The Value & Systems Science Lab (VSSL)

Report on EMS Service and Vehicle License Applications

BACKGROUND

RCW 48.49.190 directs the Office of the Insurance Commissioner (OIC), in collaboration with the Health Care Authority (HCA), the Department of Health (DOH) and interested parties, to submit a report and any recommendations to the appropriate committees of the legislature as to how balance billing for ground ambulance (GA) services can be prevented and whether ground ambulance services should be subject to the balance billing restrictions of Chap. 48.49 RCW.

To support that report and overall body of work, the OIC determined that it would be beneficial to review a sample of DOH Emergency Medical Services (EMS) Service and Vehicle License Applications for any available information about characteristics of GA providers, as well as information about their organization and business practices. The OIC partnered with the Value & Systems Lab (VSSL) at the University of Washington on obtaining and reviewing these applications. The following sections summarize findings from the review conducted by VSSL, with the goal of providing information about GA services that complements other information obtained and activities conducted by the OIC to fulfill RCW 48.49.190.

DEFINITIONS

The following definitions related to GA transportation services were used in review (listed alphabetically):

Advanced life support (ALS). Invasive emergency medical services requiring advanced medical treatment skills (RCW 18.73.030).

Aid vehicle. A vehicle used to carry aid equipment and individuals trained in first aid or emergency medical procedure (RCW 18.73.030).

Ambulance. A ground or air vehicle designed and used to transport the ill and injured and to provide personnel, facilities, and equipment to treat patients before and during transportation (RCW 18.73.030).

Basic life support (BLS). Noninvasive emergency medical services requiring basic medical treatment skills (RCW 18.73.030).

Dispatch Plan. First of five items on the DOH EMS Service and Vehicle License Application describing the general operation of EMS service and how it will operate in a manner consistent with WAC 246-976, the Regional Plan, and approved Regional Patient Care Procedures (DOH EMS Service and Vehicle License Application, Page 4).

Emergency response or "response". A BLS or ALS level of service that has been provided in immediate response to a 911 call or the equivalent (WAC 182-546-0125).

Emergency medical transportation or "transport". Ambulance transportation during which a client receives necessary emergency medical services immediately prior to, or in transit to, an appropriate medical facility (WAC 182-546-0125).

Response Plan. Second of five items on the DOH EMS Service and Vehicle License Application describing the general operation of EMS service and how it will operate in a manner consistent with WAC 246-976, the Regional Plan, and approved Regional Patient Care Procedures (DOH EMS Service and Vehicle License Application, Page 4).

Response Types

Primary response. First out/first alarm (DOH EMS Service and Vehicle License Application: Application Instruction Checklist, Page 2).

Secondary response. Responding at primary service's request, second out alarm (DOH EMS Service and Vehicle License Application: Application Instruction Checklist, Page 2).

Transport Types

Primary transport. Ambulance transportation during which a client receives necessary emergency medical services immediately prior to, or in transit to, an appropriate medical facility (WAC 182-546-0125) subsequent to first out/first alarm.

Secondary transport. Ambulance transportation during which a client receives necessary emergency medical services immediately prior to, or in transit to, an appropriate medical facility (WAC 182-546-0125) subsequent to response at primary service's request, second out alarm.

Interfacility transport. Medical transport of a patient between recognized medical treatment facilities requested by a licensed health care provider (WAC 246-976-010).

Provider Organization Types. GA provider organizations can be categorized into different types. There is no universal categorization method; different approaches have been used in prior work both in and outside of Washington. For the purposes of application review, VSSL worked in conjunction with OIC, HCA, and DOH to review approaches used within Washington, as well as approaches used in other settings (e.g., in published literature). Iterative discussion on this information led to consensus around the following set of GA provider organization types:

(Listed alphabetically)

1. City Fire Department
2. City/Fire District Combination
3. EMS District
4. Federal Fire Department
5. Fire District
6. Hospital District
7. Industrial Fire Department
8. Military
9. Municipality (city/county)
10. Private for Profit
11. Private Non-Profit
12. Private Volunteer Association
13. Tribal EMS

These 13 GA provider organization types were then grouped as public, private, or tribal organizations:

Public	Private
City Fire Department City/Fire District Combination EMS District Federal Fire Department Fire District Hospital District Industrial Fire Department Military Municipality	Private for Profit Private Non-Profit Private Volunteer Association
	Tribal
	Tribal EMS

APPROACH

Application Sample Selection

In conjunction with the OIC, HCA, and DOH, it was determined that given there are over 400 GA provider organizations in Washington, it would be infeasible to obtain and review a full set of DOH EMS Service and Vehicle License Applications. In turn, a multi-step approach was adopted to identify a sample of applications for review.

First, to reflect the different types of GA provider organizations, EMS Agency Resource and Transport data were used to identify the organization types with the highest number of combined (primary, secondary, and interfacility) transports. These data were obtained from OIC in January 2023 and reflect information updated as of 2022. Seven GA provider organization types, which combined to represent nearly 98% of all transports represented in the data, were selected for inclusion. The 7 GA provider organization types included the following: private for profit, fire

districts, city fire department, city/fire district combination, hospital district, EMS district, municipality.

Second, to capture provider organization types contributing most significantly to GA services, the top 2 highest volume provider organizations, defined by number of combined transports, were selected from each of the top 7 provider organization types. Together, these first 2 steps yielded a total of 14 GA provider organizations (2 highest volume provider organizations from each of the 7 organizational types) for inclusion in the application review process.

Third, to capture GA provider organizations from different geographical areas in Washington, all GA provider organizations were categorized by the 8 regions – central, east, north, north central, northwest, south central, southwest, and west – as defined by the Washington EMS and Trauma Regional & County Maps. The top 2 highest volume provider organizations, defined by number of combined transports, were identified from each of the 8 regions. This process yielded 16 GA provider organizations for inclusion in the application review process.

Fourth, the lists of GA provider organizations identified based on organizational type (14 organizations identified through steps 1 and 2) and the GA provider organizations identified based on geographical region (16 organizations identified through step 3) were combined. After removing duplicates – that is, provider organizations who were included based on both organizational type and geography – a set of 22 unique GA provider organizations were included in the application review process.

DOH EMS Service and Vehicle License Applications for these 22 GA provider organizations were requested from the Washington DOH Records Center in March 2023. Applications were made available to VSSL by April 2023.

FINDINGS

Application Characteristics

All 22 applications were submitted in 2021 or 2022 (renewal every 2 years). All information in applications were self-reported by submitting organizations.

Organization Types and Services Provided

Of the sample of 22 applications, 15 were from public organizations, 7 were from private organizations, and 0 were from tribal organizations (Table 1).

Overall, 20 GA provider organizations reported providing ALS services only, while 2 organizations reported providing BLS services only. Application forms requested that organizations check only 1 – either ALS or BLS services – but 1 organization reported providing both ALS and BLS services.

Table 1. Organization Public, Private, or Tribal Status

Type	Count
Public	15
Private	7
Tribal	0
Total	**22**

Responses and Transports

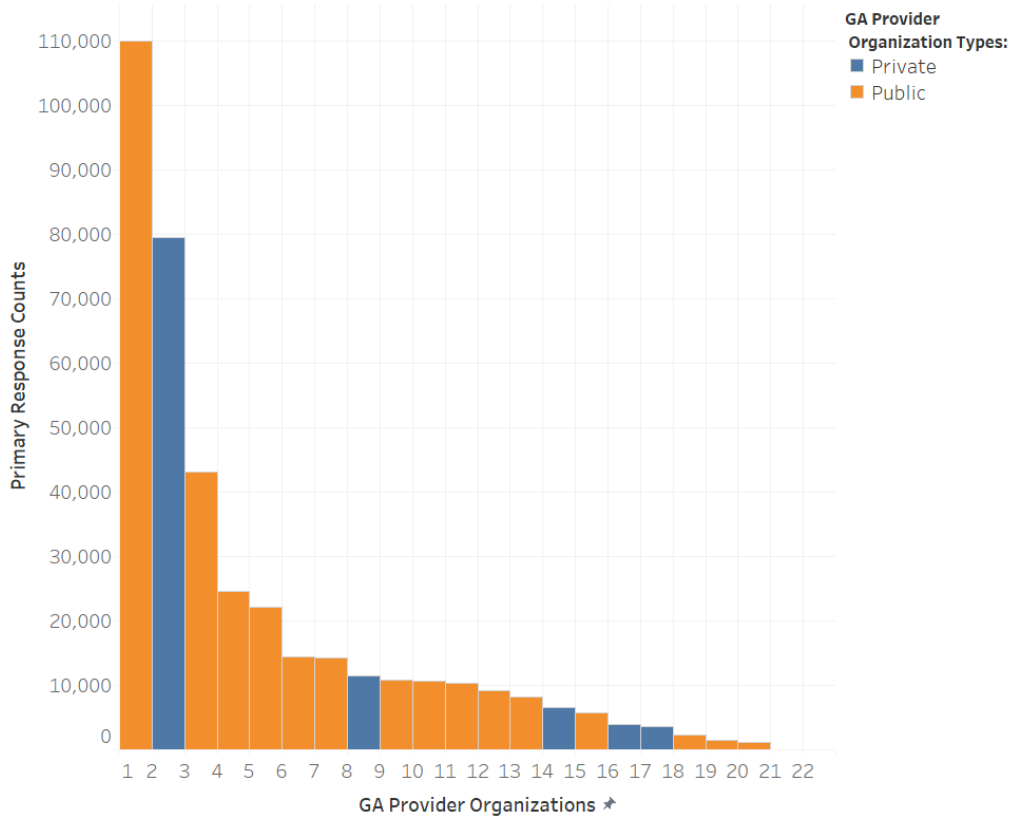
Primary Responses

Of 22 applications, most (20) reported non-zero primary response counts, with counts varying across the applications. The highest number of primary responses was 110,000 while the lowest was 0, with a 50th percentile value of 9,725 (Table 2).

Table 2. Primary Response Counts				
Minimum	**Maximum**	**25th Percentile**	**50th Percentile**	**75th Percentile**
0	110,000	3,600	9,725	14,480

Eight of the 10 GA provider organizations with the highest primary response counts were from public organizations (Figure 1).

Figure 1. Primary Response Counts, by Public versus Private Organization Status



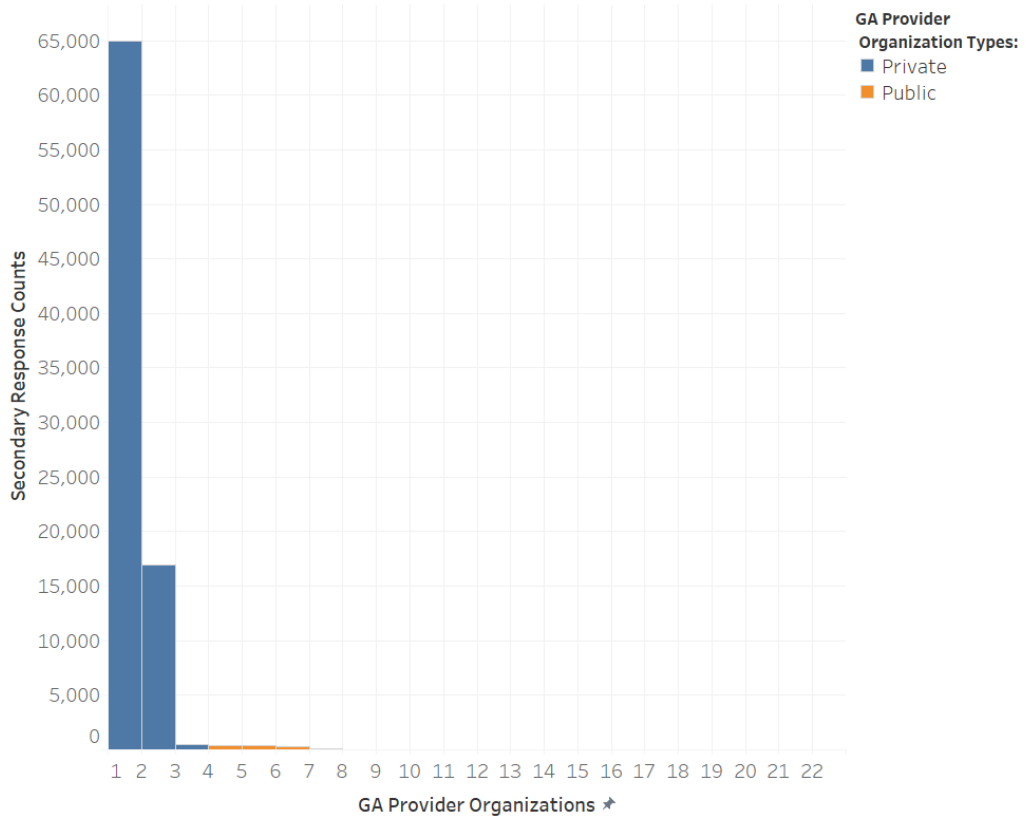
Secondary response counts were skewed toward 0, with more than half (14/22) of organizations reporting zero secondary responses. The highest number of secondary responses was 65,000 while the lowest was 0, with a 50th percentile value of 0 (Table 3).

Table 3. Secondary Response Counts

Minimum	Maximum	25th Percentile	50th Percentile	75th Percentile
0	65,000	0	0	291

Two GA provider organizations stood out from the rest with very high secondary response counts; both were private organizations (Figure 2).

Figure 2. Secondary Response Counts, by Public versus Private Organization Status



DOH EMS Service and Vehicle License Applications did not ask applicants information about primary versus secondary transports. Instead, organizations self-reported information in their applications about combined (combination of primary and secondary) transports.

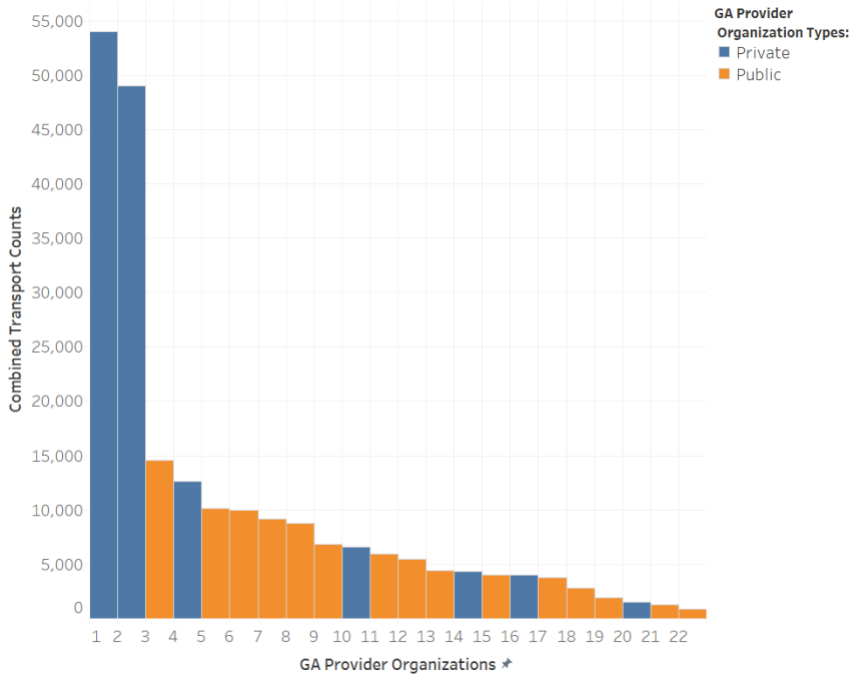
All 22 applications reported non-zero combined transport counts, ranging from a minimum value of 906 to a 50th percentile value of 5,609.5 and a maximum value of 54,038 (Table 4).

Table 4. Combined Transport Counts

Minimum	Maximum	25th Percentile	50th Percentile	75th Percentile
906	54,038	3,797	5,690.5	10,000

Two private GA provider organizations stood out with very high counts as opposed to the average count (Figure 3).

Figure 3. Combined Transport Counts, by Public versus Private Organization Status



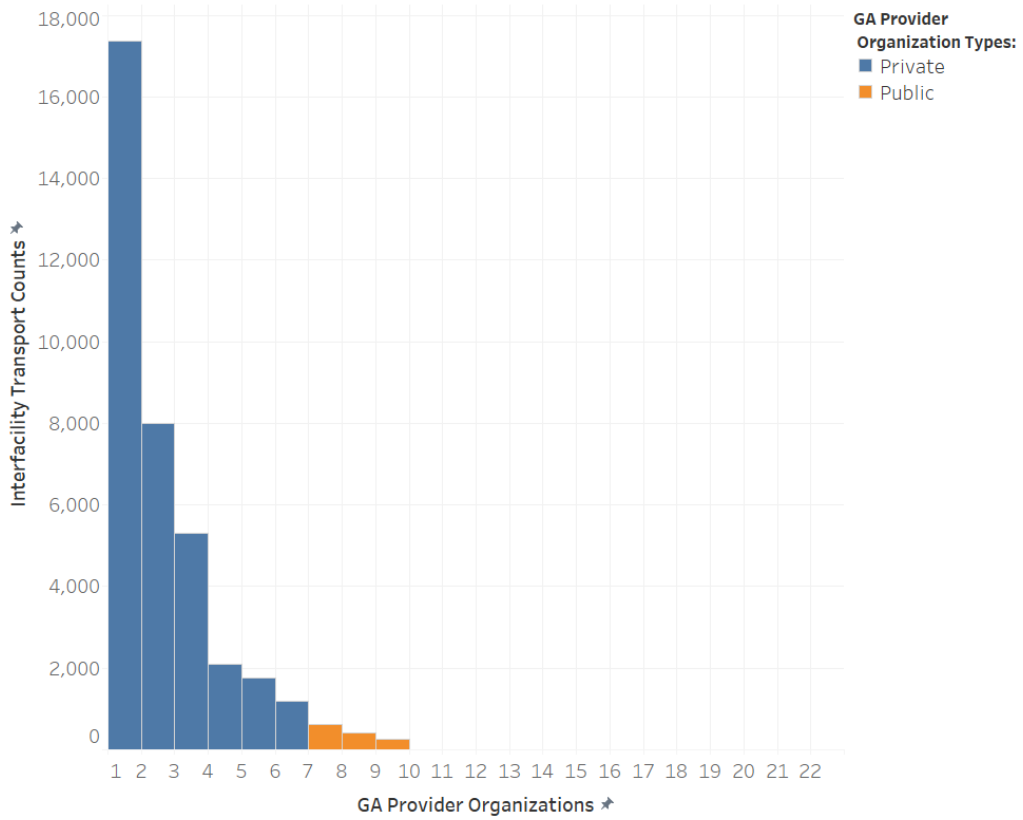
Of the 22 applications, half (11) reported non-zero interfacility transport counts. Counts were skewed, with a range of 0 to 17,381 and a 50th percentile value of 1.5 transports (Table 5).

Table 5. Interfacility Transport Counts

Minimum	Maximum	25th Percentile	50th Percentile	75th Percentile
0	17,381	0	1.5	1,200

The GA provider organizations with the 6 highest numbers of interfacility transports all from private organizations (Figure 4).

Figure 4. Interfacility Transport Counts, by Public versus Private Organization Status



Staffing

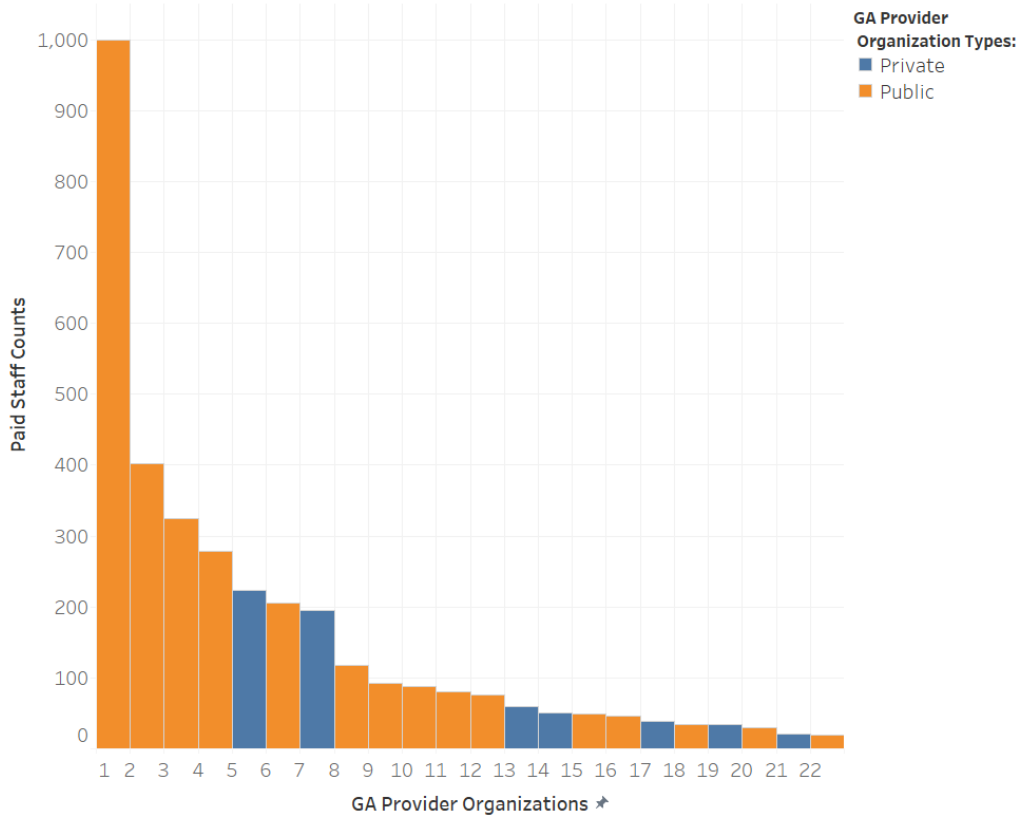
Paid Staff

All 22 applications reported paid staff. The highest number of paid staff was 1,000 while the lowest was 20, with a 50th percentile value of 78.5 (Table 6).

Table 6. Paid Staff Counts				
Minimum	**Maximum**	**25th Percentile**	**50th Percentile**	**75th Percentile**
20	1,000	39	78.5	205

Of the GA provider organizations with the 10 highest numbers of paid staff, 8 (including the top 4) were public organizations (Figure 5). The top organization had a transport count that was more than double the count for the second highest organization.

Figure 5. Paid Staff Counts, by Public versus Private Organization Status



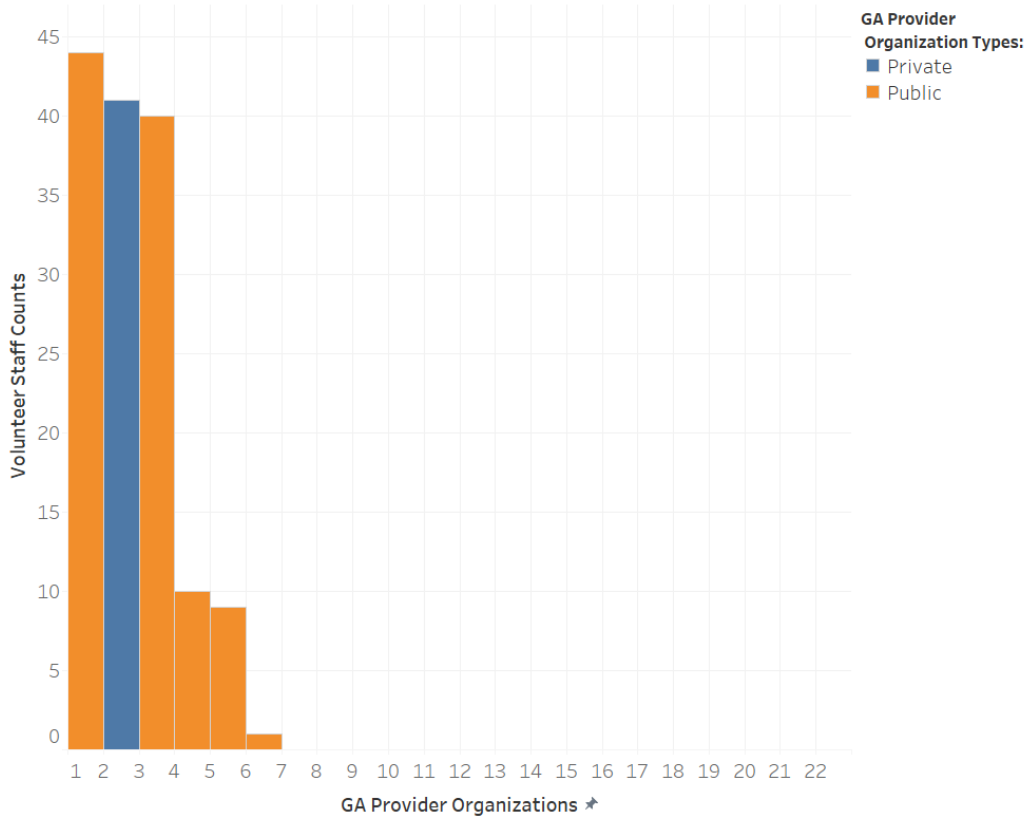
Volunteer staff counts were heavily skewed toward the low end of the spectrum, with many organizations (16/22) reporting 0 volunteer staff. Volunteer staff counts ranged from 0 (minimum) to 44 (maximum), with a 50th percentile value of 0 (Table 7).

Table 7. Volunteer Staff Counts

Minimum	Maximum	25th Percentile	50th Percentile	75th Percentile
0	44	0	0	1

Of 6 organizations reporting any volunteer staff, most (5) were public organizations (Figure 6).

Figure 6. Volunteer Staff Counts, by Public versus Private Organization Status



Aid Vehicles

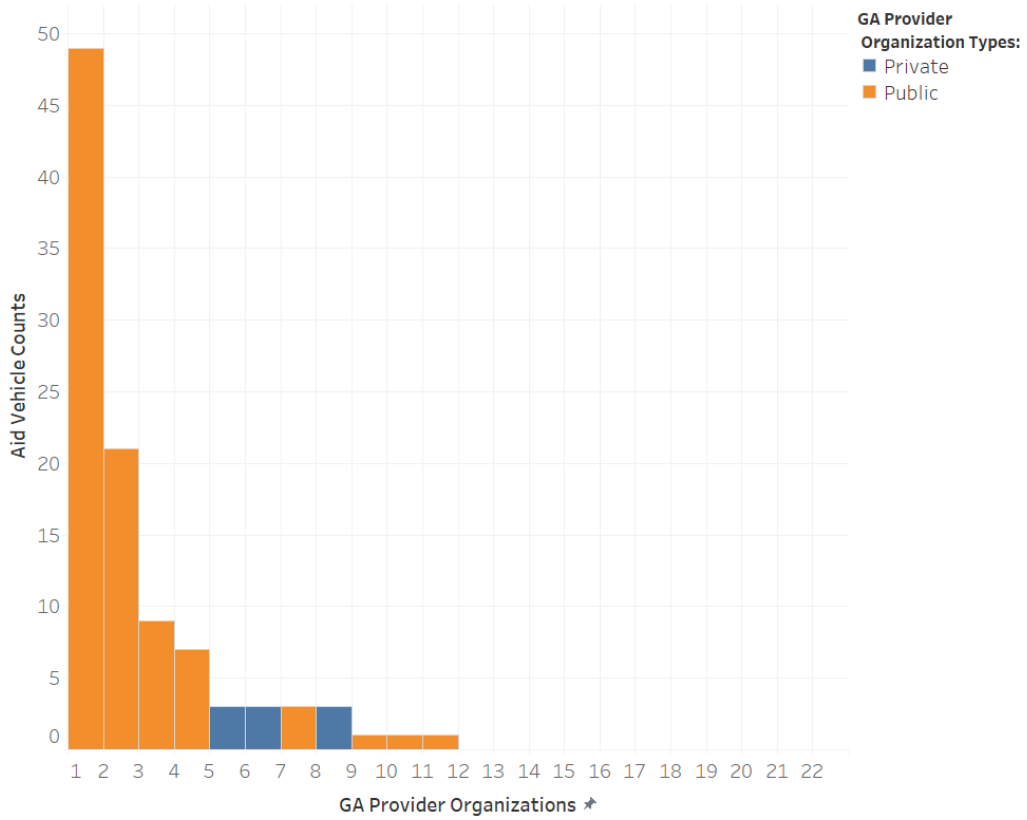
Of the 22 applications, half (11) reported having aid vehicles. The highest number of aid vehicles was 49 while the lowest and 50th percentile values were 0 and 0.5, respectively (Table 8).

Table 8. Aid Vehicle Counts

Minimum	Maximum	25th Percentile	50th Percentile	75th Percentile
0	49	0	0.5	3

All but 3 of the 12 organizations with aid vehicles – including the three organizations with the highest number of such vehicles – were public rather than private organizations (Figure 7).

Figure 7. Aid Vehicle Counts, by Public versus Private Organization Status



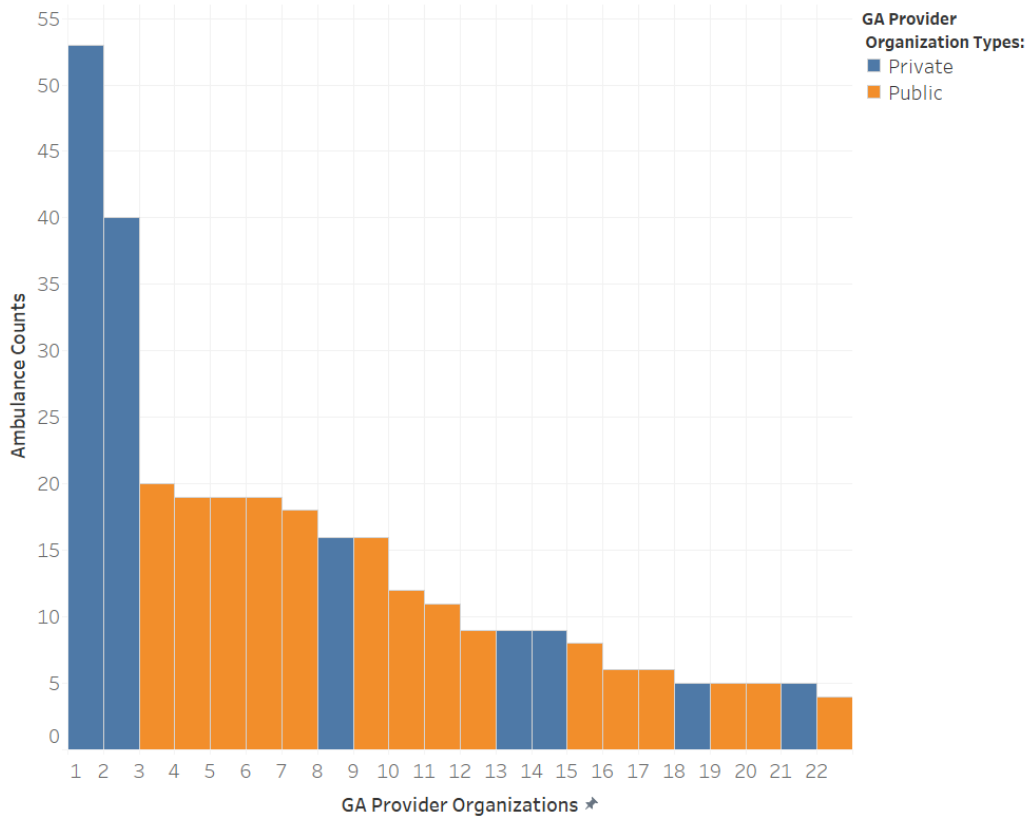
All 22 applications reported having ambulances. There was considerable variation observed in ambulance counts, with values ranging from 4 (minimum) to 53 (maximum) with a 50th percentile value of 10 (Table 9).

Table 9. Ambulance Counts

Minimum	Maximum	25th Percentile	50th Percentile	75th Percentile
4	53	6	10	19

The two largest organizations by ambulance count were private organizations with twice as many, or more, vehicles compared to the next three largest organization, which were all public (Figure 8).

Figure 8. Ambulance Counts, by Public versus Private Organization Status



Dispatch and Response Plans

Across 22 applications, there was significant variation in detail, nature, and extent of information provided by applicants about dispatch and response plans. In particular, dispatch and response plans varied with respect to detail on dimensions such as personnel, vehicle types, and geographic response areas in determining tiered response. The following de-identified excerpts exemplify such variation for dispatch plans (Table 10) and response plans (Table 11).

Table 10. Dispatch Plan Content

Dimension	Greatest Detail	Least Detail
Services	*"All of ___ County is served by ___ 911 system; once a fire or medical aid situation is realized, the call is forwarded to ___, a division of ___. ___ operates with the criteria based dispatch protocols. These protocols have been reviewed by ___, the ___ Medical Program Director. ___ sends the closest ___ Company to aid calls with the closest medic unit to all ALS calls. ___ are sent to BLS calls as deemed necessary by the company officer or paramedic on the engine."*	*"Respond to all ALS dispatch in our jurisdiction."*
Communication Systems	*"All calls for assistance are placed through the ___ 911 system. The call is answered by the ___ 911 Center in ___, WA. Once the kind of assistance needed is identified the Dispatcher pages for the units to respond through a paging system, and an ___ App. Units are given the nature of the call, address, and time of page. If units do not respond within 8 minutes the page is repeated. If the 2nd page goes unanswered the ___ 911 Center will page ___ District, ___ miles to the south of ___ or ___ miles to the south of ___. If ___ Ambulance knows all the ___ Ambulances are busy on other calls, we will instantly call for an agency assist from ___ District or ___ Ambulance with no patient delays. ___ 911 Center also paged the local 1st Responders from Fire Districts ___ and ___ in the response area to contact and stabilize the patients before our arrival."*	*"County 911 system."*

Table 11. Response Plan Content		
Dimension	**Greatest Detail**	**Least Detail**
Personnel	*"Staffing levels on our apparatus includes two (2) personnel on a Medic Unit, one (1) Paramedic and one (1) EMT, and three (3) personnel on Engines and Ladder Trucks, at least at EMT level. One or more of our personnel on Engines and the Ladder Trucks may be a Paramedic. Most ALS calls will have at least two (2) Paramedics. For multiple patient incidents, cardiac arrests, or calls of a violent nature, the on-duty ___ Chief and EMS Officer also responds."*	*Not addressed at all in some applications.*
Services	*"Tiered response with closest ALS and BLS units. Closest capable units meet in direction of travel to ED. ALS Auto Aid to ___, ___, and ___. Secondary area includes ALS and BLS Mutual and Auto Aid to all ___. ___ Mutual Aid Agreement and ___ Fire and Rescue's response plan set with CAD, ensures a local response when ___ Fire and Rescue units are unavailable."*	*"We send the nearest EMS Licensed ALS or BLS Unit with transport capabilities."*
Geographic Areas	*"___ has ___ fire stations located strategically within the fire district boundaries (___ square miles). Staffed stations are located in the ___, WA and one at ___, WA…___ provides 911 emergency response ALS ambulance transport to the one hospital in our jurisdiction, which is ___ Medical Center. ___ Medical Center is a Level ___Trauma Verified hospital, Level ___ for stroke destination and Level ___ for cardiac destination. We transport patients from our local facility to other metropolitan area hospitals (inter-facility) only as a backup to the local private ambulance provider, ___ and ___."*	*"Initial 911 response in accordance with regional plan."*

Together, the free response application format and wide variation in responses precluded the ability to describe, compare, or contrast information about dispatch and response plans across applications in the sample.

LIMITATIONS

This review was subject to several limitations. First, a sample of applications was used, rather than the full set of all applications. In turn, the review omitted information from GA provider organizations that were not included in the sample. However, a full review was infeasible, and a multi-step approach was adopted to help promote sample selection that represented highest volume GA provider organizations and representation from different organization types and geographies across Washington. This review creates the framework and foundation for future reviews of applications. Second, the review was conducted at one point in time. Some information may not be captured, to the extent that application information changes iteratively over time. This challenge is somewhat offset by the variation observed in application materials, which likely limited insights that could be obtained even with multiple rounds of longitudinal application review. Third, while a rationale, consensus-based approach was used to sample applications, the review did not include Tribal EMS organizations. Future work should assess elements of applications from such organizations. Fourth, applications permitted handwritten responses; some of these were difficult to read and interpret.

CONCLUSION

This review revealed variation in a number of aspects of GA services. Considerable variation was observed in the provider organization types, services provided, responses, transports,

staffing, vehicles, dispatch, and response plans. In particular, this variation is demonstrated visually through Figures 1 through 8, as well as via information in Tables 2 through 9 showing 50th percentile being closer to minimum rather than maximum counts. These findings are suggestive of a few outlier GA provider organizations reporting high counts with respect to responses, transports, staffing, and vehicles. Dispatch and response plans varied on details to dimensions such as personnel, vehicle types, communication systems, and geographic areas.

Notably, two barriers prevented the ability to generate additional insight about GA services from this review of DOH EMS Service and Vehicle License Applications. First, certain aspects of GA provider organizations and their services were not included in application questions, underscoring the need obtain that information via other methods and sources. Second, a free response application format and wide variation in resulting responses about dispatch and response plans also precluded the ability to glean information relevant to GA provider organization and business practices.