

# “Palm Beach County Drowning Deaths: What We Know”



Prepared by: The Drowning Prevention Coalition of Palm Beach County Manager, Anna Stewart

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## Palm Beach County Board of County Commissioners

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## **Section One – Background/Mission/Drowning Defined**

This report documents the background of the Drowning Prevention Coalition of Palm Beach County (DPC) including its formation, staffing and funding. The statistics presented in this document pertain to those drowning deaths that occurred only in 2016 (Jan-Dec) where the death was determined to be accidental drowning by the Office of the Medical Examiner, District 15. According to District 15 website, the organization “conducts investigations of violent, sudden, unexpected, and suspicious deaths occurring within the County, or any death where there is no doctor in attendance, in accordance with the parameters established by Florida State Statutes. The office functions as a repository for records, documents and photographs generated during investigation of a death.” They are located on the property of the Palm Beach County Sheriff’s Office located off of Gun Club Road in West Palm Beach. For the purposes of this report, all drowning deaths reported include cities and unincorporated areas within the County’s perimeters. This is statistically relevant, for often times drownings that occur outside Palm Beach County jurisdiction are sent to District 15 for unknown reasons. Such drownings are not included in the DPC’s findings since the incident didn’t occur within the County itself.

**The Coalition’s Mission** is to reduce drowning, near-drowning and other water-related incidents by educating the public about water safety and basic rescue techniques. The Mission applies to residents of the entire county but can also include visitors. To achieve its mission, the Coalition:

1. Provides free, land based water safety presentations to audiences of all ages. The DPC partners with the Palm Beach County School District to gain access into Pre-K to 12<sup>th</sup> grade classrooms for educational training. Adult trainings are also provided for businesses, non-profit organizations, senior groups etc...
2. Sets up an educational display booth at health and safety fairs on a yearly basis to hand out water safety and drowning prevention materials to attendees.
3. Provides free/reduced cost swimming lessons to underprivileged and special needs children ages 3-12 who qualify. There are 18 aquatic facilities that participate in this program that provides swimming lessons to participants.

There is a lot of confusion relating to the definition of drowning. **How is drowning defined?**

After much research, it was found that The World Health Organization has adopted the following definition on drowning: “Drowning is the process of experiencing respiratory impairment from submersion/immersion in liquid.” What does this mean in layman’s terms? New Health

Advisor's online website (<http://www.newhealthadvisor.com/what-happens-when-you-drown.html>) explains what happens when a drowning occurs:

As you drown you no longer have access to oxygen, which within a couple of seconds causes injury to your brain and other organs. The exact process goes like this:

- Due to initial panic, you will automatically exert energy and use up more oxygen as you move around in the water.
- Also while under water your body will build up carbon dioxide, causing you to take in water as you are desperate to breathe.
- And this will cause you to cough or swallow as it touches your airways, as a result you will unfortunately take in even more water.
- Eventually your throat will close up to protect your lungs (known as Laryngospasm), forcing the water into the stomach.
- Soon you become unconscious because of your reduced oxygen levels, forcing your throat to relax and allowing water to enter your lungs.
- Your heart will then struggle to pump blood around your body and will eventually stop.

Drowning incidents can take place in as little as one to two inches of water (water just needs to cover the nose and mouth at the same time for respiratory impairment to occur) and in any body of water (i.e. pool, spa, puddle, ocean, lake, pond, canal, drainage ditch, decorative water features). Regardless of one's age, race, gender, swimming capability and socioeconomic background, a drowning incident can transpire.

## **Section Two – History of the DPC/Staffing/Funding**

The Drowning Prevention Coalition (DPC) originated in the early 1990s at the Palm Beach County Health Department as a result of a two-year grant issued by the Center for Disease Control. The grant money was used to hire an injury prevention coordinator to study drowning, near drowning incidents and other health education issues. Once the grant concluded, the DPC dissipated.

During the mid-1990s, former County Commissioner Warren Newell helped establish a Drowning Prevention Task Force along with a gentleman whose daughter was severely injured as a result of a near-drowning event. The Task Force consisted of key stakeholders whose mission was to raise

community awareness about water safety. The American Red Cross Palm Beach County Chapter housed the Task Force in order for funds to be raised.

In the late 1990s, the Commissioner Newell approached the Palm Beach County Board of County Commissioners, Palm Beach County Health Care District, and the County's Children's Services Council to provide permanent funding for a County Drowning Prevention Coalition that would continue to remain at the American Red Cross. The Coalition lasted at the Red Cross for approximately three years and was transferred to Palm Beach County Fire Rescue (PBCFR) at the request of former Assistant County Administrator Jean Cramer in 2000.

At the beginning of 2003, the Coalition's Director left, and the Health Care District pulled their funding to use elsewhere. The Coalition's Education Specialist remained on board for a few months and then resigned.

Not wanting to see the Coalition dissolve, PBCFR and Jean Cramer discussed hiring a Drowning Prevention Coordinator, who would be directly supervised by PBCFR's Community Education Coordinator. In December 2003, a DPC Coordinator was hired to work a 40-hour week. The Coordinator became the full time Coalition Manager in February 2007, and, in May 2007, a new full time DPC Coordinator was hired due to the growing demand of DPC's services. The Coordinator's primary focus was children's programming while the Manager concentrated on administrative duties and providing adult water safety presentations. PBCFR's Community Education Coordinator was no longer involved with the DPC, but PBCFR's Fire Marshal became the DPC's direct supervisor.

There are two primary funding sources for the DPC. The Palm Beach County Board of County Commissioners (\$150,000), and the Children's Services Council (CSC) of Palm Beach County (\$100,000). In previous years, the CSC contributed \$50,000 per year but due to an increase in demand for swimming lessons the CSC increased their funding for the first time to \$100,000 (for Fiscal Year 2018) to accommodate the growing requests for lessons. Of the \$100,000, \$50,000 must be guaranteed for swimming lessons.

### **Section Three - Palm Beach County Drownings vs. Other Counties**

According to the Florida Department of Health, Bureau of Vital Statistics, the following 2016 Unintentional Drowning rates are based on 10 counties (out of 67) with the highest population (note that only Florida resident drowning deaths are reported). Rates are per 100,000 population.

Of the ten counties, Palm Beach County came in fourth with a drowning rate of 1.9. The rate of drownings from highest to lowest are as follows:

<u>County</u>	<u># of Drownings</u>	<u>Rate</u>
Brevard	22	3.2
Broward	53	2.8
Hillsborough	32	2.3
Pinellas	21	2.3
<b>Palm Beach</b>	<b>29</b>	<b>1.9</b>
Lee	14	1.9
Duval	18	1.8
Orange	21	1.6
Polk	14	1.6
Miami Dade	38	1.3

Delving further, if the last three years (2014-2016) are reviewed using Bureau of Vital Statistics utilizing counties with the ten highest populations, Palm Beach County had a drowning rate of 2.3, the third highest drowning rate of the ten counties.

<u>County</u>	<u># of Drownings</u>	<u>Rate</u>
Brevard	54	2.9
Broward	141	2.6
<b>Palm Beach</b>	<b>104</b>	<b>2.3</b>
Pinellas	69	2.2
Lee	48	2.2
Polk	39	2.1
Duval	50	2.0
Hillsborough	66	1.7
Orange	59	1.6
Miami Dade	112	1.3

### **Scope of Problem**

According to the Florida Department of Health's website, "Florida leads the country in drowning deaths of children ages 1-4 years. Annually in Florida, enough children to fill three to four preschool classrooms drown before their fifth birthday." Palm Beach County is no exception, for

children in the aforementioned age group have the highest drowning rate in the County based on population. However, despite this age group having the highest drowning rate, drowning victims are of all ages, and are non-residents, residents, homeless, or of unknown origin. The average drowning rate in the County is 3.8 per 100,000 population, based on the last ten years of medical examiner reports from District 15. In addition, the average number of drowning deaths per year over the last decade was 48. In 2016 alone, there were 47 drowning deaths in the County. It is important to note that the Florida Department of Health statistics on drowning only reflect Florida resident deaths, whereas the findings presented in this report include all drowning deaths regardless of the victim's residential status. Thus, there will always be a discrepancy in drowning statistics between what the Florida Department of Health reports and what the Coalition provides. In addition, weeks if not months after a drowning death occurs are the reports provided to the DPC. For example, a drowning death that happened in December 2016, the report might not be available until April of 2017. This can present difficulties in offering up to date information to the public.

#### **Section Four – Analysis of Medical Examiner 2016 Reports**

Every 2016 medical examiner (ME) report received (47 of them) from District 15 that listed the cause of death as accidental drowning was received by the DPC and analyzed using an Excel spreadsheet and Epi Info (after data was input). Epi Info is a free software tool provided by the Centers for Disease Control and Prevention (CDC) designed for “public health practitioners and researchers. It offers database construction, a customized data entry experience, and data analyses with epidemiologic statistics, maps, and graphs.” The following 2016 data diagrams were made using Excel’s graphics feature:

1. Accidental Drowning Deaths by Age for PBC
2. Accidental Drowning Deaths by Age in PBC in 2016 via Line Graph
3. Accidental Drowning Deaths by Gender for PBC
4. Accidental Drowning Deaths per Month for PBC
5. Resident/Non Resident Drowning Deaths in PBC

The following 2016 data diagrams were made using Epi Info’s graphics feature:

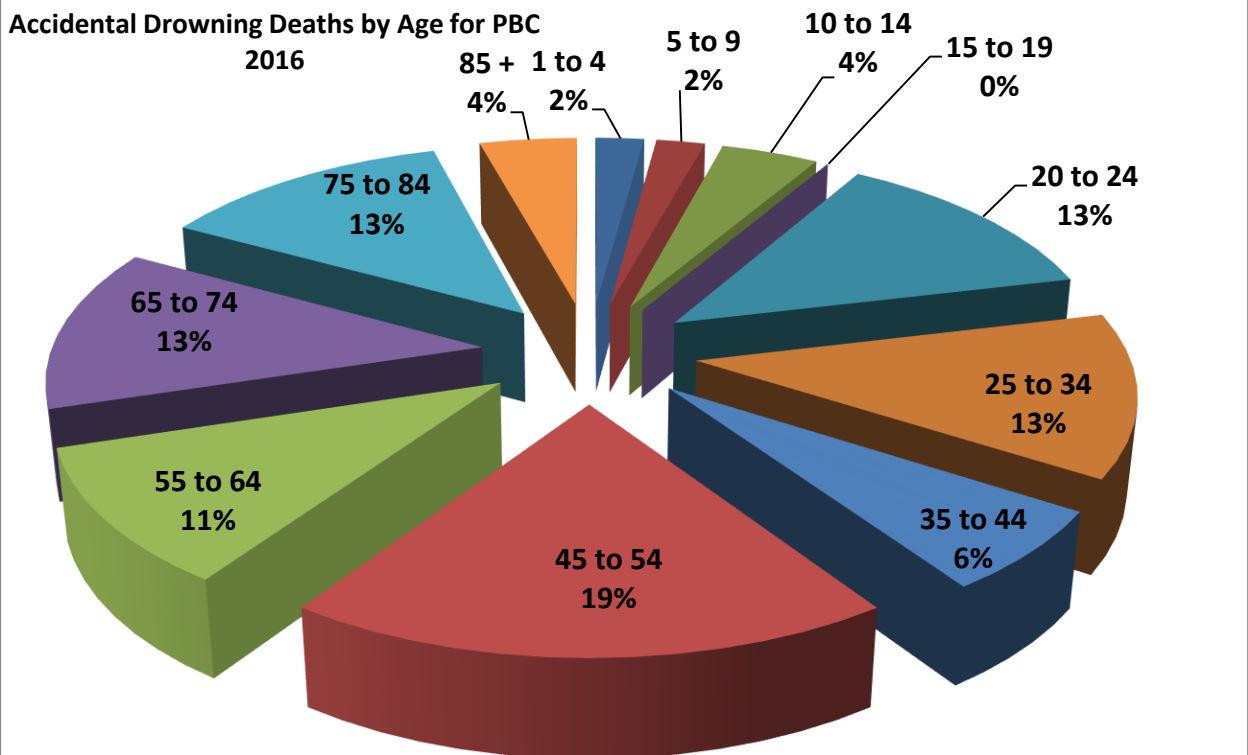
6. Number w/ Alcohol in System
7. Frequency by Body of Water
8. Frequency by Unincorporated Palm Beach County Zip Codes and Incident Location

9. Type of Clothing Present
10. Was CPR Performed
11. Number w/ Drugs in System
12. Specific Location of Death (Scene or at Hospital)
13. Drowning by Race
14. How Many Were Witnessed?

All aforementioned graphs include data where immediate cause of death was drowning. Data excludes homicides, suicides, human trafficking; it includes Resident and Non Resident drowning deaths. The 2016 ME reports received incorporated findings from both the medical examiner investigator who appears at the location where incident occurred along with the autopsy findings from the medical examiner.

**Accidental Drowning Deaths by Victim’s Age – Table 1**

Age ranges were modeled after CDC’s WISQARS (Web-based Injury Statistics Query and Reporting System). The age group with the highest percentage of drowning were adults 45 to 54 years of age (19%, 9) followed by 75 to 84 (13%, 6), 65 to 74 (13%, 6), 25 to 34 (13%, 6), and 20 to 24 (13%, 6). The age group with the lowest occurrence of drowning deaths was 15 to 19 years of age (0%) followed by 1 to 4 (2%, 1), 5 to 9 (2%, 1), and 10 to 14 (4%, 2). With the Coalition spreading water safety education in schools via its land based drowning prevention programming, we can assume that these low numbers are a direct result of our outreach.



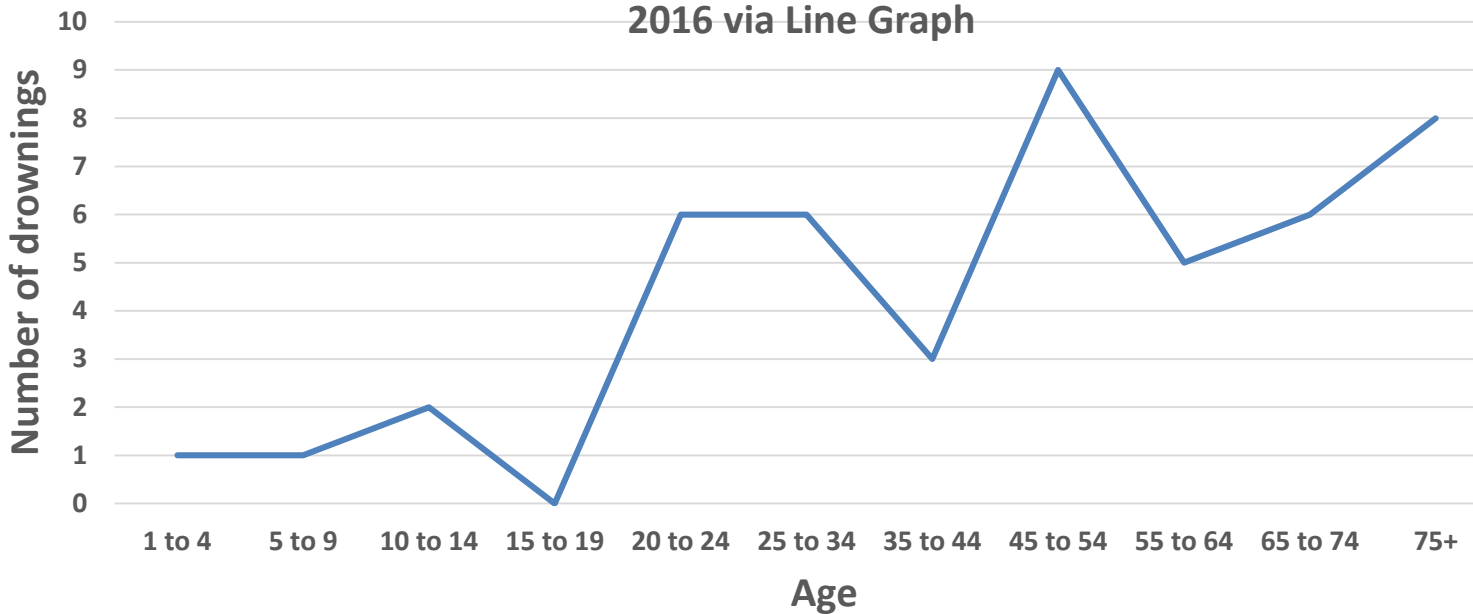
Data Source: Office of the Medical Examiner, District 15; Data Notes: Immediate Cause of Death: Drowning; Data excludes homicides, suicides, human trafficking; includes Resident and Non Resident Drowning Deaths; Prepared by Drowning Prevention Coalition of PBC



## **Accidental Drowning Deaths by Victim’s Age in Line Graph – Table 2**

Table 2 displays the spike in drowning deaths in the 45 to 54 age category. Based on the age groups in Table 1, an examination of age and location of each drowning incident took place. In the aforementioned highest category, three victims drowned in the ocean, two drowned in a pool, one drowned in a lake, pond, canal, and one had a Motor Vehicle Accident in a canal. There were eight drowning deaths with individuals 75 and older. They drowned in the following locations: pool (two victims), hot tub (one victim), ocean (three victims), lake (one victim), and pond (one victim). When combining three age groups with six drownings each (20 to 24, 25 to 34 and 65 to 74), one drowned in a pool, three in the ocean, two in a lake, five in a canal, one in the intracoastal, two in a pond, two in motor vehicle crashes in a body of water, and two deemed as other. Of children ages 1 to 14, two drowned in a pond, one in a pool, and one in a canal.

**Accidental Drowning Deaths by Age in PBC  
2016 via Line Graph**

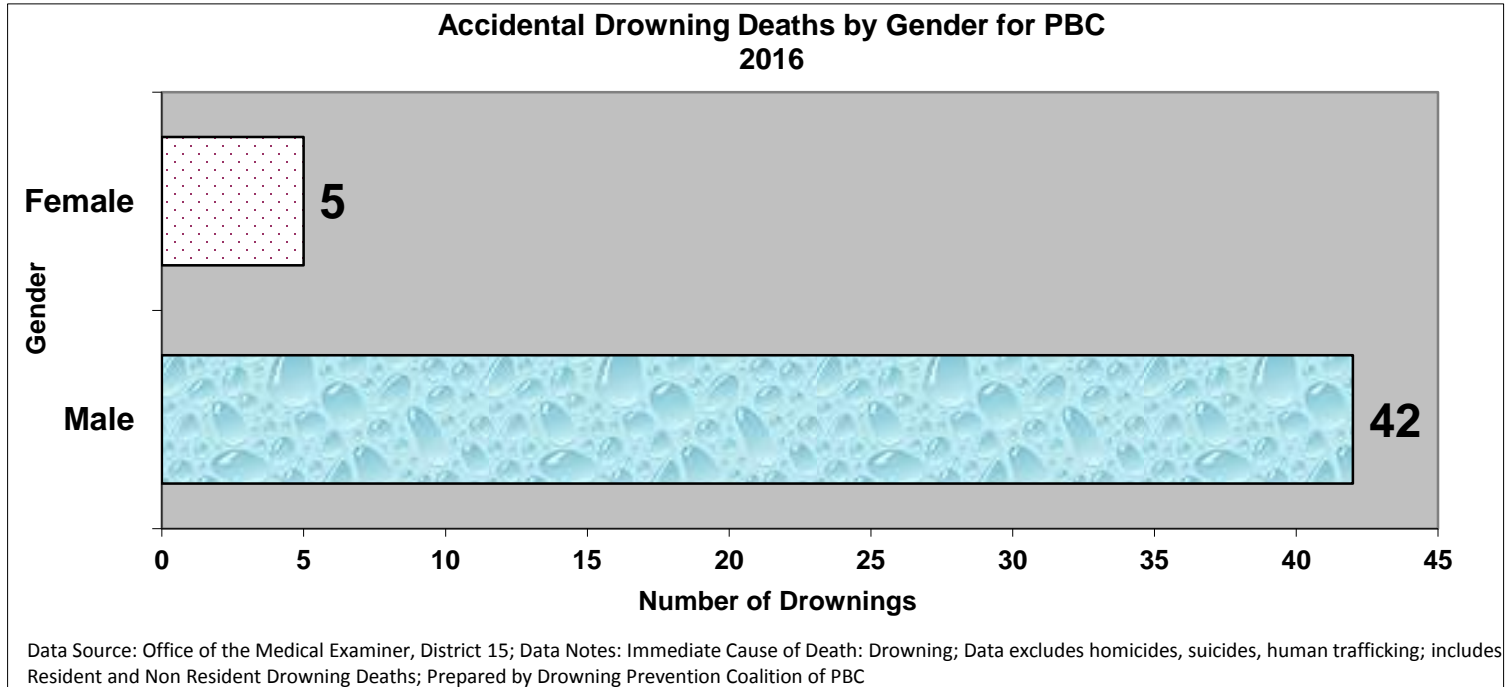


Data Source: Office of the Medical Examiner, District 15; Data Notes: Immediate Cause of Death: Drowning; Excludes homicides and suicides, human trafficking; \*Data Includes Resident and Non Resident Drowning Deaths. Graph prepared by the Drowning Prevention Coalition of Palm Beach County

## **Accidental Drowning Deaths by Gender – Table 3**

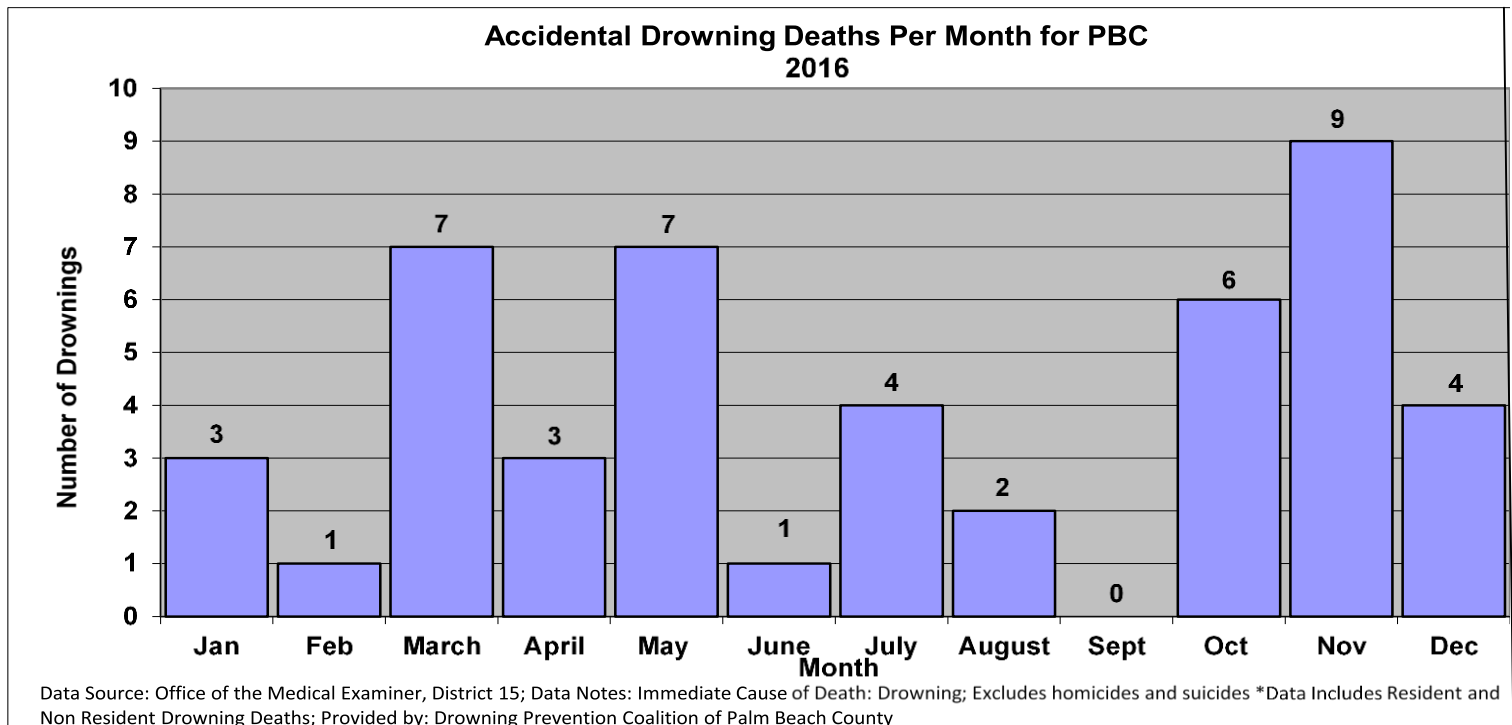
Overwhelmingly, males drowned more frequently (89%) than females (11%). Forty-two males drowned, compared to five females. This is on trend with national statistics which indicate that males are more likely to drown due to greater water exposure and riskier behavior (i.e. alcohol consumption). Even though the bar graph does not show ethnicity, examination of the ME

reports concluded that of the 42 male decedents, 29 were White, nine were Black, four were Hispanic and one was Asian.



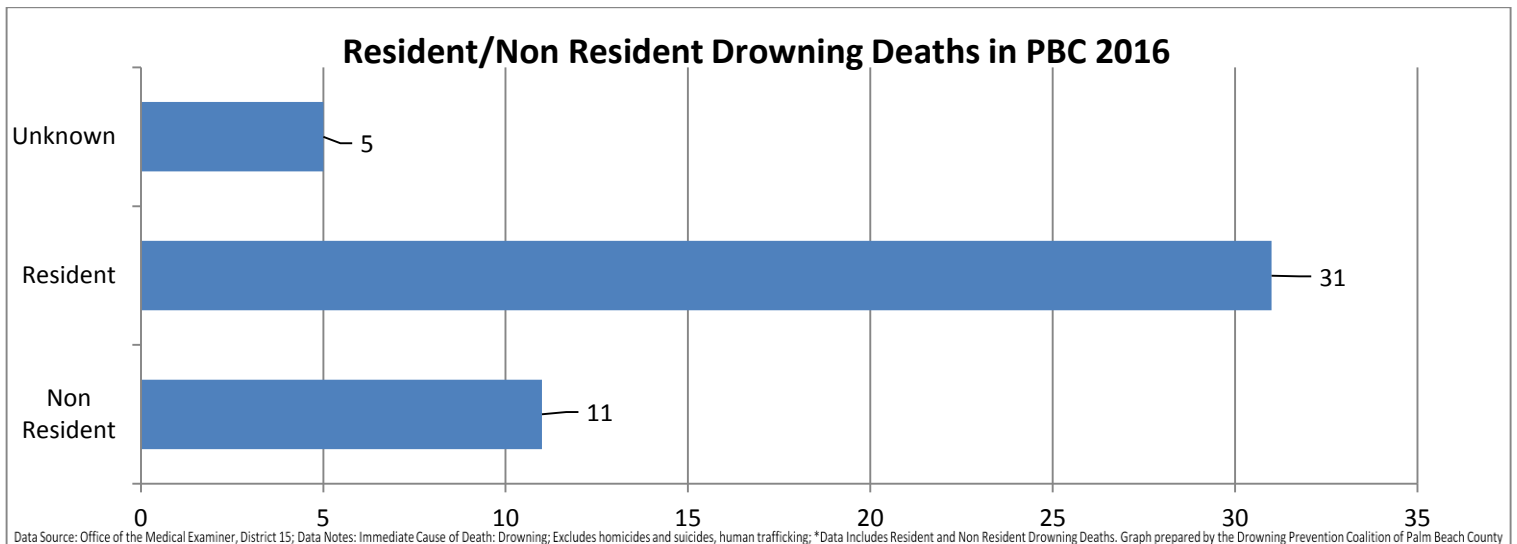
#### Accidental Drowning Deaths Per Month – Table 4

In every month except September there was at least one drowning. November had the highest number of drowning incidents with 9 (19%), followed by March and May (7 respectively, 15%), and then October with 6 drownings (13%).



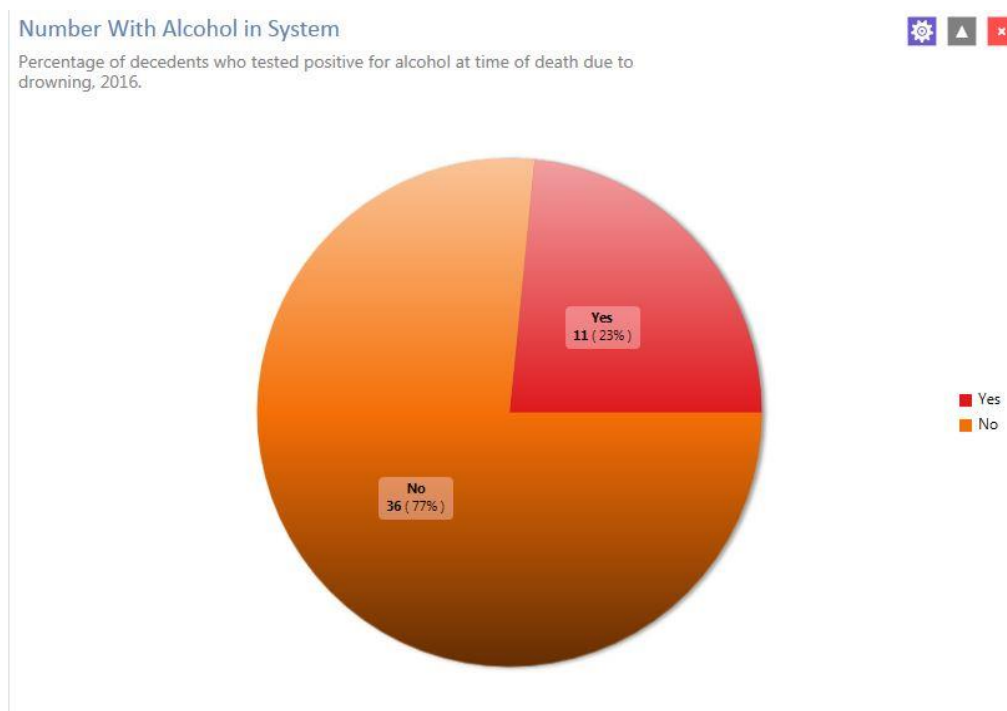
### Resident/Non Resident Drowning Deaths – Table 5

Palm Beach County, known for its robust tourism industry, isn't immune to drowning incidents of travelers. Of the 47 drowning deaths in 2016, 11 were non-residents (23%) while 5 were unknown (11%).



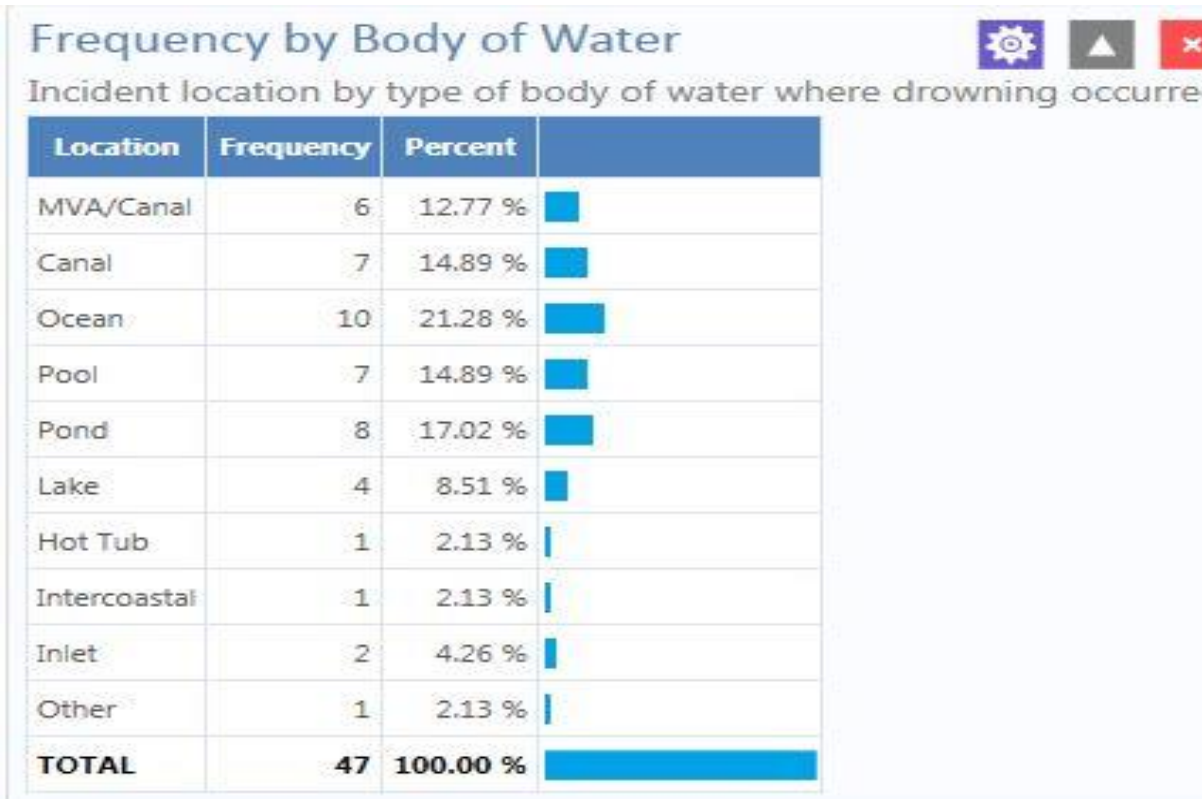
### Number of Victims w/ Alcohol in System at time of Death – Table 6

Based on toxicology reports presented by the ME's office, while most victims did not have alcohol in their system, 23% did.



### **Frequency by Body of Water – Table 7**

Table 7 identifies the location where the drowning incident actually occurred. The number one place where drowning deaths occurred was in the Ocean (21%, 10), followed by Ponds, (17%, 8,) Canals, and Pools (15%, 7 each), and Motor Vehicle Accidents in Canals (13%, 6).



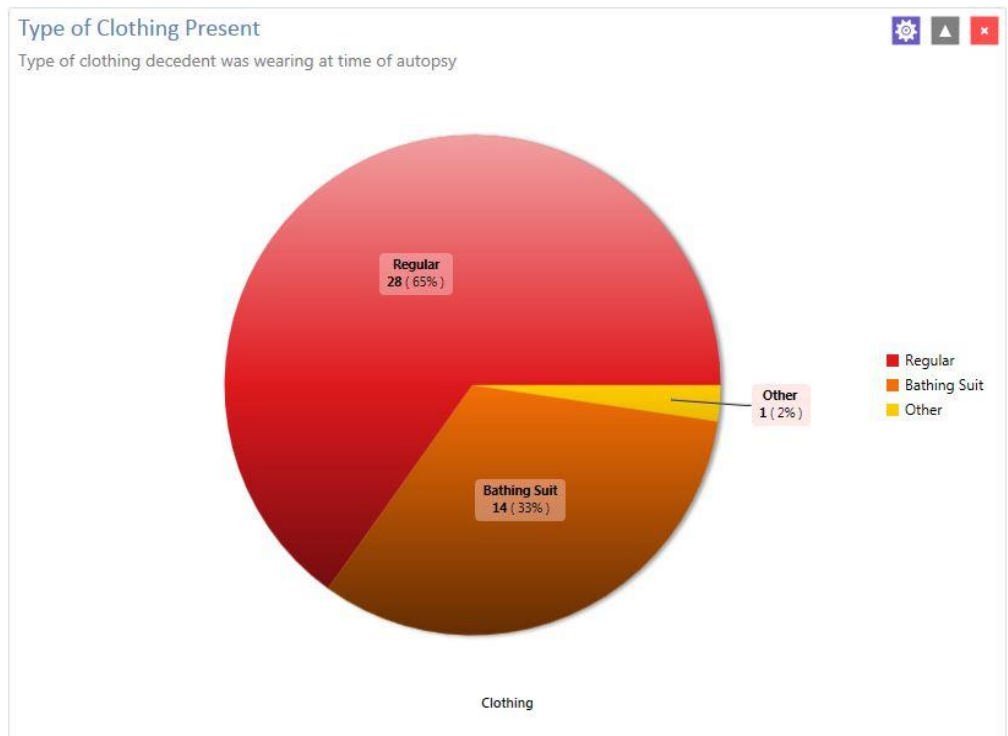
### **City & Location of Drowning Incident in UPBC – Table 8**

As determined by Palm Beach County Fire Rescue GIS staff based on addresses and zip codes provided to them by the DPC, a total of 40% of all the County’s drowning deaths happened in Unincorporated Palm Beach County (UPBC) areas. According to Florida 2010 census data, the majority of Palm Beach County residents live in UPBC locations so the aforementioned statistic is not unexpected. The Glades had four incidents, West Palm Beach had three, while Boca Raton, Boynton Beach, Loxahatchee, and Jupiter had had two incidents each. With 28%, ponds were the number one drowning location in UPBC followed by canal (22%), MVA Canal (17%), Pool (11%), Inlet (11%), and Lake and Hot Tub (6% each).

Zip Code	City & Location of Drowning Incident in Unincorporated Areas
33401	WPB / Pond
33415	Greenacres / Pond
33417	WPB / Lake
33417	WPB / Pond
33428	Boca / Pool
33430	Belle Glade / Canal
33430	Belle Glade / MVA Canal
33430	Belle Glade / MVA Canal
33436	Boynton Beach / Hot Tub
33436	Boynton Beach / Pond
33462	Lantana / Canal
33470	Loxahatchee / Pond
33470	Loxahatchee / Canal
33477	Jupiter / Inlet
33477	Jupiter/ Inlet
33484	Delray / MVA Canal
33493	South Bay / Canal
33498	Boca / Pool

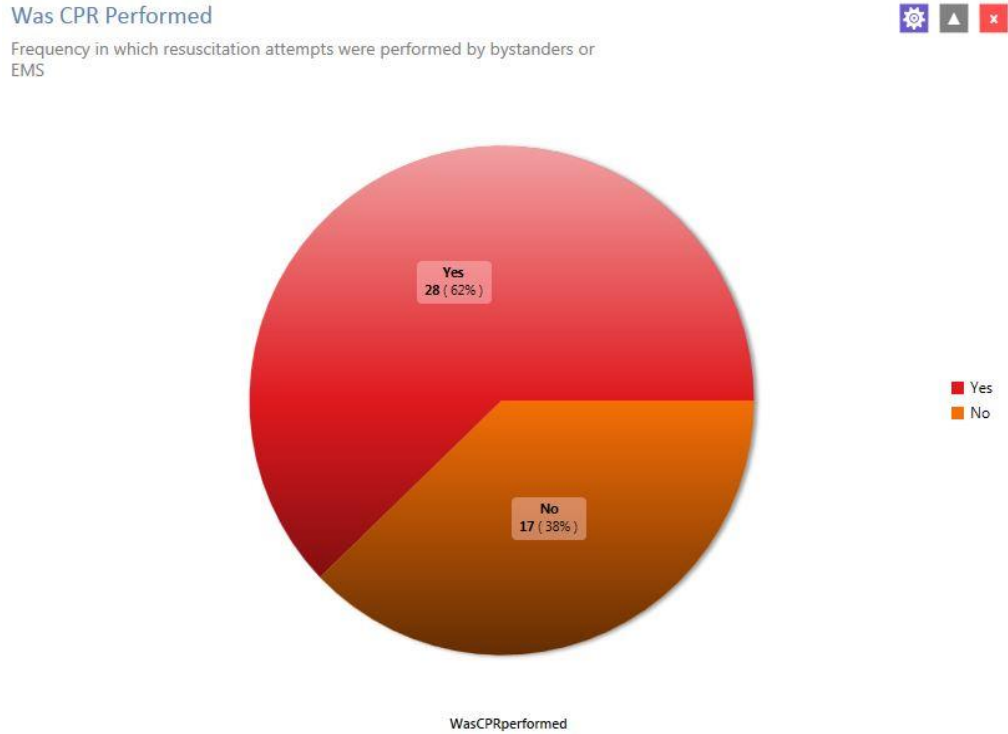
**Type of Clothing Present on Decedent – Table 9**

At the time of autopsy, more than half (65%, 28) had no intention of ending up in the water, for they were wearing regular clothes, while only 33% or 14 victims wore a bathing suit. The other was nude at time of autopsy because they arrived from the hospital.



### Was CPR Performed – Table 10

At the time of the drowning incident was CPR performed either by bystanders or emergency medical services? Over half (62%, 28) of the victims had CPR performed on them.

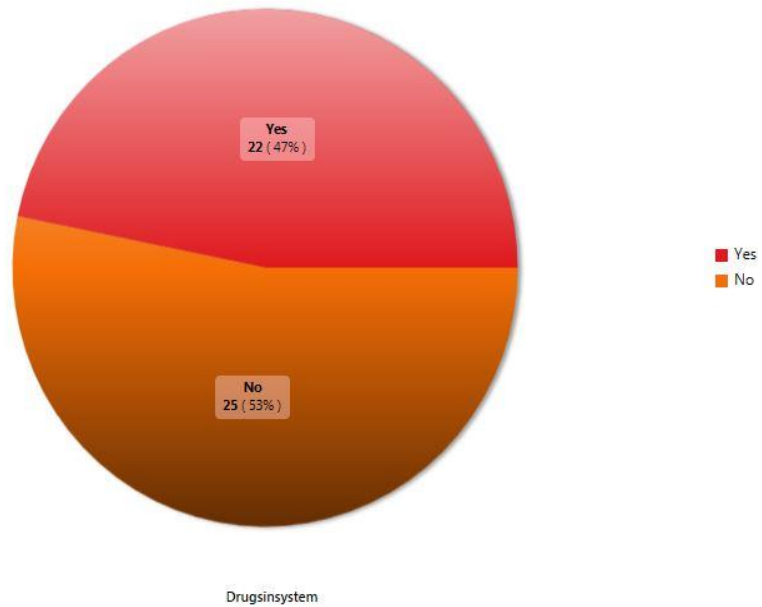


### Number with Drugs in System – Table 11

Table 11 offers insight as to whether or not the victim's toxicology screening showed Drugs in System at time of death. Drugs include both prescription and illicit drugs. Close to half of the victims had some kind of drug(s) in their system at time of death (47%, 22). Of the four children, only one had drugs in their system. The rest of the children tested negative. Thus, of the adult drowning victims, 21 out of 43 tested positive for drugs (49%).

### Number With Drugs in System

Percentage of decedents who tested positive for drugs (Prescription, OTC, Illicit, etc.) in their system at time of death, 2016.

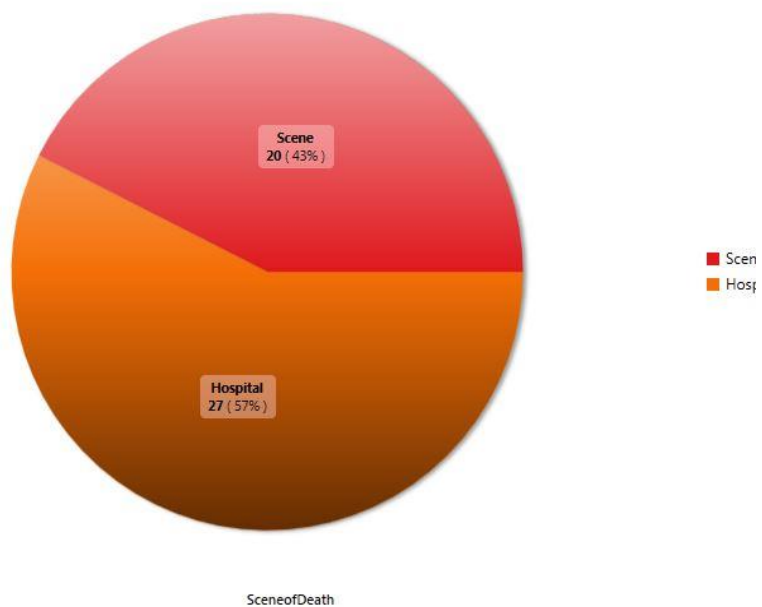


### Location of Death – Table 12

Table 12 shows the Specific Location of Death where the decedent was declared dead by authorities. Over half of the victims (57%, 27) were declared dead at the hospital rather than at the incident location.

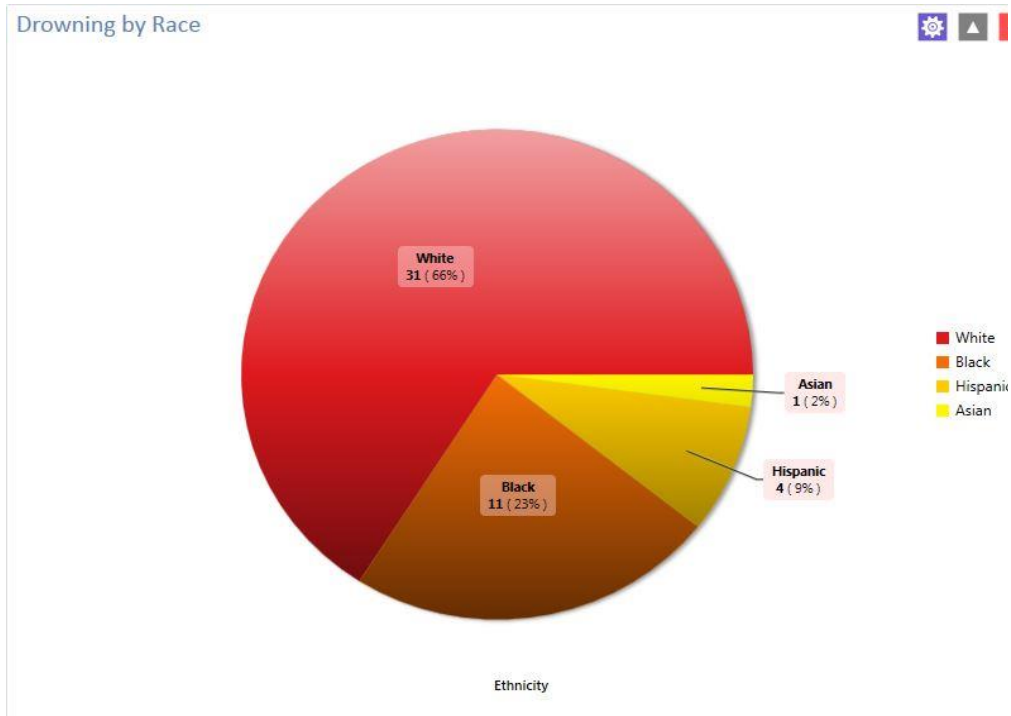
### Specific Location of Death

Specific location where the decedent was declared dead by authorities



### Drowning by Race – Table 13

White individuals make up 66% (31) of the drowning victims in 2016, followed by 23% Black (11).

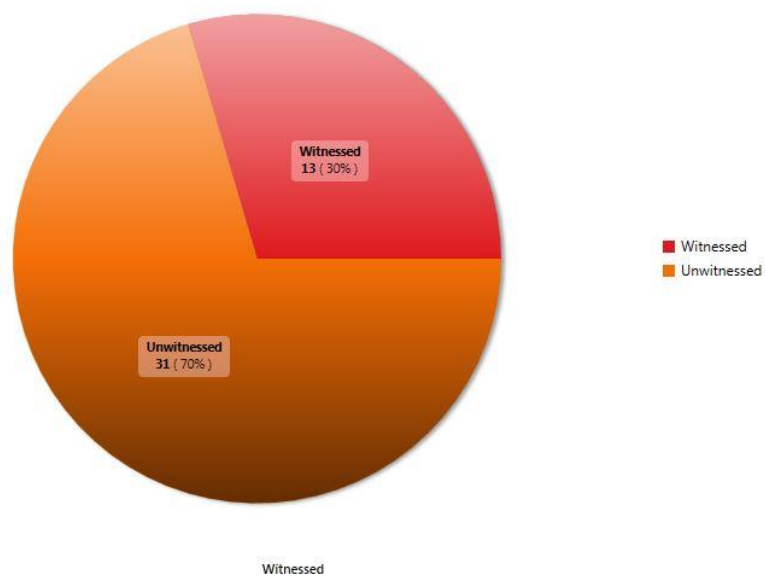


### How Many Were Witnessed? – Table 14

What was the frequency of drownings that were Witnessed or Not Witnessed by bystanders? The results indicate that 70% (31) of the drowning incidents in 2016 were unwitnessed.

#### How Many were Witnessed?

Frequency of drownings that were not witnessed (0) or witnessed (1) by bystanders.





## **Special Notes**

There are special notes that should be mentioned because of miscellaneous information about the decedent and or information surrounding their drowning incident. Based on the ME reports provided, 22% (4) of the decedents couldn't swim, while 11% (2) could. Swimming capability was not mentioned for remaining victims. Four victims were participating in some sort of ocean activity at the time of their incident (i.e. scuba diving, boating,). Other special notes include a decedent who was autistic, one who was trying to save his wife who was in the water, another who got stuck under water while on a tractor, one who was running from police, one who had dementia, and a Cuban refugee who was reported missing from a boat trying to come ashore in Palm Beach County.

## Conclusion

The majority of drowning deaths that occur in Palm Beach County are preventable if the necessary precautions are taken. Particularly in cases where children are involved, proper adult supervision is paramount to prevent drowning, along with children knowing how to survive if they fall into a body of water. Adults need to make better life choices such as refraining from drinking or taking illicit drugs when in or near a body of water. Moreover, caution needs to be taken when utilizing prescription medication by taking the recommended dosage and understanding potential side effects.

Never swimming alone, calling 911 and providing detailed information of the incident, not jumping in after a drowning victim, but instead, learning the proper lifesaving technique of reaching a long object out to them while laying down on the ground or throwing something that floats can reduce drowning incidents. Also, becoming knowledgeable about how to escape a sinking vehicle, could be helpful in preventing adult drowning deaths.

In addition, the following were **key findings** made during the writing of this report:

- The age group with the highest percentage of drowning deaths were adults 45 to 54 years of age while there were zero drowning deaths in the 15-19 age category. Eight percent of the deaths were children 1-14.
- 89% (42) of the drowning deaths in PBC for 2016 were males. Of the males that drowned, 69% were white.
- Drowning incidents occur year-round in Palm Beach County. November had the highest number of drowning incidents with nine.
- It's not just Florida residents that drown in Palm Beach County, but nonresidents as well. Nonresidents accounted for 24% of all drowning deaths in 2016.
- Alcohol was involved in 23% of the drowning deaths while drugs (prescription or illicit) were present in 47% of the drowning deaths.
- 21% of all drowning incidents in 2016 occurred in the ocean, followed by ponds (17%), canals (15%), pools (15%), and MVA canals (13%).
- 40% of all drowning incidents occurred in unincorporated PBC (where the majority of residents live).
- 65% of decedents were wearing regular clothing at time of death.
- Over half of the victims had CPR performed on them.
- Most of the victims were declared dead at the hospital (57%).
- The majority of the deaths were unwitnessed (70%).

## **Prevention of Drowning**

Key factors to take into consideration to prevent drowning is continued water safety education via land based presentations for adults and children as well as encouraging formal swimming lessons for all age groups. It would be truly beneficial if all elementary schools adopted a mandatory swimming requirement for their youngest children who can't pass a swim test. This idea was brought up by the Coalition to the PBC School Board several years ago. The School Board recommended that the DPC voluntarily work with the District's Physical Education teachers from individual schools. Over the past several years the DPC has implemented a "Schools and Pools" program where children (K-2<sup>nd</sup> grade) within walking distance to a pool (i.e. Plumosa School of the Arts, Pioneer Park Elementary), took swimming lessons during the school day in lieu of PE class. While this program was successful for those few who participated, in Fiscal Year 2017 there was zero involvement due to liability concerns at the local administrative level. It is critical that administrators and caregivers alike recognize that learning to swim is a lifesaving skill unlike any other sport (i.e. football, soccer, basketball, softball, volleyball) and that the benefits of swimming lessons outweigh the negatives.

With PBC having over 1.3 million residents, having two full time Coalition staff members is insufficient to meet growing demand. Additional funding is recommended for at least one more full time staff member to focus just on pre-schools and aftercare programs. As of now, the Coordinator is in charge of all children programming which includes the aforementioned groups. However, keeping up with just school based organizations and summer camps is time consuming. As previously mentioned, the Manager is in charge of all the adult programs and administrative duties.

Citizens need to recognize that a drowning incident can happen to them (just like a heart attack can happen to the healthiest of individuals) regardless of swimming capability, so vigilance needs to play a factor anytime a body of water is nearby. This includes while driving in a vehicle near canals, being near a lake, pool, pond, in a hot tub, in the ocean, etc...

Cardiopulmonary Resuscitation needs to become a staple in water safety education, for knowing and performing this type of resuscitation correctly can increase the likelihood of survival for a drowning victim.

Floaties/water wings should never take the place of adult supervision. Such devices provide a false sense of security for both adults and children, and they teach children the improper way to

stay above the water. It is recommended that children/adults who can't swim or have poor swimming capability wear a properly fitted U.S Coast Guard approved life jacket that can be bought at sporting goods stores and online. In addition, life jacket wear for adults is strongly encouraged and should always be worn by children when recreational boating.

Often times adults and teenagers over estimate their swimming capability and a drowning incident can easily occur. Safety experts recommend taking frequent breaks and to think about risky behaviors.

The number one reason why drowning incidents occur for children is due to a lapse in adult supervision. It's important that adults understand the concept of supervision. Looking down at one's phone and periodically looking up to see if your child is ok, isn't considered adequate supervision. Water safety advocates talk about eye to eye contact at all times and touch supervision. If a child is missing, look in nearby bodies of water first. Furthermore, the use of layers of protection (i.e. door alarms, door locks, door knob protectors, window alarms, isolation fencing) can play a key role in drowning prevention by preventing water access. While such layers of protection are crucial they are only sufficient if in proper working order. For example, there should be no holes in fencing panels, self-locking, self-latching gates need to close and lock after being opened, and alarms need to be on and not turned off even during pool parties.

Drowning incidents often occur during pool parties or when there are a lot of people in the same vicinity of a body of water. Designate a responsible "water watcher" (an adult) whose sole responsibility is to watch the body of water for 15 minutes without distraction. After 15 minutes is over, have another adult to take charge over the water watching duties. Repeat this process until gathering is over.

Water is a wonderful source of recreational activity for the whole family. While it is important to have fun, it is imperative that dangers associated with water are kept in mind. The Coalition wants everyone to be water safe and water smart.