



## Pediatric Ambulance Runs: Facts and Trends (2018)

Office of Preparedness and Emergency Health Care  
Division of Public Health

### Purpose

This report uses Wisconsin ambulance run data to examine the key demographic and incident-specific characteristics of pediatric ambulance runs in the State of Wisconsin.

### Core Results

- Youth ages 15-19 had the largest overall proportion of pediatric ambulance runs, followed by children ages 0-4. Males were more represented for ages 0-9, whereas females were more represented for ages 15-19.
- Volume of pediatric ambulance runs remained relatively stable across the year with most events occurring during the normal school week between 2 p.m. and 8 p.m.
- Whereas most pediatric ambulance runs occurred in Milwaukee County, patients from Menominee County had the highest rate of pediatric ambulance runs as a function of the county population.
- Most pediatric runs were 911 response calls and most patients were transported to an emergency department. Most of these pediatric emergency events occurred at a private residence.
- The most common primary impression for pediatric ambulance runs was for neurological symptoms or illness (such as seizures). Motor vehicle incidents represented the most common mechanism of injury. Assessment of pain or vital signs were the most common procedures performed. Normal saline and oxygen were the most common medications administered.

### Methods

All pediatric ambulance runs between January and December 2018 for patients aged 19 or younger were pulled from the Wisconsin Ambulance Run Data System (WARDS). At present, WARDS maintains approximately 98% data coverage for all ambulance runs and EMS agencies across the State of Wisconsin. To be included in this report, incidents were required to have some form of EMS response called for a pediatric patient. Emergency department or other emergent care visits for pediatric cases without an ambulance run are not included in this report.

### Key Collaboration

This report was developed in partnership with the Wisconsin Emergency Medical Services for Children program (WI EMSC). WI EMSC is funded by the Wisconsin Department of Health Services through a Health Resources and Services Administration (HRSA) grant. WI EMSC is focused on improving the quality of emergency care for children and reducing child and youth mortality and morbidity resulting from severe illness or trauma. WI EMSC provides training, resources and support to each of Wisconsin's 128 emergency departments and more than 750 emergency medical service agencies. To learn more about WI EMSC visit <https://www.chawisconsin.org/initiatives/emergency-care/>.



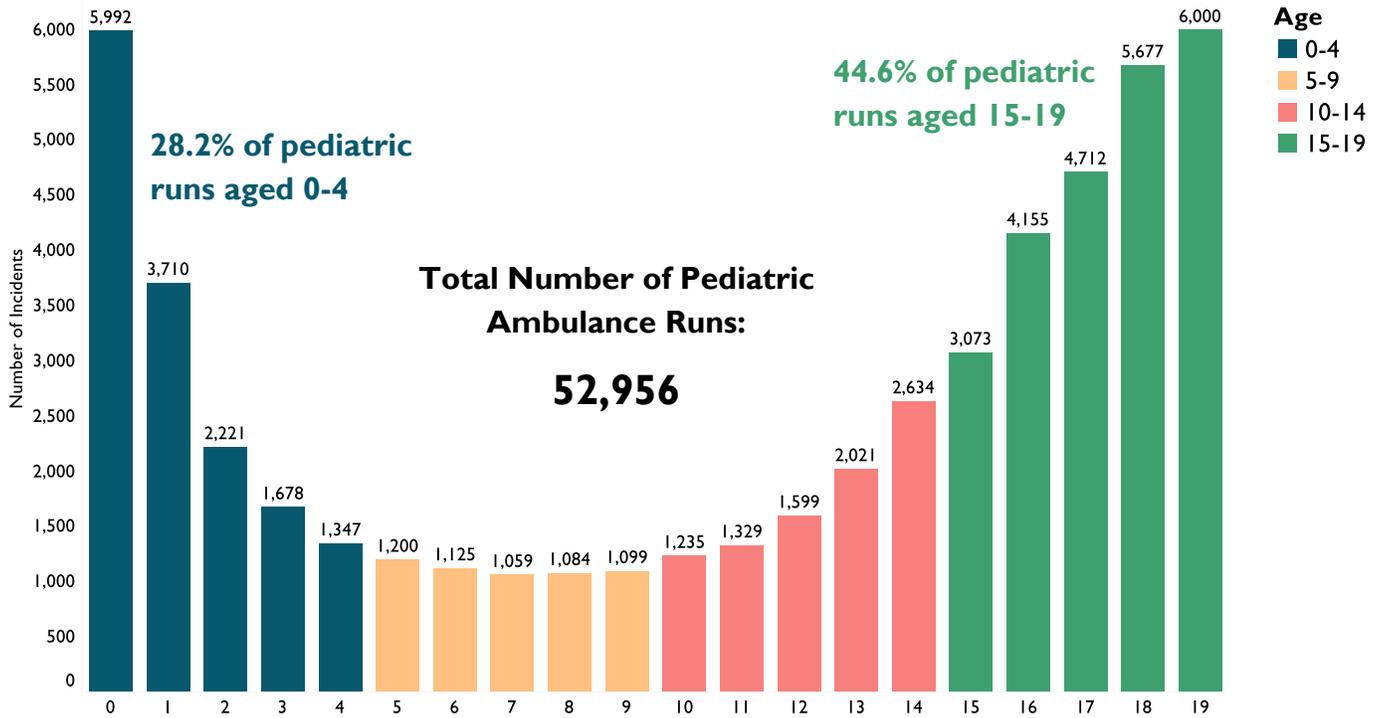


# Pediatric Ambulance Runs

## Overall Trends by Month and Time of Day

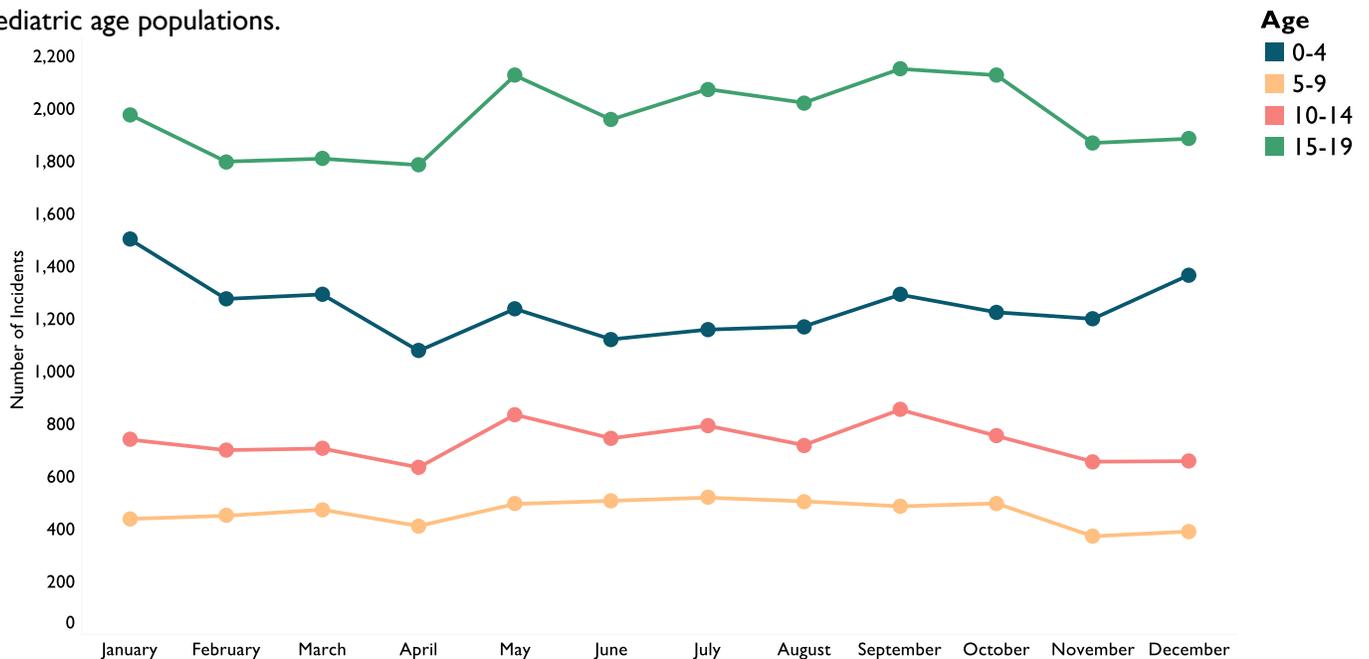
### Volume of Pediatric Ambulance Runs by Age

Pediatric ambulance runs represented over 7.5% of all ambulance runs in 2018. There were marked variations in the number of pediatric ambulance runs based on age. Youth ages 15-19 represented the largest overall proportion of pediatric ambulance runs, followed by children ages 0-4.



### Volume of Pediatric Ambulance Runs by Month and Age

Pediatric ambulance runs remained stable across the year, with consistent patterns in volume between pediatric age populations.



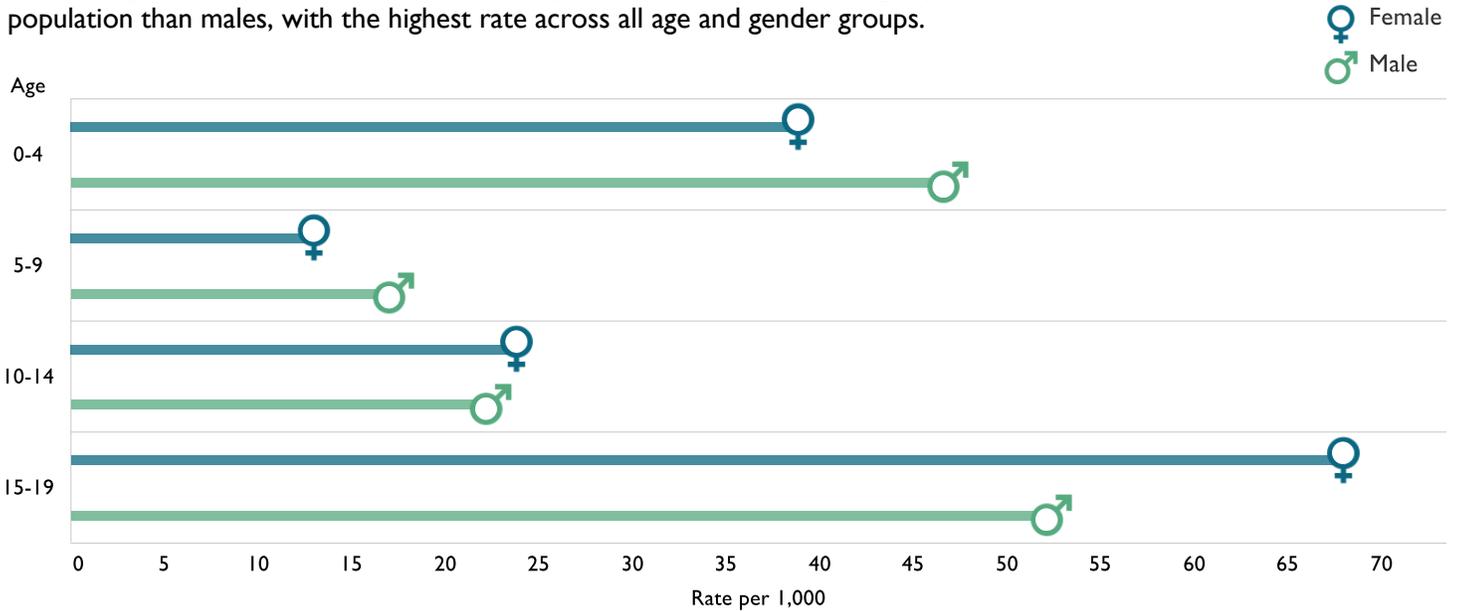


# Pediatric Ambulance Runs

Overall Trends by Age, Gender, and Time/Day of Event

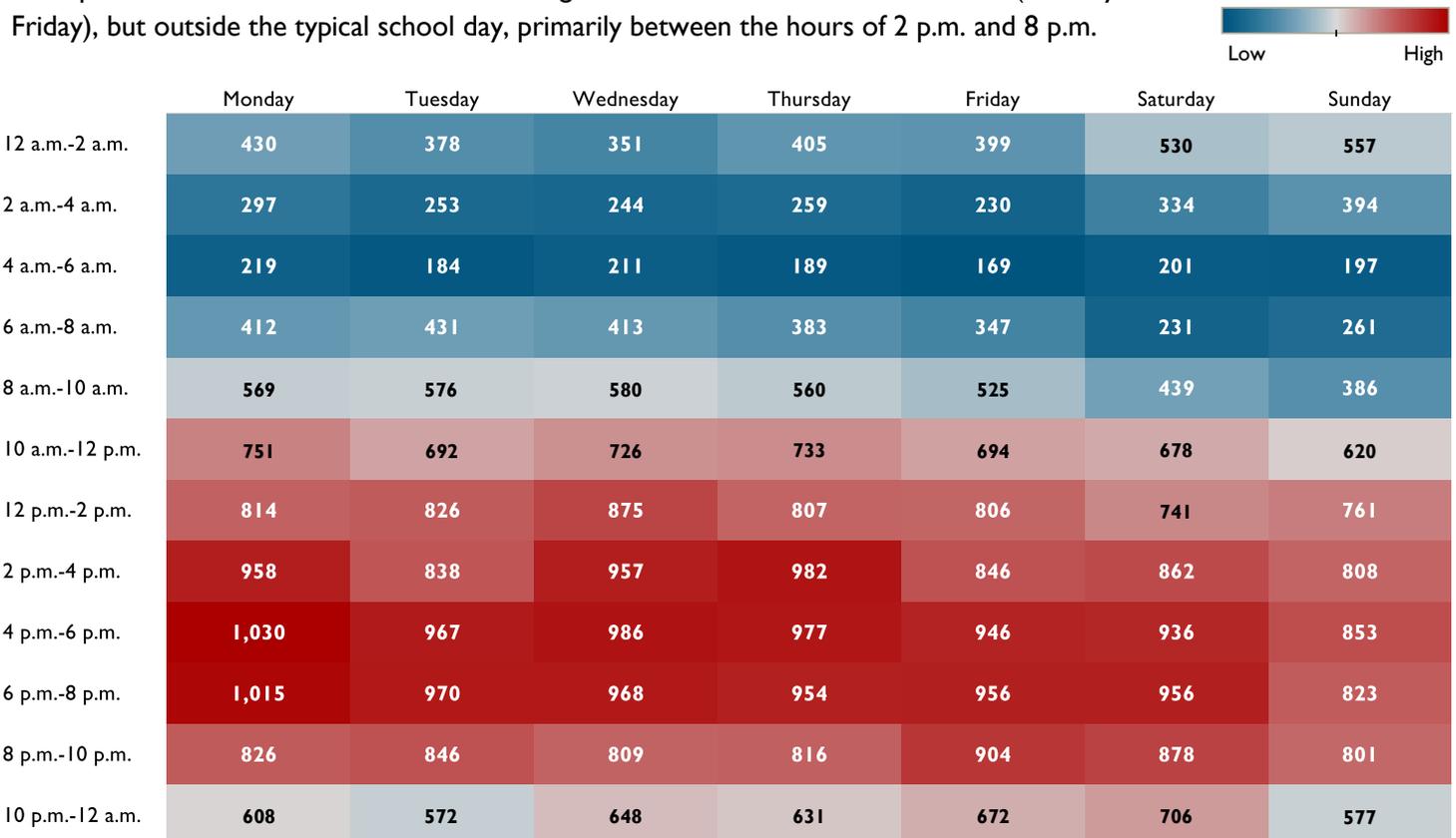
## Rate per 1,000 of Pediatric Ambulance Runs by Age and Gender

Male pediatric ambulance runs represented a larger proportion of the Wisconsin population than females for children ages 0-4 and 5-9. However, females ages 15-19 represented a larger proportion of the Wisconsin population than males, with the highest rate across all age and gender groups.



## Volume of Pediatric Ambulance Runs by Time of Day and Day of Week

Most pediatric ambulance runs occurred during the course of a normal school week (Monday to Friday), but outside the typical school day, primarily between the hours of 2 p.m. and 8 p.m.





# Pediatric Ambulance Runs

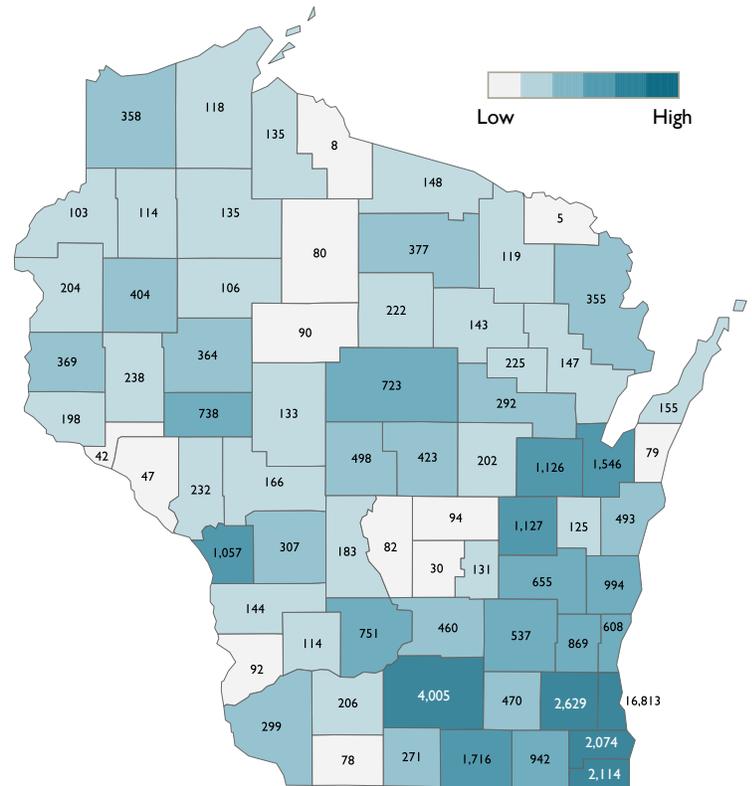
## Overall Trends by County

### Volume of Pediatric Ambulance Runs by County

In terms of pediatric ambulance run volume, the number of events in each county closely mirrors population distribution across the State of Wisconsin. The largest number of events occurred in some of Wisconsin's most populated counties: Milwaukee, Dane, Waukesha, Kenosha, and Racine. In 2018, pediatric ambulance run volumes from these counties accounted for slightly more than **52%** of all cases for children and youth ages 0 to 19.

#### Incident County

Milwaukee	16,813
Dane	4,005
Waukesha	2,629
Kenosha	2,114
Racine	2,074

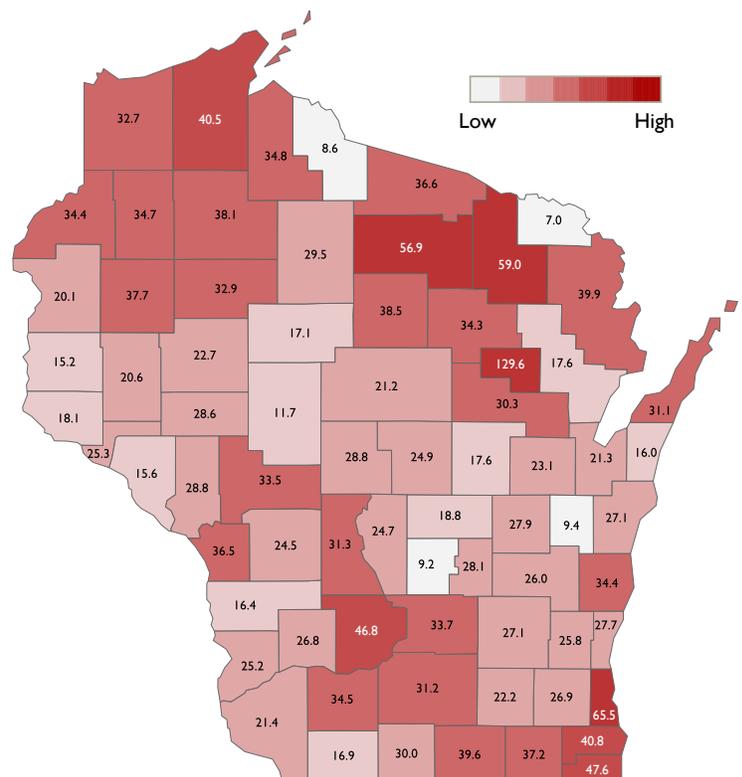


### Rate per 1,000 of Pediatric Ambulance Runs by County

Examining the rate of pediatric ambulance runs per 1,000 children and youth aged 0-19 in each county, a markedly different pattern emerged. Though Milwaukee and Kenosha Counties were represented among the group with the highest rates of pediatric ambulance runs, jurisdictions with more rural populations—particularly in Northern Wisconsin—presented with a higher share of pediatric events. In particular, Menominee County represented more than double the rate of pediatric ambulance runs than nearly every other Wisconsin county.

#### Incident County

Menominee	129.60
Milwaukee	65.52
Forest	59.00
Oneida	56.87
Kenosha	47.63



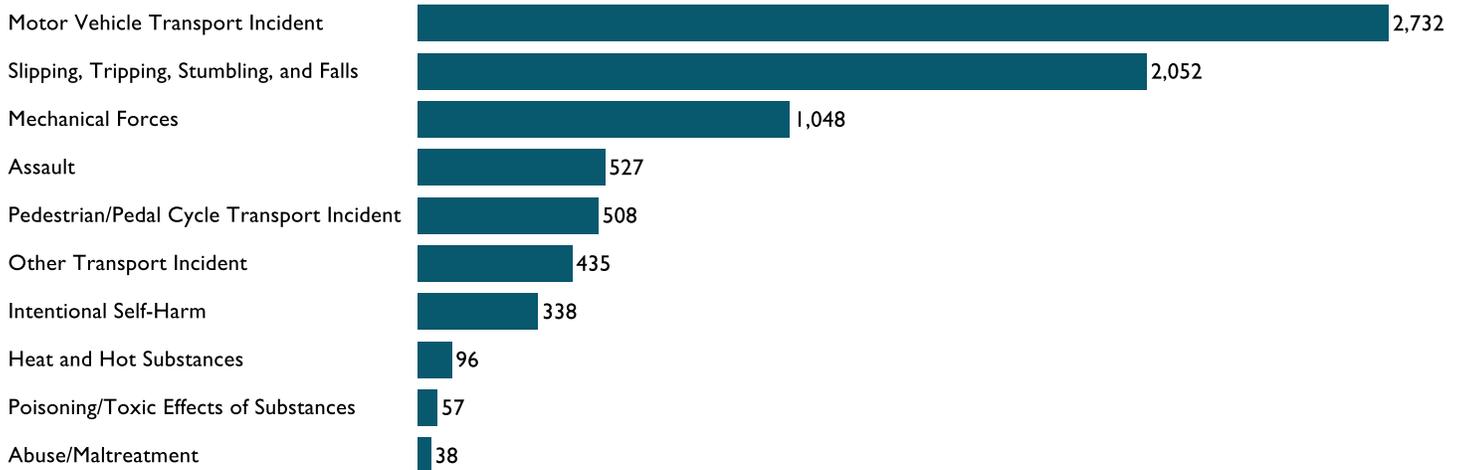


# Pediatric Ambulance Runs

## Mechanism of Injury and Response Times

### Most Common Mechanisms of Injury for Pediatric Ambulance Runs

The most common mechanism of injury for pediatric ambulance runs was for motor vehicle transport incidents, followed by slipping/falls, and mechanical forces. The graph below documents the other types of common injuries.



### Disproportionate Mechanisms of Injury for Youth Ages 15 to 19

Youth ages 15 to 19 bore disproportionate representation across all types of injury events, but were particularly overrepresented for motor vehicle incidents, assaults, and self-harm events.



**52.2% of all injury events**



**65.7% of all motor vehicle incidents**



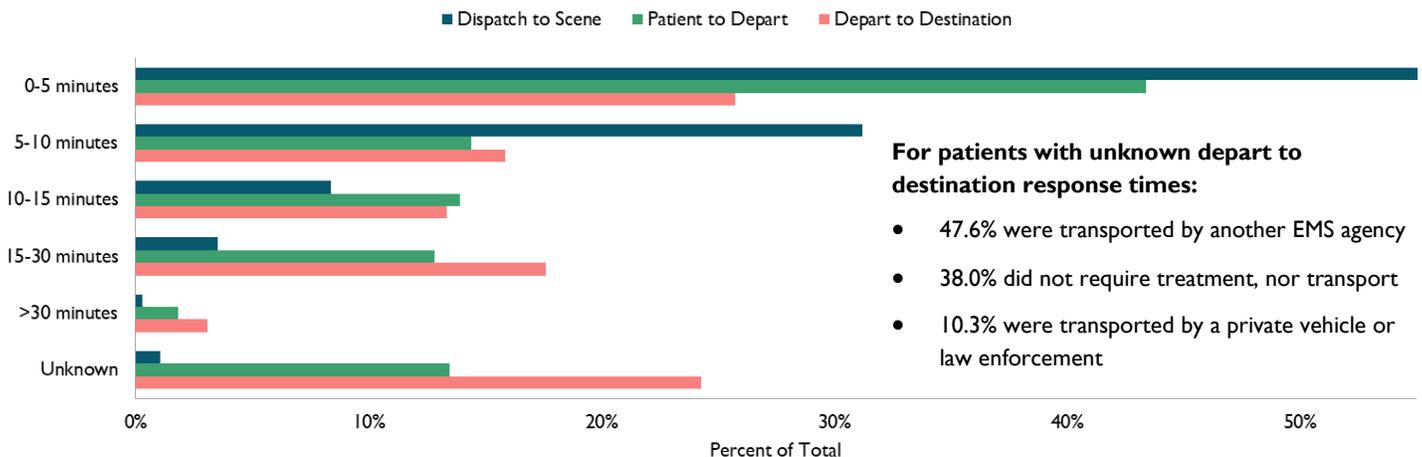
**70.2% of all assault events**



**73.1% of all self-harm events**

### EMS Response Times for Pediatric 911 Response Ambulance Runs

For the majority of pediatric ambulance runs, response times between dispatch notification and scene arrival came within 5 minutes or less. Response times were more varied, generally longer, and included more unknown values for time spent with the patient and the period between scene departure and destination.



#### For patients with unknown depart to destination response times:

- 47.6% were transported by another EMS agency
- 38.0% did not require treatment, nor transport
- 10.3% were transported by a private vehicle or law enforcement



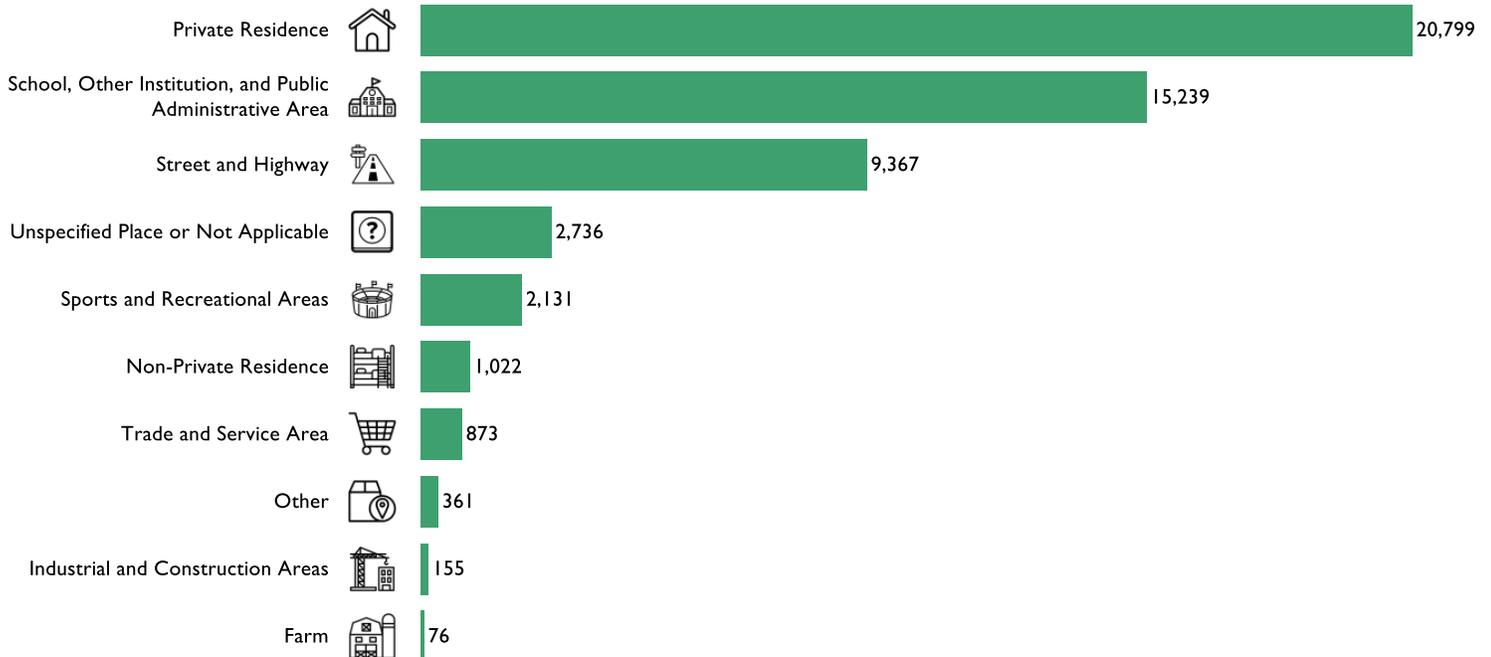


# Pediatric Ambulance Runs

## Incident Location Types, Dispatch Service, and Destination Type

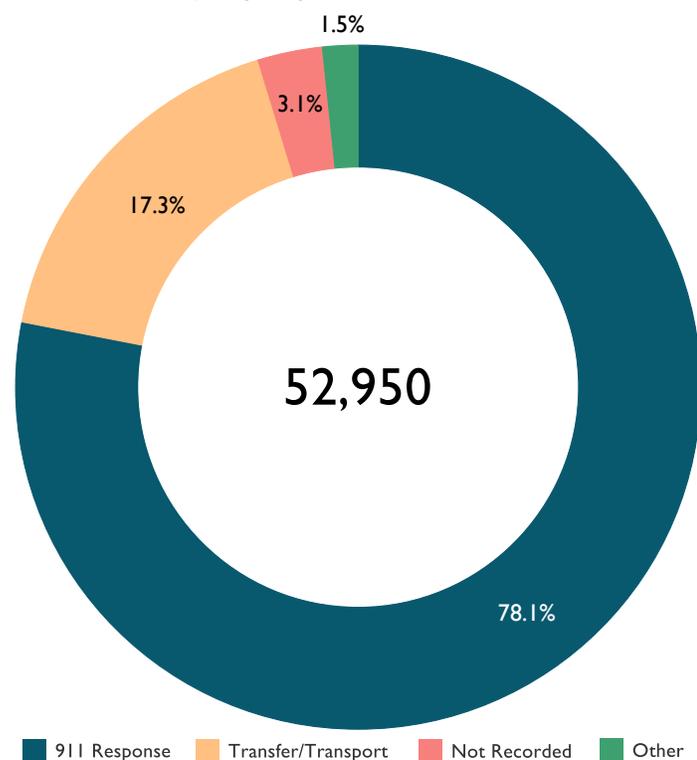
### Incident Location Types for Pediatric Ambulance Runs

Most pediatric ambulance runs were for incidents at a private residence, followed by incidents occurring in schools or other public institutions and streets or highways. The graph below details the other types of common incident locations.



### Dispatch Service Type for Pediatric Ambulance Runs

For the vast majority of pediatric ambulance runs included in the present analysis (78.1%), the EMS response was the result of a 911 emergency call made to dispatch personnel. An additional 17.3% of pediatric ambulance runs were made to transfer or transport children to other care facilities to meet treatment needs.



### Destination Type for Pediatric Ambulance Runs

The vast majority of pediatric ambulance runs ended up transporting patients to an emergency department, followed by non-emergency department hospital beds.

Emergency Department	32,192
Hospital-Non-Emergency Department Bed	7,620
Other	541
Medical Office/Clinic	237
Home	217



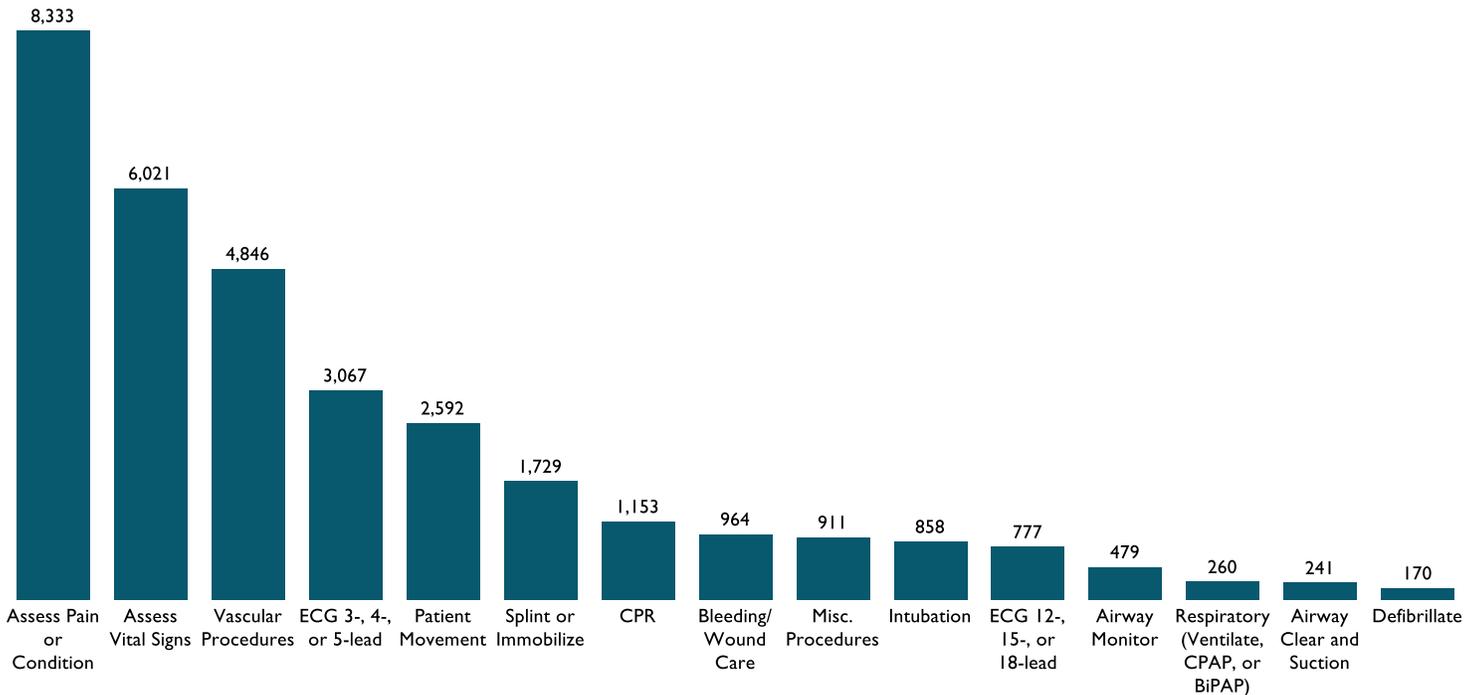


# Pediatric Ambulance Runs

Dispatch Service, Incident Location Types, and Destinations

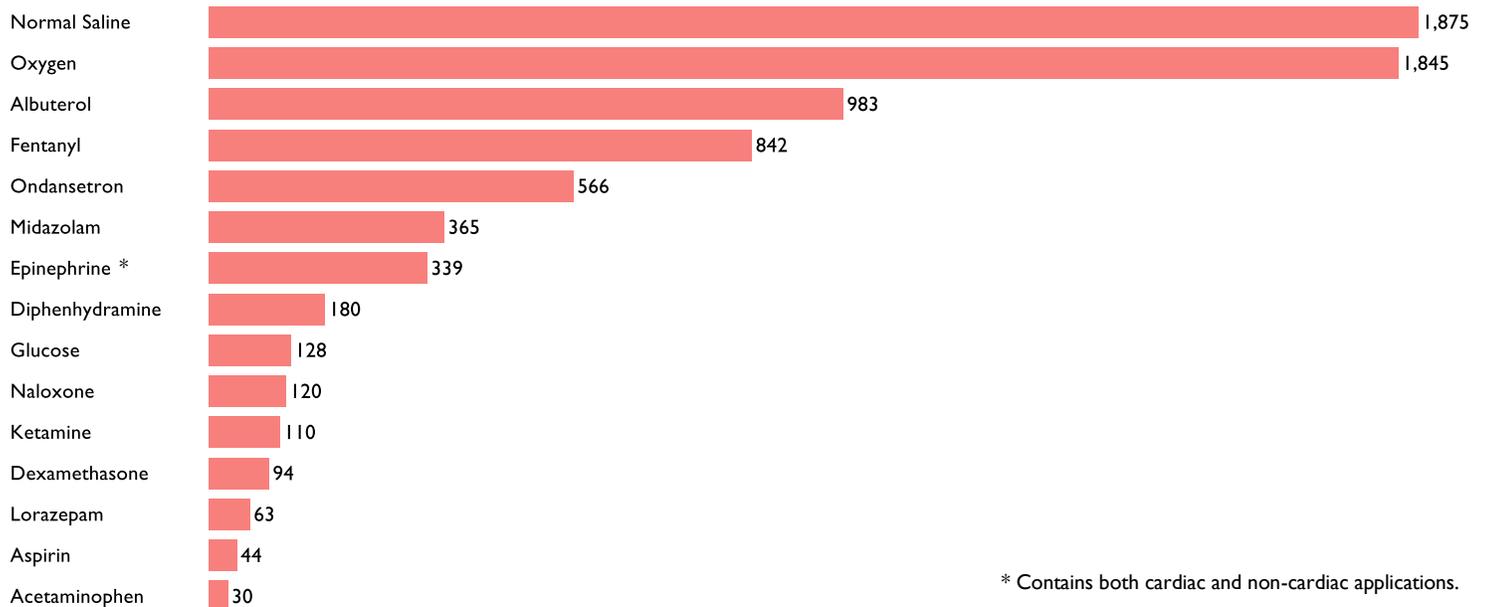
## Most Common Procedures for Pediatric 911 Response Ambulance Runs

The most common types of procedure performed by EMS personnel during a pediatric ambulance runs were for the assessment of pain, health conditions, or the monitoring of vital signs. Vascular interventions, ECG monitoring, patient movement, and splinting and immobilization were some of the other most common procedures performed.



## Most Common Medications for Pediatric 911 Response Ambulance Runs

The administration of normal saline, oxygen, and albuterol were the three most common medications administered by EMS personnel in pediatric 911 response runs. Interestingly, fentanyl was the fourth most common medication provided, speaking to the severity of these runs. The graph below details the other common medications administered.



\* Contains both cardiac and non-cardiac applications.



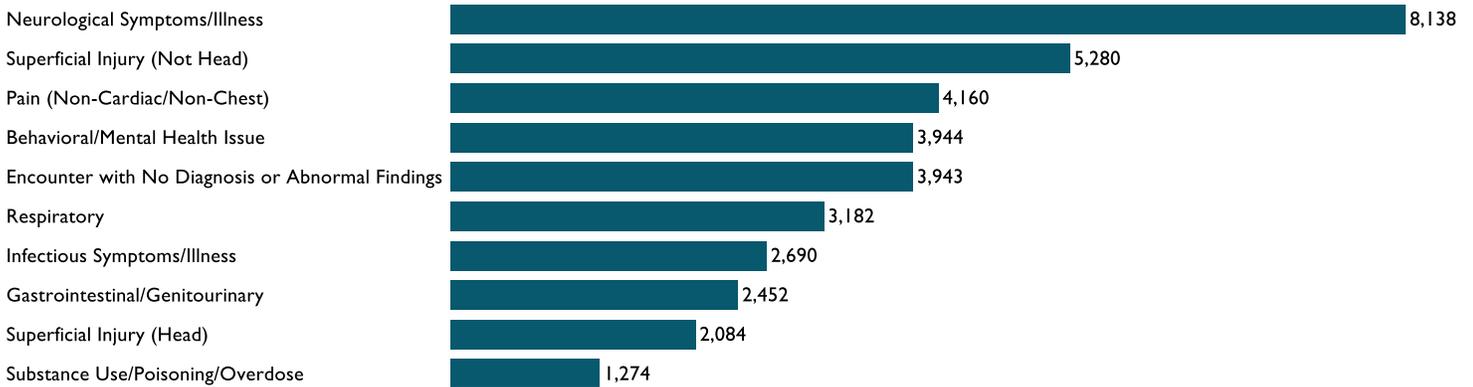


# Pediatric Ambulance Runs

## Dispatch Service, Incident Location Types, and Destinations

### Most Common Primary Impressions for Pediatric Ambulance Runs

The most common primary impression for pediatric ambulance runs was for neurological symptoms or illness, followed by superficial injuries and non-cardiac pain. The graph below documents the other types of common primary impressions.



### Disproportionate Primary Impressions for Children Ages 0 to 4

Children ages 0 to 4 bore disproportionate representation for primary impressions related to infectious illness (71.4% of all cases) and respiratory events (54.2%).

**71.4% of all infectious illness**



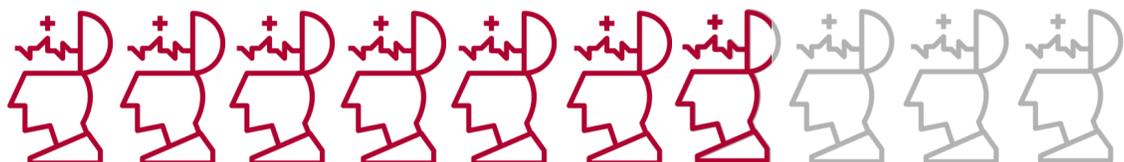
**54.2% of all respiratory events**



### Disproportionate Primary Impressions for Youth Ages 15 to 19

Youth ages 15 to 19 bore disproportionate representation for primary impressions related to behavioral or mental health (69.3% of all cases) and poisoning or substance use (82.7%).

**69.3% of all behavioral/mental health**



**82.7% of all poisoning/substance use**

