

# WHITE PAPER

## Ground Ambulance Services in the United States

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A Study of Private Healthcare Claims

A FAIR Health White Paper, February 23, 2022



## Summary

Currently, no federal law protects consumers against “surprise” bills from out-of-network ground ambulance providers. Some state and local governments regulate ground ambulance surprise billing practices; however, such laws may not apply to all health plans or ambulance providers in an area. Because of the substantial policy interest in ground ambulance services, FAIR Health drew on its vast database of private healthcare claims to illuminate multiple aspects of such services across the nation, including utilization, costs, age, gender, diagnoses and differences across states. Among the findings:

- Throughout the period 2016-2020, advanced life support (ALS) services, which provide a higher level of care than basic life support (BLS) services, accounted for a larger percentage of emergency ground ambulance claim lines than BLS services. For example, in 2020, 51.5 percent of emergency ground ambulance claim lines were associated with ALS compared to 48.5 percent associated with BLS.
- From 2017 to 2020, average charges and allowed amounts increased for both ALS and BLS emergency ground ambulance transport.<sup>1</sup>
  - ALS emergency ground ambulance services increased from an average charge of \$1,042 in 2017 to \$1,277 in 2020—a 22.6 percent increase. The average allowed amount for the same services rose 56 percent from \$486 to \$758 during the same period.
  - The average charge for BLS emergency ground ambulance services increased 17.5 percent from \$800 in 2017 to \$940 in 2020. The average allowed amount for the same services rose 39.9 percent from \$373 to \$522 during the same period.
- Individuals 65 years and older were consistently the largest age group associated with emergency ground ambulance services, though their share of the distribution decreased from 37.7 percent in 2016 to 34 percent in 2020.
- In the period 2016-2020, females accounted for a larger share of emergency ground ambulance claim lines than males in all but two age groups; males had more claim lines in the 0-18 and 51-64 age groups.
- In the period 2016-2020, the top three reasons patients overall were transported via emergency ground ambulance were (from most to least common) general signs and symptoms, general signs and symptoms involving circulatory and respiratory system, and signs and symptoms involving cognition.
- Among patients aged 19-35, mental health conditions were the most common diagnosis associated with emergency ground ambulance in the period 2016-2020.
- In 2020, COVID-19 entered the rankings of diagnoses associated with ALS emergency ground ambulance transport at 15th place, and entered the rankings for BLS emergency ground ambulance transport at 10th place.
- In both 2019 and 2020, the five states with the highest emergency ground ambulance use as a percentage of all medical claim lines in that state were all in the Northeast and South, and the five states with the lowest use were in the Midwest and West. According to previously published FAIR Health air ambulance data, this was the opposite of the geographic distribution of fixed-wing air ambulance usage in 2019 and 2020, in which the five states with the highest use were in the Midwest and West and the five states with the lowest use were in the Northeast and South.<sup>2</sup>
- The five states with the highest average mileage for emergency ground ambulance transport in 2020 were Arkansas (27.9 miles), North Dakota (27 miles), Wyoming (24.5 miles), West Virginia (21.6 miles) and Maine (20.9 miles).

<sup>1</sup> Costs shown here are for base fees only and do not include mileage fees.

<sup>2</sup> FAIR Health, *Air Ambulance Services in the United States: A Study of Private and Medicare Claims*, A FAIR Health White Paper, September 28, 2021, <https://s3.amazonaws.com/media2.fairhealth.org/whitepaper/asset/Air%20Ambulance%20Services%20in%20the%20United%20States%20-%20A%20Study%20of%20Private%20and%20Medicare%20Claims%20-%20A%20FAIR%20Health%20White%20Paper.pdf>.

- The five states with the lowest average mileage for emergency ground ambulance transport in 2020 were New York (6.9 miles), Alaska (7.5 miles), New Jersey (8.6 miles), Rhode Island (8.9 miles) and Florida (8.9 miles).
- In the period 2016-2020, males had a higher percentage of inpatient admissions after emergency ground ambulance transport than females in all age groups except the youngest—0 to 18 years. In that age group, 35.4 percent of females were admitted to the hospital compared to 32.3 percent of males.

## Background

An estimated three million privately insured patients are transported by ground ambulances to emergency rooms annually.<sup>3</sup> Nearly two-thirds of ground ambulance rides are provided by local government agencies, such as municipal fire departments or rescue squads.<sup>4</sup> Ambulance services also may be provided by hospitals, or by private nonhospital ambulance companies. Due to the nature of emergency services, patients often do not choose their ambulance provider. Emergency medical dispatchers select the closest or most appropriate ambulance, depending on the caller's location and the nature of the medical emergency. As a result, patients who receive ambulance services are likely to receive them from providers who do not contract with their health plan, which can result in out-of-network bills.<sup>5</sup>

Currently, no federal law protects consumers against “surprise” bills from out-of-network ground ambulance providers. The federal No Surprises Act, signed into law in December 2020 as part of the Consolidated Appropriations Act of 2021, includes provisions to protect consumers from surprise bills, including air ambulance bills. These protections, however, do not apply to ground ambulance services. Instead, Congress required further study of such services, and instructed the Secretary of Health and Human Services, the Secretary of Labor and the Secretary of the Treasury to establish a committee that will review the options for improving cost transparency for ground ambulance services, in order to increase consumer awareness about insurance coverage for such services and protect patients from surprise bills.

In the absence of a federal ground ambulance surprise billing law, some state and local governments have stepped in to regulate ground ambulance surprise billing practices; however, such laws may not apply to all health plans or ambulance providers in an area. For example, states cannot regulate “self-funded” employer health plans, which cover about two-thirds of all employees. Colorado, for example, regulates rates paid and patient cost sharing for some ground ambulance services, but the law does not apply to ambulance services provided by publicly funded fire agencies, and does not protect those with self-funded employer plans.<sup>6</sup> The complexity of existing state and local regulation is reportedly one reason that federal lawmakers are reluctant to regulate surprise billing by ground ambulances.<sup>7</sup>

Because of the substantial policy interest in ground ambulance services, FAIR Health drew on its vast database of private healthcare claims to produce this report, illuminating multiple aspects of such services

<sup>3</sup> Krutika Amin et al., “Ground Ambulance Rides and Potential for Surprise Billing,” Peterson-KFF Health System Tracker, June 24, 2021, <https://www.healthsystemtracker.org/brief/ground-ambulance-rides-and-potential-for-surprise-billing/>.

<sup>4</sup> Amin et al., “Ground Ambulance Rides and Potential for Surprise Billing.”

<sup>5</sup> Karan R. Chhabra et al., “Most Patients Undergoing Ground and Air Ambulance Transportation Receive Sizable Out-of-Network Bills,” *Health Affairs* 39, no. 5 (April 15, 2020), <https://doi.org/10.1377/hlthaff.2019.01484>.

<sup>6</sup> 3 Colo. Code Regs. § 702-4:4-2-66.

<sup>7</sup> Sarah Kliff and Margot Sanger-Katz, “Why Ambulances Are Exempt from the Surprise-Billing Ban,” *New York Times*, December 22, 2020, <https://www.nytimes.com/2020/12/22/upshot/ground-ambulances-left-off-surprise-medical-bill-law.html>.

across the nation, including utilization, costs, age, gender, diagnoses and differences across states.<sup>8</sup> This report is a companion to a white paper previously issued by FAIR Health on air ambulance services.<sup>9</sup>

A national, independent nonprofit organization dedicated to bringing transparency to healthcare costs and health insurance information, FAIR Health possesses a repository of over 36 billion private healthcare claim records—the largest in the nation, and the source of data for this report.

## Methodology

FAIR Health conducted both longitudinal and non-longitudinal analyses of this data. In its non-longitudinal data analysis, FAIR Health used both longitudinal and non-longitudinal claim lines<sup>10</sup> from its private insurance dataset that had a procedure code indicating emergency ground ambulance services (as defined below) or else A0998—Ambulance response and treatment, no transport. De-identified commercial claims data with dates of service from January 1, 2016, through June 30, 2021, were evaluated.

Emergency ground ambulance services include the following procedure codes (table 1):

**Table 1. Emergency ground ambulance procedure codes**

Procedure Code	Description
A0427	Ambulance service, advanced life support, emergency transport, level 1 (ALS 1-emergency)
A0429	Ambulance service, basic life support, emergency transport (BLS-emergency)
A0433	Advanced life support, level 2 (ALS 2)

The difference between basic life support and advanced life support is as follows:

- Basic life support (BLS): Also called “first step treatment,” these services can be provided by either a paramedic or an emergency medical technician (EMT). They typically include fractures or injuries, psychiatric patients or medical and surgical patients who do not need cardiac monitoring or respiratory interventions.
- Advanced life support (ALS): Ambulances that can provide this level of care also can provide basic life support but must have a paramedic on board. The technicians on an ALS ambulance have a higher level of training. Typically, to treat a patient during an ALS ambulance service, an invasive procedure is done, for example, with needles or other devices that make cuts in the skin. An ALS provider can give injections, do very limited surgical procedures (e.g., a tracheotomy) and administer medicine. ALS ambulances are typically outfitted with airway equipment, cardiac life support, cardiac monitors and glucose testing devices.

FAIR Health analyzed the data by such factors as costs, age, gender, diagnoses, utilization by state and mileage by state. In analyzing utilization by state (figures 16 and 17), FAIR Health calculated emergency ground ambulance claim lines as a percentage of all medical claim lines by state. This was done to

<sup>8</sup> Although ground ambulances may be used for nonemergency purposes, this paper focuses on emergency ground ambulance services.

<sup>9</sup> FAIR Health, *Air Ambulance Services in the United States*.

<sup>10</sup> “Claim lines” are the individual procedures or services listed on an insurance claim.

normalize the data, avoiding fluctuations due to changes within plan data and accounting for such factors as varying state populations.

FAIR Health evaluated mileage data using the following procedure codes (table 2):

**Table 2. Ground ambulance mileage procedure codes**

Procedure Code	Description
A0380	BLS mileage (per mile)
A0390	ALS mileage (per mile)
A0425	Ground mileage, per statute mile

Using the same criteria as in the non-longitudinal data analysis, FAIR Health tracked patients in the longitudinal cohort to acquire outcome analyses, such as hospitalizations.

## Limitations

The data used in this report comprise claims data for privately insured patients who are covered by insurers and third-party administrators who voluntarily participate in FAIR Health's data contribution program. Medicare Advantage (Medicare Part C) enrollees from contributing insurers are included, but not participants in Medicare Parts A, B and D.<sup>11</sup> In addition, data from Medicaid, CHIP and other state and local government insurance programs are not included, nor are data collected regarding uninsured patients.

This is an observational report based on the data FAIR Health receives from private payors regarding care rendered to covered patients.

The report was not subject to peer review.

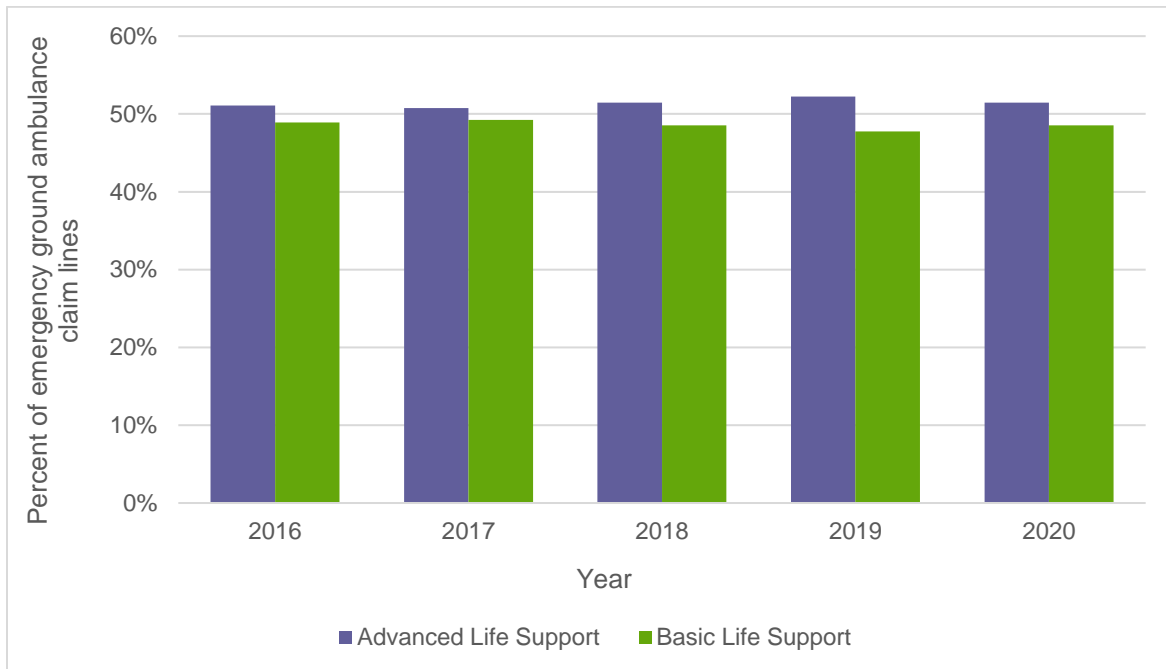
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<sup>11</sup> FAIR Health also receives the entire collection of claims for traditional Medicare Parts A, B and D under the Centers for Medicare & Medicaid Services (CMS) Qualified Entity Program, but those data are not a source for this report.

## Results

### ALS versus BLS

Throughout the period 2016-2020, advanced life support (ALS) services made up a larger percentage of emergency ground ambulance claim lines than basic life support (BLS) services (figure 1). For example, in 2020, 51.5 percent of emergency ground ambulance claim lines were associated with ALS compared to 48.5 percent associated with BLS.

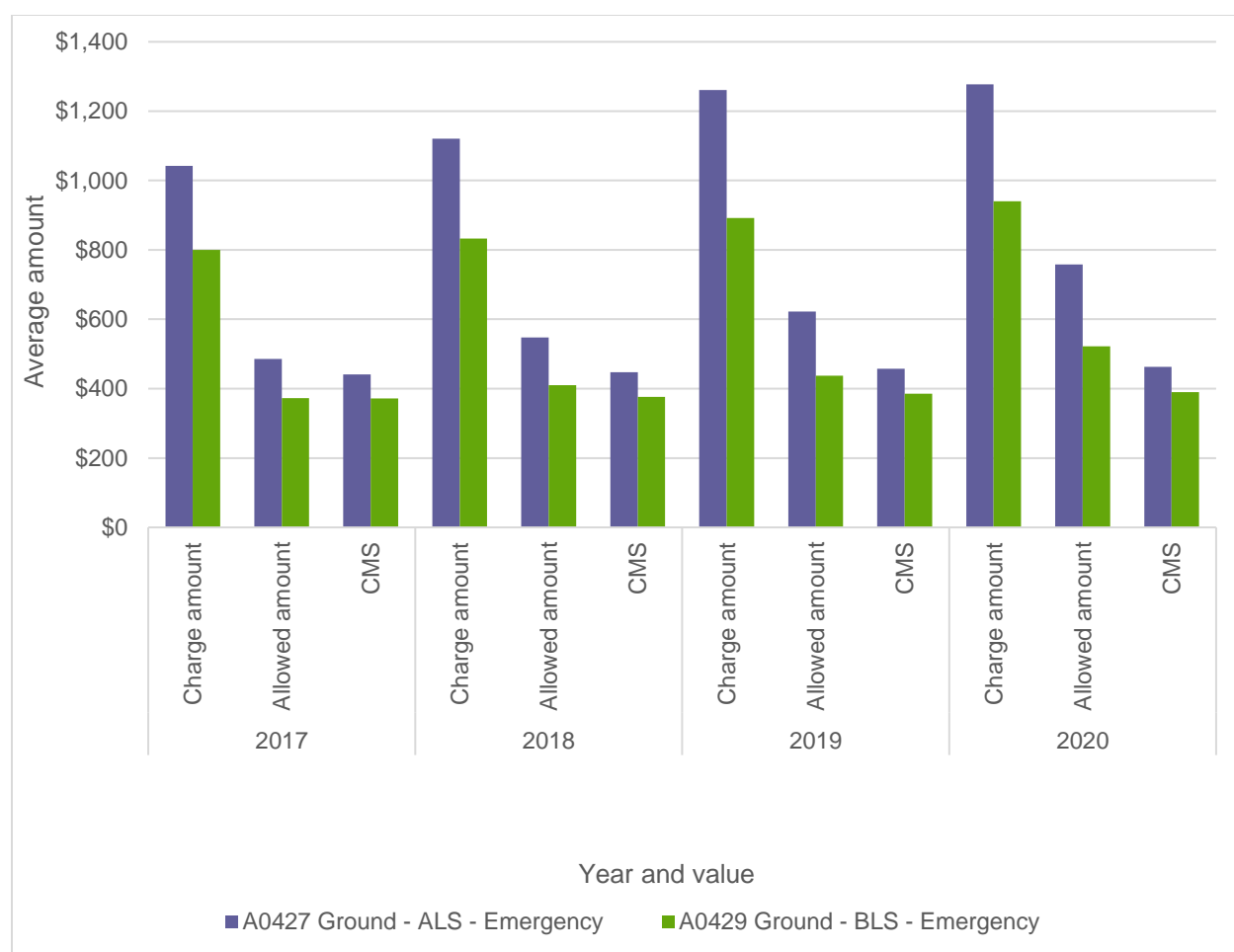


**Figure 1. ALS versus BLS claim lines as a percentage of all emergency ground ambulance claim lines, 2016-2020**

## Costs

Emergency ground ambulance costs include a base fee and a payment for mileage.<sup>12</sup> Figure 2 shows the average base fees, without mileage fees, for ALS and BLS emergency ground ambulance services from 2017 to 2020 in terms of charge amounts<sup>13</sup> and allowed amounts.<sup>14</sup> Medicare reimbursement amounts also have been included as a point of reference. All types of values for both types of ground ambulance increased. ALS costs were higher than BLS costs for all types of values.

ALS emergency ground ambulance services increased from an average charge of \$1,042 in 2017 to \$1,277 in 2020—a 22.6 percent increase. The average allowed amount for the same services rose 56 percent from \$486 to \$758 during the same period. The average Medicare amount for these services increased from \$441 to \$463, a five percent increase.



**Figure 2. Average charge amounts, allowed amounts and CMS (Medicare reimbursement) amounts for ALS and BLS emergency ground ambulance services, without mileage fees, 2017-2020**

<sup>12</sup> Quick Med Claims, “Understanding Ground Ambulance Charges,” accessed February 9, 2022, <https://www.quickmedclaims.com/2018/03/understanding-ground-ambulance-charges/>.

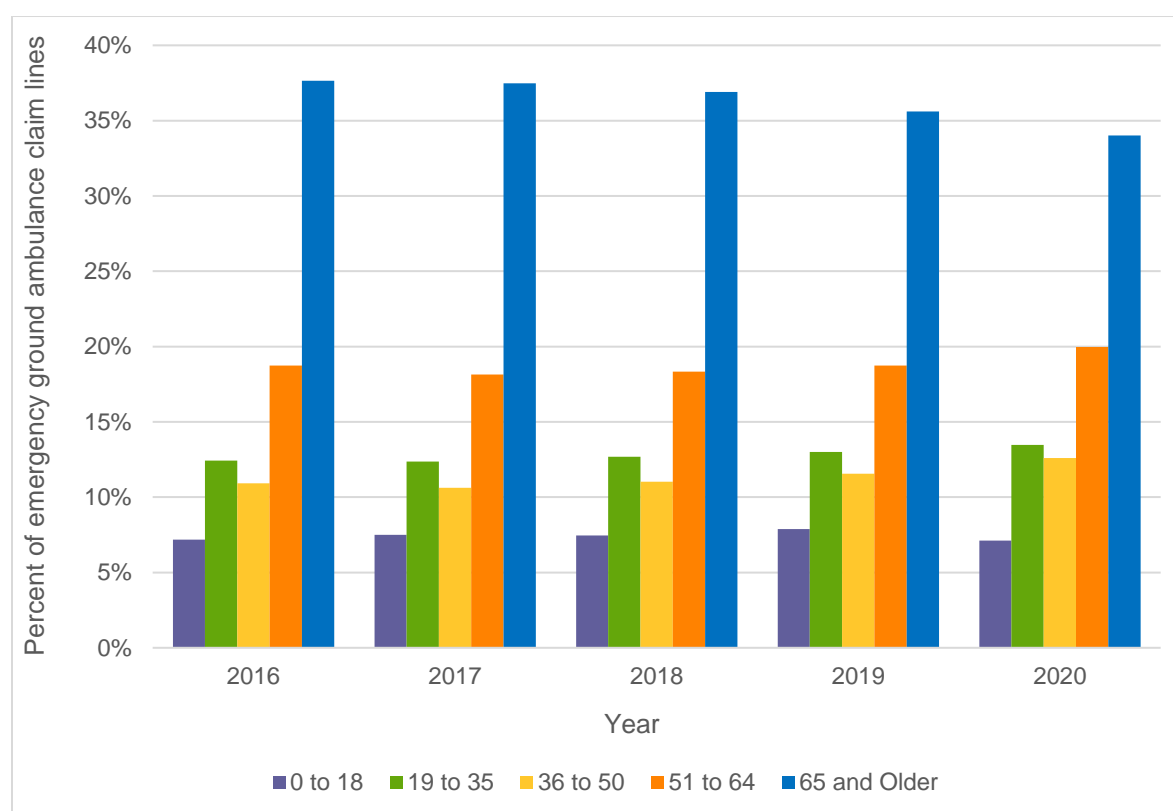
<sup>13</sup> A charge amount is the amount charged to a patient who is uninsured or obtaining an out-of-network service.

<sup>14</sup> An allowed amount is the total fee negotiated between an insurance plan and a provider for an in-network service; the allowed amount includes both the insurer’s and the member’s share of the total fee.

The average charge for BLS emergency ground ambulance services increased 17.5 percent from \$800 in 2017 to \$940 in 2020. The average allowed amount for the same services rose 39.9 percent from \$373 to \$522 during the same period. The average Medicare amount for these services increased 4.8 percent from \$372 to \$390.

## Age and Gender

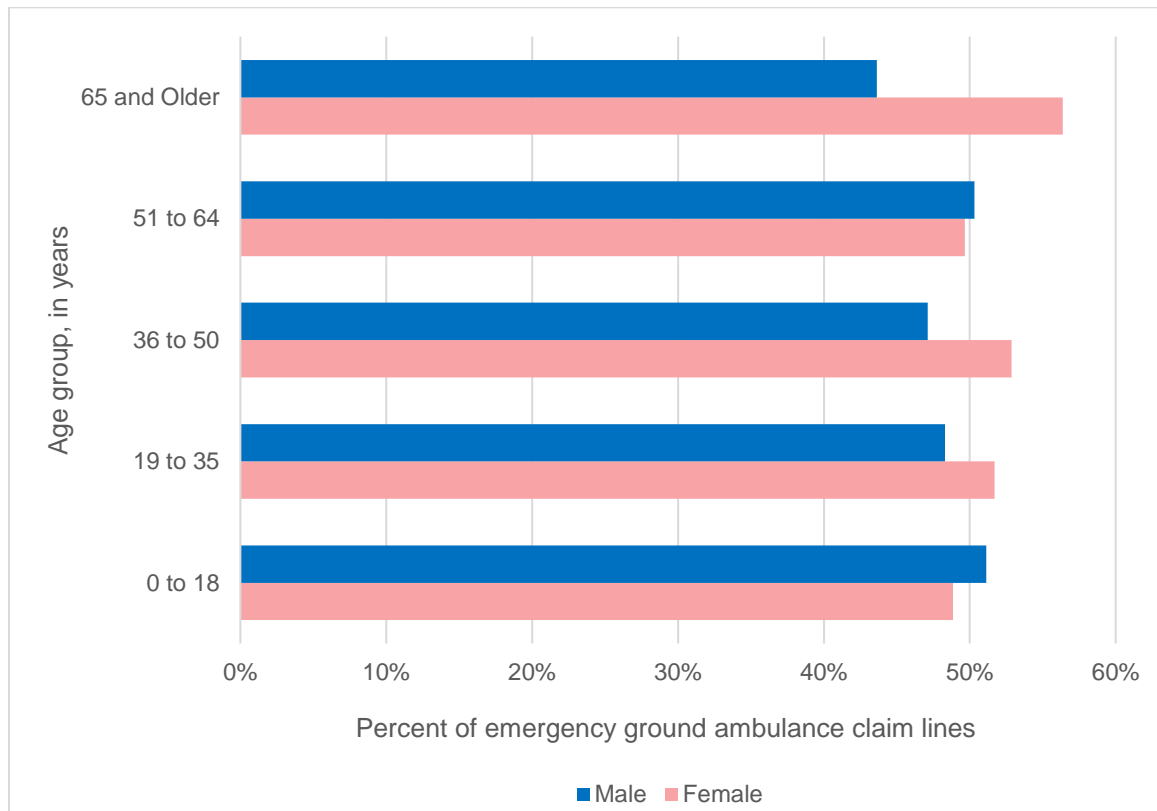
Individuals 65 years and older were consistently the largest age group associated with emergency ground ambulance services, though their share of the distribution decreased from 37.7 percent to 34 percent from 2016 to 2020 (figure 3). By comparison, individuals 65 years and older compose 10 to 11 percent of FAIR Health's longitudinal dataset overall. The age group 51 to 64 was consistently the second most common age cohort to incur ambulance transport and 19-to-35-year-olds were the third most common.



**Figure 3. Distribution of age groups associated with emergency ground ambulance claim lines by year, 2016-2020**



FAIR Health data<sup>15</sup> and the reports of other researchers<sup>16,17</sup> show that females are generally more likely than males to use healthcare services. In the case of emergency ground ambulance in the period 2016-2020, however, there were two age groups in which males had a larger share of claim lines: 0 to 18 and 51 to 64 (figure 4). In the age groups 19 to 35 and 36 to 50, females exceeded males, though the difference was relatively small. The greatest difference was in the 65-and-older cohort, where 56.4 percent of the emergency ground ambulance claim lines were associated with females.



**Figure 4. Distribution of emergency ground ambulance claim lines by age and gender, 2016-2020**

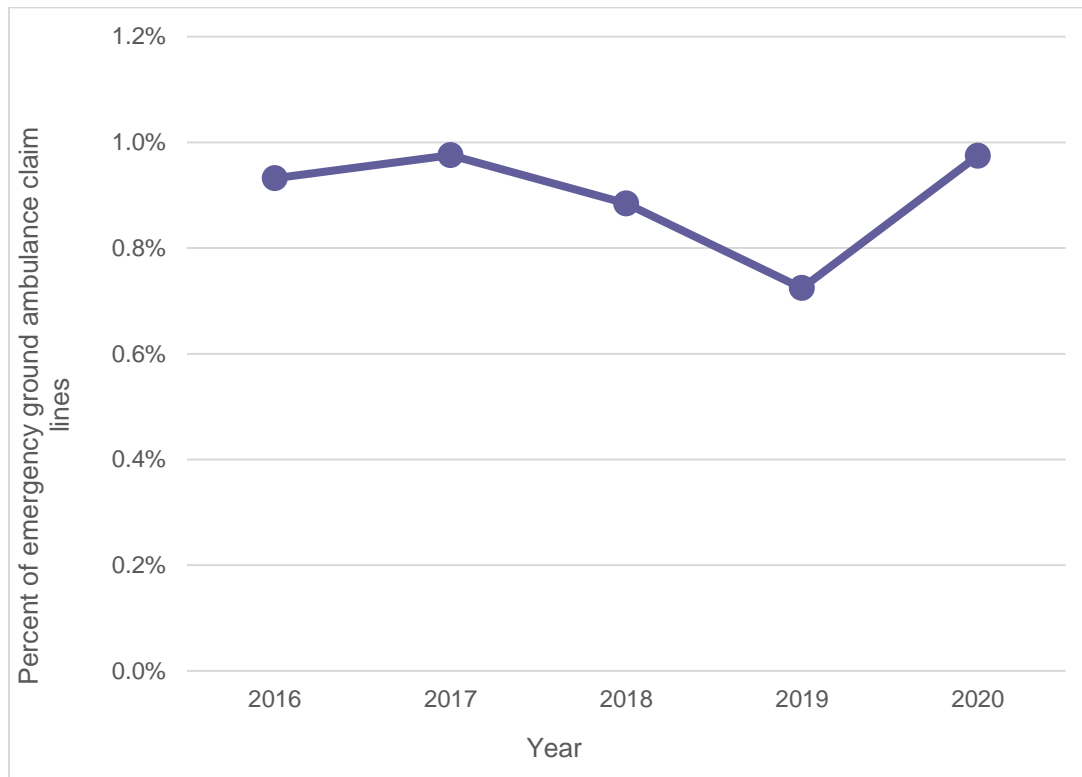
<sup>15</sup> FAIR Health, *FH® Healthcare Indicators and FH® Medical Price Index 2021: An Annual View of Place of Service Trends and Medical Pricing*, A FAIR Health White Paper, March 31, 2021, <https://s3.amazonaws.com/media2.fairhealth.org/whitepaper/asset/FH%20Healthcare%20Indicators%20and%20FH%20Medical%20Price%20Index%202021--A%20FAIR%20Health%20White%20Paper--FINAL.pdf>.

<sup>16</sup> Jill J. Ashman, Esther Hing and Anjali Talwalkar, "Variation in Physician Office Visit Rates by Patient Characteristics and State, 2012," NCHS Data Brief, no. 212 (Hyattsville, MD: National Center for Health Statistics, 2015), <https://www.cdc.gov/nchs/data/databriefs/db212.pdf>.

<sup>17</sup> Klea D. Bertakis et al., "Gender Differences in the Utilization of Health Care Services," *Journal of Family Practice* 49, no. 2 (2000):147-52, <https://www.ncbi.nlm.nih.gov/pubmed/10718692>.

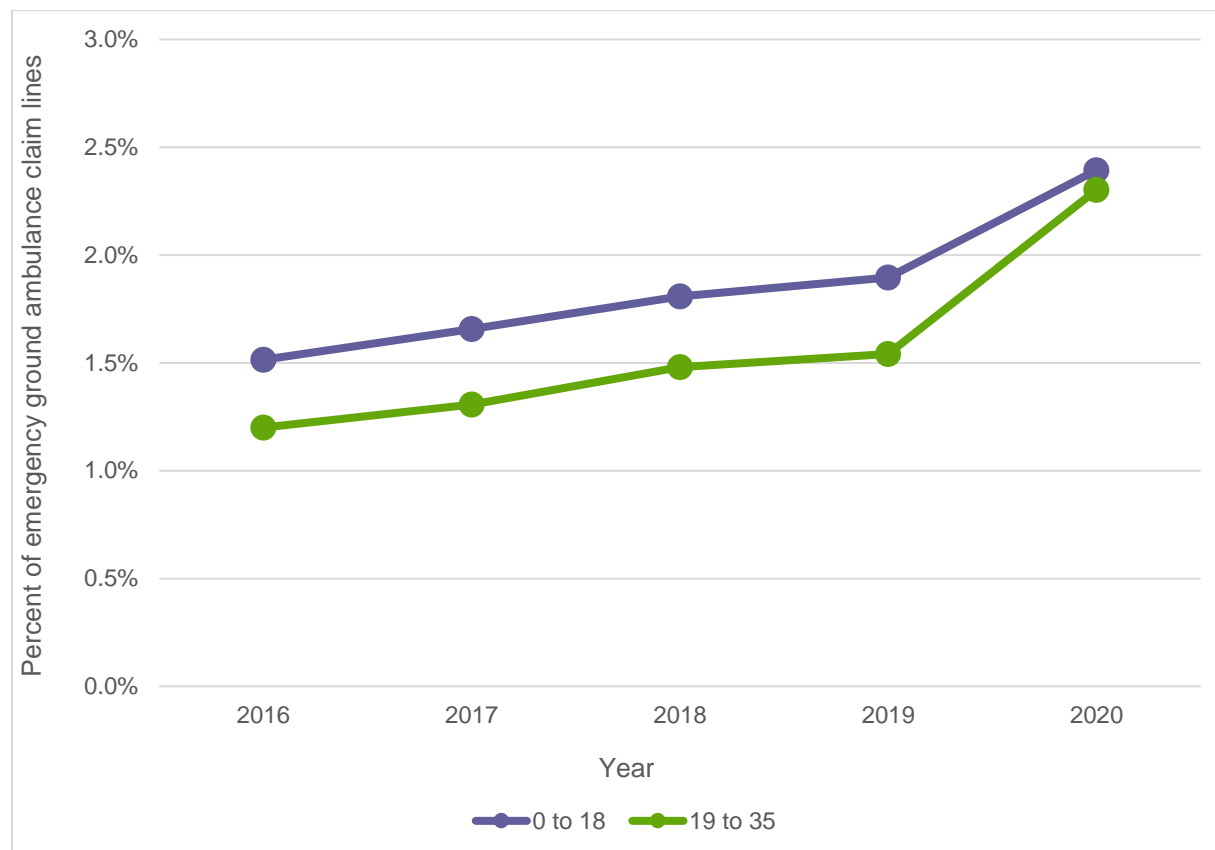
## Response and Treatment—No Transport

In addition to being used for transport, ground ambulances can deliver another type of care: in which the patient is treated on-site and the ambulance does not ultimately transport the patient from the location to a hospital. (This procedure code is A0998.) As seen in figure 5, this type of service (response and treatment—no transport) declined from 2017 to 2019, dropping from 1 percent to 0.7 percent of all emergency ground ambulance claim lines. In 2020, however, it increased back to approximately one percent of all emergency ground ambulance claim lines.



**Figure 5. Response and treatment—no transport as a percentage of emergency ground ambulance claim lines, 2016-2020**

For the two youngest age cohorts, response and treatment—no transport services increased as a percentage of emergency ground ambulance claim lines during the same time frame, 2016-2020 (figure 6). For the age group 0 to 18, the increase from 2016 to 2020 was 58 percent; for the age group 19 to 35, the increase was 91.8 percent.



**Figure 6. Response and treatment—no transport as a percentage of emergency ground ambulance claim lines, age groups 0 to 18 and 19 to 35, 2016-2020**

The top 15 diagnoses associated with response and treatment—no transport ambulance care underwent a number of changes from 2016 to 2020 (table 3). For example, general signs and symptoms involving the circulatory and respiratory system increased from fourth place in 2016, accounting for 5 percent of the total distribution of claim lines, to second place in 2020, at 8.4 percent. Chest pain started at sixth place in 2016 (at 2.7 percent of the distribution), dropped to eighth place in 2017 and 2018, then climbed back to sixth place in 2019 and 2020 (at 4.3 percent in 2020). Hypertension increased from 18th place in 2016 (at 0.6 percent of the distribution) and joined the top 15, at 15th place, in 2020 (at 1.8 percent).

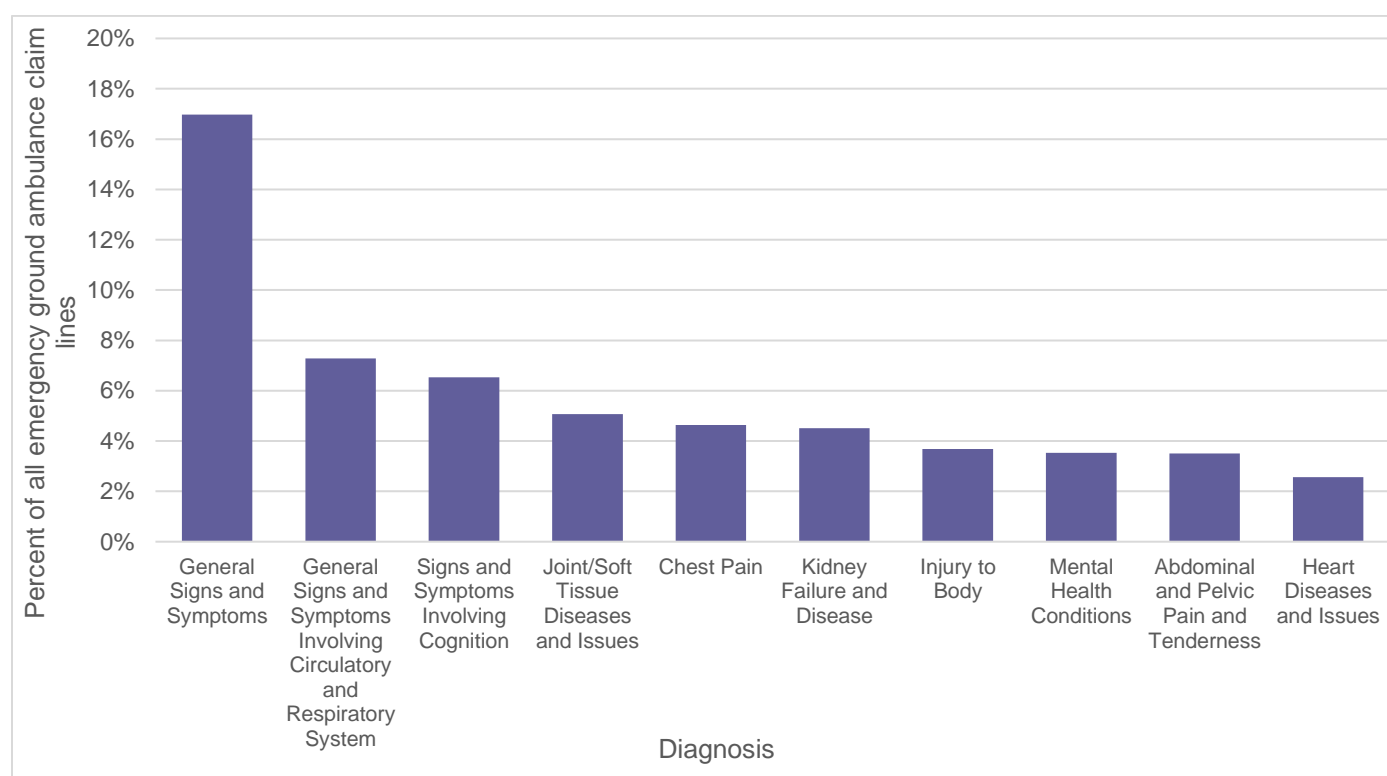
**Table 3. Top 15 diagnoses associated with response and treatment—no transport ambulance care, 2016-2020**

	2016	2017	2018	2019	2020
General Signs and Symptoms	1	1	1	1	1
Injury to Body	2	3	3	2	3
Endocrine and Metabolic Disorders	3	2	2	4	4
General Signs and Symptoms Involving Circulatory and Respiratory System	4	4	4	3	2
Signs and Symptoms Involving Cognition	5	5	5	5	5
Chest Pain	6	8	8	6	6
Joint/Soft Tissue Diseases and Issues	7	6	6	8	9
Abnormal Findings on Path/Lab Tests	8	10	10	12	12
Mental Health Conditions	9	11	11	11	10
Head Injury	10	9	9	9	8
Diabetes Mellitus	11	12	12	10	11
Signs and Symptoms Involving Behavior and Emotional State	12	7	7	7	7
Epilepsy and Seizures	13	13	13	13	13
Abdominal and Pelvic Pain and Tenderness	14	14	14	14	14
Nausea and Vomiting	15	15	15	15	16
Hypertension	18	18	18	16	15

## Diagnoses Associated with Emergency Ground Ambulance

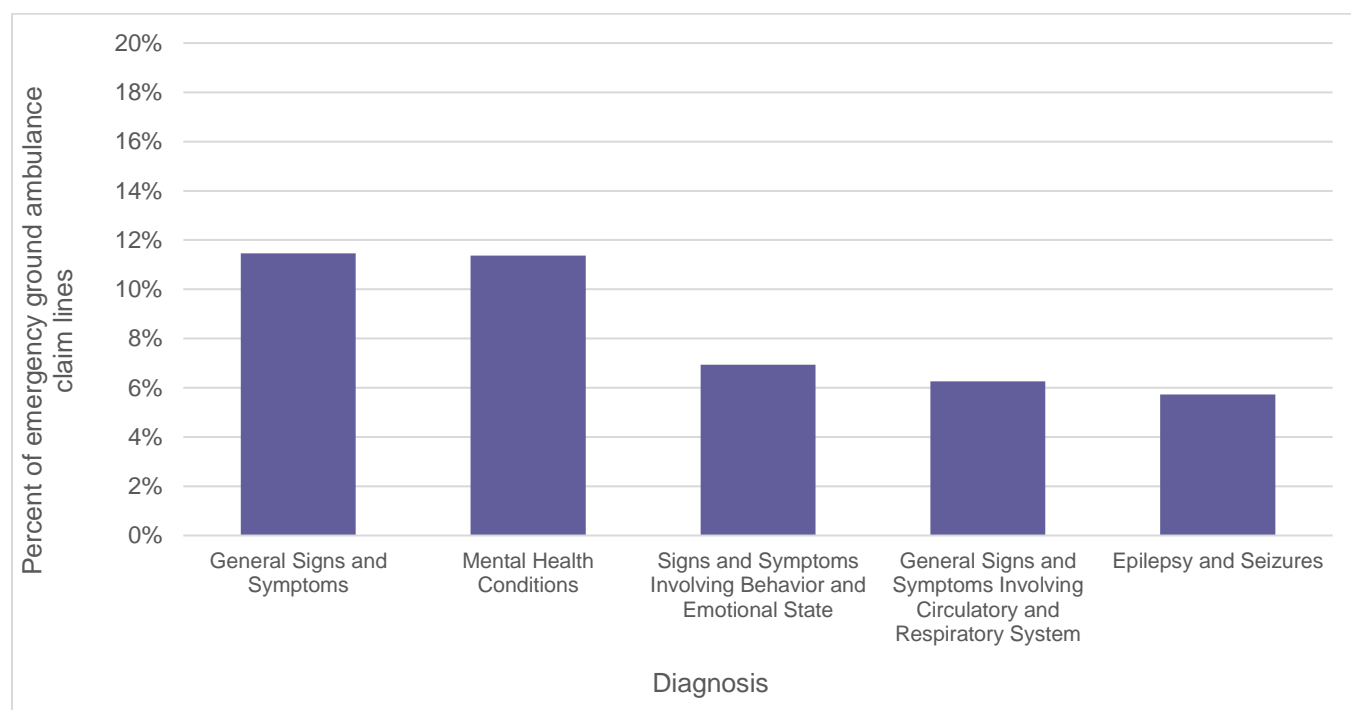
In the period 2016-2020, the most common diagnosis for which patients were transported via emergency ground ambulance was general signs and symptoms, which include diagnoses such as syncope and collapse, ataxic and/or paralytic gait, tremors, lack of coordination and fever (figure 7). General signs and symptoms accounted for 17 percent of the distribution of emergency ground ambulance claim lines.

The second most common reason for emergency ground ambulance transport was general signs and symptoms involving circulatory and respiratory system (7.3 percent). Included in this category are tachycardia, bradycardia and heart palpitations. Signs and symptoms involving cognition were the third most common reason (6.5 percent), including disorientation, stupor, coma and amnesia.



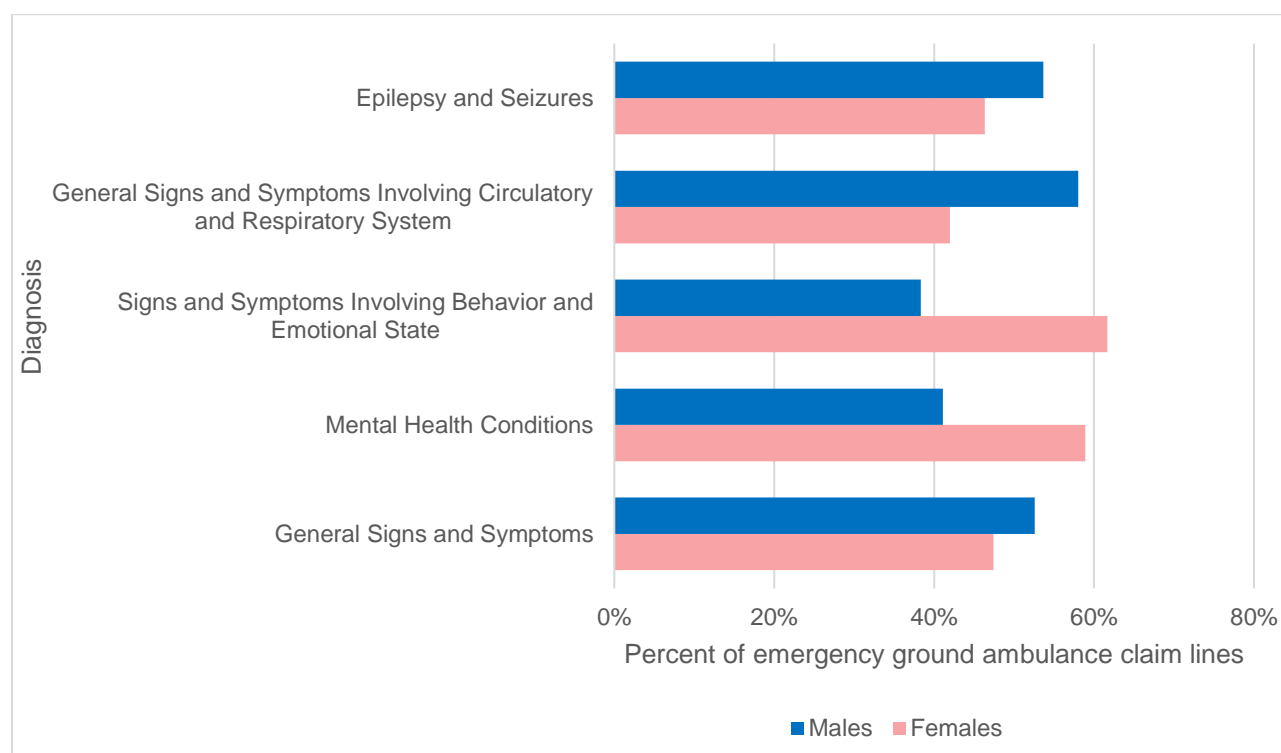
**Figure 7. Most common diagnoses associated with emergency ground ambulance claim lines, 2016-2020**

The five most common conditions for pediatric patients (ages 0 to 18) necessitating emergency ground ambulance transport in the period 2016-2020 (figure 8) were in part different than for patients overall (figure 7). While general signs and symptoms were still the most common, and general signs and symptoms involving circulatory and respiratory system were in the top five (in this case at number four, with 6.3 percent of the claim line distribution), mental health conditions were the second most common reason for pediatric patients to receive emergency ground ambulance transport. Mental health conditions composed 11.4 percent of the distribution, almost the same as general signs and symptoms, which made up 11.5 percent. Signs and symptoms involving behavior and emotional state, which include violent behavior, state of emotional shock and stress, unspecified, and homicidal and suicidal ideations, were the third most common diagnosis (6.9 percent), while epilepsy and seizures were the fifth most common (5.7 percent).



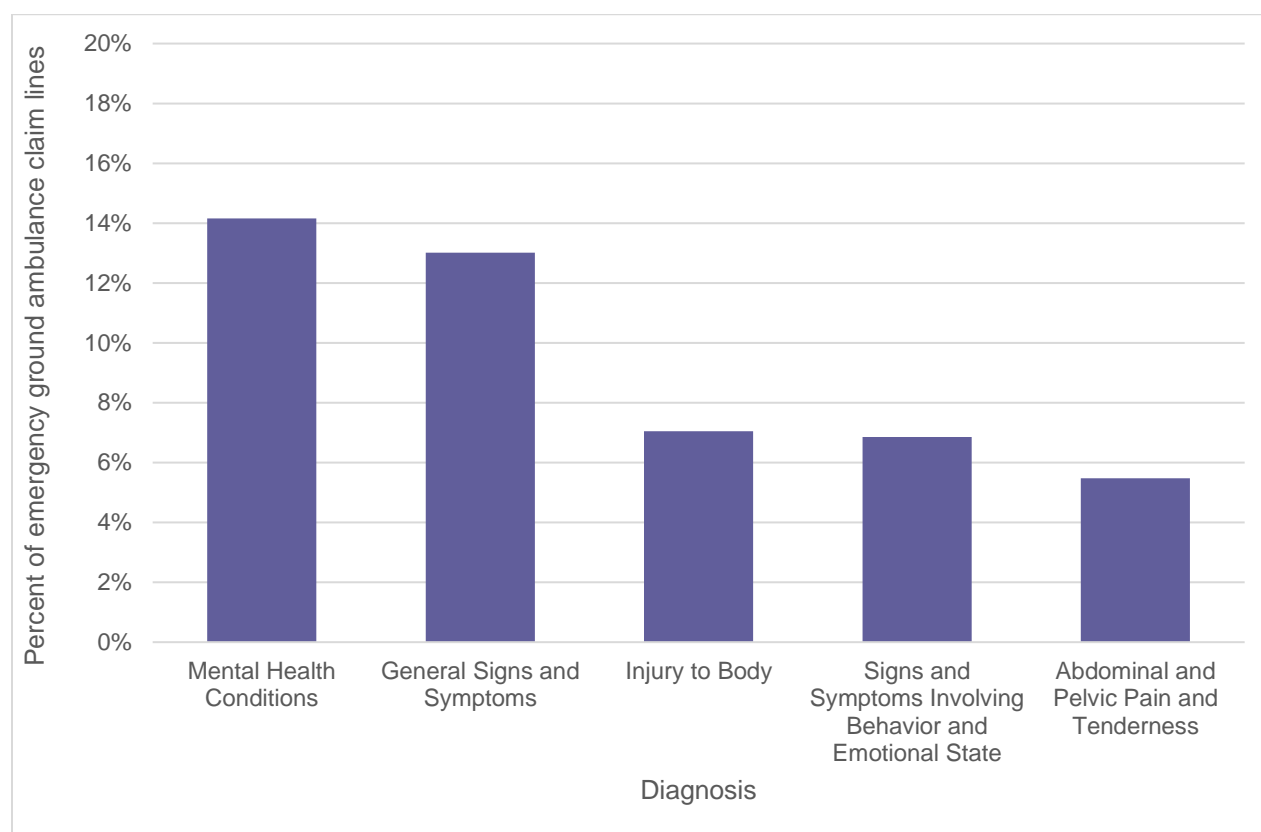
**Figure 8. Five most common diagnoses associated with emergency ground ambulance claim lines in the age group 0 to 18, 2016-2020**

In pediatric patients, the two mental or behavioral health diagnoses in the five most common emergency ground ambulance diagnoses were associated more with females, while the other three diagnoses in the top five were associated more with males (figure 9). For mental health conditions, 58.9 percent of claim lines were submitted for females; for signs and symptoms involving behavior and emotional state, 61.7 percent of claim lines were submitted for females.



**Figure 9. Five most common diagnoses associated with emergency ground ambulance claim lines in the age group 0 to 18 by gender, 2016-2020**

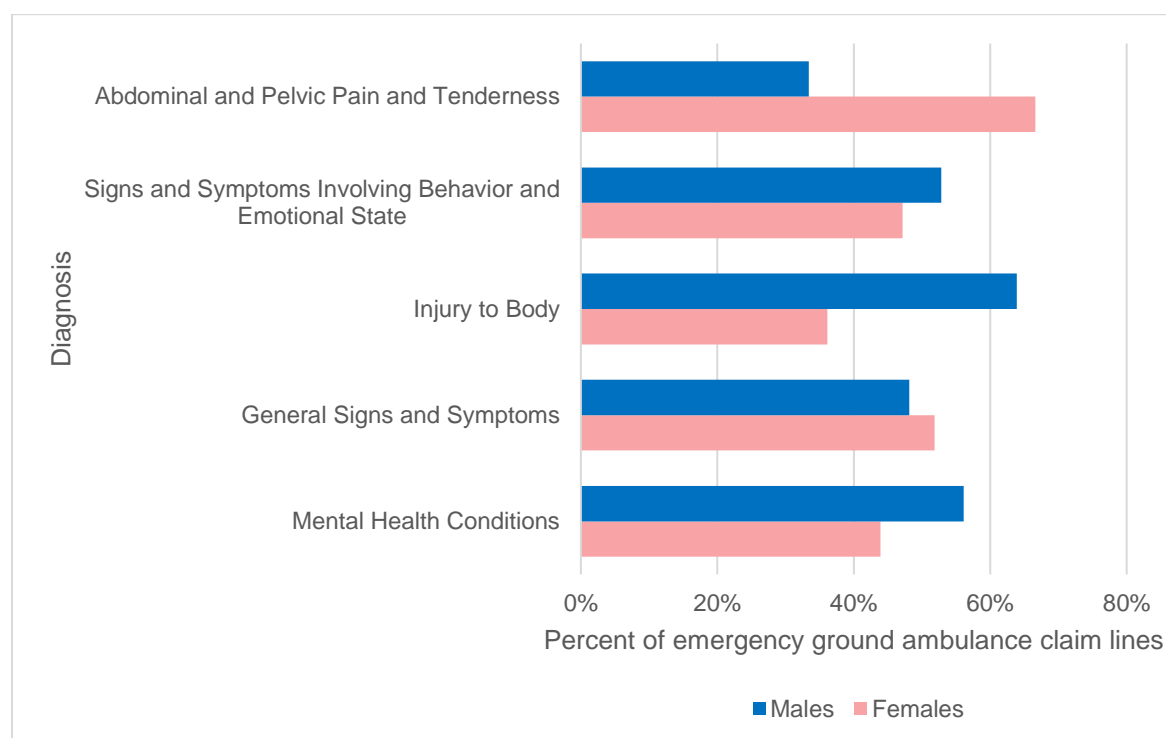
Patients in the age group 19 to 35 also had a distinctive group of five most common diagnoses associated with emergency ground ambulance in the period 2016-2020 (figure 10). Mental health conditions were the most common diagnosis, at 14.2 percent of the distribution, and injury to body was third (7 percent). Abdominal and pelvic pain and tenderness were the fifth most common diagnosis (5.5 percent).



**Figure 10. Five most common diagnoses associated with emergency ground ambulance claim lines in the age group 19 to 35, 2016-2020**

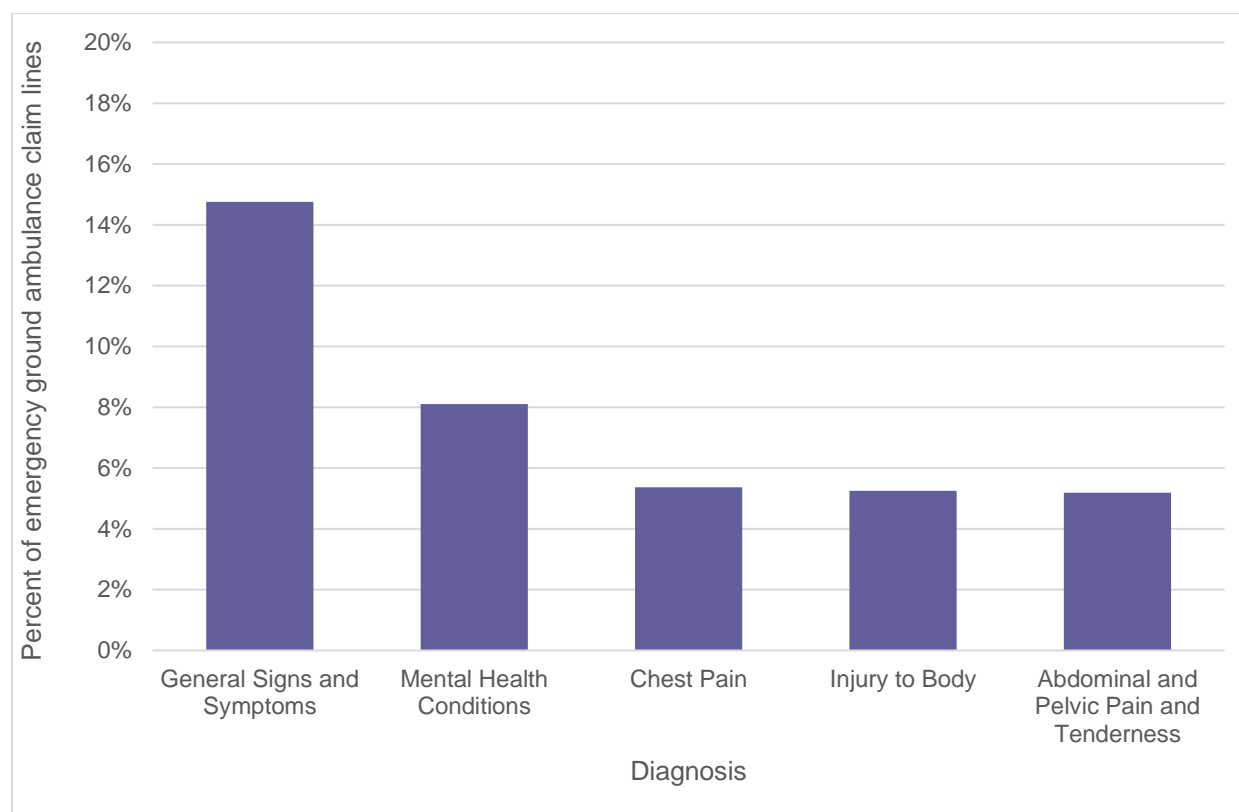


In the 19-35 age group, diagnoses of mental health conditions, as well as of signs and symptoms involving behavior and emotional state, were associated more with males than females (figure 11), unlike in the 0-18 age group (figure 9). In the 19-35 age group, injury to body was overwhelmingly associated with men (63.9 percent) and abdominal and pelvic pain and tenderness were overwhelmingly associated with women (66.6 percent).



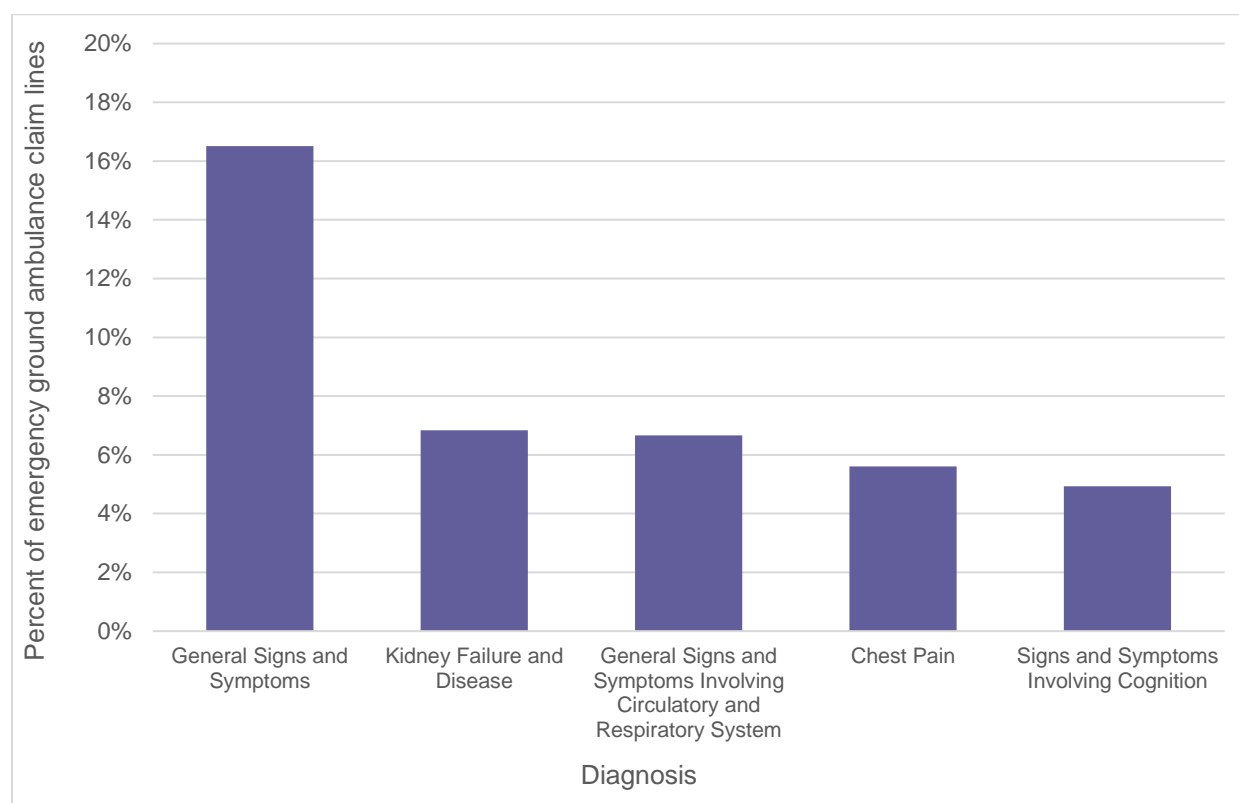
**Figure 11. Five most common diagnoses associated with emergency ground ambulance claim lines in the age group 19 to 35 by gender, 2016-2020**

In the 36-50 age group, chest pain was one of the five most common diagnoses associated with emergency ground ambulance in the period 2016-2020 (figure 12). Chest pain ranked third in this age group, at 5.4 percent of the distribution.



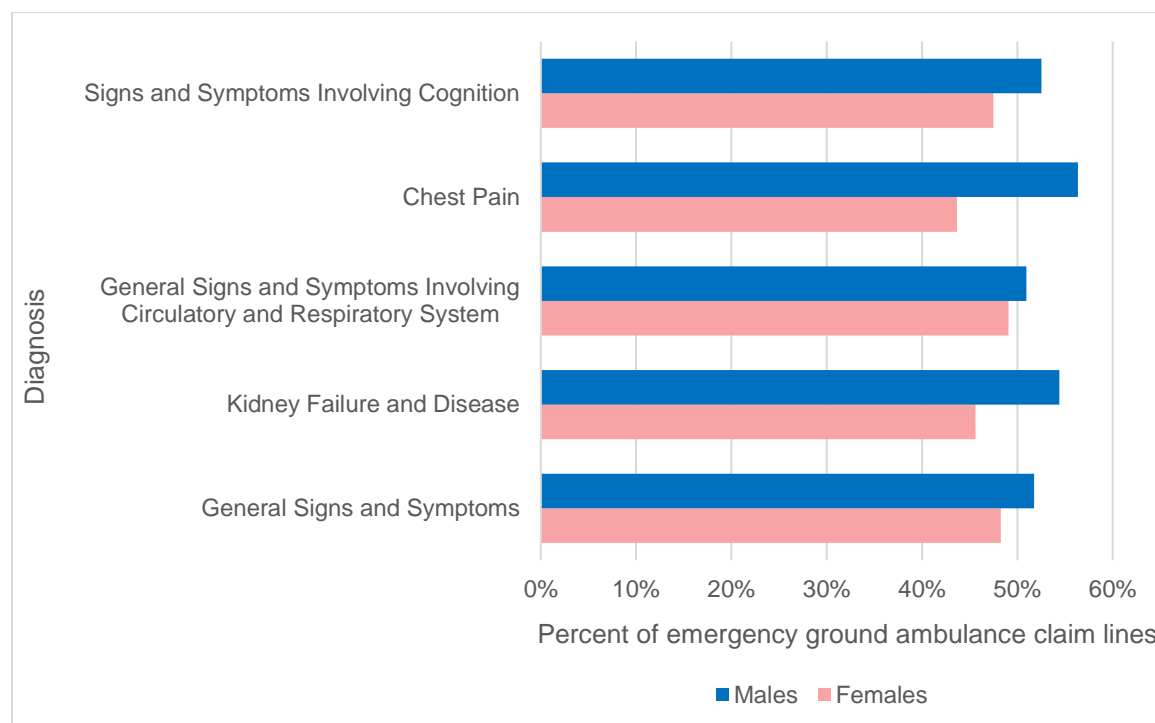
**Figure 12. Five most common diagnoses associated with emergency ground ambulance claim lines in the age group 36 to 50, 2016-2020**

In the 51-64 age group, kidney failure and disease, as well as signs and symptoms involving cognition, join the five most common diagnoses associated with emergency ground ambulance in the period 2016-2020 (figure 13). General signs and symptoms involving circulatory and respiratory system, not seen since the five most common diagnoses of the 0-18 age group (figure 8), return in the five most common diagnoses of the 51-64 age group.



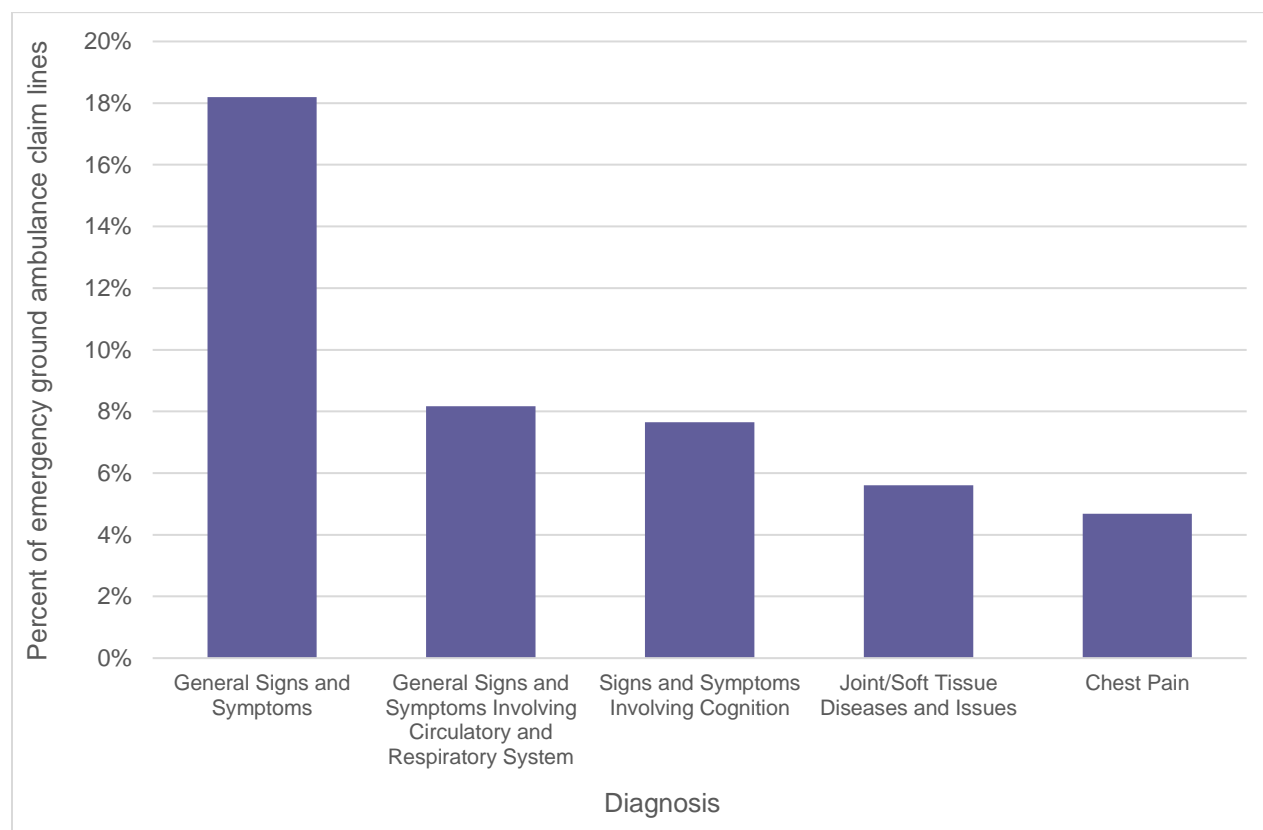
**Figure 13. Five most common diagnoses associated with emergency ground ambulance claim lines in the age group 51 to 64, 2016-2020**

In the 51-64 age group, males were associated more than females with all of the five most common diagnoses, although the disparity between the genders, for the most part, was not significant (figure 14). The only diagnosis for which more than 55 percent of the claim lines were associated with men was chest pain, where the male share was 56.4 percent.



**Figure 14. Five most common diagnoses associated with emergency ground ambulance claim lines in the age group 51 to 64 by gender, 2016-2020**

In the age group 65 years and older, general signs and symptoms were the most common diagnosis associated with emergency ground ambulance in the period 2016-2020 (figure 15). This diagnosis was followed by general signs and symptoms involving the circulatory and respiratory system, signs and symptoms involving cognition, joint/soft tissue diseases and issues, and chest pain.



**Figure 15. Five most common diagnoses associated with emergency ground ambulance claim lines in the age group 65 years and older, 2016-2020**

## Changes in Diagnoses by Ambulance Type

### ALS

The top four diagnoses associated with advanced life support (ALS) emergency ground ambulance transport remained fairly stable from 2016 to 2020 (table 4). Chest pain, which was in third place from 2016 to 2019, dropped to fourth place in 2020, replaced by signs and symptoms involving cognition, which was in fourth place until 2020. These four diagnoses decreased somewhat overall as a percentage of all ALS claim lines, mostly because of newer additions such as COVID-19 in 2020 (which made up 1.4 percent of all ALS claim lines in 2020, entering the rankings in 15th place). Chest pain dropped a full percentage point from 2019 to 2020 (9.8 percent to 8.8 percent of all ALS claim lines), although signs and symptoms involving cognition increased 0.5 percent during that period (9.2 percent to 9.7 percent).

Head injury rose in the rankings from 10th place in 2016 to 8th, beginning in 2018. It also increased in overall share of ALS claim lines, from 2.5 percent in 2016 to 3.5 percent in 2020. Cerebrovascular diseases dropped from 14th place in 2016 to 16th place in 2020. Cerebrovascular diseases include nontraumatic cerebral hemorrhages (brain bleeds not due to head injury, but more from hypertension or other issues), ischemic stroke and cerebral aneurysms.

Except for the addition of COVID-19 and the dropping off of cerebrovascular diseases in 2020, the top 15 diagnoses associated with ALS ambulance transport remained the same from 2016 to 2020, despite shifts in ranking.

**Table 4. Top 15 diagnoses associated with ALS emergency ground ambulance transport, 2016-2020**

	2016	2017	2018	2019	2020
General Signs and Symptoms	1	1	1	1	1
General Signs and Symptoms Involving Circulatory and Respiratory System	2	2	2	2	2
Chest Pain	3	3	3	3	4
Signs and Symptoms Involving Cognition	4	4	4	4	3
Injury to Body	5	5	6	7	6
Abdominal and Pelvic Pain and Tenderness	6	6	5	5	5
Joint/Soft Tissue Diseases and Issues	7	7	7	6	7
Heart Disease	8	8	9	9	9
Epilepsy and Seizures	9	10	11	11	12
Head Injury	10	9	8	8	8
Nausea and Vomiting	11	13	13	13	13
Digestive System Issues	12	11	12	12	11
Signs and Symptoms Involving Behavior/Emotional State	13	12	10	10	10
Cerebrovascular Diseases	14	15	14	15	16
Heart Attack	15	14	15	14	14
COVID-19	*	*	*	*	15

\* Not listed before 2020.

## BLS

The top 15 diagnoses associated with basic life support (BLS) emergency ground ambulance transport (table 5) fluctuated slightly more than those associated with ALS (table 4), especially in 2020. Injury to body, for example, fell to seventh place in 2020, from fifth place in all previous years studied, while general signs and symptoms involving circulatory and respiratory system rose to fifth place from sixth. Signs and symptoms involving behavior and emotional state rose from 13th place in 2016 to 9th place in 2018, where it remained through 2020.

Cerebrovascular diseases dropped from 9th place in 2016 to 14th place in 2020. This drop was similar to that seen in the ALS top 15 diagnoses.

The percentage share of most of the top 10 diagnoses decreased in 2020, either between 2019 and 2020 or 2016 and 2020, or both. General signs and symptoms, however, increased from 24.1 percent of the BLS claim lines in 2016 to 26.8 percent in 2020. Other diagnoses that showed an increase from 2016 to 2020 had smaller changes, including signs and symptoms involving cognition, which rose from 7.2 percent in 2016 to 8.3 percent in 2020, and general signs and symptoms involving circulatory and respiratory system, which rose from 4 percent in 2016 to 4.9 percent in 2020. While head injury increased from 2016 to 2020 (2.6 percent to 2.8 percent), it decreased from 2019 to 2020 (3.1 percent to 2.8 percent).

COVID-19 accounted for 2.1 percent of BLS ambulance claim lines in 2020, entering the rankings in 10th place that year.

**Table 5. Top 15 diagnoses associated with BLS emergency ground ambulance transport, 2016-2020**

	2016	2017	2018	2019	2020
General Signs and Symptoms	1	1	1	1	1
Joint/Soft Tissue Diseases and Issues	2	2	2	2	3
Signs and Symptoms Involving Cognition	3	3	3	3	2
Mental Health Conditions	4	4	4	4	4
Injury to Body	5	5	5	5	7
General Signs and Symptoms Involving Circulatory and Respiratory System	6	6	6	6	5
Abdominal and Pelvic Pain and Tenderness	7	7	7	8	8
Head Injury	8	8	8	8	9
Cerebrovascular Diseases	9	9	11	12	14
Sprains, Strains, Breaks and Fractures	10	12	13	13	13
Nonspecific Musculoskeletal Pain	11	11	10	10	12
Digestive System Issues	12	13	12	11	11
Signs and Symptoms Involving Behavior and Emotional State	13	10	9	9	9
Kidney Failure	14	14	14	14	15
Pressure Ulcer	15	16	16	19	22
Dementia	16	15	15	15	16
COVID-19	*	*	*	*	10

\* Not listed before 2020.

## Geography

In the heat map below, states in which emergency ground ambulance claim lines were a greater percentage of all medical claim lines than other states in 2019 are on the red end of the spectrum, while states with a lower percentage are on the green end (figure 16). That year, the five states with the highest use of emergency ground ambulance transport as a percentage of all medical claim lines in that state were (from highest to lowest) Massachusetts, South Carolina, West Virginia, Rhode Island and Georgia. The five states with lowest use were (from lowest to highest) South Dakota, Utah, Hawaii, North Dakota and Kansas.

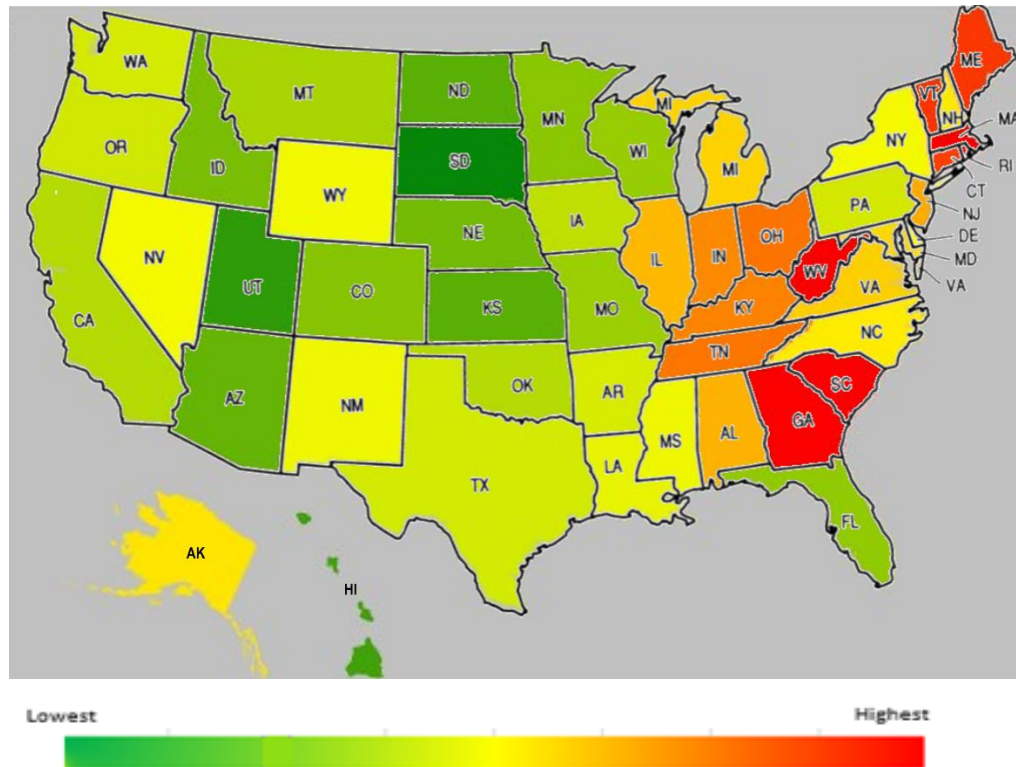
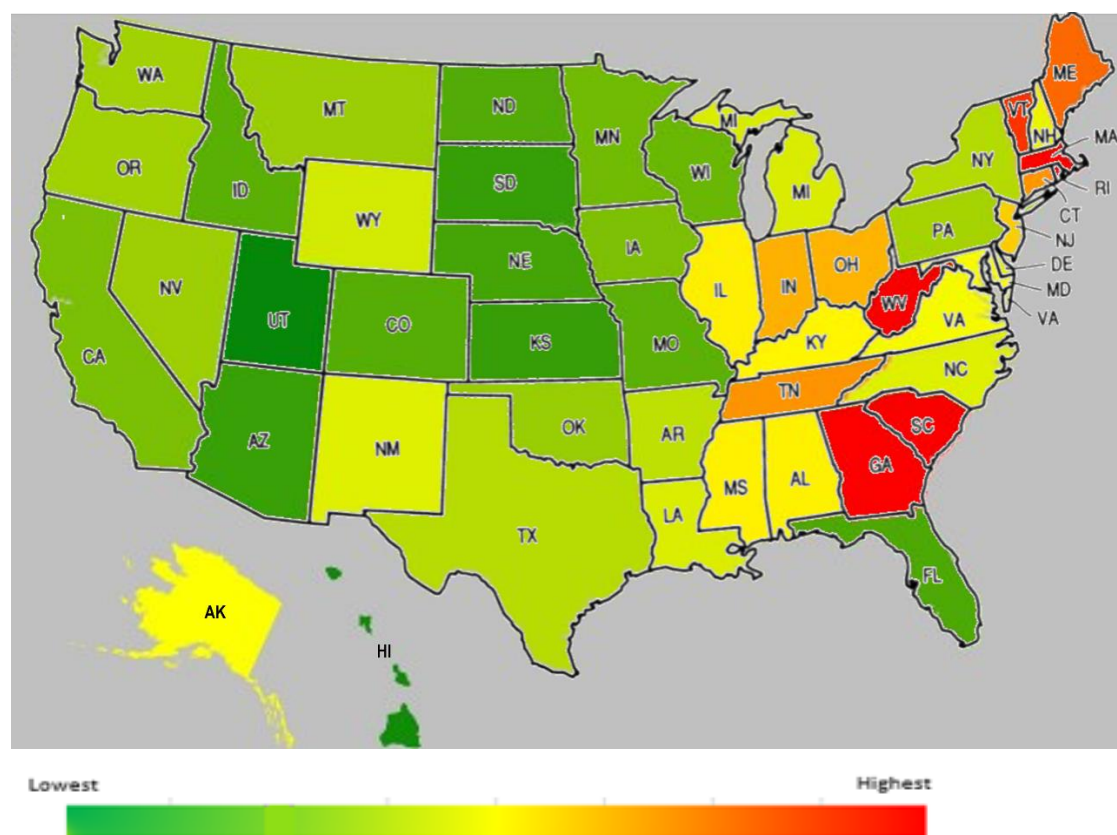


Figure 16. Emergency ground ambulance claim lines as a percentage of all medical claim lines by state, 2019



In 2020, the same five states still had the highest use of emergency ground ambulance transport (figure 17); however, their rankings changed from 2019 (figure 16). West Virginia moved to the top spot, with South Carolina remaining at second; Georgia, Rhode Island and Massachusetts rounded out the top five. The five states with lowest use in 2020 were similar to 2019, with a few changes: Utah, Hawaii, South Dakota, Kansas and Arizona.

In both 2019 and 2020, the five states with the highest emergency ground ambulance use as a percentage of all medical claim lines in that state were all in the Northeast and South, and the five states with the lowest use were in the Midwest and West. According to previously published FAIR Health air ambulance data, this was the opposite of the geographic distribution of fixed-wing air ambulance usage in 2019 and 2020, in which the five states with the highest use were in the Midwest and West and the five states with the lowest use were in the Northeast and South.<sup>18</sup>



**Figure 17. Emergency ground ambulance claim lines as a percentage of all medical claim lines by state, 2020**

<sup>18</sup> FAIR Health, *Air Ambulance Services in the United States*.

The average mileage that emergency ground ambulances traveled by state in 2019 varied from 29.2 miles in Wyoming to 5.1 miles in New York (figure 18). The five states with the highest average mileage in 2019 were:

- Wyoming—29.2 miles;
- Nebraska—27.0 miles;
- North Dakota—25.7 miles;
- West Virginia—21.6 miles; and
- Montana—20.1 miles.

The three states with the lowest mileage (New York; Washington, DC; and Florida) have large metropolitan centers, which likely accounts for the lower ground mileage. Notably, however, Alaska had the fourth lowest ground mileage, perhaps due to its reliance on air ambulances for longer trips. The five states with the lowest average ground mileage in 2019 were:

- New York—5.1 miles;
- Washington, DC—7.1 miles;
- Florida—7.2 miles;
- Alaska—7.9 miles; and
- New Jersey—8.8 miles.

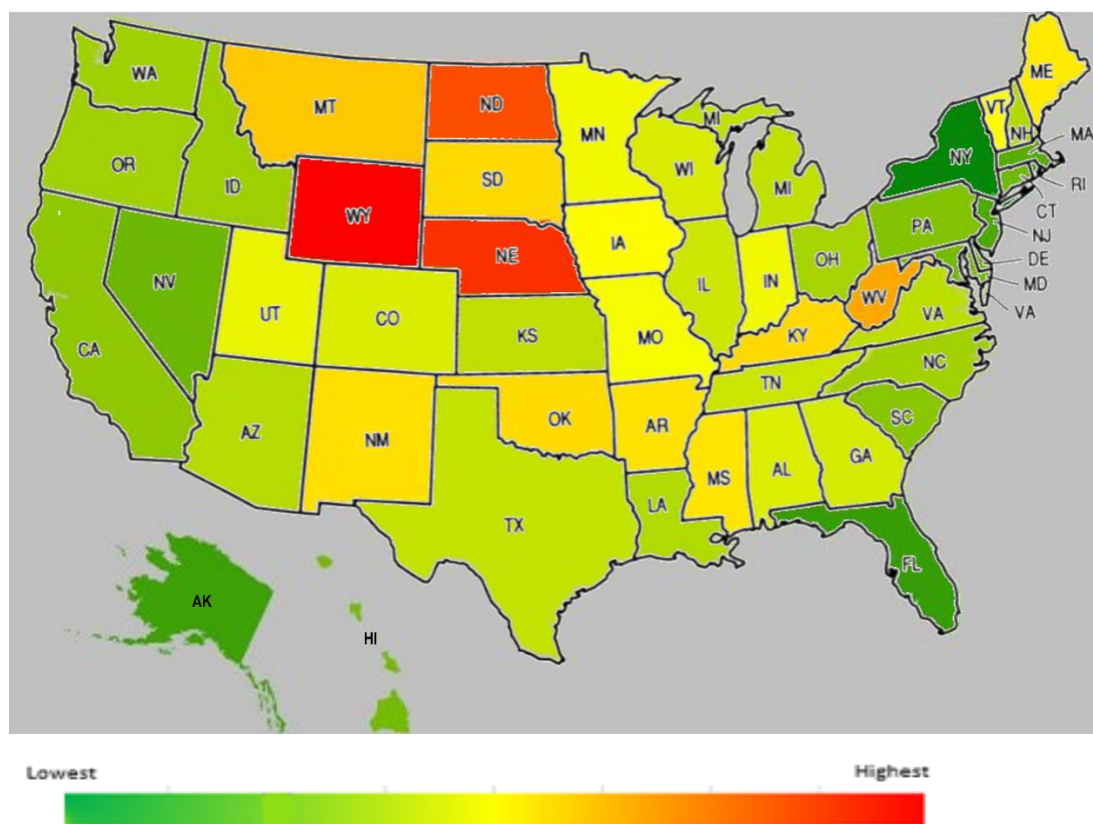


Figure 18. Average mileage for emergency ground ambulance transport by state, 2019

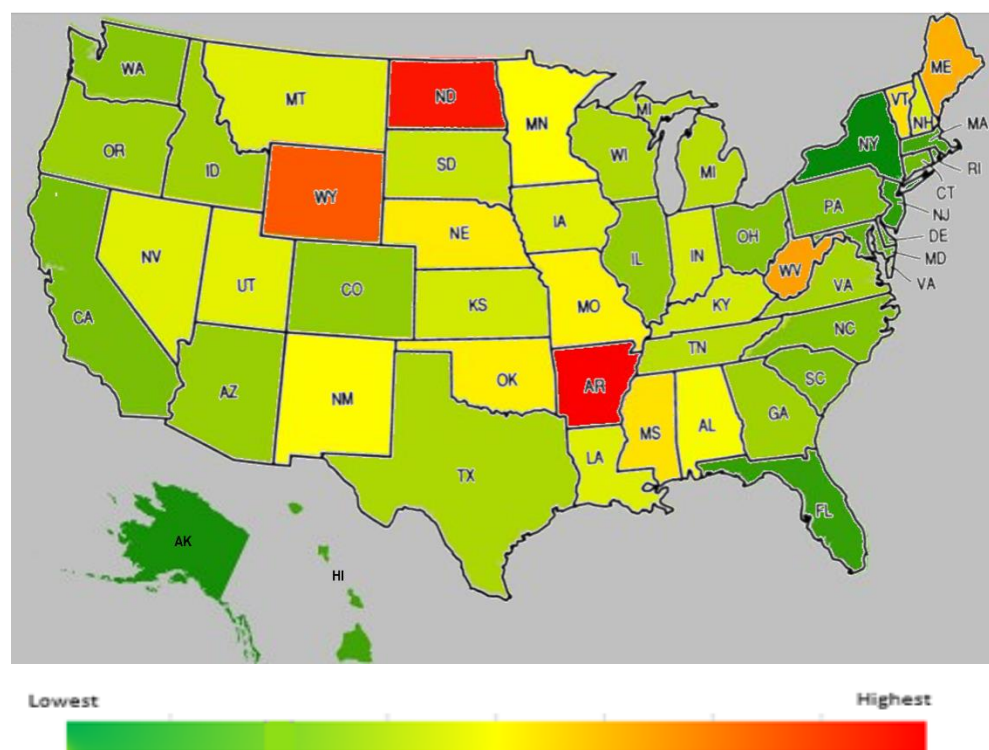
In 2020, with COVID-19 and other considerations, mileage decreased on average for most of the high-mileage states. Arkansas became the state with the highest average mileage (figure 19). The five states with the highest average mileage for emergency ground ambulance transport in 2020 were:

- Arkansas—27.9 miles;
- North Dakota—27.0 miles;
- Wyoming—24.5 miles;
- West Virginia—21.6 miles; and
- Maine—20.9 miles.

The five states with the lowest average mileage for emergency ground ambulance transport in 2020 were:

- New York—6.9 miles;
- Alaska—7.5 miles;
- New Jersey—8.6 miles;
- Rhode Island—8.9 miles; and
- Florida—8.9 miles.

Of note, Washington, DC, which had the second lowest average mileage in 2019 at 7.1 miles, increased to 10.8 miles in 2020, and had the ninth lowest average mileage that year.



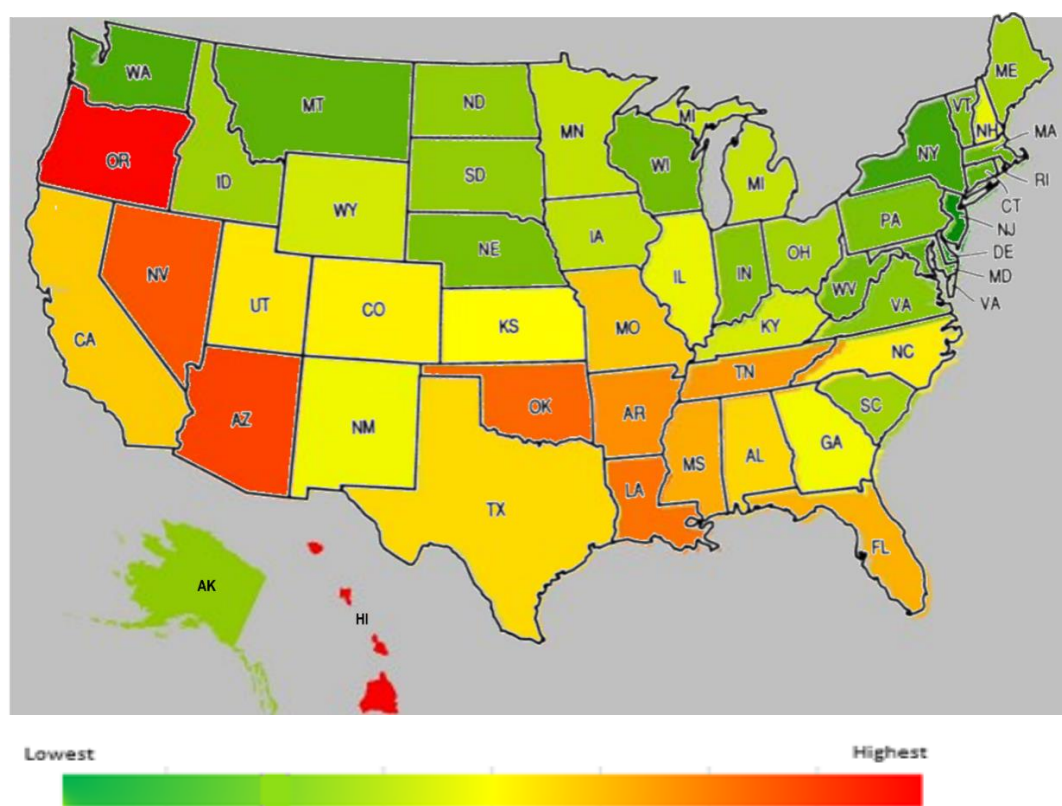
**Figure 19. Average mileage for emergency ground ambulance transport by state, 2020**

States vary in their use of ALS as compared to BLS. Figure 20 shows the total number of ALS emergency ground ambulance rides in a state (in 2019 and 2020) divided by the total number of BLS emergency ground ambulance rides in a state (in 2019 and 2020). The five states with the highest proportion of ALS to BLS rides were:

- Hawaii—3.96 times as many ALS rides as BLS rides;
- Oregon—3.93 times as many ALS rides as BLS rides;
- Nevada—3.38 times as many ALS rides as BLS rides;
- Oklahoma—3.26 times as many ALS rides as BLS rides; and
- Louisiana—3.18 times as many ALS rides as BLS rides.

The five states with the lowest proportion of ALS to BLS rides (expressed below as the number of BLS to ALS rides) were:

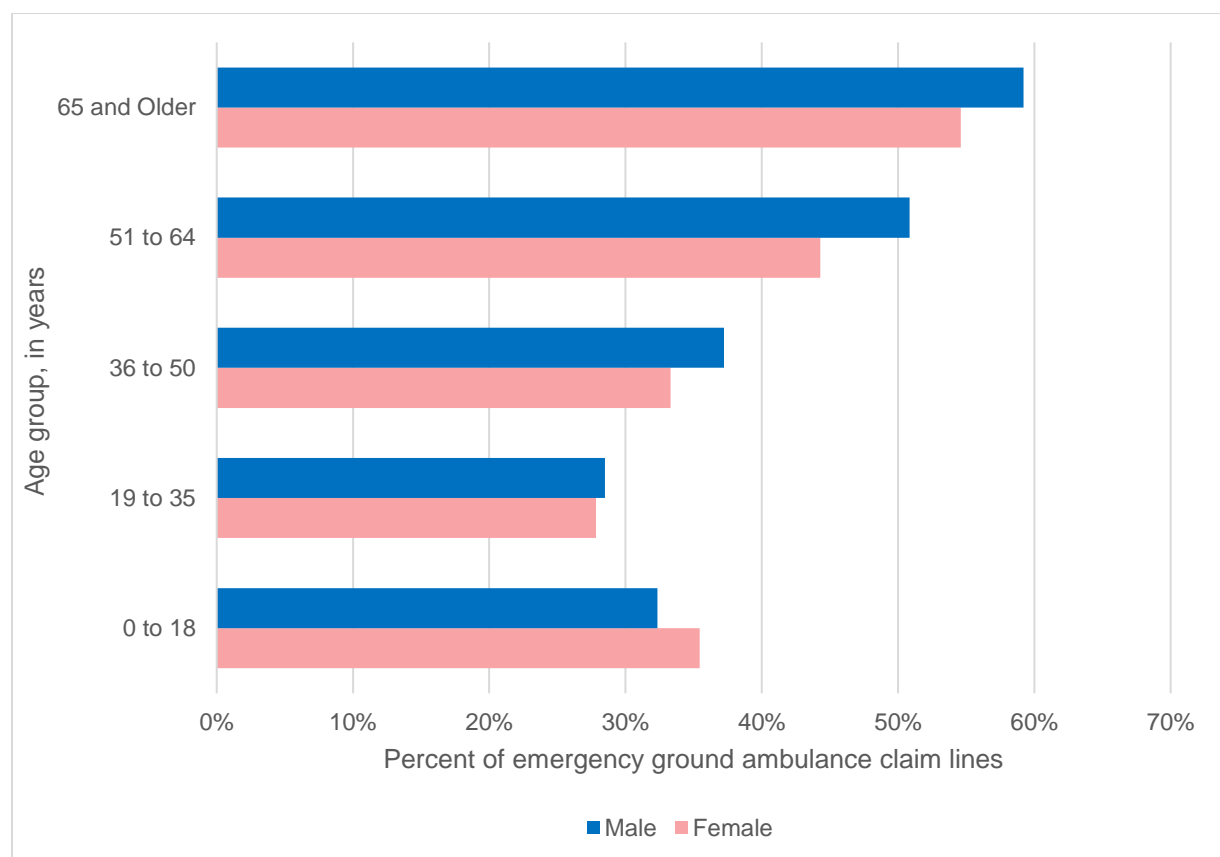
- Delaware—3.42 times as many BLS rides as ALS rides;
- New Jersey—3.10 times as many BLS rides as ALS rides;
- Washington, DC—2.26 times as many BLS rides as ALS rides;
- New York—1.31 times as many BLS rides as ALS rides; and
- Washington State—1.16 times as many BLS rides as ALS rides.



**Figure 20. Proportion of ALS to BLS emergency ground ambulance rides by state, 2019-2020**

## Conversion to Inpatient Admissions

In the period 2016-2020, males had a higher percentage of inpatient admissions after emergency ground ambulance transport than females in all age groups except the youngest—0 to 18 years (figure 20). In that age group, 35.4 percent of females were admitted to the hospital compared to 32.3 percent of males.



**Figure 21. Percent of emergency ground ambulance claim lines resulting in an inpatient admission by age group and gender, 2016-2020**

## Conclusion

This study of emergency ground ambulance services makes several notable findings. Throughout the period 2016-2020, advanced life support (ALS) services made up a larger percentage of emergency ground ambulance claim lines than basic life support (BLS) services. From 2017 to 2020, average charges, allowed amounts and Medicare reimbursements all increased for both ALS and BLS emergency ground ambulance transport.

Individuals 65 years and older were consistently the largest age group associated with emergency ground ambulance services, though their percentage share of the distribution decreased from 2016 to 2020. In the period 2016-2020, there were two age groups in which males had a larger share than females of emergency ground ambulance claim lines: 0 to 18 and 51 to 64. In all other age groups, females exceeded males.



In the period 2016-2020, the top three reasons patients overall were transported via emergency ground ambulance were (from most to least common) general signs and symptoms, general signs and symptoms involving circulatory and respiratory system, and signs and symptoms involving cognition. In 2020, COVID-19 entered the rankings of diagnoses associated with ALS transport at 15th place. The same year, COVID-19 entered the rankings of diagnoses associated with BLS transport at 10th place.

In both 2019 and 2020, the five states with the highest emergency ground ambulance use as a percentage of all medical claim lines in that state were all in the Northeast and South, and the five states with the lowest use were in the Midwest and West. The five states with the highest average mileage for emergency ground ambulance transport in 2020 were Arkansas, North Dakota, Wyoming, West Virginia and Maine. The five states with the lowest average mileage were New York, Alaska, New Jersey, Rhode Island and Florida.

In the period 2016-2020, males had a higher percentage of inpatient admissions after emergency ground ambulance transport than females in all age groups except the youngest—0 to 18 years.

FAIR Health hopes that this study will be useful to policy makers, researchers, payors, providers and consumers.

## About FAIR Health

FAIR Health is a national, independent nonprofit organization dedicated to bringing transparency to healthcare costs and health insurance information through data products, consumer resources and health systems research support. FAIR Health qualifies as a public charity under section 501(c)(3) of the federal tax code. FAIR Health possesses the nation's largest collection of private healthcare claims data, which includes over 36 billion claim records and is growing at a rate of over 2 billion claim records a year. FAIR Health licenses its privately billed data and data products—including benchmark modules, data visualizations, custom analytics and market indices—to commercial insurers and self-insurers, employers, providers, hospitals and healthcare systems, government agencies, researchers and others. Certified by the Centers for Medicare & Medicaid Services (CMS) as a national Qualified Entity, FAIR Health also receives data representing the experience of all individuals enrolled in traditional Medicare Parts A, B and D; FAIR Health includes among the private claims data in its database, data on Medicare Advantage enrollees. FAIR Health can produce insightful analytic reports and data products based on combined Medicare and commercial claims data for government, providers, payors and other authorized users. FAIR Health's free, award-winning, national consumer websites are [fairhealthconsumer.org](https://fairhealthconsumer.org) and [fairhealthconsumidor.org](https://fairhealthconsumidor.org). For more information on FAIR Health, visit [fairhealth.org](https://fairhealth.org).

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