

# **WATER-RELATED INCIDENTS IN PIMA COUNTY, 2013**

## **Annual Report for the Drowning Prevention Coalition of Arizona**



**Arizona Department of Health Services  
Bureau of Public Health Statistics**

**December 8, 2014**



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**This report is prepared in support of the activities of the Drowning Prevention Coalition of Arizona.**

**Suggested citation: Flood TJ. *Water-related incidents in Pima County, AZ, 2013.* Arizona Department of Health Services, Bureau of Public Health Statistics. Phoenix, AZ. December 2014.**

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### **INTRODUCTION**

In the mid-1980's the drowning death rate of Arizona's preschoolers ranked first in the nation.<sup>1</sup> Warm weather, long summers, and the presence of more than 300,000 residential swimming pools make Arizona prone to water-related incidents. Furthermore, death is just one outcome of water-related incidents: in about 9% of incidents the child survives, albeit with some degree of neurological impairment.<sup>2</sup>

To address the problem of water-related incidents the Drowning Prevention Coalition of Arizona was formed in 1988. This Coalition is comprised of municipal fire departments, hospitals, the state and county health departments, community organizations, pool builders, suppliers of pool safety equipment, parents of drowned victims, corporations, and others.

For many years the Drowning Prevention Coalition of Arizona focused its prevention efforts in the Phoenix metropolitan area. In recent years, however, the fire departments in Pima county have become interested in promoting a more statewide effort to prevent drownings. Representatives from fire departments in Pima county have participated in the public education campaigns of the Coalition. They also have encourage fire departments in Tucson and surrounding communities to submit case reports of water-related incidents to the central data monitoring system maintained by the Arizona Department of Health Services.

Pima county's largest city is Tucson, but also includes populations that are expanding into suburbs, exurbs, and unincorporated and rural areas. For a list of Pima county communities and their 2010 census populations see this link to [Wikipedia](#). The following report summarizes the data reported for 2013 from Pima county.

### **METHODS AND DATA SOURCE**

**Case Definition:** In this report a water-related incident is defined as an incident in which a fire department (FD) responded to a 9-1-1 emergency call originating in Pima county. We include in the analysis any incident in which the victim was given CPR, was not breathing, and was submerged or not struggling when retrieved from the water. (Some of these cases die the same day or at a later time; some fully recover.) We exclude from analysis any incident that did not appear to be life-threatening; for

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<sup>1</sup> Arizona Department of Health Services. Unintentional Drowning Deaths, Arizona, 1980-1989. Office of Planning & Health Status Monitoring, October 1990.

<sup>2</sup> Beyda, D. and Masuello, J. Phoenix Children's Hospital. Oral communication, July 1999.

example, we exclude from analysis an incident in which a victim was struggling and did not require CPR.<sup>3</sup>

Procedures: Since 1988, the Arizona Department of Health Services (ADHS) has monitored water-related incidents as reported by local fire departments. The fire departments usually are first on the scene of 9-1-1 calls and are generally able to provide information about the event from information provided by witnesses. We assume that very few serious incidents occur without activation of 9-1-1. The fire departments submit case reports on a standard Incident Report Form (see appendix) developed in conjunction with the Coalition. The reported data items include the age and gender of the victim, the location of the incident, and the apparent circumstances surrounding the event. The ADHS Bureau of Public Health Statistics receives and analyzes these case forms.

This data surveillance system relies mainly upon fire departments to report all the serious cases occurring within their jurisdictions. The procedures are identical to the system that was established in Maricopa county. Electronic versions of past years' reports concerning Maricopa county are accessible at <http://www.azdhs.gov/phs/phstats/meddir/>

Supplemental sources: In conjunction with the Coalition, the surveillance system searches the local newspaper (the Arizona Republic, Tucson Daily Star, and a few other newspapers) and television daily for reports of water-related incidents. When found, articles are downloaded<sup>4</sup> or clipped, and attached to the fire department reports. Rarely, there is no associated fire department report. If a report from the fire department is missing, then ADHS contacts the fire department to request a submission. If the fire departments do not submit a case report, then we assume the case was serious, and we use the information from the news clipping to create a case report. We use death certificates only to document the outcome status for incident cases reported by fire departments.<sup>5</sup>

Analysis: Analysis of data is performed using Microsoft Access. We have excluded the apparently minor (non life-threatening) incidents,<sup>3</sup> also called “dunkings”, from subsequent analyses reported herein.

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<sup>3</sup> These relatively minor 9-1-1 incidents that were excluded sometimes are called “dunkings, close calls, or near misses.” In 2013 there were 4 such incidents reported from Pima county. ADHS requests that fire departments submit all such incidents, but we exclude these minor incidents from further analysis in the yearly reports. Obviously trivial incidents that would not even qualify as “dunkings” are not submitted by most fire departments.

<sup>4</sup> The Children’s Safety Zone collaborates with local fire departments, hospitals and media to gather statistics and stories on water related incidents and fatalities in Arizona. See <http://childrensafetyzone.com/go/>

<sup>5</sup> We do not use death certificates to supplement the count of incidents reported by fire departments. However, as explained in a later section, we use death statistics as an independent method of tracking drowning trends.

## LIMITATIONS OF ACCURACY OF INCIDENCE DATA

The surveillance system assumes that few serious water-related incidents occur without the activation of the 9-1-1 system. However, this assumption has not been rigorously tested. Cases that generally lack a fire department report include those that are obviously dead when the law enforcement responders arrive on scene, crime scene cases, and cases under the jurisdiction of the sheriff's office or a tribal government.

Information from death certificates (described below) reveals that no child drowning in 2013 in Pima county was missed by the reports we received from fire departments or from news clippings.<sup>6</sup> The incidence data recorded 3 deaths of children in this age group for incidents occurring in 2013.

## RESULTS

In 2013 fire departments submitted reports for 12 serious water-related incidents occurring in Pima county among persons of all ages. Four additional cases were reported but these were minor incidents and are not further considered here. The data for fire departments in Pima county does not extend very far back in time.

### Characteristics of 2013 incidents

#### Reporting fire department

The following fire departments submitted reports in 2013

	Count
Drexel Heights	3
Golder Ranch	1
Northwest	2
Rural/Metro	3
Tucson Fire	3

#### City of Incident

	Count
Marana	1
Oro Valley	1
Rural Pima County	5
Tucson	5

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<sup>6</sup> For consistency with methods used in previous years, we do not add missed cases to the surveillance database.

**Age group of Patient**

	Count
0-4	8
5-14	2
15-34	1
35-64	1

**Gender of the patient**

	Count
Male	8
Female	3
Unknown	1

**Type of water in which incident occurred**

	Count
Bathtub	1
Pool, above ground	1
Pool, in ground	8
River or lake	1
Unknown	1

**Time of day of the incident (24-hour clock)**

	Count
Hour 10	1
Hour 11	1
Hour 12	1
Hour 13	1
Hour 15	1
Hour 17	2
Hour 18	1
Hour 19	1
Hour 22	1
Hour 23	1
unknown	1

### Site of the incident

	Count
Friend's home	1
Public pool	1
Relative's home	1
Victim's home	6
Not applicable or unknown	3

### Outcome of patient

	Count
Apparently normal	4
Impaired	2
Died	4
Unknown	2

### Race and ethnicity

Not able to analyze due to missing and small counts.

### Apparent circumstances (for incidents in pools involving children age 0-4)

	Count
Lack of pool barrier	2
Lapse in supervision	3
Unknown	1

## DEATH CERTIFICATE DATA

Death certificates provide an independent data source to measure the counts, rates, and trend of child drownings. While we use information from death certificates to supplement the outcome status of cases identified through fire department reports (described above), we do not add otherwise unreported drowning cases to the incidence database. Thus, the mortality data can help to measure the accuracy and completeness of the incidence surveillance system for the cases who die. However, the case definitions used for vital statistics differ slightly compared to those used in the incidence data.

Customarily, mortality data show deaths of the resident population during a given year. However, for this report we present an unconventional analysis that more precisely reflects the local, year-to-year findings. We reviewed Arizona death statistics to find child cases who died in Pima county, regardless of where they resided. We include only the cases whose incident occurred in Pima county and whose death occurred in Arizona. Thus, we present the local rates of drowning deaths, regardless of

residency. To calculate the mortality rate, we divided the count by the estimated number of children age 0-4 each year residing in Pima county. This method improves the accuracy of identifying locally occurring events which is important for the Coalition that relies upon this surveillance system to provide yearly feedback about the effectiveness of local prevention programs.

The 2013 drowning death rates for children under five years of age in Pima county are calculated for drownings in all bodies of water, and separately for drownings that occurred in swimming pools (including spas), and in bodies of water other than pools and spas.<sup>7</sup> In 2013, the Pima drowning rate for all bodies of water was 4.9 deaths per 100,000 resident children. The death rate for pools was 3.3 per 100,000 children. For comparison, the goal of *Healthy Arizona 2010* was to reduce drowning fatalities to no more than 0.9 deaths per 100,000 young children.<sup>8,9</sup> Pima county's drowning rate in 2013 is higher than the statewide goal, but similar to that in Maricopa county.<sup>10</sup>

## DISCUSSION

This is the first report that ADHS has prepared that looks at the incidents and deaths from immersion in Pima county. By encouraging fire departments to collect information about the incidents it is hoped that targeted intervention programs can be designed. Further collection of Pima county incident data in future years may reveal unique findings concerning immersion incidents in this county. Because greater Tucson has a smaller population, fewer cases occur in the greater Tucson area and it may take several years of observation to see whether the data patterns are similar to those noted in the data from the greater Phoenix area.

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<sup>7</sup> We consider a hot tub or spa in the same category as swimming pool.

<sup>8</sup> U.S. Department of Health and Human Services. *Healthy People 2010*, 2<sup>nd</sup> ed., Volume 2. Injury Prevention, Section 15-29: Reduce Drownings, page 15-40. U.S. Government Printing Office, November 2000.

<sup>9</sup> <http://www.azdhs.gov/bems/trauma-pdf/injuryprevplan.pdf> ADHS Injury Surveillance and Prevention Plan, 2002-2005.

<sup>10</sup> Drowning death rate for children, 0-4 years of age, where the occurrence of the death and the incident was in Pima County. [Data Source: ADHS, Vital Statistics, death certificates coded with underlying cause of death as: E830, E832, or E910 (prior to year 2000); or W65-W74, V90-V92, or Y21 (year 2000 and later). Manner of death: accidental or undetermined].

