



Insights



MASA Insights: special report

Emergency medical transportation: The true costs – and how they're rising

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In the United States, understanding medical costs is a major challenge for consumers, employers, and policymakers. Amidst this challenge, there has been little focus on the cost drivers of frontline emergency care — specifically, medical transportation services. An ambulance not only serves as a crucial gateway to life-saving trauma care — it administers life support services and other medical procedures en route, and its costs are not inconsequential to American families.

Medical transport is a central part of medical care, yet often excluded from broader conversations. Why? It is a mode of care that exists outside of hospitals and health systems, which can mean its cost and utilization are under the microscope far less than traditional care providers. Additionally, an ambulance is utilized when choice is limited and time is critical — further obfuscating what the cost is of that care, and why.

So, what are the true costs of emergency transportation and the variables that contribute to these costs? And, how can this knowledge help to address obstacles and opportunities in the face of high and growing medical costs? This report is the first in a series of papers intended to define and analyze key data that helps consumers, employers, and policymakers to make better informed decisions around medical transportation costs.

Key terms used in this report

AED: Automated external defibrillator

AJEM: American Journal for Emergency Medicine

ALS: Advanced life support

Average Billed Per Service: The average amount billed for medical transportation services.

Average Allowed Per Service: An average of the maximum payment a health insurance plan will pay for a covered health care service. May also be called “eligible expense,” “payment allowance,” or “negotiated rate.”

BLS: Basic Life Support

Emergent: Emergency

EMS: Emergency Medical Services

HCPCS: Healthcare Common Procedure Coding System

HDHP: High Deductible Health Plan

ICD: International Classification of Diseases

MSA: Metropolitan Statistical Area

Non-Emergent: Non-Emergency

PPO: Preferred Provider Organization

About the publisher

A provider of emergency transportation coverage, MASA® works to protect its members from large medical expenses, stepping in to mitigate exposures in the medical and ancillary transportation space. Since MASA is the only U.S. company centered around providing complete nationwide coverage for emergency transportation, we have a high investment in examining this issue and discovering the drivers of the frequency, costs, and coverage gaps.

About the research

This paper builds on the findings from a major actuarial database that combines over 70 years of research, representing 70 million life years of exposure data.

The database is used to estimate expected claim costs and model healthcare utilization by the insurance industry across the U.S. It's also updated annually to address market trends and regulatory compliance issues. In 2022, the most recent year of complete data at the time this paper was written (spring 2024), this database leveraged about 400,000 claims for emergency medical transport to create a statistically significant sample out of around 20 million people serviced with emergency transportation.

Variables examined in this paper include frequency of medical transport use, triggering events, costs and accessibility associated, geographic location analysis, analysis of industry and billing categories, and the frequency and costs of ambulance transportation by age and gender.

Much of this data and analysis is not readily available to the public. Our intent is to reveal the true costs of medical transport so that challenges can be brought to light and critical opportunities addressed. While our own MASA internal claims data in this arena includes 30 years of claims history, compiling research from one of the largest known private databases as well as peer-reviewed medical journals reinforces — and makes unequivocally and statistically significant — the key themes in our own data.



This paper builds on the findings from 70 years of research, representing 70 million life years of data.

Frequency of utilization

Emergency Medical Services (EMS) provided an estimated 20 million people with emergency medical transportation in 2022.

For each 1,000 insureds, 22 used ground medical transportation. Per 10,000 insureds, 5.5 individuals used air medical transportation.

Within the average household (0.7 spouses, 1.3 children and 0.05 senior citizens), 70 per 1,000 of these families require an ambulance on an annual basis.¹

Caretaking families maintain an even greater frequency of usage; for the one in six working adults who care for a family member over age 75, an ambulance will be required every three years. We can expect this to impact the financial and emotional well-being of those working adults.

Events that drive utilization

We reviewed the frequency of medical transport claims through the filter of “triggering events” to better understand the circumstances associated with the claims. The events that trigger emergency medical transportation claims are categorized by 22 ICD (International Classification of Diseases) categories. As seen in Exhibit 1 below, the category with the highest utilization rate is R00-R99 (“symptoms, signs and abnormal clinical and laboratory findings”), which includes subclassifications linked to conditions related to acute and/or cardiac events, including chest pain (1.09), syncope (loss of consciousness), collapse (0.98), convulsions (0.82), and shortness of breath (0.78).

The R00-R99 category covers a broad range of signs, symptoms, and abnormal clinical and laboratory findings that aren’t classified elsewhere; the category may be used when a definitive diagnosis hasn’t yet been made.² It’s important to note, within the ICD classification system, signs coded under R00-R99 may be indicators of underlying disease classified elsewhere.

For example, since R00-R99 covers symptoms involving the circulatory and respiratory systems, they could lead to the diagnosis of heart disease or respiratory disorders.

The broad category with the second highest utilization rate is S00-T88 (“injury, poisoning and other consequences of external causes”). The codes within this category cover injuries and are linked to causes outside the body; external factors such as accidental blows, workplace incidents, motor vehicle traffic accidents, poisoning, drowning, slipping or falling, burns, infections, medical errors, or an assault.

The third, fourth and fifth highest annual utilization rates are around “diseases of musculoskeletal/connective tissue systems,” (rate of 1.42 per 1,000); “diseases of the circulatory system” (rate of 1.41 per 1,000); and “mental, behavioral and neurodevelopmental disorders” such as schizophrenia, mood disorders, anxiety, dissociative and stress-related disorders, and disorders of adult personality and behavior (rate of 1.22 per 1,000).

Underlying trends that affect frequency

There are several factors that contribute to the overall higher rates of emergency transportation use, but a significant contributor is simply the aging population. As the Baby Boom generation ages — health factors aside — we can expect that the rate of ambulance use will continue to increase in tandem with their aging.

1: MASA 2024 analysis; private database of U.S. claims data from 2022

2: American Academy of Pediatrics, “Pediatric ICD-10-CM,” 2024

Exhibit 1: Frequency and cost by triggering event

ICD category	Annual utilization rate per 1,000	Average billed per service	Average allowed per service
R00-R99: Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	12.32	\$1,966	\$1,209
S00-T88: Injury, poisoning and certain other consequences of external causes	3.18	\$4,334	\$2,476
M00-M99: Diseases of the musculoskeletal system and connective tissue	1.42	\$1,879	\$1,149
I00-I99: Diseases of the circulatory system	1.41	\$6,017	\$3,300
F01-F99: Mental, behavioral and neurodevelopmental disorders	1.22	\$1,894	\$1,172
G00-G99: Diseases of the nervous system	0.48	\$3,331	\$1,967
K00-K95: Diseases of the digestive system	0.46	\$4,728	\$2,764
J00-J99: Diseases of the respiratory system	0.44	\$6,181	\$3,437
N00-N99: Diseases of the genitourinary system	0.27	\$3,084	\$1,755
O00-O9A: Pregnancy, childbirth and the puerperium	0.21	\$6,806	\$4,074
U00-U85: Codes for special purposes	0.20	\$5,109	\$2,779
L00-L99: Diseases of the skin and subcutaneous tissue	0.08	\$2,597	\$1,497
Z00-Z99: Factors influencing health status and contact with health services	0.18	\$1,573	\$966
P00-P96: Certain conditions originating in the perinatal period	0.13	\$16,145	\$8,856
Q00-Q99: Congenital malformations, deformations and chromosomal abnormalities	0.02	\$14,306	\$8,427
V00-Y99: External causes of morbidity	0.00	\$1,526	\$1,045

Source: MASA 2024 analysis; private database of U.S. claims data from 2022

Cost trends

The average billed amount for ambulance transportation for children is \$3,470; for men it is \$2,930 and for women it is \$2,480. It's important to note that though these are averages, the price for an ambulance varies widely and depends on factors such as geographical location, if treatment is provided at the scene or in the ambulance, and the patient's age.³

Looking at cost trends across the four year period of 2020-2023, we see that costs are increasing beyond inflation rates. Even though the utilization trend remained consistent across that period (-0.5% per year or -0.33% across the four years), the actual billed amounts increased 32%. Meaning, even when utilization does not increase, exposure risk will increase significantly — from just ambulance costs alone [see Exhibit 2].

Types of ER transport costs

There are two basic cost types when it comes to ER transport: Air (helicopter or air ambulance, which can travel faster than ground ambulances over long distances), and ground (which is used for shorter distances and can be limited by road conditions and traffic). There are vast cost differences between the two types. For instance, the average billed amount for medical air transportation in 2022 was approximately \$51,300 per service and \$1,740 per service for ground transportation.

Medical transportation categories

Within ambulatory services, there are also cost variations between the two main categories of medical transportation: Emergency and non-emergency. Within these two categories, there are four overarching HCPCS (Healthcare Common Procedure Coding System) codes: BLS (basic life support); ALS (advanced life support services); "emergency" and "non-emergency" — any and all of these billing codes may be used during ambulance services.

Additionally, there are 12 "Group 1" ambulance billing codes, which are categorized according to the complexity and level of service.

For example, the code "A0431" means "Ambulance Service, Conventional Air Services, Transport, One Way (Rotary Wing)," and indicates a very specific scenario in which transport by rotary wing air ambulance may be necessary because the patient's condition requires rapid transport to a treatment facility — and distance or other obstacles make this impossible by ground transportation. These 12 codes are listed in Exhibit 3.

The myriad of critical activities that happen during medical transportation and continually advancing technology contribute to rising costs. Basic life support is often the first line of medical response care a patient receives during an emergency — basic techniques like CPR or the use of an AED (automated external defibrillator). Advanced life support services go beyond BLS techniques and require a higher level of care, such as advanced airway management and advanced cardiac life support. "Non-emergency" codes during medical transportation care can include care scenarios such as when a patient needs safe transportation from a hospital to an inpatient facility.⁴

As seen in Exhibit 4 below, ALS and BLS "emergency" codes were used at a much higher rate (annual rate of 9.93 and 5.88 per 1,000) than the nonemergent codes (with an annual rate of just 2.13 and 0.81 per 1,000).⁵

This conveys how critical ambulance services are, especially evidenced by the high frequency of emergency ambulance trips with advanced life support. It is worth noting that when people do not have emergency transport coverage, they may risk their lives by not calling 911 to request emergency services.

Accessibility and cost of emergency medical transportation

There are multiple aspects to consider when it comes to the accessibility of emergency medical transportation in different regions; for example, gender, income level, and location. The average billed amount nationwide is \$2,952. The areas in the U.S. that have higher average billed amounts (see AK, AZ, and NV MSAs below) — also tend to experience a greater lack of access to care and fewer trauma units or emergency rooms than other regions. This means that traveling to emergency rooms in these regions involves longer distances, leading to higher costs. [See Exhibit 5.]

3: MASA 2024 analysis; private database of U.S. claims data from 2022

4: Centers for Medicare & Medicaid Services, CMS.gov. "Billing and Coding: Ambulance Services"

5: MASA 2024 analysis; private database of U.S. claims data from 2022



Even though utilization trends remain consistent across 2020–2023, the actual billed amounts increased 32% across the four years.

Exhibit 2: YoY average transport billed amount vs annual medical inflation rate, 2020–2023

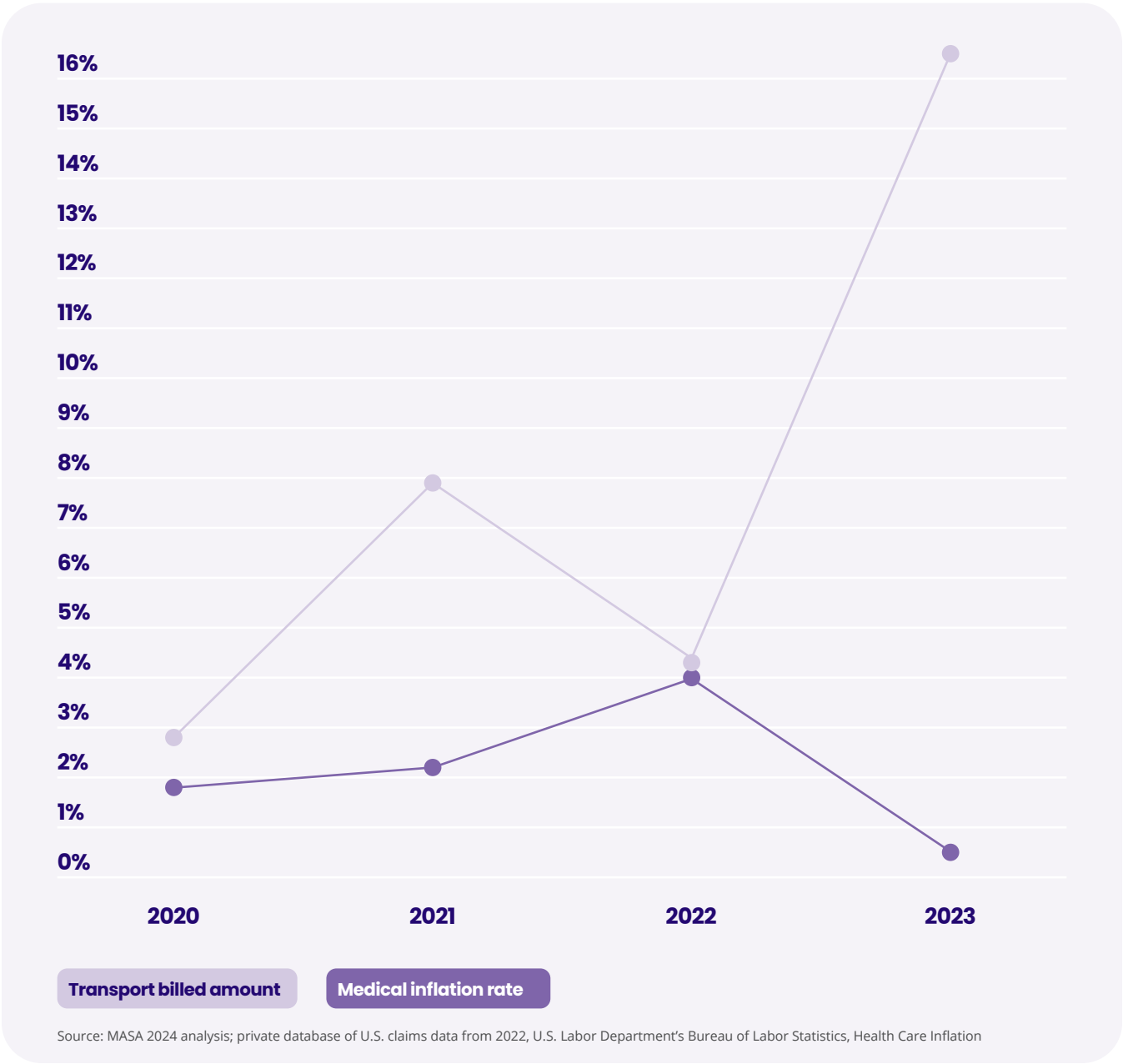


Exhibit 3: Ambulance service billing and coding

Code	Description
A0425	Ground Mileage, Per Statute Mile
A0426	Ambulance Service, Advanced Life Support, Non-Emergency Transport, Level 1 (ALS 1)
A0427	Ambulance Service, Advanced Life Support, Emergency Transport, Level 1 (ALS 1-Emergency)
A0428	Ambulance Service, Basic Life Support, Non-Emergency Transport (BLS)
A0429	Ambulance Service, Basic Life Support, Emergency Transport (BLS-EMERGENCY)
A0430	Ambulance Service, Conventional Air Services, Transport, One Way (Fixed Wing)
A0431	Ambulance Service, Conventional Air Services, Transport, One Way (Rotary Wing)
A0432	Paramedic Intercept (PI), Rural Area, Transport Furnished by a Volunteer Ambulance Company Which is Prohibited by State Law from Billing Third Party Payers
A0433	Advanced Life Support, Level 2 (ALS 2)
A0434	Specialty Care Transport (SCT)
A0435	Fixed Wing Air Mileage, Per Statute Mile
A0436	Rotary Wing Air Mileage, Per Statute Mile

Source: Centers for Medicare & Medicaid Services, CMS.gov. "Billing and Coding: Ambulance Services"
<https://www.cms.gov/medicare-coverage-database/view/article.aspx?articleId=56468&ver=11>

Exhibit 4: Emergent vs non-emergent ambulance transportation frequency and costs

Type of transportation	Annual utilization rate per 1,000	Average billed per service	Average allowed per service
Advanced life support, Emergency	9.93	\$1,436	\$945
Basic Life Support, Emergency	5.88	\$1,180	\$774
Basic Life Support, Non-Emergency	2.13	\$1,401	\$675
Advanced life support, Non-Emergency	0.81	\$2,001	\$1,133

Source: MASA 2024 analysis; private database of U.S. claims data from 2022

Exhibit 5: Frequency and cost by MSA by average billed amount

	Annual utilization rate per 1,000	Annual utilization rate per 1,000 (ground)	Annual utilization rate per 1,000 (air)	Ratio of ground to air utilization rate per 1,000	Average billed per service	Average allowed per service
Nationwide	22.58	22.03	0.55	39.84	\$2,952	\$1,735
Redding, CA	6.21	4.66	1.55	3.00	\$26,080	\$11,881
Chico, CA	11.89	10.19	1.70	6.00	\$20,054	\$7,037
Napa, CA	19.74	15.79	3.95	4.00	\$18,756	\$7,806
Merced, CA	15.50	13.48	2.02	6.67	\$16,207	\$7,647
Non-MSA Area, AK	27.31	21.53	5.78	3.73	\$15,820	\$10,884
Enid, OK	15.35	12.47	2.88	4.33	\$15,689	\$7,335
El Centro, CA	10.62	9.19	1.42	6.45	\$15,394	\$9,289
San Angelo, TX	13.12	11.48	1.64	7.00	\$13,589	\$7,504
Non-MSA Area, AZ	28.76	23.70	5.06	4.69	\$13,252	\$11,150
Non-MSA Area, NV	31.21	26.17	5.03	5.20	\$13,057	\$6,847
Non-MSA Area, CO	21.62	18.58	3.04	6.12	\$11,837	\$6,954
Non-MSA Area, WY	21.66	18.28	3.39	5.40	\$11,550	\$5,792
Cape Coral-Fort Myers, FL	40.89	39.49	1.40	28.17	\$11,449	\$4,478
Abilene, TX	21.90	19.63	2.27	8.67	\$11,345	\$5,787
Non-MSA Area, HI	19.07	16.95	2.12	8.00	\$11,320	\$3,612
Non-MSA Area, NE	14.39	12.57	1.82	6.92	\$11,263	\$6,082
Non-MSA Area, NM	21.00	18.19	2.81	6.47	\$11,209	\$4,809
Lewiston, ID-WA	15.08	12.75	2.33	5.47	\$10,632	\$5,028
Lake Havasu City-Kingman, AZ	24.73	21.69	3.05	7.11	\$10,617	\$6,373
Kokomo, IN	14.11	12.10	2.02	6.00	\$10,120	\$6,096

Source: MASA 2024 analysis; private database of U.S. claims data from 2022

Coverage gaps

Gaps in insurance coverage for emergency medical transportation vary based on insurance carrier and plan structure — including co-pays, deductibles, and co-insurance. These “gaps” can be very costly for the patient. Even if a person is insured, when in an emergency situation that demands immediate attention, locating an in-network or competitively priced medical transportation service isn't feasible.

The average annual deductible per enrolled employee in employer-based health insurance is \$3,811 per year for families and \$1,992 per year for single coverage.⁶ According to the U.S. claims database, the average allowed amount per ground ambulance service is \$1,100; (see below in Study 1 and 2). In both scenarios, the patient will end up paying approximately \$640 out of pocket, after their deductible and co-insurance have been considered.

Note that due to the sheer volume of independent, local, hospital, and government-operated medical transport providers (more than 22,000 currently in the U.S.) and the lack of centralized data amongst the providers, we have not been able to indicate which providers are in-network with top health insurance carriers or plans.

Study 1

The most common health plan for covered workers is the Preferred Provider Organization (PPO) plan. An average PPO plan has a deductible ranging from \$1,500-\$2,500 depending on the organization's size and industry sector.⁷ An individual may reasonably be enrolled in a health plan with a \$2,000 deductible and 80% coinsurance. If they have a medical emergency requiring a ground ambulance and the billed amount for the ride is \$1,740 (the average billed amount according to the U.S. claims database), several scenarios are possible:

- If the individual has paid \$260 or less toward their annual deductible, they are responsible for the entire ambulance bill — or \$1,740 out of pocket.

- If the individual has paid a portion of their deductible, \$1,000 for example, they are responsible for the unpaid portion of their deductible and 20% of the remaining balance (co-insurance) of the bill — or \$1,148 out of pocket.
- If the individual has satisfied their deductible, the insurance carrier will cover 80% of the ambulance bill, up to the allowable limit (\$1,100 on average). Since 80% of the \$1,740 bill is greater than the allowable limit of \$1,100, the insured is left paying the uncovered balance of the carrier's 80% co-insurance portion as well — or \$860 out of pocket.

Study 2

The second most common plan is a High Deductible Health Plan (HDHP). HDHP's are required to have a minimum deductible of \$3,200 for a family and \$1,600 for an individual in 2024. An individual with an HDHP may reasonably be enrolled in a plan with a \$3,000 deductible and 80% coinsurance. If they have a medical emergency requiring a ground ambulance and the billed amount for the ride is \$1,740 (the average billed amount according to the U.S. claims database), several scenarios are possible:

- If the individual has paid \$1,260 or less toward their annual deductible, they are responsible for the entire ambulance bill — or \$1,740 out of pocket.
- If the individual has paid a portion of their deductible, \$2,000 for example, they are responsible for the unpaid portion of their deductible and 20% of the remaining balance (co-insurance) of the bill — or \$1,148 out of pocket.
- If the individual has satisfied their deductible, the insurance carrier will cover 80% of the ambulance bill, up to the allowable limit (\$1,100 on average). Since 80% of the \$1,740 bill is greater than the allowable limit of \$1,100, the insured is left paying the uncovered balance of the carrier's 80% co-insurance portion as well — or \$640 out of pocket.

6: Kaiser Family Foundation (KFF) via Forbes Advisor, 2024

7: Forbes Advisor, “Health Insurance Statistics and Facts,” 2024

Balance bills

Providers often seek reimbursement from the patient for any amount charged beyond the allowable limit of the health plan. These excess charges are referred to as “balance bill” charges and can be costly. According to the U.S. claims database, a health plan member pays an average of \$643 in balance bill amounts for each medical ground transportation service. While the No Surprises Act (NSA)⁸ — effective January 1, 2022 — limits balance billing activities for air ambulance providers at a national level, balance bill activities for ground ambulance providers fall under state laws and regulations, where enacted, and vary by state.

A study of health insurer data between 2013-2017⁹ found that 79% of all ground ambulance rides resulted in an out-of-network bill. A more recent study from 2019¹⁰ showed that 86% of ambulance rides to ERs resulted in an out-of-network bill for patients with private insurance. Reports suggest that ground ambulance bills are among “highest risk of all” medical balance bills.

Industry breakdown

The U.S. claims database categorizes each insured into one of eight key industries [Exhibit 6]. Among these, the industry with the highest annual utilization of medical transportation was Service/Public Administration (5.W per 1,000 insureds). The sector with the highest actual cost was Agriculture. Here, it’s important to note that public sector is a large vertical, and employees are 30% more likely to be over 55 than the U.S. workforce population.¹¹

Demographics breakdown

In terms of gender, the database showed that men use ambulance transportation more than women (29 per 1,000 for men and 25 per 1,000 for women). When looking at age alongside frequency of ambulance rides, as expected, the highest frequency occurs in the 65+ age range.



A health plan member pays an average of \$643 in balance bill amounts for each medical ground transportation service.

8: U.S. Department of Labor, “Requirements Related to Surprise Billing, Part 2,” 2022

9: Health Affairs, “Most Patients Undergoing Ground and Air Ambulance Transportation Receive Sizable Out-Of-Network Bills,” 2020

10: JAMA Network, “Assessments of Out-of-Network Billing for Privately Insured Patients Receiving Care in In-Network Hospitals, 2019

11: Federal Workforce Data, 2022; Labor Force Statistics, 2022

Exhibit 6: Frequency and cost by industry

	Annual utilization rate per 1,000 nationwide	Average billed per service	Average allowed per service
Unknown	10.20	\$2,849	\$1,675
Agriculture / Forestry / Fishing / Mining / Construction	0.81	\$3,301	\$1,792
Service / Public administration	5.08	\$3,064	\$1,832
Manufacturing	2.54	\$2,965	\$1,720
Transportation / Communication / Utilities	0.98	\$3,270	\$1,953
Wholesale	0.80	\$3,218	\$1,923
Retail	0.93	\$2,875	\$1,710
Financial insurance / Real estate	1.24	\$2,642	\$1,553

Source: MASA 2024 analysis; private database of U.S. claims data from 2022

Conclusion

Overall, the data leads us to two main conclusions: that costs for medical ground transportation are rising and that there is no real overall average cost per ride. As detailed above, the critical and technical services used during medical transportation are simply expensive to provide and the ambulance units costly to maintain, especially when combined with the length of time those services are used and the complexity of the services rendered. Similarly, there are too many variables (air or ground; emergent or nonemergent; location, age), to uncover a true “average.”

Because of the numerous variables at play, many people’s finances and health are at risk. For example, if there is a high cost and an inability to pay for medical transport — because the journey to an ER is too long or because the patient thinks that the life-saving services are simply too expensive and uncovered — lives are on the line.

While the frequency has in recent history remained consistent, we may expect an increase in that as well: We find that the highest frequency of emergency medical transportation is linked to older adults, and also linked to the “R00-R99” ICD category, (“symptoms, signs, and abnormal clinical and laboratory findings, not elsewhere classified”), which includes symptoms such as chest pain, shortness of breath, and circulatory diseases. We know that the older workforce has nearly quadrupled in size since the ’80s, with Baby Boomers rejoining or staying longer in the workplace.¹² According to American Journal of Preventive Medicine findings, the death rates from cardiovascular disease rose by 9.3% from 2020 through 2022, in contrast to a decline of 8.9% from 2010 to 2019.

We have also highlighted the gaps in insurance coverage and the balance billing issues that affect consumers of emergency medical transportation. This increasingly high-cost service poses a significant financial burden to the privately insured. By publishing this key data outlining the nuances, drivers, and cost variations, we hope to partner with employers, providers, and policymakers to address both the barriers to and opportunities for access to care within the market.



This increasingly high-cost service poses a significant financial burden to the privately insured.

12: Pew Research Center, “The growth of the older workforce,” 2023



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