Calculating Your EMS Service's

"Average Cost of Service"
And
"Unit Hour Analysis"

Developed by:

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It is imperative for EMS providers to know what their costs are. Unfortunately, many EMS services have not figured out their cost of doing business! For those who have already calculated their estimated costs, we note that that there are many different methods of cost calculation.

The main purpose of this form is to help a service determine your "Average Cost per Call" The UHA is also helpful in measuring productivity as well as overall system costs. This utility allows analysis and benchmarking to determine how effectively your system is working and can be an effective management tool.

To fully understand the information contained in the analysis it is prudent to provide a few definitions to assist in understanding the impact of the UHA.

A ***unit hour*** is equal to one hour of service by a fully equipped and staffed ambulance available for dispatch or assigned to a call. For ambulance services with average turnaround times which are greater than one hour, adjustments can be made to the listed formulas to achieve more accurate estimates.

Utilization is a measure of productivity, which compares the available resources (i.e. unit hours) with the actual amount of time those units are being utilized for patient treatment and transport or productive activity. This measurement is calculated to determine the percentage of unit hours actually consumed in productivity compared with the total staffed unit-hours.

Unit Hour Analysis Summary:

Direct comparison and correlation of UHA between separate ambulance organizations is difficult as utilization rates are dependent on a number of other mitigating factors such as the presence of response time standards, shift length, overall time or length of transports; impact on employee wellness and safety, transport times and turnaround times as well as a variety of other operational and administrative issues.

Typically, EMS organizations strive for the highest utilization rates possible, with optimal overall utilization rates being considered in the .50 - .55 range. We utilize the following general scale when evaluating overall UHU:

.55 - .45 – Optimal Utilization
.45 - .35 – Above Average Utilization
.35 - .25 – Average Utilization
.25 - .15 – Below Average Utilization
.15 - .01 – Poor Utilization

The following is a "Cost / Unit Hour Analysis Form" with instructions. These instructions are provided in order to attempt to standardize the methodology used to calculate costs and achieve maximum understanding, of the calculation method.

In completing this form, you will need to know your costs as they relate to your ambulance calls only (i.e., no wheelchair van costs).

UNIT HOUR ANALYSIS BASED ON FINANCIAL AND OPERATIONAL DATA FOR A FISCAL YEAR

1. TOTAL UNIT HOURS PER WEEK = (A) _____ **Manned Ambulance Hours**
Estimated number of hours staffed per week.
(See example listed below)

2. AVERAGE CALL VOLUME PER WEEK = (B) _____ **Calls Per Week**
Estimated number of responses (including all transports, stand bys, refusals and other no transport calls for the fiscal year / divided by 52.07 weeks in a year.

3. UNIT HOUR UTILIZATION = (B/A) _____ **Calls Per Unit Hour**

4. SHIFT UTILIZATION = (B/A) x 8 hrs. _____ **Calls Per Unit Shift**

5. TOTAL EXPENSES PER WEEK = (C) **$** _____ **Expense Per Week**
Take your total expenses per year divided by 52.07 week.

6. TOTAL EXPENSES PER DAY = (C)/7 Days **$** _____ **Expenses Per Day**

7. COST PER UNIT HOUR: (Line C divided by Line A) **$** _____ **Cost Per Unit Hour**

B. Depreciation Cost for Ambulance(s) (If not included in #6) **$** _____ **Increase for Ambulance Dep.**

C. Depreciation Cost for Building(s) (If not included in #6) **$** _____ **Increase for Building Dep.**

D. Depreciation Cost for Equipment (If not included in #6) **$** _____ **Increase for Equipment Dep.**

E. Add Lines #7A, #7B, #7C and #7D = (E) **$** _____ **Adjusted Cost Per Unit Hour**

8. COST PER UNIT SHIFT = (E) x 8 hours **$** _____ **Cost Per Unit Shift**
The shift length can be adjusted but we have selected the eight hour shift as a standard shift length

9. COST PER CALL = (Line 8 divided by Line 4) **$** _____ **Cost Per Call**

10. OVERALL SYSTEM COST PER CALL:

A. Line 9 times X % **$** _____ **% Increase for non-transport**
Take Line 9 times the percentage of your annual ambulance calls that you respond to a location, but do not transport a patient.

B. Line 9 times X % **$** _____ **% CA / Bad Debt Allowance**
Take Line 9 times your current ambulance collection percentage including Contractual Allowance and Bad Debt amounts (For example, if your gross collection percentage is 60% use 40% as your multiplier).

C. Line 9 **$** _____ **Cost Per Call**
Enter the amount you have on Line 9.

D. Add Lines #10A, #10B and #10C **$** _____ **Adjusted Cost Per Call**

E. Enter Your Profit Margin Per Call **$** _____ **Profit Margin Per Call**

F. Add Lines #10D and #10E **$** _____ **Overall System Cost Per Call**
This line should help to verify the minimum amounts which should be billed for each call

Unit Hour Analysis Worksheet
Instructions

Line # 1: TOTAL UNIT HOURS PER WEEK = (A)

A unit hour is an hour in which a vehicle is actually staffed. One unit hour = one ambulance staffed with two providers for one hour. For example:

Staffed Ambulances	# Of Hours per Day	# Of Days per Week	Unit Hours per Week
2	24	7	336
1	12	5	60
1	8	5	40
Total Unit Hours Per Week (A)			436

Calculate only using the number of crews required to staff ambulances. A typical crew consists of 2 persons. However, If you have an extra EMT or Paramedic scheduled on a particular shift, you use should list 1.5 crews. You should also include scheduled volunteer or on-call crews which may respond from home. If a vehicle is staffed, by either paid or volunteer crew on-station or responding from home, you should count those hours in the total Unit Hours per Week.

Line # 2: AVERAGE CALL VOLUME PER WEEK = (B)

Take all of your ambulance responses, emergency and non-emergency, including no-transport calls and stand-bys, to identify your total annual responses (all of your "out the door" calls) and divide that number by 52.07 weeks in a year, giving you your Average Call Volume per Week number. Make sure you have removed from your annual responses, those trips that are not ambulance calls (i.e., alternative transportation modes such as wheelchair van, invalid coach, etc.).

Line # 3: UNIT HOUR UTILIZATION

Take Line #2 (B), Average Call Volume per Week, and divide that by Line #1 (A), your Total Unit Hours per Week. This gives you the Calls per Unit Hour number which can be converted to a percentage by moving the decimal point two spaces to the right.

Line # 4: SHIFT UTILIZATION:

Take your "Calls Per Unit Hour" number and multiply it by 8 hours in a shift, giving you your "Calls Per Unit Shift" number.

Line # 5: TOTAL EXPENSES PER WEEK = (C)

List all ambulance related administrative and operational expenses. Make sure you remove any expenses that do not pertain to ambulance calls (i.e., wheelchair or invalid coach expenses, etc.).

Line # 6: TOTAL EXPENSES PER DAY

Now that you have your "Total Expenses Per Week", Line #5, take that number and divide it by seven, giving you your "Total Expenses Per Day" number.

Line # 7 (A to E):

A. COST PER UNIT HOUR: (C) divided by (A) **$_____ Cost Per Unit Hour**

Take the "Total Expenses per Week", Line #5, and divide it by your "Total Unit Hours Per Week", Line #1, giving you your "Cost Per Unit Hour".

B. Depreciation Cost for Ambulance(s) **$_____ Increase for Vehicle Dep.**

If the depreciation of your vehicle(s) is not included in your "Total Expenses", Line #5, you should calculate that expense and add it here. To get that number, take the cost of a vehicle and divide it by the number of years of depreciation or its "useful life". Then take that number and divide it by 8,760 hours in a year, giving you the "Depreciation Cost per Hour" for that vehicle. Repeat this step for **all emergency vehicles** you have in service. Add up all the "Depreciation Cost per Hour" totals, giving your the "Increase for Vehicle Depreciation" number.

C. Depreciation Cost for Building(s) **$_____ Increase for Building Dep.**

If the depreciation of your building(s) is not in your "Total Expenses", Line #5, you should calculate that expense and add it here. To get that number, take the cost of a building(s) and divide it by the number of years of depreciation. Then take that number and divide it by 8,760 hours in a year, giving you the "Depreciation Cost per Hour" for that building. Repeat this step for all the buildings you own. Add up all the "Depreciation Cost per Hour" totals, giving you the "Increase for Building Depreciation" number.

D. Depreciation Cost for Equipment **$_____ Increase for Equipment Dep.**

If the depreciation of your equipment is not in your "Total Expenses", Line #5, you need to calculate that expense and add it here. To get that number, take the cost of a equipment on your depreciation list and divide it by the number of years of depreciation. Then take that number and divide it by 8,760 hours in a year, giving you the "Depreciation Cost Per Hour" for that piece of equipment. Repeat this step for all the equipment on your service's depreciation list. Add up all the "Depreciation Cost Per Hour" totals, giving you the "Increase for Equipment Depreciation" number.

E. Add Lines #7A, #7B, #7C and #7D = (E) **$_____ Adjusted Cost Per Unit Hour**

Line # 8: COST PER UNIT SHIFT

Take the "Adjusted Cost Per Unit Hour" number, Line #7 (E), and multiply that number by eight hours, giving you your "Cost Per Unit Shift" number. For internal purposes, the number of hours per shift may be modified to match you shift length.

Line # 9: COST PER CALL

Take the "Cost Per Unit Shift" number, Line #8, and divided by the "Shift Utilization" number, Line #4, giving you the "Cost Per Call" number.

Line # 10 (A to F): OVERALL SYSTEM COST PER CALL:

A. Line 9 times X % **$_____ % Increase for non-transport**

Take Line 9 times the percentage of your annual ambulance calls that you respond to a location, but do not transport a patient.

B. Line 9 times X % **$_____ % Bad Debt Allowance**

If your Bad Debt Allowance is not in your "Total Expenses", Line #5, you need to calculate that expense and add it here. Take Line 9 times the percentage of your ambulance calls that are placed into Bad Debt.

C. Line 9 **$_____ Cost Per Call**

Enter the amount you have on Line 9.

D. Add Lines #10A, #10B and #10C **$_____ Adjusted Cost per Call**

E. Enter Your Profit Margin (Net Revenue) per Call **$_____ Profit Margin per Call**

Profit is an estimated amount of excess revenue income over the expenses. No business can exist for long unless it earns a profit. Non-Profit organizations should still estimate a profit margin, as long as they reinvest that profit back into the company. Insert projected profit margin on this line.

F. Add Lines #10D and #10E **$_____ Overall System Cost Per Call**

This line total is the amount you are to list on the "Cost of Service" Form.