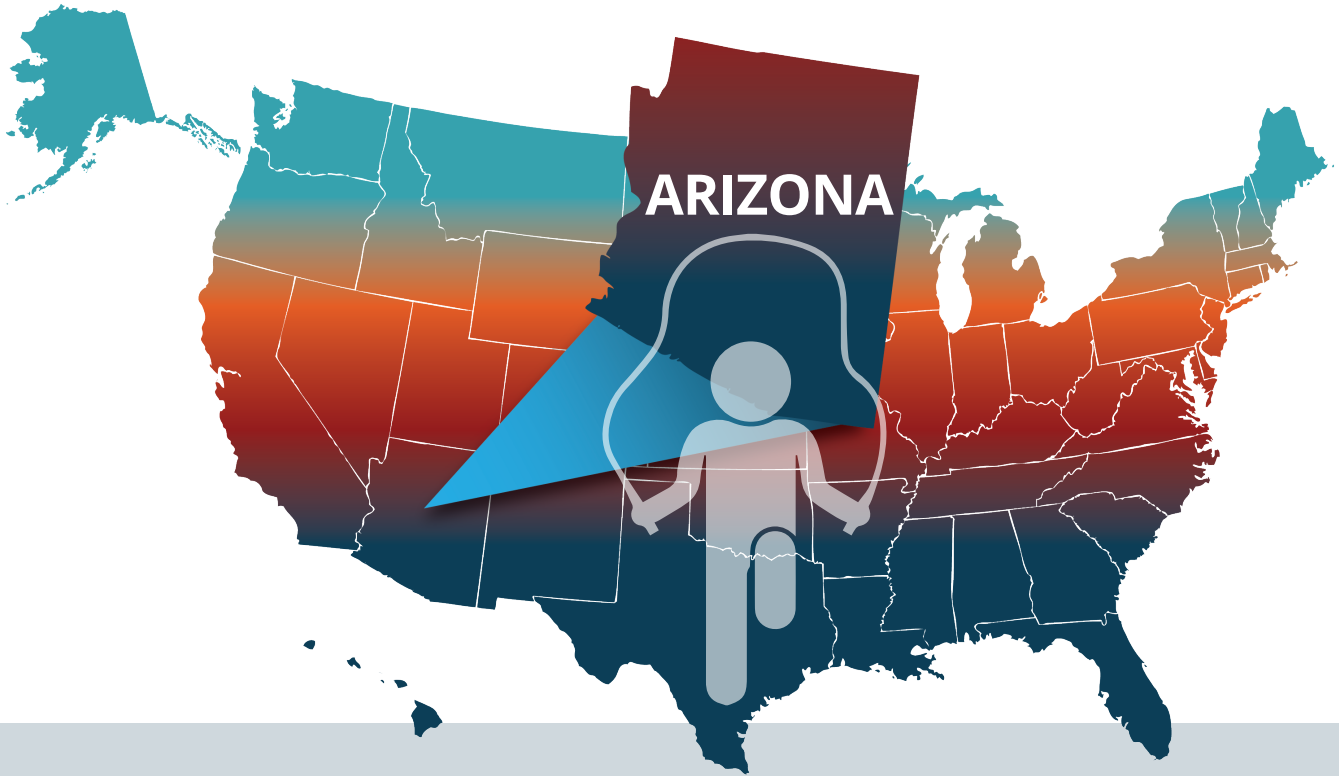


ImageTrend Collaborate™ Short Report: Arizona Pediatric Behavioral Health Incidents in the Prehospital Setting from 2018 – 2021

State Report | Published February 2022



SUMMARY

What is already known about this topic?

Pediatric mental health emergencies have been on the rise which has resulted in an increase in the utilization of emergency medical services (EMS) and emergency departments.

What does this report add?

From 2018 to 2021, the proportion of emergent pediatric behavioral health incidents attended by EMS has increased across the nation and Arizona.

What is the call to action?

Identify geographical regions and pediatric groups experiencing increased levels of behavioral health emergencies and provide additional access to mental health support services, enhance acute care during crisis, and reduce burden on prehospital services.



Overview

Studies have found an increase in emergent pediatric behavioral health incidents over the last two decades and even more so during the COVID-19 pandemic.¹⁻³ The Centers for Disease Control (CDC) reported the proportion of pediatric mental health-related emergency department visits increased by 31% from 2019 to 2020.² The rise in pediatric behavioral health emergencies is not only a societal concern but also adds additional strain to EMS organizations.

Methodology

DATA COLLECTION METHOD:

All data is collected and stored within ImageTrend Collaborate. Each organization has given permission to utilize their data for Collaborate research purposes. Data reported within this report is based on the National Emergency Medical Services Information System (NEMSIS) data elements.

DATA DE-IDENTIFICATION:

ImageTrend Collaborate follows federally established HIPAA Safe Harbor Regulations to ensure data anonymity and protection of patient records. Reports provided to individual State collaborators utilizing their comparative data are only disseminated to that State's established point of contact provided to ImageTrend. Further dissemination is at the discretion of the State.

DATA ANALYSIS:

- Data was aggregated and analyzed within Microsoft PowerBI Version 2.88.1385.0.
- The incidents included in the analysis had an Incident/Patient Disposition (eDisposition.12) and was 911 Response (eResponse.05) which resulted in patient contact.
- Incidents were from January 1, 2018 to December 31, 2021.
- Patients were included from ages 0 to 17 years. Age groups were created to identify elementary (5-10 years), middle (11-13 years), and high (14-17 years) schools. Children in the 0 to 4 years were not grouped as behavioral health incidents were minimal.
- NEMSIS Version 3.4 Provider Primary Impression (eSituation.11) and Provider Secondary Impression (eSituation.12) fields were searched for the ICD-10 terms "behavioral, stress (excluded terms: respiratory distress), schizo, psychotic, manic, bipolar, personality, emotional, depressive or depression, suicidal or suicide, anxiety, agitation, violent behavior, mental".
- U.S. regions were identified utilizing the U.S. Census region groups.³
- Chi-square analysis was performed to measure differences from 2018 to 2021.



Assumptions and Limitations

Data included within this report is retrospective and includes all submissions to ImageTrend Collaborate between January 1, 2018 and December 31, 2021.

- Not all organizations report transgender/non-binary genders as this is not a standard element within NEMESIS v3.4.
- If corrections/edits or changes to the ePCR documentation were made after the date the report was created, the changes are not shown in this report, but all updates will be available within Collaborate for future reporting.
- Data reported and collected into the dataset has varying documentation standards based on agency or state policies.

Financial support for this report was provided by ImageTrend, Inc.

Arizona (AZ) Results

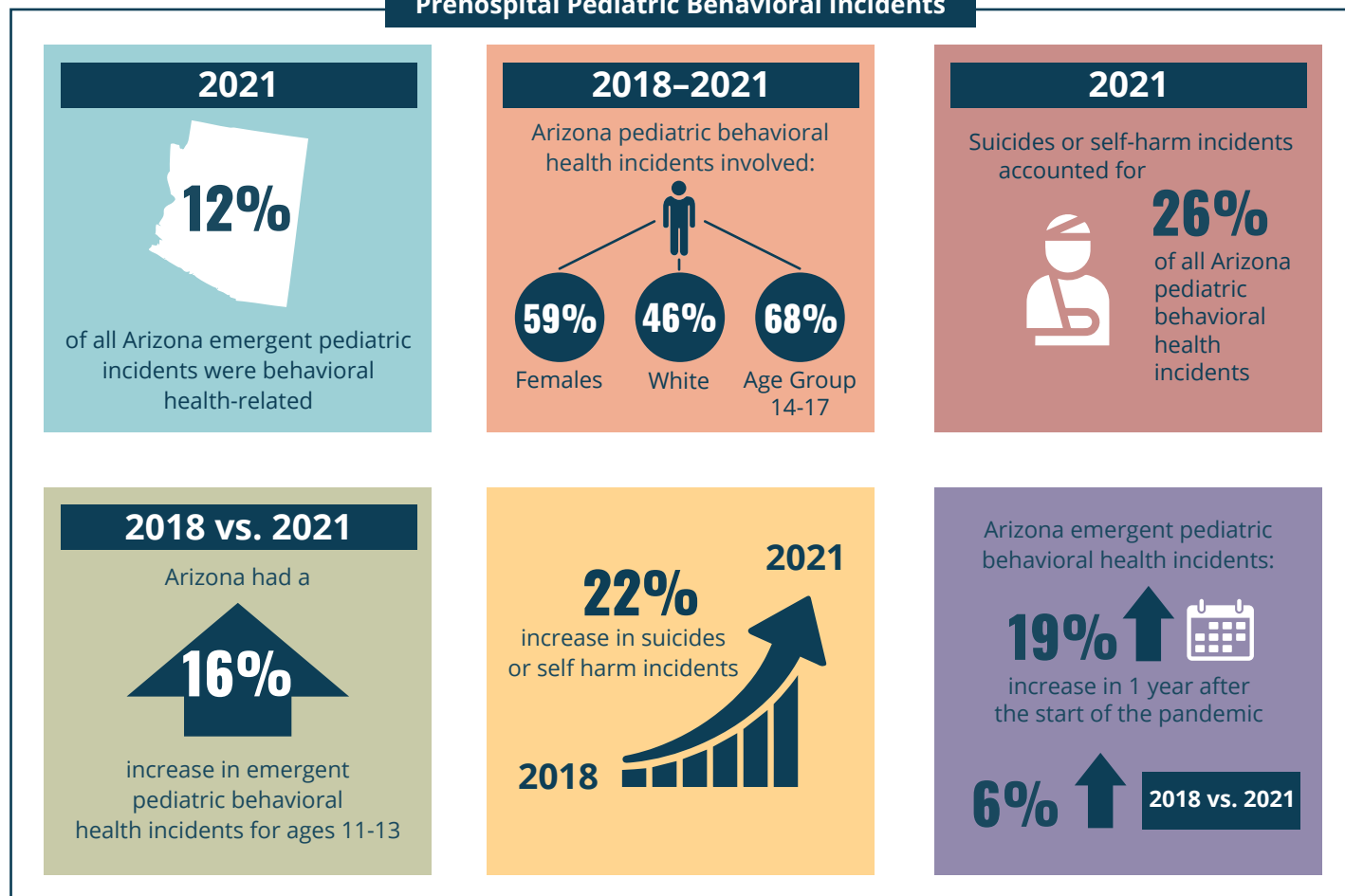
From January 2018 to December 2021, there was a total of 17,537 (12%) behavioral health incidents out of 150,926 pediatric incidents in Arizona. Overall, this was similar to the U.S. (11%) and western region rate (10%) for emergent prehospital pediatric incidents.

- There was a 6% increase in emergent pediatric behavioral health incidents in 2021 compared to 2018 within Arizona. This was slightly lower than the national increase (10%) and slightly higher than the western region (5%) over this same time frame.
- Both Arizona and the U.S. saw a 19% increase in these types of incidents one year after the COVID-19 pandemic was declared.
- In Arizona, a majority of the behavioral health incidents involved females (59%), white (46%) and the age group 14-17 years old (68%).
- The 11-13 years old group had the largest increase (16%) in incidents from 2018 to 2021 in Arizona. This was slightly lower than the national increase for this age group (18%).
- Suicide or self-harm incidents accounted for 24% of all pediatric behavioral health incidents in Arizona from 2018 to 2021.
- There was a 22% increase in pediatric suicides or self-harm incidents within Arizona and a 2% decrease across the U.S. from 2018 to 2021.
- Females accounted for 64% of suicide or self-harm incidents within the U.S. and 63% within Arizona since 2018.
- Seasonality trends showed an increase in these types of incidents during the fall and spring for all four years studied and is in line with other studies.⁴



Key Findings

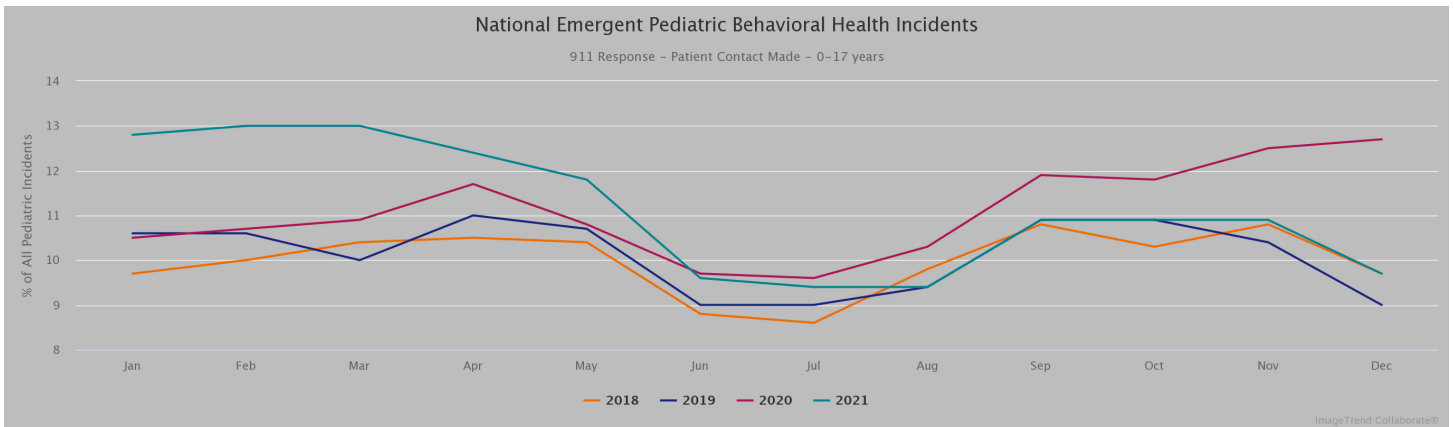
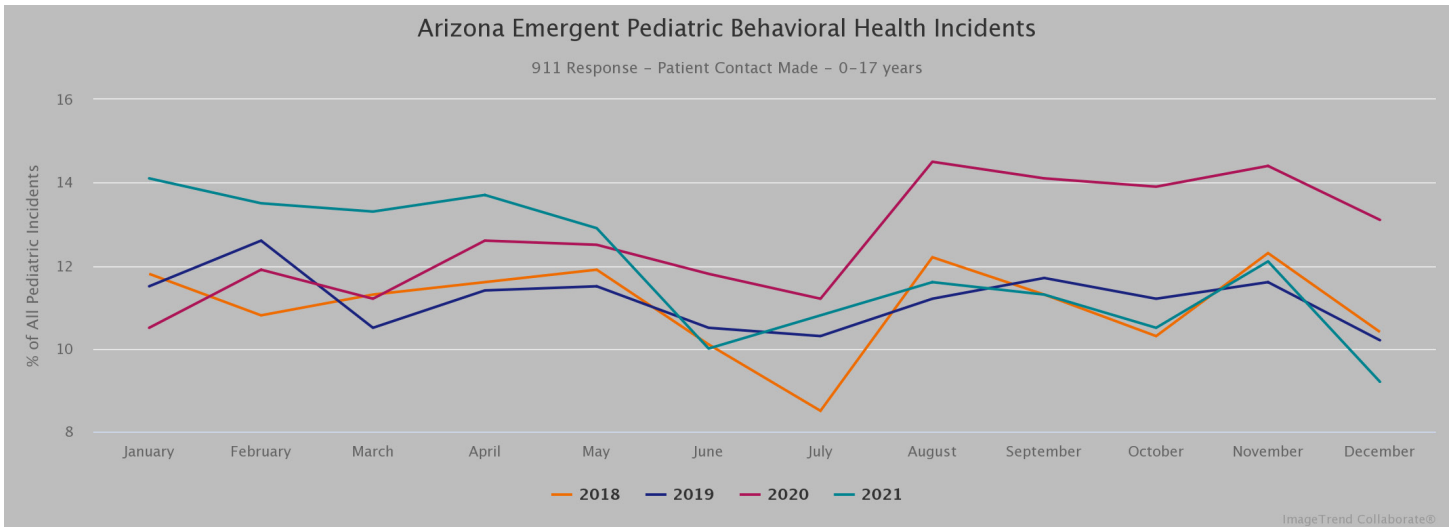
Prehospital Pediatric Behavioral Incidents



Action Items

Work with community organizations to identify mental health intervention programs available in Arizona

Provide additional training and resources for Arizona EMS providers to properly handle pediatric health crisis incidents



Further Questions to Consider

1. How many incidents result in repeat patients?
2. How many incidents result in a transport to a dedicated pediatric location?
3. What are provider perceptions on behavioral health incidents?
4. How are providers trained to manage pediatric behavioral health incidents?
5. How often is a patient admitted, released or transferred to specialty care?
6. How often is telemedicine being used to evaluate and treat patients?

**Table 1. Prehospital Pediatric (≤17 years) Behavioral Health Incident Descriptives for Arizona^a**

		2018	2019	2020	2021	Total
All Incidents ^b	U.S.	226,599	268,581	250,771	300,946	1,046,897
	Arizona	36,474	40,409	32,607	41,436	150,926
Behavioral Health Incidents	U.S.	22,636 (10.0%)	27,213 (10.1%)	28,136 (11.2%)	33,094 (11.0%)*	111,079 (10.6%)
	Arizona	4,048 (11.1%)	4,516 (11.2%)	4,086 (12.5%)	4,887 (11.8%)*	17,537 (11.6%)
Suicide/Self-harm Incidents ^c	U.S.	5,654 (25.0%)	6,296 (23.1%)	6,724 (23.9%)	8,064 (24.4%)*	26,738 (24.1%)
	Arizona	851(21.0%)	1,040 (23.0%)	1,107 (27.1%)	1,253 (25.6%)*	4,251 (24.2%)
Gender						
Male	U.S.	9,616 (42.6%)	11,938 (44.0%)	11,646 (41.5%)	12,992 (38.9%)	46,192 (41.6%)
	Arizona	1,707 (42.2%)	1,885 (41.8%)	1,663 (40.7%)	1,840 (37.7%)	7,095 (40.5%)
Female	U.S.	12,896 (57.2%)	15,127 (55.8%)	16,356 (58.3%)	20,236 (60.7%)	64,615 (58.2%)
	Arizona	2330 (57.6%)	2617 (58.0%)	2411 (59.1%)	3027 (62.0%)	10385 (59.0%)
Race (Top 3 by Counts)^d						
White	U.S.	8,652 (38.4%)	10,535 (38.8%)	11,185 (39.9%)	13,479 (40.4%)*	43,851 (39.5%)
	Arizona	1,971 (48.7%)	2,000 (44.4%)	1,894 (46.5%)	2,183 (44.8%)*	8,048 (46.0%)
Black/African American	U.S.	3,115 (13.8%)	4,406 (16.2%)	4,687 (16.7%)	5,819 (17.4%)*	18,027 (16.2%)
	Arizona	354 (8.8%)	393 (8.7%)	334 (8.2%)	442 (9.1%)*	1,523 (8.7%)
Hispanic	U.S.	2,893(12.8%)	3,114 (11.5%)	3,342 (11.9%)	3,924 (11.8%)*	13,273 (11.9%)
	Arizona	921 (22.8%)	987 (21.9%)	922 (22.6%)	949 (19.5%)*	3,779 (21.6%)
^a Incidents were 911 response with patient contact ^b Contained a documented primary impression ^c Percent of pediatric behavioral health incidents ^d Overall percentage also includes unknown race/blanks *Significant difference from 2018 to 2021 (Chi-square P-value < 0.01)						

Table 2. Prehospital Pediatric Behavioral Health Incident Rates by Age for Arizona

		2018	2019	2020	2021	Total	% Change 2018 vs. 2021
Rates per 100 Incidents by Age Groups (% of BH Incidents)							
5-10 years	U.S.	4.9 (11.5%)	5.3 (12.1%)	4.8 (9.5%)	5.0 (9.9%)	5.0 (10.7%)	+2.0%
	Arizona	5.0 (10.1%)	5.1 (10.0%)	5.3 (8.8%)	5.0 (8.9%)	5.1 (9.4%)	+0%
11-13 years	U.S.	15.2 (22.3%)	16.0 (23.9%)	17.4 (23.0%)	18.0 (24.2%)*	16.7 (23.4%)	+18.4%
	Arizona	16.1 (21.9%)	16.8 (23.8%)	18.1 (21.4%)	18.7 (24.2%)*	17.4 (22.9%)	+16.2%
14-17 years	U.S.	17.5 (66.1%)	17.2 (64.1%)	19.0 (67.5%)	18.7 (65.9%)*	18.2 (65.9%)	+6.9%
	Arizona	19.0 (67.9%)	18.6 (66.3%)	20.8 (69.7%)	19.4 (66.9%)*	19.4 (67.6%)	+ 2.1%
Rates per 100 Incidents by U.S. Regions							
Regions (0-17 years)	Arizona (150,926)	11.1	11.2	12.5	11.8*	11.6	+6.3%
	West (329,336)	10.1	9.9	10.7	10.6*	10.3	+5.0%
	All U.S. (1,046,897)	10.0	10.1	11.2	11.0*	10.6	+10.0%
*Significant difference from 2018 to 2021 (Chi-square P-value < 0.01)							



References

1. Mapelli E, Black T, Doan Q. Trends in Pediatric Emergency Department Utilization for Mental Health-Related Visits. *J Pediatr*. 2015 Oct;167(4):905-10. doi: 10.1016/j.jpeds.2015.07.004. Epub 2015 Aug 6. Erratum in: *J Pediatr*. 2015 Nov;167(5):1176. PMID: 26256019.
2. Leeb RT, Bitsko RH, Radhakrishnan L, Martinez P, Njai R, Holland KM. Mental Health-Related Emergency Department Visits Among Children Aged <18 Years During the COVID-19 Pandemic — United States, January 1–October 17, 2020. *MMWR Morb Mortal Wkly Rep* 2020;69:1675–1680. DOI: <http://dx.doi.org/10.15585/mmwr.mm6945a3>
3. Fernandez, A., Gindt, M., Babe, P., & Askenazy, F. (2021). Mental health-related visits in a pediatric emergency department during the COVID-19 pandemic. *International Journal of Emergency Medicine*, 14(1), 1-3.
4. Marshall, R., Ribbers, A., Sheridan, D., & Johnson, K. P. (2021). Mental Health Diagnoses and Seasonal Trends at a Pediatric Emergency Department and Hospital, 2015–2019. *Hospital pediatrics*, 11(3), 199-206.

To Our Contributors

We want to thank our clients who have opted to provide their data to better the industry. Without you, our efforts to advance prehospital research to improve patient care, agency efficiencies, and industry knowledge would be limited.

*Thank
you*



About Collaborate

The EMS and healthcare industry is full of underutilized data that can be used to make a lasting, positive impact on the community. The ImageTrend Collaborate initiative provides insight into clinical, operational, and public health data that will contribute to healthcare provided by organizations, specific sectors, and the industry at large. We will dive into research topics relevant to the urgent topics affecting the care provided within your community. Collaborate aggregates, de-identifies and reports on data to empower data-driven decision-making. As of 2021, Collaborate data includes over 30 million incident records representing all regions of the United States. | www.ImageTrend.com/Collaborate

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About ImageTrend

ImageTrend, Inc. is dedicated to connecting life's most important data in the healthcare and emergency response community. We deliver software solutions, data analytics and services for EMS, hospitals, community paramedicine/mobile integrated healthcare programs (CP/MIH), critical care, fire, and preparedness to enable fully integrated patient-centric healthcare and public safety. Our commitment to innovation, our clients, and providing world-class implementation and support is unsurpassed. Based in Lakeville, Minnesota, we combine business analysis, creative design, and data-driven architecture to offer scalable solutions and strategies for today and the future. | www.ImageTrend.com