

**SAFE  
K:DS**  
WORLDWIDE™



## Keeping Kids Safe In and Around Water

Exploring Misconceptions that Lead to Drowning

July 2016



# The Facts about Kids and the Danger of Drowning

## THE PROBLEM<sup>1</sup>

Almost 800 children drown in the U.S. every year.

800

Two thirds of these deaths occur during May – August.

### Drowning Risk Varies by Age



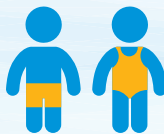
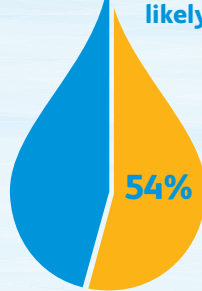
<1 year olds are **more likely to drown at home**



1-4 year olds are **more likely to drown in a pool**



5-17 year olds are **more likely to drown in natural water**



More than half of all child drowning deaths are among **children ages 0 to 4.**

## PARENTS' MISCONCEPTIONS



### MISCONCEPTION 1

Nearly half of parents surveyed think that if a child was drowning nearby, they would hear it.

### Reality

**Drowning is silent.** There can be very little splashing, waving or screaming.<sup>11</sup>



### MISCONCEPTION 2

1 out of 3 parents have left a child alone in a pool for two or more minutes.

### Reality

**Drowning is quick.** Once a child begins to struggle, you may have less than a minute to react.<sup>3</sup>




### MISCONCEPTION 3

More than half of parents surveyed think that when present, a lifeguard is the primary person responsible for their child's supervision at the pool.

### Reality

**Watching your child in the water is your responsibility.** A lifeguard's job is to enforce rules, scan, rescue and resuscitate.<sup>6</sup>



**MISCONCEPTION 4**  
60 percent of parents surveyed would not worry as much about drowning if their child has had swim lessons.

**Reality**

Swim lessons are essential, but skill level varies.

A review of children who drowned in a pool revealed that 47 percent of 10 – 17 year olds reportedly knew how to swim.<sup>19</sup>

**WATER SURVIVAL SKILLS**

**5 Survival Skills That Could Save Your Life in the Water<sup>28</sup>**



1 Step or jump into water over your head and return to the surface.



2 Float or tread water for one minute.



3 Turn around in a full circle and find an exit from the water.

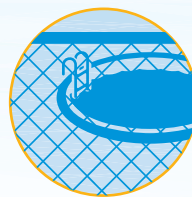


4 Swim 25 yards to the exit.



5 Exit from the water. If in a pool, be able to exit without using the ladder.

**WATER SAFETY TIPS**



- ◆ Watch your kids when they are in and around water, without distraction.
- ◆ Teach children to swim and the 5 Water Survival Skills.
- ◆ Learn CPR and basic rescue skills.
- ◆ Make sure pools have four-sided fencing at least 4 feet high.



## Executive Summary

Sunshine, sparkling water, bright colored bathing suits and the sounds of splashing and joyous laughter: these are common sights and sounds during the warmer months in the U.S. Yet each year almost 800 children ages 0-17 – or two children a day – lose their lives while bathing, swimming or playing in or around water.<sup>1</sup> Nearly two-thirds of those deaths occur between May and August, and for every death, another five children visit an emergency department because of a non-fatal drowning incident.<sup>1-2</sup>

Among unintentional injuries, drowning is the leading cause of death for children 1-4 years of age, the second leading cause of death for children 5-14 years of age, and the third leading cause for children under 1 and 15-17. In 2014, 784 children fatally drowned in the United States (Table 1).<sup>1</sup>

**Table 1. Age is a key determinant in the setting of childhood drownings (n=784)<sup>1</sup>**

Setting	0-4 years	5-9 years	10-14 years	15-17 years
Bathtub	52	7	6	2
Pool	225	57	30	16
Natural water	81	56	58	89
Unknown	62	9	17	17
Total by age	420	129	111	124

To better understand the issue, Safe Kids Worldwide explored current patterns of fatal drowning as well as parental beliefs and behaviors related to water safety. National drowning data for children from birth to 17 years of age were analyzed and a survey of 1,003 parents of 1-12 year olds was conducted. This study was made possible with support from Nationwide's Make Safe Happen program, which is dedicated to reducing child injuries in and around the home, and the collaboration of the National Center for Fatality Review and Prevention.

We found that a number of parental misconceptions regarding water safety persist, despite the concerted efforts to increase knowledge and awareness.

**Misconception 1: I will hear my child if he/she gets into trouble in the water and starts to drown.**

Despite the fact that drowning tends to be silent, we found that nearly half of parents surveyed (48 percent) think that if their child was drowning nearby they would hear splashing, crying or screaming.

**Misconception 2: Nothing bad will happen if I take my full attention off my child for a couple of minutes.**

Despite the fact that drowning can happen in only minutes, we found that almost one in three parents admitted to having left their child at a pool for two or more minutes without supervision.<sup>3-5</sup>

**Misconception 3: If there is a lifeguard present, I don't need to worry as much about actively supervising my child in and around the water.**

We found that more than half of parents surveyed think that lifeguards are the primary people responsible for their child's supervision at a pool, when





in fact, lifeguards are actually responsible for enforcing the rules, scanning, rescue and resuscitation.<sup>6</sup>

**Misconception 4: If my child has had swim lessons, I don't have to worry about him or her drowning.**

Three out of 5 parents surveyed would not worry as much about drowning if their child had swim lessons, yet 47 percent of children ages 10-17 who drowned in pools were able to swim.<sup>7</sup>

**Misconception 5: If my child can swim, he or she has all the necessary water survival skills.**

While swim lessons are important, most parents surveyed were not able to identify water survival skills or understand how having those skills differs from being able to swim.

**Misconception 6: If there is a fence around the property, my child is safe from drowning.**

Despite the fact that a majority of young children drown in home pools, parents with pools on their property did not demonstrate adequate understanding of the importance of supervision and effective barriers, including fencing, in preventing children from drowning at home.<sup>7</sup>

**Misconception 7: My learning CPR is not going to make a difference if my child gets into trouble in the water.**

Despite the fact that initiating cardiopulmonary resuscitation (CPR) on the scene before Emergency Medical Services (EMS) arrives increases the likelihood of survival, 4 out of 10 parents surveyed reported that they have never been trained in infant and child CPR.<sup>8</sup>

These findings suggest the need for enhanced efforts to reach all families and to encourage parents to:

- **Watch kids when they are in or around water, without being distracted.** Keep young children within arms' reach of an adult. Make sure older children swim with a partner every time.
- **Teach children how to swim. Every child is different, so enroll children in swim lessons when they are ready.** Consider their age, development and how often they are around water.
- **Make sure kids learn how to swim and develop these five water survival skills:**
  1. step or jump into water over their head;
  2. return to the surface and float or tread water for one minute;
  3. turn around in a full circle and find an exit;
  4. swim 25 yards to exit the water; and
  5. exit the water. If in a pool, be able to exit without using the ladder.
- **Install fences around home pools.** A pool fence should surround all sides of the pool and be at least four feet tall with self-closing and self-latching gates.
- **Empty kids' pools after each use.** Store them upside down so they don't collect water.
- **Know what to do in an emergency.** Learning CPR and basic water rescue skills may help you save a child's life.







## Introduction

Among unintentional injuries, drowning is the leading cause of death for children 1-4 years of age, the second leading cause of death for children 5-14 years of age and the third leading cause for children under 1 and 15-17 years of age.<sup>9</sup> In 2014, 784 children ages 0-17 fatally drowned in the United States, down 21 percent from 1,004 fatal drownings in 2005. Despite this reduction, each day two children fatally drown and it is estimated that for every death, another five children visit an emergency department because of a non-fatal drowning incident.<sup>1-2,10</sup> Almost two thirds of fatal drownings in 0-17 year olds occur between the months of May and August.

Drowning can be quick and quiet when it occurs.<sup>11</sup> In real life, there is very little splashing, waving or screaming. When a child begins to struggle in the water, something called the *instinctive drowning response* kicks in.<sup>12</sup> Older children cannot wave their arms because they instinctively extend their arms to the side and press down on the water to try and lift their bodies up so their mouth is above the water line. Younger children do not even have the strength to do this so will remain with their face in the water with little to no movement in their arms and legs. Nor can children yell – they are struggling to keep their mouths above water and only have time to grab a quick breath before the cycle repeats and eventually they tire out, cannot fight to stay above water and become submerged.<sup>12-13</sup> Drowning takes only minutes and once the instinctive drowning response begins it can be less than 20 seconds before a child sinks below the surface.<sup>3</sup> Brain damage can occur within five minutes of being submerged under water, and with each minute a child is submerged, the severity of outcome worsens.<sup>4-5</sup>

This silence and speed are characteristics of childhood drowning, and may be the only things that all cases have in common. Personal characteristics of the child, physical and environmental surroundings, socioeconomic status and ethnic or racial backgrounds all play a role in drowning.<sup>4,11,14-18</sup> While the specific circumstances leading to a drowning death are different in every case, there are common themes seen across age groups and types of water. Although any child can drown in any type of water, there are distinct age-related patterns evident in the three most common settings – the bathroom or home, the pool and natural water.<sup>1,11,15,19-21</sup>

With the support of Nationwide's Make Safe Happen program, Safe Kids Worldwide sought to better understand current patterns, circumstances, beliefs and behaviors leading to childhood drowning. In collaboration with the National Center for Fatality Review and Prevention, we explored existing datasets and conducted a survey with a sample of 1,003 parents of children 1-12 years of age. The detailed profiles for drownings in and around the home, in pools and in natural water are available in the accompanying Safe Kids Worldwide report *Dangerous Waters: Profiles of Fatal Childhood Drownings in the U.S. 2005-2014* available at [www.safekids.org](http://www.safekids.org) and highlights are presented here with survey results.





### Who is more at risk?<sup>7</sup>

We analyzed fatal drowning data for 2005 to 2014 and confirmed several demographic trends.

- Children under age 5 are at greatest risk and made up 50 percent of all drownings and 73 percent of pool drownings between 2005 and 2014. The increased risk is in part because toddlers and preschoolers are constantly on the move and curious about everything in their surroundings. While some drownings occur in the presence of parents, there are also many cases where a child has wandered away from a supervising adult and accessed a backyard pool.
- Boys are two times more likely to drown in pools and four times more likely to drown in natural water settings than girls. As with other areas of injury, this may reflect increased risk taking and/or differences in supervision between boys and girls.
- African American children have a greater risk of fatal drowning than Caucasian children. While Caucasian children account for greater numbers (7 out of 10), fatality rates per 100,000 are higher for African American children compared to Caucasian children across multiple settings. The inequity between races increases with age, such that among those ages 5-17, African American children drown in pools at 4.5 times the rate of Caucasian children. Researchers have suggested these disparities may be due to differences in swimming ability, access to swim lessons, lower educational attainment and income levels, and cultural differences.

### Drownings In and Around the Home

As any parent of a young child knows, the home is full of endless opportunities that can become hazards for little ones. This concern is especially important when water is involved. Regular household items such as buckets, wells, cisterns, septic tanks, decorative ponds, toilets and bathtubs provide a potential drowning source for infants and toddlers. The most common location of fatal drowning incidents in this age group is the bathroom, particularly the bathtub.<sup>10-11,22</sup> In 2014 there were 67 fatal drownings in bathtubs, 78 percent of which involved children under age 5.<sup>1</sup>

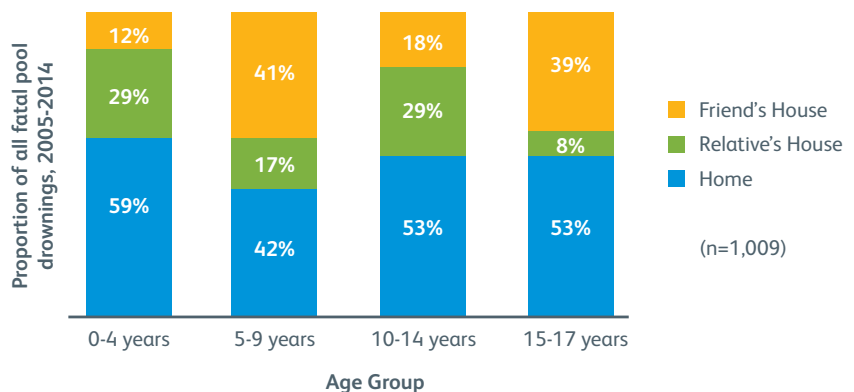
To understand more about drownings in the home setting (excluding pools) we looked at the 512 fatal drownings in the National Center for Fatality Review and Prevention's Child Death Review Case Reporting System (CDR-CRS) for 2005 to 2014. Bathtub drownings made up 88 percent of these cases, followed by buckets at 6 percent. Four out of 10 cases occurred in infants under 1 year and another 4 occurred in toddlers ages 1-4.<sup>7,19</sup>

### Pool Drownings

Pool drownings occur in both public and private settings, in backyards, apartment complexes and hotels, in above-ground and in-ground pools, kids' pools and spas. In 2014, 328 children ages 0-17 fatally drowned in a pool – almost one a day.<sup>7,19</sup>

Where information on pool ownership was available within the child death review data, we found that 87 percent of the drownings occurred in private pools and 13 percent in public pools. A look at the specific location of the pool found that the largest proportion of deaths occurred at the child's home, where regulations and standards for pools are less rigorous than those for public pools.<sup>23</sup> Sixty percent of pool drownings in 0-4 year olds happened at their home, whereas for 5-9 year olds about 40 percent occurred at either the child's or a friend's home (Figure 1).<sup>13,22</sup>

Figure 1. Children ages 5-9 are just as likely to drown at a friend's home as they are at home<sup>7,19</sup>



## Natural Water Drownings

Natural water drownings are those that occur in lakes, rivers, oceans and other open bodies of water. In 2014, 284 children ages 0-17 fatally drown in an incident involving natural water.<sup>1</sup> Teens are three times more likely to fatally drown in natural water than children ages 5-9 and two times more likely to drown than children under 5 years.<sup>7</sup> This difference likely reflects increased exposure to these water settings, reduced supervision and greater propensity for risk-taking behaviors among teens.<sup>10-11,21</sup>

While many think of boating and natural water drownings interchangeably, only 7 percent of fatal drownings between 2005 and 2014 were watercraft related. An analysis of the child death review data on natural water drownings between 2005 and 2014 found that the three most frequent natural bodies of water responsible for fatalities were lakes (38 percent), rivers (24 percent) and ponds (20 percent). Oceans only made up only 4 percent of fatal drownings in natural water. Older children and teens ages 10-17 are more likely to fatally drown in lakes and rivers, while ponds pose a greater threat to younger children.<sup>7</sup>

## Preventing Drowning in Childhood

The staggering toll that drowning takes on children makes it clear that drowning is a major risk for children. We found that parents worry about their child's safety around water with just over half of those surveyed (55 percent) saying they are more worried about drowning than other safety concerns, such as being in a car crash. Parents whose children had participated in swim lessons were more likely to be concerned than parents whose children had not (61 percent and 43 percent, respectively), suggesting that increased exposure to water safety may raise awareness of real and potential dangers and children's limitations.

Unfortunately, there is no single step or action parents can take to prevent these tragic events. Drowning prevention takes multiple strategies and the approach used involves ensuring overlapping layers of protection. The four most frequently discussed are:

- Active adult supervision – within arms' reach supervision for young children and constant visual supervision for all children<sup>24-25</sup>
- Water safety education – water competency skills and swim lessons for both children and parents<sup>2,6,11,26-28</sup>
- Barriers/fencing – barriers around pools that completely separate the pool from the house and yard to prevent unintended access, including four-sided isolation fencing at least four feet high, self-closing and self-latching gates and door alarms in areas leading to pools<sup>6,11,24</sup>
- Cardiopulmonary resuscitation (CPR) training – learning CPR to increase the chance of survival in the event of a drowning incident<sup>2,5-6,11</sup>

## Supervision

Active supervision is one of the most important layers of protection and is absolutely necessary when children are in and around water.<sup>24,29</sup> Our analysis of the child death review data indicated that a lack of or lapse in supervision played a role in the majority of cases examined. Supervision





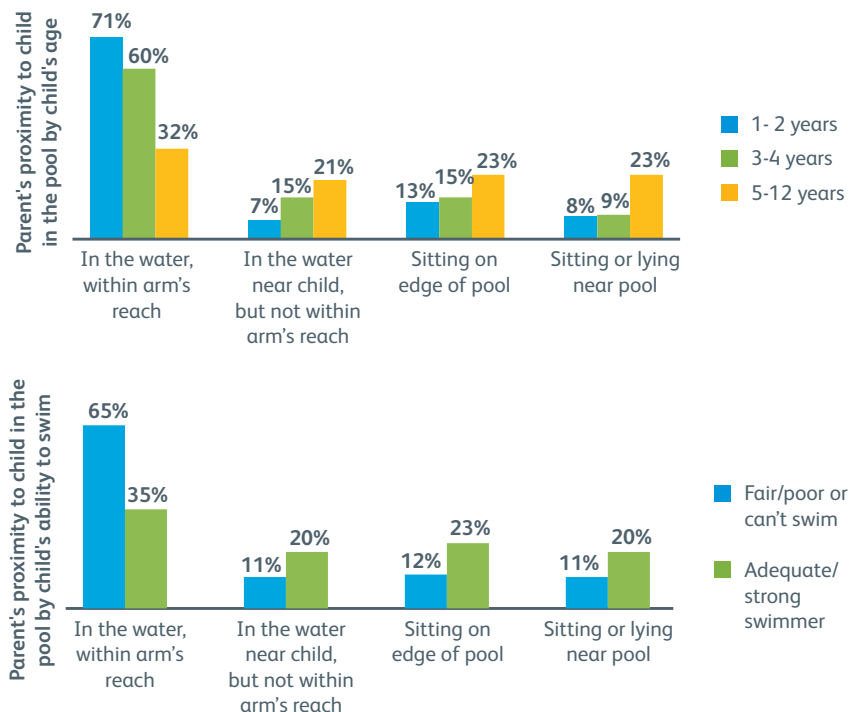
was missing almost half of the time that children drowned in pools. Even when present, caregivers were often not providing adequate supervision due to drugs, alcohol, injury/ illness or distraction (56 percent of the 659 cases where supervision was present). For natural water settings, 6 out of 10 fatal drownings happened in the presence of a supervising adult and in 4 out of 10 cases supervision was needed but absent.<sup>7,19</sup> To better understand why this happens we explored four misconceptions related to supervision.

**Misconception 1: I will hear my child if he or she gets into trouble in the water and starts to drown.**

Nearly half of the parents in our survey (48 percent) think that if their child was drowning nearby they would hear him or her splashing, crying or screaming. With the many distractions and fast-paced world in which we live, parents today often rely more on their sense of hearing than sight when supervising their children. As a result, they anticipate they will hear something to signal that their child is in trouble. Particularly in a busy pool or natural water setting, it is not enough to supervise with your ears only. Constant visual supervision by an adult for all children and non-swimmers are recommended. In addition to watching, parents are advised to check in with their child in the water by asking them if they are okay and only accepting a verbal response.

In terms of their proximity when supervising in a pool setting, less than half of parents surveyed (49 percent) indicated they remain within arms' reach of their child in the water, while others reported supervising from farther away. Not surprisingly, parents' reported proximity to their child varied by the child's age and perceived ability to swim (Figure 2). However, we still found that one in three parents of a child under age 5 are not supervising within arms' reach.

**Figure 2. While parents of younger children and non-swimmers are more likely to stay within arms' reach, an alarming number are not following recommended safety practices**





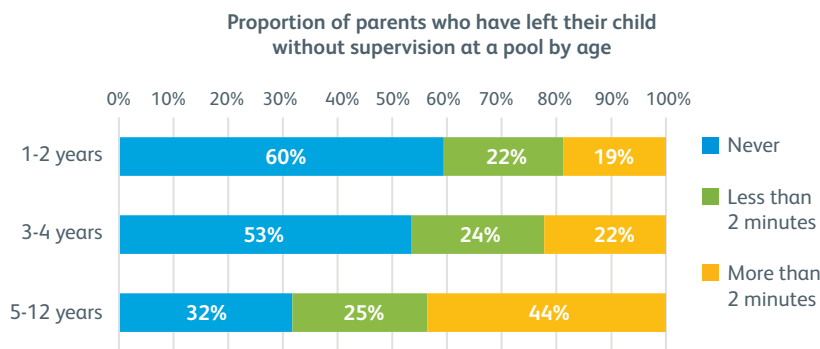
## Misconception 2: **Nothing bad will happen if I take my full attention off my child for a couple of minutes.**

When we asked parents at what point it is acceptable to leave a child unaccompanied in the water at a pool, over half (54 percent) said never. However, 18 percent indicated that it depends on the child's swimming ability and 12 percent said it depends on the child's age. And while to some extent this may be true – for example a teen who has been on the swim team since he or she was a small child may require less parental supervision – one can never assume that any person is immune to drowning. Even strong swimmers drown.<sup>24</sup> Depending on the water conditions, the activity going on around them, how long they've been swimming on a given day and any number of other variables, children who are fine one minute can find themselves struggling the next.

Recent research looking at parents' ability to assess their child's swimming skills suggests that as parents judge their child's swimming ability to be improving, they increasingly believe the child can keep him or herself safe near water and that less active parental supervision is needed.<sup>30</sup> Further, parents often overestimate their child's ability to swim<sup>30-31</sup>, and it is unlikely that many have had the opportunity to assess that ability when their child is distressed.

In our survey, almost one in three parents (32 percent) admitted to having left their child at a pool for two or more minutes without supervision, although this behavior varied with a number of factors. (Figure 3). Children who were older, had taken swim lessons or whose parents perceived them as strong or adequate swimmers were more likely to be left unsupervised at the pool by their parents. Conversely, parents who identified themselves as inexperienced or weak swimmers reported leaving their children alone at the pool less often.

**Figure 3. Age is a driving factor in parents' decision to leave children unsupervised at pools**



Typically there are plenty of other activities besides swimming happening around a pool. While 91 percent of parents surveyed indicate that their activities at the pool include supervising their child, they also reported other distractions such as reading a book or using their phone. In two previous studies, Safe Kids found that parents participate in distracting activities with increasing frequency as their children grows older.<sup>32-33</sup> For example, 6 percent of parents with a child under age 5 will read a book or magazine while supervising their child in the water compared to 23 percent of 5-9 year olds and 40 percent of children ages 10-14.<sup>32</sup>



We found that parents who had not had swim lessons or who self-identified as fair, poor or non-swimmers were more likely than other parents to report they never engage in distracting activities when at the pool with their children. We also found that those who reported at least sometimes engaging in other activities at the pool were more often the parents of children ages 5 to 12 or children who have had swim lessons. On the other hand, parents with children ages 1 to 4 or those whose children had not had swim lessons were significantly more likely to say they never engage in any of the distracting activities at the pool. While the question we asked parents was related to general activities and behaviors at the pool and not specifically while their children were in the water, these results may imply that a certain level of comfort related to water may encourage a more relaxed mindset and multitasking by parents in pool settings. Likewise, inexperience and lack of exposure to water may heighten awareness so that these parents are more focused and vigilant about supervision. However, there are also situations where parents or families of poor or inexperienced swimmers watch a child perish because they do not know how to swim themselves and cannot rescue their child.

We acknowledge that constant visual supervision of children in and around water can be a challenge, but there are situations where it is absolutely necessary. Infants and young toddlers are more dependent on parents and caregivers than older children and can drown in very little water in only a couple of minutes. They are 'head heavy,' meaning that their heads are disproportionately large compared to their bodies, making it harder for them to right themselves or lift their heads in the event they tip over in the water. Thus the main strategy to prevent drowning when these children are swimming or bathing or playing in and around the water is close adult supervision.<sup>11,24</sup> This is why we recommend that caregivers never leave a baby or young toddler alone in a bathtub. In some situations, foreseeable lapses make supervision inadequate as the only preventive strategy.<sup>24</sup> We therefore recommend a multi-layered approach to protection when talking about swimming pools and natural water. We also recommend assigning a "Water Watcher" in settings where it is difficult for a parent to maintain constant visual supervision so that there is at least one adult whose sole responsibility is to watch children, making the supervisory role clear.

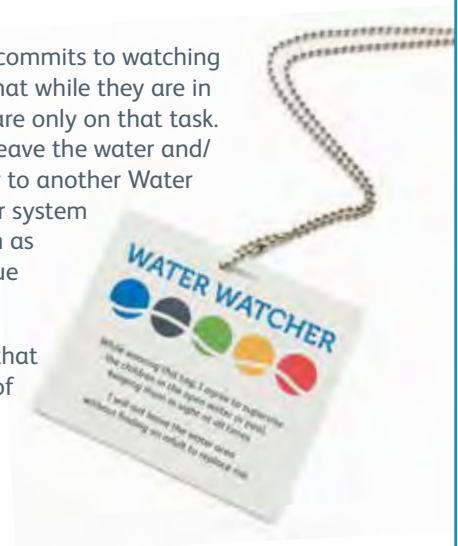


### What is a Water Watcher?

A Water Watcher is an adult who commits to watching children in and around water, so that while they are in the role, their eyes and attention are only on that task. This only ends when the children leave the water and/or they turn over the responsibility to another Water Watcher. Using the Water Watcher system for a certain amount of time (such as 15-minute periods) prevents fatigue and lapses in supervision.

The Water Watcher card is a tool that helps underscore the importance of the role and identifies who has undertaken the responsibility for active supervision.<sup>34</sup>

[www.safekids.org/waterwatcher](http://www.safekids.org/waterwatcher)



Alternately, parents of children who are inexperienced or non-swimmers can choose to have their children wear a U.S. Coast Guard approved life jacket when they are in and around the pool or natural water.<sup>24</sup> In the event they do fall in or get into trouble, the life jacket will hold their heads above water. While overall 43 percent of parents in our survey reported that their child uses a life jacket at the pool, this varied by swimming ability and children reported to be inexperienced or non-swimmers used life jackets more often compared to those who can swim (54 percent and 40 percent, respectively). The most common reason parents gave for not using a life jacket was that they were present to help their child so it was not needed. This suggests that parents do not understand that it is exactly the foreseeable lapses in supervision that make a life jacket a necessity for inexperienced and non-swimmers.

**Misconception 3: If there is a lifeguard present, I don't need to worry as much about actively supervising my child in and around the water.**

Eight out of 10 parents surveyed said having lifeguards at a pool is an important safety measure but more than half (56 percent) think that when present, a lifeguard is the primary person responsible for their child's supervision at the pool. In reality, the roles, responsibilities, life-saving abilities, competence and vigilance of lifeguards vary greatly by setting. Factors such as time of day, level of experience, number of children in the water and adult-to-child ratio have been associated with scanning behavior of lifeguards.<sup>35-38</sup> In fact their role is not to "supervise" children, but rather to scan the water and in the event of trouble, rescue and resuscitate.<sup>6</sup> Therefore, they cannot be viewed as a replacement for parental supervision. Our survey results suggest that parents may perceive less need for parental supervision in the presence of a lifeguard, therefore creating a false sense of security regarding their children's safety.

While lifeguards cannot replace supervision by a parent or other caregiver, they are an important layer of protection necessary in the event that a child requires rescue and resuscitation.<sup>6</sup> Presence of lifeguards increase the likelihood of a favorable outcome. This is why it is recommended that those who choose to swim in natural bodies of water or at publicly accessible sites do so only in designated areas with a lifeguard present.<sup>24</sup> Yet, many of the parents we surveyed said they frequently attend pools that do not have lifeguards on duty. Public community and gym pools were reported as having lifeguards 80 percent of the time, but only 42 percent of private community pools and 25 percent of condo and apartment pools reported having lifeguards. Lack of lifeguards, supervision or other safety precautions are a growing concern in the specific setting of condominium and apartment pools.

**Swim Lessons and Water Survival Skills**

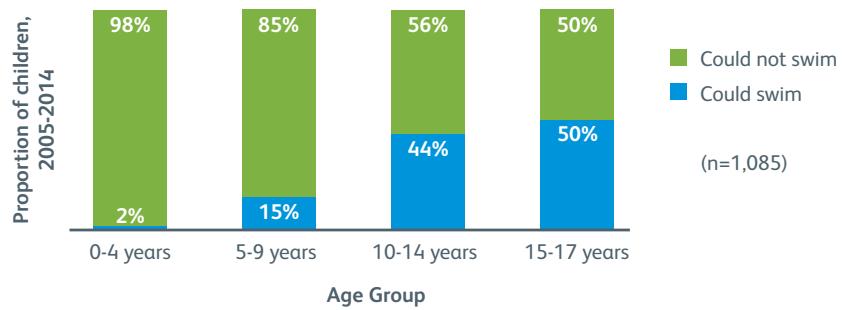
Learning how to swim can reduce the risk of drowning in children.<sup>28,39</sup> The American Academy of Pediatrics (AAP) continues to recommend swim lessons for all children ages 4 and older. However, because toddlers are at high risk of drowning, the AAP suggests that parents of children ages 1-4 consider starting swim lessons or water survival skills training earlier based on an individual child's frequency of exposure to water, emotional maturity, physical limitations and health concerns related to swimming pools.<sup>24</sup>





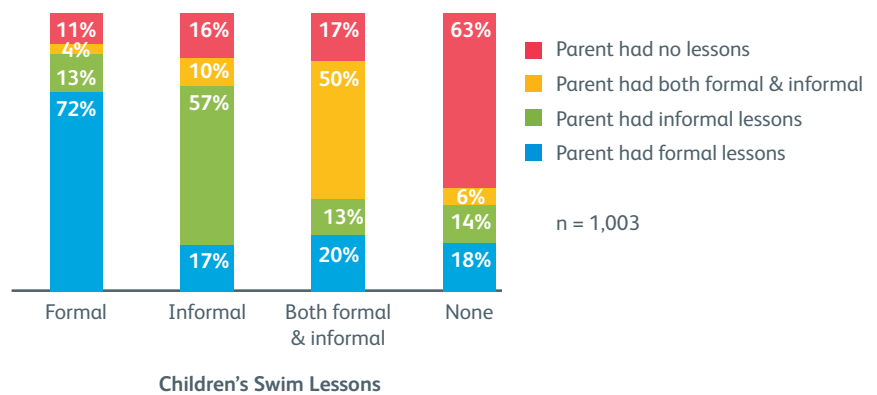
Our analysis of the child death review data found that in the cases where information was available, nearly half (47 percent) of all 10-17 year olds who drowned reportedly knew how to swim. Reported swimming ability increased with age from 2 percent of children under age 5 to 50 percent of children ages 15-17 (Figure 4).<sup>7</sup>

**Figure 4. Nearly half of 10-17 year olds who drown in pools reportedly know how to swim<sup>7,19</sup>**



We found that parents see swim lessons as important, with almost 9 out of 10 parents indicating that learning to swim was just as important for a child as wearing a seat belt. However, only 53 percent of parents we surveyed reported their child has had formal swim lessons. Children whose parent had swim lessons (formal or informal) were also more likely to have had swim lessons compared to those children whose parents had not had swim lessons (93 percent and 55 percent, respectively) (Figure 5).

**Figure 5. When it comes to swim lessons for their child, parents are most likely to do what they know**



The probability of having had any type of swim lessons also increased with a child's age. The proportion with formal swimming lessons ranged from 39 percent for 1-2 year olds up to 63 percent for 5-12 year olds. More than half of children who have had swim lessons were under age 4 when they started (18 percent started lessons at age 1, 21 percent at age 2 and 17 percent at age 3).

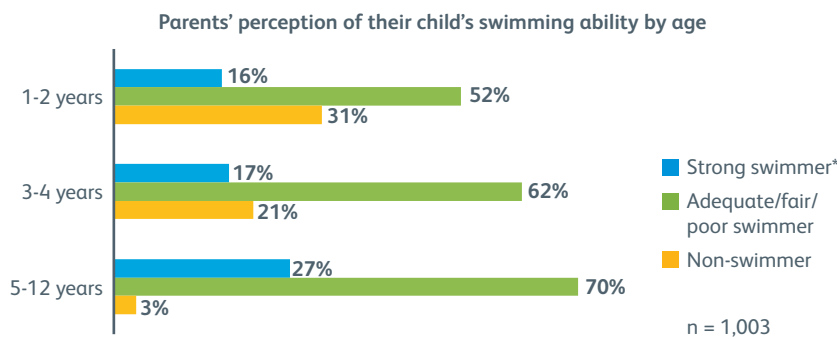
Participation in both formal and any type of swim lessons was higher for children in homes with a pool on the property compared to other children. Participation in formal swim lessons was also associated with household income – the higher the household income, the more likely children were to have participated. Children living in a rural environment were less likely to have participated in swim lessons than those in urban or suburban settings (58 percent, 85 percent and 79 percent, respectively). These last two findings likely relate to affordability and accessibility, and have implications for organizations working to increase the number of children who have had swim lessons, particularly those from underserved and remote populations.

**Misconception 4: If my child has had swim lessons, I don’t have to worry about him or her drowning.**

One of the challenges in understanding the impact of swim lessons in terms of swimming ability is that their content and length vary greatly from program to program. They can, for example, range from a daily lesson at a one-week summer camp to weekly lessons for several years. This diversity, together with individual differences in a child’s readiness to learn and development, mean that participation in swim lessons does not guarantee a child will learn to swim within a specified period.<sup>31</sup> Yet there is some evidence to suggest that parental concerns about water safety may be reduced by a child taking swim lessons.<sup>25</sup> We found that 60 percent of parents surveyed would not worry as much about drowning if their child had swim lessons.

When we asked parents about their child’s swimming ability, not surprisingly it varied by age and by whether or not the child had participated in swim lessons. Research looking at how well parents can judge their child’s actual swimming skills suggests that only the highest level of reported swimming skill is related to actual observed swimming ability.<sup>28,29</sup> If this assumption holds for parents in our survey, the majority may believe their child is able to swim better than he or she truly can (Figure 6).

**Figure 6. A majority of parents likely overestimate their child’s swimming skill level**





### Misconception 5: **If my child can swim, he or she has all the necessary water survival skills.**

In recent years water safety experts have started to question whether swim lessons adequately prepare students to deal with situations where they are in danger of drowning (e.g., they get into trouble in the water or fall in unexpectedly) and have developed a concept called *water competency* to describe water survival skills.<sup>27-28</sup>

#### **What is water competency?**

The American Red Cross has identified a sequence of critical water survival skills that they use to define water competency.<sup>26,39</sup>

**These skills include the ability to:**

- 1. step or jump into the water over your head;**
- 2. return to the surface and float or tread water for one minute;**
- 3. turn around in a full circle and find an exit;**
- 4. swim 25 yards to the exit; and**
- 5. exit from the water. If in a pool, be able to exit without using the ladder.**

While some of these skills are included as part of swim lessons, not everyone who can swim has these skills. A survey by the American Red Cross in 2014 found that while 80 percent of Americans self-identified as “swimmers” only 56 percent of those swimmers were able to perform all five water survival skills in the water competency sequence. Only 39 percent of parents of children ages 4-17 said their child can perform them.<sup>40</sup>

We explored parents understanding of water competency to assess whether they were aware of the concept, the related skills and how it differs from swim lessons. Parents’ responses suggest that some do not understand water competency or the water survival skills involved. When asked unprompted what they thought were the most important skills to ensure safety for their child in a pool, parents most frequently mentioned being able to swim (45 percent) and knowing how to float (16 percent). However, when given a list that included both water competency skills and swimming strokes, the proportion of parents able to identify water survival skills ranged from 21 percent for exiting the water without a ladder to 70 percent for floating. (Figure 7)

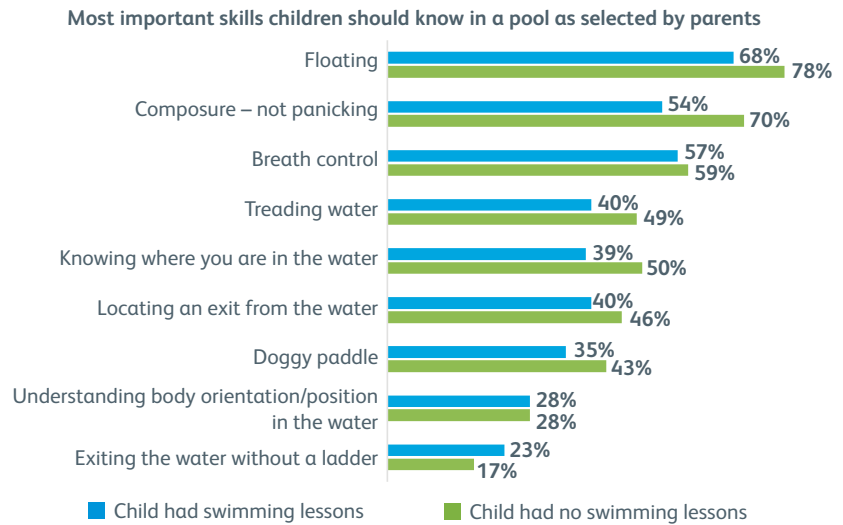
We suggest that parents work with their learn-to-swim provider or local swim instructor to test whether their children have the ability to perform the five water survival skills. Achieving water competency will take time and practice to build proficiency. Further, it is important to remember that water competency is influenced by water conditions (e.g., water temperature, movement, depth). Water survival skills like floating that a child can do in one setting like a pool may not easily be done in another setting, like a river or the ocean.<sup>27</sup>







**Figure 7. Parents are able to identify water survival skills**



### Home Pool Environment

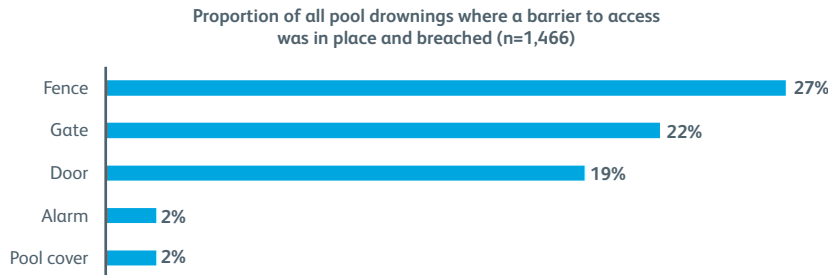
As anyone who has been around children knows, kids are very curious and can be quite resourceful. They often find their way into seemingly impossible situations which cause injury and harm. Home pools present a particularly grave risk. Supervision and environmental safety measures may decrease this risk, but neither strategy is effective alone.

The first line of defense against drowning in home pools is active supervision at all times.<sup>24</sup> However, in reality lapses in supervision may occur, which is why barriers that prevent the child from accessing the pool are necessary. Recommended barriers include fencing, gates, alarms and door locks. The preferred type of fence is one that completely surrounds and separates the pool from the rest of the house (isolation fencing). Perimeter fencing, on the other hand, encircles the pool and the house together. As perimeter fencing provides a more direct route from the house to the pool for a small child, it is not as effective in preventing drowning.<sup>39</sup> Other key aspects of adequate and effective fencing are self-closing and self-latching gates.<sup>39</sup> Pool alarms and rigid pool covers can also provide additional layers of protection; however, neither are a substitute for adequate fencing.<sup>2,24</sup> Additionally, approved pool drain covers should be used to prevent entrapment and entanglement which can also lead to drowning.<sup>41</sup>

Evidence shows that lapses in supervision and barriers can be key contributors to pool drownings for young children. In 1994, the Consumer Product Safety Commission (CPSC) conducted a study of home pool drownings in children under age 5 in three states – California, Arizona and Florida – and found that in 7 out of 10 drownings the child was not expected to be in or at the pool at the time the incident occurred. Sixty-five percent of the drownings occurred at the child's own home.<sup>42</sup> The most recent CPSC report on pool and spa safety indicates that almost two-thirds of drowning deaths in children under age 5 in 2015 occurred when there was a lapse in adult supervision and during that time the child managed to access the pool or spa.<sup>43</sup> Further, available information from the Child Death Review indicates that in 47 percent of 1,466 pool drowning deaths between 2005 and 2014, at least one barrier failed to prevent a child from gaining access to the pool. Most commonly, inappropriately designed or poorly maintained

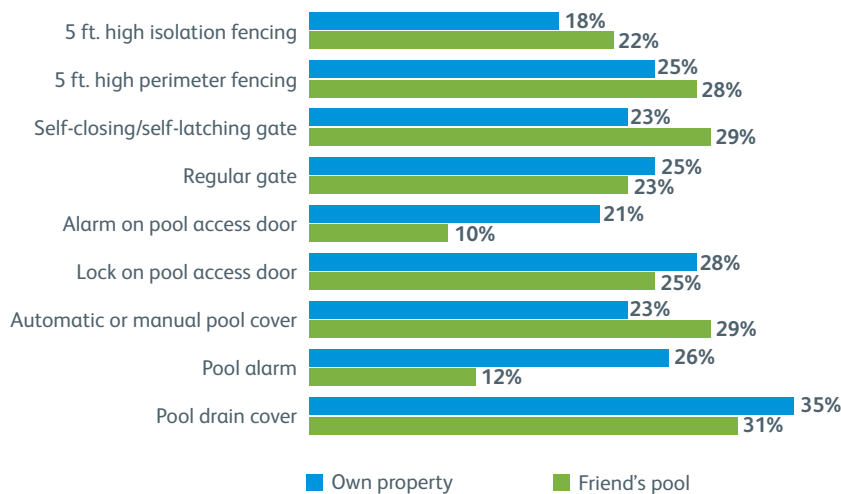
fences were the problem, followed by gates, doors and pool alarms (Figure 8). Where a fence failure was reported, issues included a gap in the fence, the child climbing the fence, a damaged fence and an inadequate height.<sup>7,19</sup> These results support the need for pool barriers to reduce the likelihood of a child accessing a home pool when lapses in supervision inevitably occur.

**Figure 8. Of barriers in place, fences were most likely to be breached<sup>7,19</sup>**



Given the number of children under age 10 that drown in a pool on their own or a friend's property, we asked parents whose children frequent pools in those locations to report the presence of various environmental measures. For the most part, the frequency with which these safety measures were reported was very low. Pool drain covers were the most prevalent at about 33 percent overall (Figure 9). Of particular concern were the low proportion of pools with either isolation or perimeter fencing.

**Figure 9. Parents report low compliance with safety recommendations at home pools**





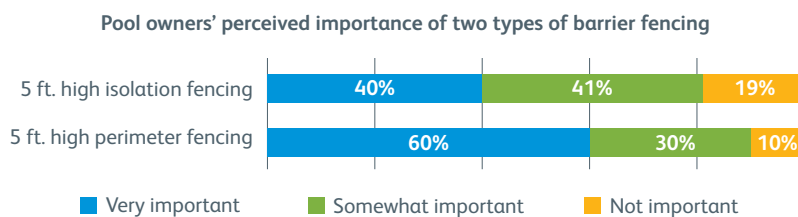




**Misconception 6: If there is a fence around the property, my child is safe from drowning.**

The fact that most drowning deaths of young children occur at their own home following a lapse in supervision not only highlights the importance of adequate fencing as an added layer of protection, but also the value of a fence that isolates the pool from the house and rest of the yard. Parents with pools on their property in our survey did not report greater concern about drowning or closer supervision of their children than other parents. They also did not demonstrate an adequate understanding of the most effective fencing elements. When asked to indicate the importance of different pool barriers, perimeter fencing was reported as very important more often than isolation fencing (Figure 10).

**Figure 10. Parents do not perceive isolation fencing as more valuable than perimeter fencing**



**Cardiopulmonary Resuscitation (CPR)**

In the event that a small child does drown, the first vital steps to increasing the chance of survival are calling 911 and initiating cardiopulmonary resuscitation (CPR).<sup>6</sup> With every second that passes, oxygen is not being circulated to the child's brain, and with each minute that passes the risk of death or permanent brain damage increases. If CPR is initiated right away and EMS arrives within nine minutes or less, the child is three to five times more likely to survive with no long term health implications.<sup>4,8</sup> For this reason, it is recommended that all parents receive training in infant and child CPR.<sup>24</sup>

Information from child death reviews for fatal drownings from 2005-2014 indicate that age and location had an effect on whether CPR was initiated before EMS arrived. The proportion of cases where CPR was performed ranged from 45 percent of natural water drownings to 93 percent of pool drownings and decreased with increasing age of the victim.<sup>7,19</sup>

**Misconception 7: My learning CPR is not going to make a difference if my child gets into trouble in the water.**

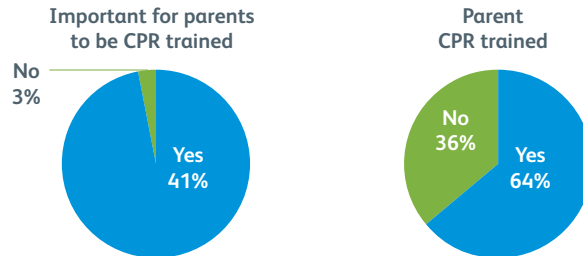
Nearly all parents in our survey (97 percent) agreed that it is important for a parent to know infant and child CPR. However, only 64 percent of parents reported that they have ever been trained accordingly (Figure 11). This suggests that almost 4 in 10 parents do not see the benefit or that the benefit does not outweigh the perceived cost or inconvenience. Despite the fact that the proportion of parents trained increased as household income increased, only 3 percent mentioned cost as being a barrier. The most common reasons given for not learning CPR for the 367 parents who indicated they had not been trained were a lack of time or opportunity (29





percent), not seen as necessary (22 percent) or don't know/no reason (22 percent). This implies there is a group of parents failing to understand the value of CPR training. In reality, if the parent is the only bystander, knowing CPR could make the difference between life and death or lifelong disability for their child.

**Figure 11. Despite acknowledging its importance, almost 4 out of 10 parents do not have CPR training**



## Pool Safety Tips for Parents

The seven misconceptions described in this report underline the importance of parents and caregivers understanding the risks for drowning and actions to keep children safe around water. The following highlights key safety tips.

- **Watch kids when they are in or around water, without being distracted.** Keep young children within arm's reach of an adult. Make sure older children swim with a partner every time.
- **Teach children how to swim.** Every child is different, so enroll children in swim lessons when they are ready. Consider their age, development and how often they are around water.
- **Make sure kids know how to swim and have these five water survival skills:**
  1. step or jump into water over their head;
  2. return to the surface and float or tread water for one minute;
  3. turn around in a full circle and find an exit;
  4. swim 25 yards to exit the water; and
  5. exit the water. If in a pool, be able to exit without using the ladder.
- **Install fences around home pools.** A pool fence should surround all sides of the pool and be at least four feet tall with self-closing and self-latching gates.
- **Empty kids' pools after each use.** Store them upside down so they don't collect water.
- **Know what to do in an emergency.** Learning CPR and basic water rescue skills may help you save a child's life.



## Water Recreation Public Policy

Because water presents such a strong risk for kids, water safety has inspired significant advances in public policy at both the federal and state level. In 2007, Congress passed the Virginia Graeme Baker Pool and Spa Safety Act (“VGB Law”).<sup>41</sup> Virginia Graeme Baker, the granddaughter of former U.S. Secretary of State James Baker, was a 7-year-old girl and a good swimmer, but her leg was pulled in by the suction of a hot tub drain. Congresswoman Debbie Wasserman Schultz (D-FL) led the fight for the bill, working with Safe Kids Worldwide and other safety advocates. The law:

- Established mandatory standards for pool drain covers for public pools.
- Created a grant program for pool safety initiatives to states and local government with laws requiring barriers around pools and up-to-date drainage systems. Five local governments successfully applied for the grant program in 2015.<sup>44</sup>
- Required the Consumer Product Safety Commission (CPSC) to develop and implement a public awareness campaign, which resulted in the Pool Safely campaign.<sup>45</sup>

In May 2016, the CPSC reported that fatal drownings in swimming pools decreased by 11 percent since 2010.<sup>46</sup> At the same time, however, the Centers for Disease Control and Prevention (CDC) released data that 80 percent of inspections of public aquatic venues resulted in at least one violation, and 1 in 8 resulted in the closure of a facility. While water quality was a factor in at least 27 percent of the violations, 13 percent involved problems with safety equipment. The highest proportion of closures involved kiddie and wading pools.<sup>47</sup>

Child drowning remains one of the main causes of unintentional death. Now that the VGB Law has been fully implemented – though some states still have progress to make – it is time for a second wave of public policy initiatives to make swimming pools safer for our kids.

- **Home Pools:** The VGB Law does not require barriers or entrapment protection for pools at private homes. It provides incentives to states that adopt such requirements and all states should extend their laws to do so. In 2012, the International Swimming Pool and Spa Code (“Code”) was adopted.<sup>23</sup> It takes pool safety beyond the VGB Law by applying the entrapment prevention standards to all residential and public pools, upgrading the electrical requirements, and setting enhanced fencing and barrier requirements on all new construction. Georgia, Michigan, Montana, New Jersey, Virginia and Washington, D.C. have adopted the Code.<sup>48</sup>
- **Inspections:** Parents and caregivers who take their children to a public pool should feel comfortable that they are safe. Pool inspection programs are in place for just 68 percent of local health departments.<sup>49</sup> Localities should have a strong protocol for inspecting pools. State and local laws should define the coverage of pools for inspections to include those at apartment and condominium complexes.
- **Inspection Reporting:** The results of pool inspections should be available to people using pools. The provision of safety information – including recent history of inspections and pool tests for organisms which can be harmful – would heighten awareness of parents and encourage pool operators to stay on top of pool safety. Linn County, Iowa was the first in its state to post pool inspections online.<sup>50</sup>
- **Fencing:** Pools at private single-family homes must be protected by fencing, self-closing and self-latching gates, alarms and locks and other barriers to prevent children from access. Laws should apply to new construction, and find ways to include requirements to update existing pools, such as when a home changes hands.<sup>51</sup>
- **Continuing Education:** Pool operators should have a foundation of knowledge about keeping swimming pools and spas safe. There should be a certification/licensing process and a requirement for regular refresher courses.<sup>52</sup>

## Survey Methods

This survey was conducted online within the United States from May 11 to 17, 2016 among 1,003 parents of children ages 1-12 with access to a pool either on their own property or in the community. The survey was roughly 20 minutes long, with questions addressing behavior, perspectives and beliefs related to pool access, pool safety, swimming lessons and prevention measures. The margin of error for the total sample size of this study (n=1,003) is 3.1 percent at a 95 percent confidence level. This means that if the study were repeated with the population using the same parameters, 19 times out of 20 (or 95 percent of the time) we would expect to get a result within +/- 3.1 percent of the results we have here. Online samples, if recruited, managed and selected correctly, can effectively reflect a known universe. However, no online sample is projectable according to strict sampling theory which states that in order for a sample to be projectable to a population it must be a random sample of that population; that is, one in which all members of the population have a known and non-zero probability of selection.

**Table 2. Parent Sample Distribution**

Parent gender	Male	49%	Marital status	Married	84%
	Female	51%		Unmarried	16%
Parent age	Under 30 years	26%	Region	Northeast	18%
	30-34 years	30%		Midwest	22%
	35-39 years	28%		South	35%
	40-44 years	16%		West	25%
Child gender	Male	55%	Area	Mostly urban or in the city	45%
	Female	45%		Mostly suburban	41%
Child age	1-2 years	25%		Mostly rural/in the country	14%
	3-4 years	24%	Income	Less than &50,000	28%
	5-8 years	26%		\$50,000 to \$99,999	48%
	9-12 years	24%		\$100,000+	24%
Race/ethnicity	Caucasian/White	84%	Education	High school graduate	
	Hispanic/Latino	15%		or less	14%
	Asian American	7%		Some college	24%
	African American/Black	5%		College graduate	40%
	Other	3%		Graduate school	12%

The sample responding is over representative of Caucasians (84 versus 62 percent), those with a bachelor's degree of higher (52 versus 38 percent) and those with a higher income (median income in the US was \$53,657 in 2014). As a result generalizations to the whole population must be done with caution.

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## Acknowledgements

Safe Kids Worldwide would like to acknowledge the input and support of Julie Gilchrist from the Division of Unintentional Injury Prevention, National Center for Injury Prevention & Control at the Centers for Disease Control & Prevention (CDC), Diane Pilkey from Emergency Medical Services for Children (EMSC) and Injury Prevention Branch, Maternal and Child Health Bureau (MCHB), Health Resources and Services Administration (HRSA) at the U.S. Department of Health & Human Services (HHS) and Teri Covington and Heather Dykstra from the National Center for Fatality Review and Prevention at the Michigan Public Health Institute in the development of this report and the companion document, *Dangerous Waters: Profiles of Fatal Childhood Drownings in the U.S. 2005-2014*.

Suggested citation: MacKay JM, Steel A, Dykstra H, Wheeler T, Samuel E, Green A. Keeping Kids Safe In and Around Water: Exploring Misconceptions that Lead to Drowning. Washington, D.C.: Safe Kids Worldwide, June 2016.



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