Revised Sixth Edition. Royal Life Saving Society - Australia: Sydney.
6. Whipp, P., & Taggart, A. (2003). Teaching swimming in schools : issues beyond drowning. ACHPER Healthy Lifestyles Journal, 50(1): p. 12-17.
7. Royal Life Saving Society – Australia. (2011). Benchmarking Children’s Swimming and Water Safety Skills: South Australia Scoping & Feasibility Study. Royal Life Saving Society – Australia: Sydney
8. Royal Life Saving Society - Australia & AUSTRALIAN SWIMMING (2010) 2010 Survey of Swim School Managers. Royal Life Saving Society – Australia: Sydney.
9. Mitchell, R., & Haddrill, K. (ND) Perceptions of water safety of individuals from CALD backgrounds and tourists to NSW. Injury Prevention and Policy Branch NSW Health; NSW Department of Sport and Recreation: Sydney.
10. Peden, AE., Franklin, RC., & Scarr, J. (2017) Measuring Australian Children’s water safety knowledge: The National Water Safety Quiz. International Journal of Aquatic Research and Education 10(2), Article 4.
11. Larsen, P., & Savage, M. (2010) Observational investigation into the teaching of water safety skills - Water Safety Workshop, proceedings from the Australian Water Safety Conference 2010.
12. Birch, R., Matthews, B., Petrass, L. & Blitvich, J. (2015) A pilot study evaluating a Before School Survival Swimming Program. Life Saving Victoria: Life Saving Victoria: Port Melbourne
13. The Amateur Swimming Association (ASA) (2014). Taking school swimming seriously: the 2014 school swimming census. ASA: England
14. Water Safety New Zealand (2016). Water Skills for Life. Water Safety New Zealand: Wellington
15. Australian Government: Department of Health. (2017) Australian Standard Geographical Classification - Remoteness Area (ASGC-RA). Available from: <http://www.doctorconnect.gov.au/internet/otd/Publishing.nsf/Content/RA-intro#>.
16. AUSTRALIAN SWIMMING & ROYAL LIFE SAVING SOCIETY - AUSTRALIA (2013). Community perceptions of and attitudes towards children’s swimming and water safety skills. Royal Life Saving Society – Australia: Sydney.
17. Mahony, A., Larsen, P., & Peden, A. (2017) Social context of swimming and water safety: a survey of parents and carers. 2017, Royal Life Saving Society - Australia: Sydney.
18. Stanley, T., & Moran, K. (2017). Parental Perceptions of Water Competence and Drowning Risk for Themselves and Their Children in an Open Water Environment. International Journal of Aquatic Research and Education, 10(1).
19. Kjendlie, P., et al., (2013). Can You Swim in Waves? Children’s Swimming, Floating and Entry Skills in Calm and Simulated Unsteady Water Conditions. International Journal of Aquatic Research and Education 7(4): p. 301-313.

APPENDIX 1

Skill & Distance	5yr	6yr	7yr	8yr	9yr	10yr	11yr	12yr
Freestyle (n= 37,758)								
Under 10m	42.8	37.1	23.6	13.1	7.6	5.1	4.9	3.3
10-15m	50.4	42.9	39.9	33.2	23.0	19.3	16.4	12.3
25m	0.3	7.2	18.6	25.2	27.0	26.0	23.6	24.2
50m	6.5	11.8	14.4	23.1	30.2	33.1	31.0	33.5
100m	0	1.0	3.4	5.4	12.2	16.4	24.1	26.8
Backstroke (n = 36,073)								
Under 10m	59.9	50.8	34.5	20.5	12.8	8.3	5.2	4.6
10-15m	30.3	34.3	38.5	36.0	29.1	23.1	18.2	14.9
25m	3.8	9.0	17.5	25.3	28.2	26.2	23.9	21.0
50m	5.9	5.7	8.4	14.7	19.1	24.5	24.2	25.2
100m	0.0	0.3	1.1	3.4	10.7	17.9	28.6	34.3
Breaststroke (n = 22,516)								
Under 10m	100	8.3	17.3	20.6	25.2	30.9	35.4	29.8
10m	0.0	4.2	4.3	2.8	2.3	1.1	0.8	1.6
15m	0.0	41.7	32.7	17.1	6.7	3.4	2.6	0.9
25m	0.0	37.5	29.6	41.9	37.2	32.6	27.5	28.7
50m	0.0	8.3	14.8	16.2	26.7	29.2	30.5	34.2
100m	0.0	0.0	1.2	1.5	2.0	2.8	3.4	4.8
Survival Backstroke (n = 19,708)								
Under 10m	55.6	42.5	26.8	15.4	7.3	3.5	2.0	1.2
10m	33.3	46.2	53.8	48.2	41.3	34.8	27.5	20.7
15m	5.6	2.3	3.5	3.7	2.9	1.6	1.4	1.3
25m	5.6	8.6	14.2	26.2	32.0	33.4	32.4	34.6
50m	0.0	0.5	1.8	6.4	16.2	25.7	34.9	40.7
100m	0.0	0.0	0.0	0.1	0.3	1.0	1.7	1.4
Treading, sculling, or floating (n = 22,770)								
Under 30sec	39.4	14.6	4.7	2.4	1.0	0.6	0.9	0.0
30sec	43.1	49.3	46.3	38.5	31.9	27.0	21.2	19.8
1min	17.1	33.8	42.4	46.9	48.6	50.6	48.7	47.8
2min	0.4	2.2	6.2	10.8	14.2	15.4	18.6	17.7
5min	0.0	0.1	0.4	1.3	4.4	6.4	10.6	14.7
Rescues (n = 3979)								
Be rescued	60.4	20.9	6.9	0.3	0.4	0.5	0.0	0.0
Reach Rescue	36.2	60.7	55.5	48.9	44.8	35.1	32.0	36.4
Rescue over 5m	0.0	0.0	0.0	4.7	11.6	20.5	30.6	29.1

Table 7: Swimming and water safety skills children are achieving analysed by age



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