

Project ASTRAL*

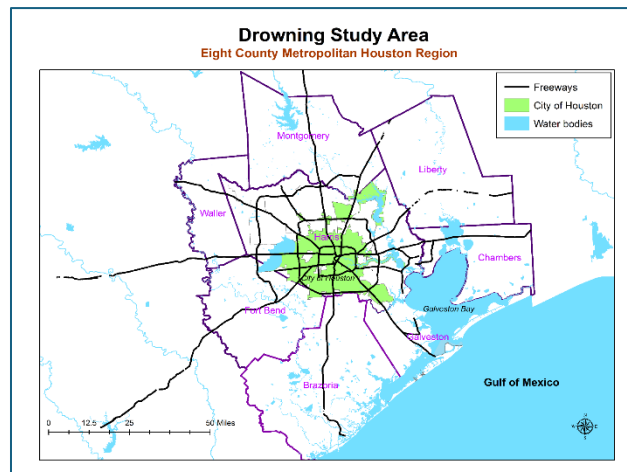
Open Water Drowning in Metropolitan Houston 2016-2022

Data Brief - August 2024

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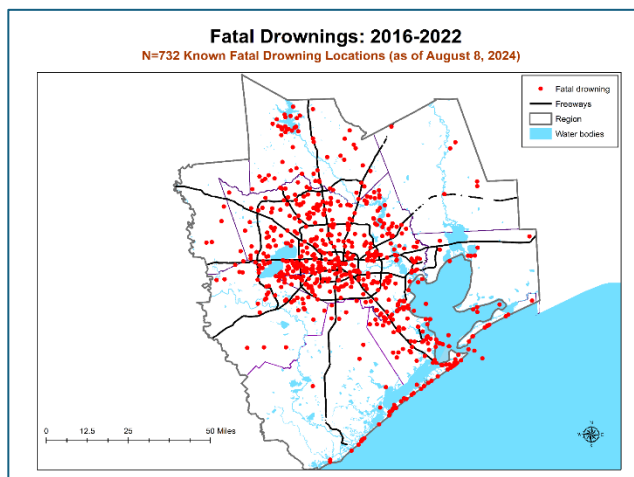
Drowning is the leading cause in children aged 1–4 years and the second-leading cause in children aged 0–17 years of unintentional injury death (1). Fatality rates from unintentional drowning vary by sex, age, race and ethnicity, and urban–rural category (2,3). This report uses the latest linked mortality data from several data sources involving persons living in the 8-county Houston metropolitan region from Project ASTRAL to present injury burden and trends and geographic distribution of unintentional open-water fatal drowning from 2016 through 2022.

Metropolitan Houston: The metropolitan Houston region comprises the 4th largest city in the US – City of Houston and the surrounding 8 counties of Harris, Fort Bend, Brazoria, Galveston, Montgomery, Chambers, Liberty and Waller. This region has 3 large rivers (Brazos, Trinity and San Jacinto) with numerous streams, bayous and estuaries, 2 large lakes (Lake Conroe, Lake Livingston), 2 reservoirs (Addicks, Barker), the Houston Ship Channel, the barrier islands of Galveston and Follet/San Luis Pass, the Bolivar peninsula, the intercoastal waterway and the Texas City Dike. This aquatic expanse offers numerous recreational opportunities to the local population and tourists. There are also unique drowning risks. The region is especially prone to flooding because most of the area is at mean sea-level and the soil characteristics predispose to run-off and flash floods.



Geographic Distribution of Drowning:

During 2016-2022, there were 822 fatalities from unintentional drowning in the metropolitan 8-county Houston region (CDC Wonder). The distribution of drownings is concentrated in the urban city center (reflecting drownings in swimming pools and bathtubs) and the coastal areas and lakes reflecting open water drownings.



Drowning Environments: Drowning occurred in natural water recreational settings (31.6%), constructed bodies of water (44.8%) and other water settings (14.9%) and floods (7.4%). Each of these locations have unique risk factors that predispose to drowning which include poor or no supervision or children around water, limited or no swimming ability, non-use of life jackets when boating, excessive speed when boating, consuming alcohol or recreational drugs, swimming in non-lifeguarded or restricted areas, boating or swimming during the dark and driving a motor vehicle in flooded areas.

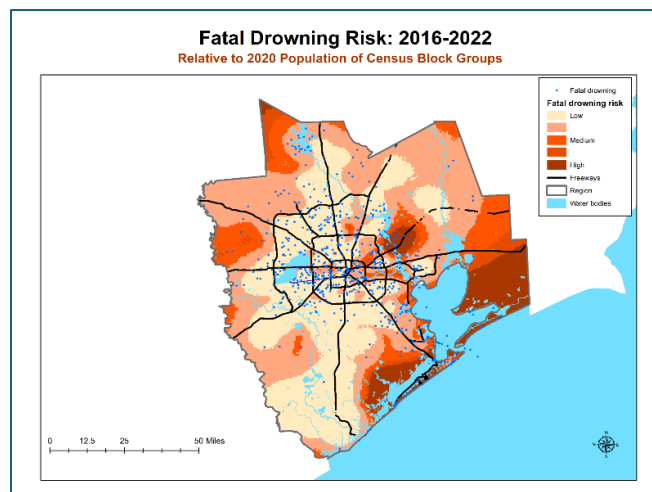
Environments Where Fatal Drowning Occurred

Type	Frequency	Percent
<u>Built environments</u>		
Swimming pools	196	25.9%
Bathtubs	130	17.2%
Hot tubs	13	1.7%
<u>Recreational settings</u>		
Beaches/The Gulf	65	8.6%
Galveston Bay	31	4.1%
Other Bays	6	0.8%
Clear Lake	12	1.6%
Lake Conroe	19	2.5%
Lake Houston	6	0.8%
Other Lakes	68	9.0%
Trinity River	4	0.5%
Other Rivers/Creeks	38	5.0%
<u>Other water environments</u>		
Bayous	58	7.7%
Flooding	56	7.4%
Ditches/canals	29	3.8%
Other	26	3.4%

30 of these involved a motor vehicle

* Percentages do not add to 100% because of rounding off errors

Fatal Drowning Risk can be assessed by the number of drowning per 100,000 population at the census tract level or in case of tourist areas (e.g. Galveston Island, Bolivar Peninsula) by the number of estimated visiting tourist (rate per 1 million). Based on US Census population estimates at the census tract level, at-risk areas are highest in the coastal areas and areas near the large lakes.



Drowning Risk by Tourist/Recreation Population:

The locations with the highest drowning risk include the Bolivar peninsula, Lake Conroe, Follett's Island/San Luis Pass and the Clear Lake area.

Drowning Risk: 2018-2021

Location	Pop2020	All Types				
		Drownings 2018-2021	Annualized Drownings	Fatal Drownings per 100,000 Population	Estimate of Tourist Visits*	Drowning Rate Per Million Persons
Galveston Island	53,695	30	7.50	13.97	6,480,000	1.16
Bolivar Peninsula	2,611	12	3.00	114.90		
Follett's Island/San Luis Pass	22,095	10	2.50	11.31	112,677	22.19
Clear Lake	53,857	11	2.75	5.11	441,629	6.23
Lake Conroe	18,348	25	6.25	34.06	80,000	78.13
Lake Houston	30,893	4	1.00	3.24		
Texas City Dike	52,259	5	1.25	2.39	1,500,000	0.83
Region	7,092,073	428	107.00	1.51	58,000,000	1.84

* Galveston Island, Galveston Park Board estimate

Follett's Island, population within 15 miles

Clear Lake, population within 10 miles

Texas City Dike, for per capita, population of Texas City; for tourism, number of vehicles entering counted, multiplied by .34

Lake Conroe, Courier of Montgomery County estimate

Region, City of Houston estimated 51 million visited; added 7 million population

Drowning Prevention:

1. Know how to swim



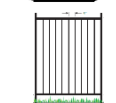
2. Provide close, constant, attentive supervision of your child around water and know how to intervene in case of drowning



3. Wear a properly fitting US Coast Guard-approved life jacket when boating



4. Ensure that your swimming pool has 4-sided isolation fencing and a functioning self-closing, self-latching gate



5. Know how to perform CPR



6. Don't drink or use drugs when boating or swimming

