

OKEMISIS Data Summary 2009-2010

Martin Lansdale, MPH

Emergency Systems

Protective Health Services

Oklahoma State Department of Health



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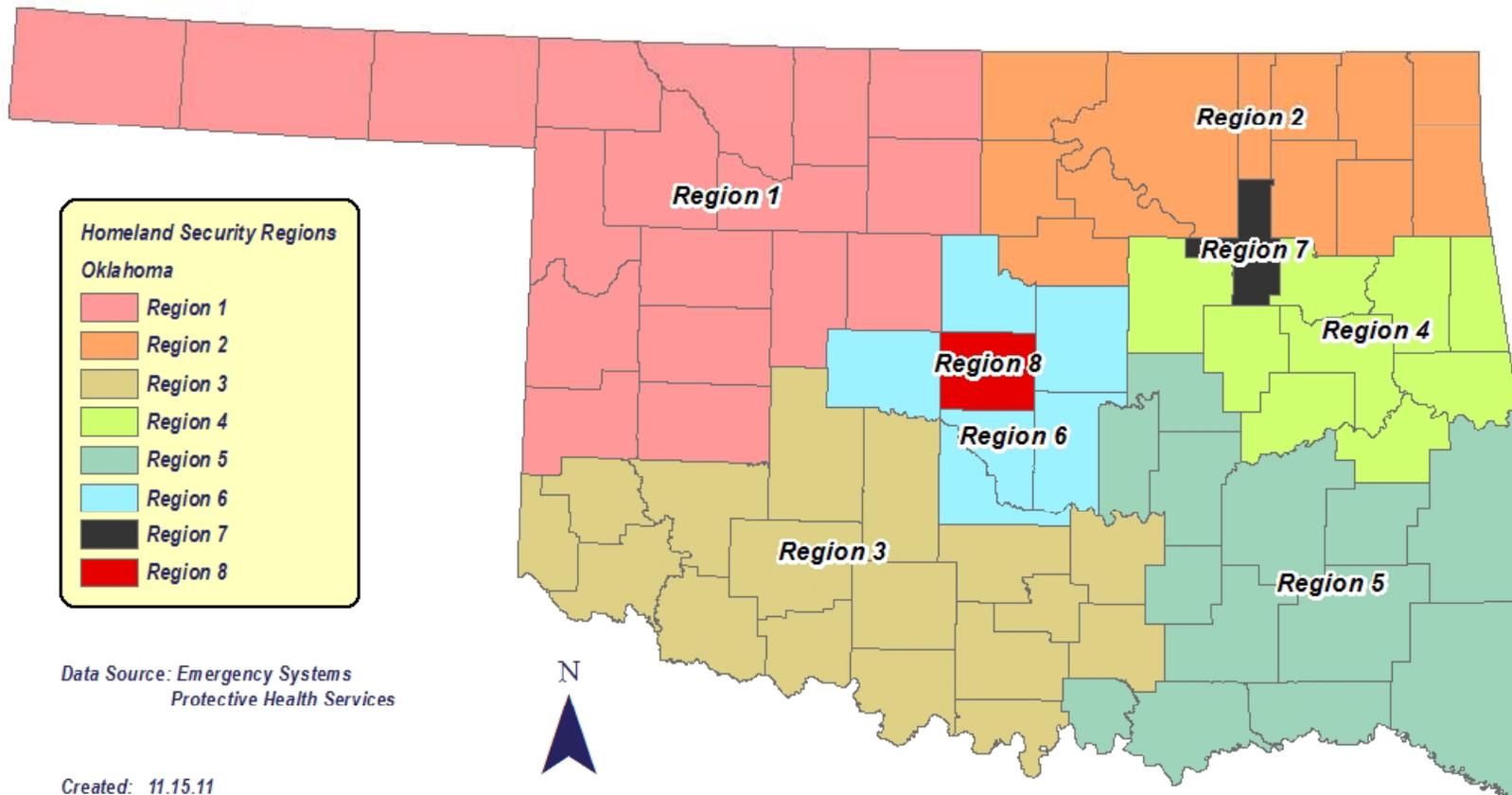
OKEMSIS Summary

- In 2009 there were 434,646 total EMS runs reported to OKEMSIS with 456,223 runs reported so far for 2010, an increase of $\approx 5\%$.
- Region 7 and 8 reported $\approx 49\%$ of the total run volume for 2009 and 2010.
- There were 194 total EMS agencies/sub-stations that reported EMS run data during that time period.
- Five of those agencies reported $\approx 50\%$ of the total run volume for Oklahoma in 2009 and 2010, with one agency reporting 37% of all statewide calls.



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OKEMISIS Summary

- The majority of EMS service calls for 2009 and 2010 were 911 calls followed by inter-facility transfers and medical transports.
- Almost 76% of the service calls were treated and transported by EMS followed by patient refusals and cancelled calls.
- The state-wide average response time for 911 calls(cancelled calls excluded) decreased from 8.09 minutes in 2009 to 7.38 minutes in 2010.
- The average scene time for 911 calls(treated and transported patients only) increased from 16.26 minutes in 2009 to 18.65 minutes in 2010.



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2009 and 2010 Call Types for EMS Service Calls

<i>Type of Call</i>	<i>Year</i>		<i>Total # of Calls</i>	<i>% of Total Calls</i>
	<i>2009</i>	<i>2010</i>		
911 Response	345,508	366,567	712,075	79.93%
Inter-facility Transfer(Scheduled)	40,132	42,351	82,483	9.26%
Missing	25,813	24,149	49,962	5.61%
Medical Transport	18,262	17,477	35,739	4.01%
Standby	3,309	4,137	7,446	0.84%
Intercept	864	734	1,598	0.18%
Mutual Aid	533	559	1,092	0.12%
Inter-facility Transfer(Unscheduled)	212	244	456	0.05%
Null Values (NA, NK, ect.)	**	**	**	**
Flag Down/Walk-in Emergent	**	**	**	**
STATE TOTALS	434,646	456,223	890,869	100.00%



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2009 and 2010 Call Outcomes for EMS Service Calls

Call Outcome	Year		Total # of Calls	% of Calls
	2009	2010		
Treated, Transported by EMS	330,516	342,590	673,106	75.56%
Patient Refused Care	43,940	47,577	91,517	10.27%
Cancelled	16,591	19,145	35,736	4.01%
No Patient Found	12,321	17,265	29,586	3.32%
No Treatment Required	8,845	10,852	19,697	2.21%
Treated and Released	6,416	6,227	12,643	1.42%
Dead at Scene	4,112	4,024	8,136	0.91%
Treated, Transferred Care	3,020	3,178	6,198	0.70%
Missing	5,163	724	5,887	0.66%
Treated, Transported by EMS (ALS)	1,340	2,026	3,366	0.38%
Null Value (NA,NK, ect..)	956	1,051	2,007	0.23%
Treated, Transported by Private Vehicle	699	589	1,288	0.14%
Treated, Transported by Law Enforcement	458	538	996	0.11%
Treated, Transported by EMS (BLS)	177	329	506	0.06%
Standby only-No Patient Contacts	89	107	196	0.02%
Unable to Locate Patient/Scene	**	**	**	**
STATE TOTALS	434,646	456,223	890,869	100.00%



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OKEMISIS Summary

- Total time (Time of destination arrival-time unit dispatched) also increased from 39.24 minutes in 2009 to 41.32 minutes in 2010.
- Region 8 had the shortest response time followed by region 7. Region 5 had the longest response time followed by Region 4.
- Region 1 had the shortest scene time followed by region 3. Region 7 had the longest scene time followed by Region 8.
- Region 1 had the shortest total time followed by region 3. Region 4 had the longest scene time followed by Region 7.



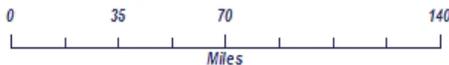
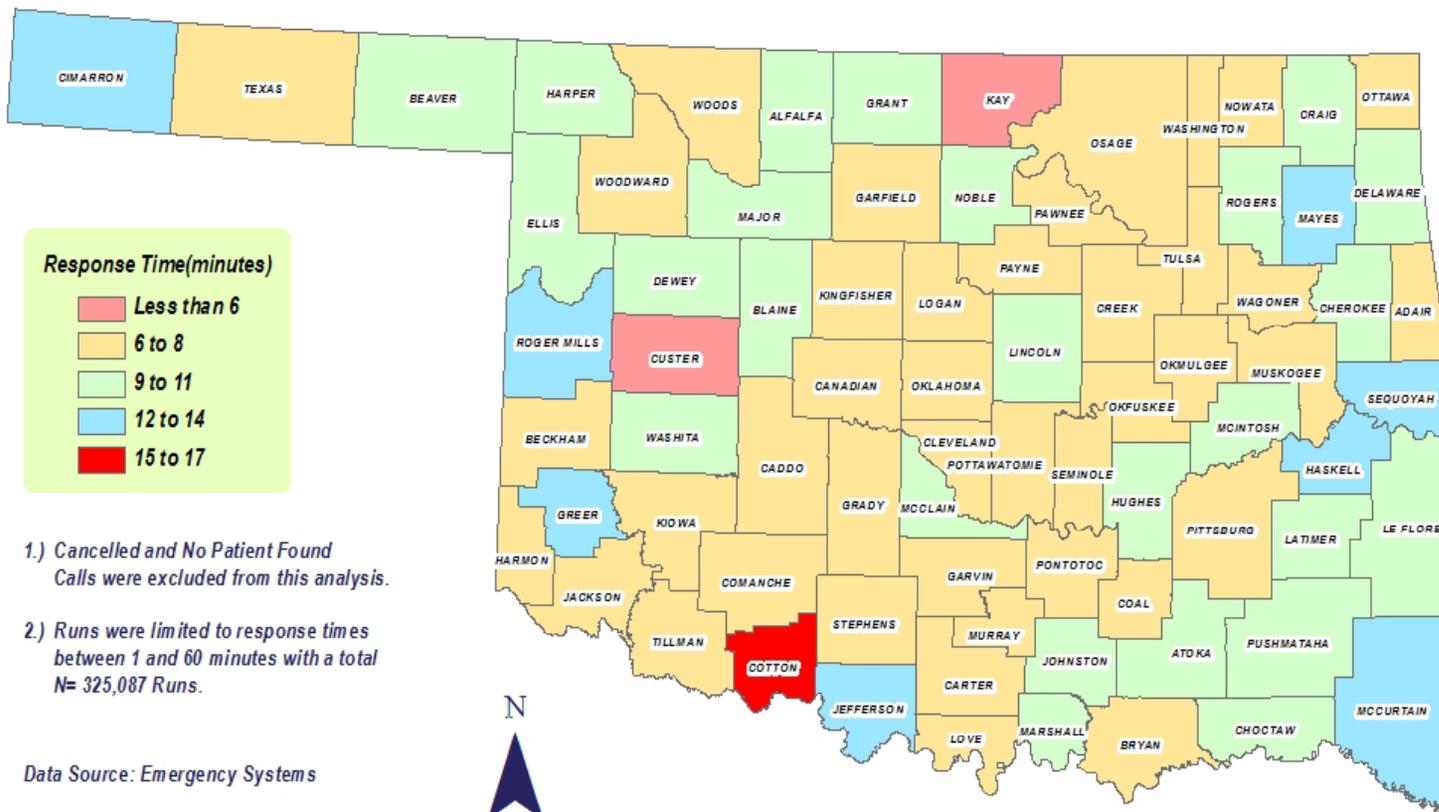
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2009-2010 EMS Response Time for Oklahoma, 911 Calls(1 to 50 Minutes, Cancelled Calls Excluded)

	Year							
	2009				2010			
	Response Time				Response Time			
Incident Region	N	Average Time(M)	Min	Max	N	Average Time(M)	Min	Max
Out of State	903	11.78	1.00	47.00	704	12.97	1.00	49.00
Region 1	14,231	7.06	1.00	50.00	14,568	7.25	1.00	50.00
Region 2	34,510	8.31	1.00	50.00	35,511	8.31	1.00	50.00
Region 3	33,220	7.78	1.00	50.00	36,341	7.84	1.00	50.00
Region 4	34,361	8.90	1.00	50.00	37,819	8.75	1.00	50.00
Region 5	22,799	8.88	1.00	50.00	22,725	9.25	1.00	50.00
Region 6	25,680	7.90	1.00	49.95	28,538	8.06	1.00	49.00
Region 7	9,470	5.88	1.00	50.00	70,521	6.29	1.00	50.00
Region 8	9,610	6.41	1.00	50.00	74,179	6.17	1.00	50.00
STATE TOTALS	184,784	8.03	1.00	50.00	320,906	7.38	1.00	50.00



Average Response Time for 911 Calls by County, Oklahoma 2010

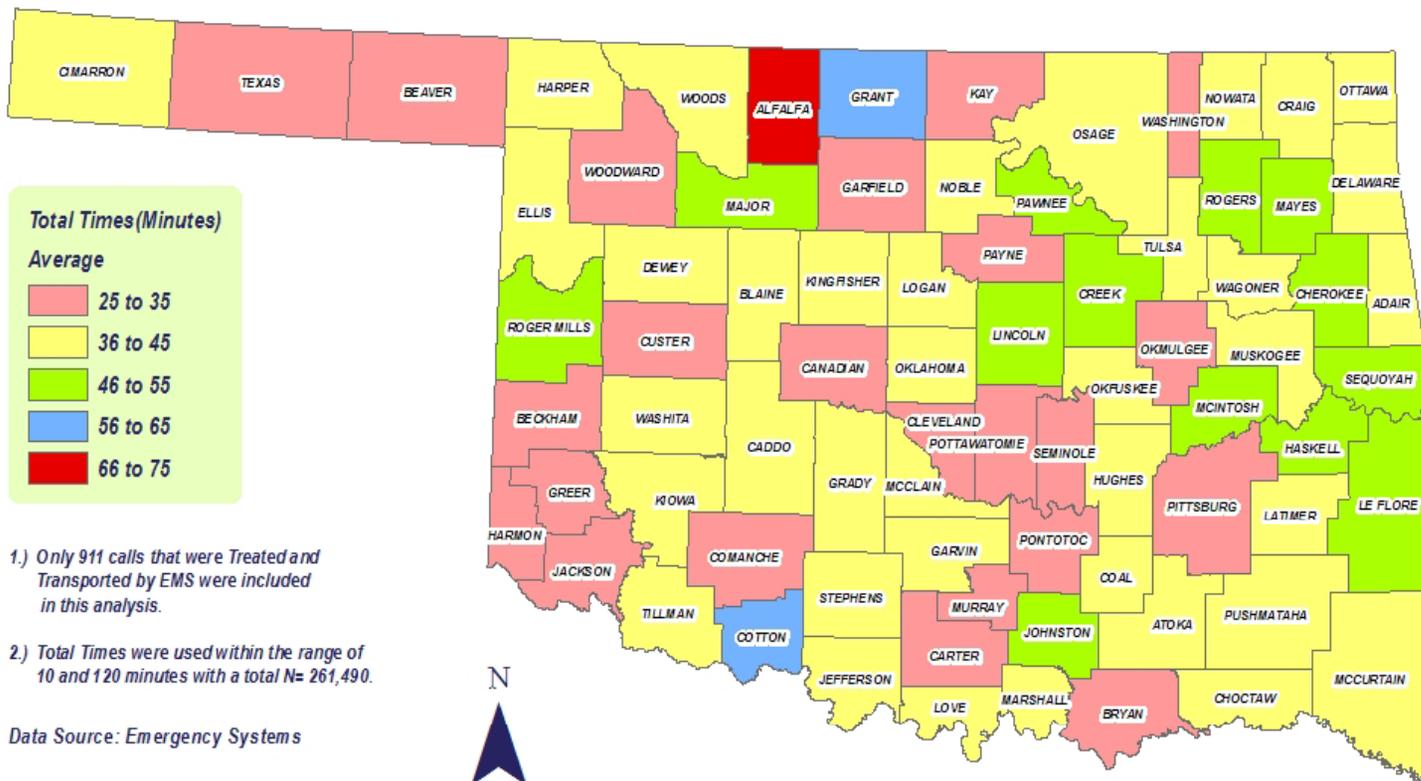


Disclaimer: This map is a compilation of records, information and data from various city, county and state offices and other sources, affecting the area shown, and is the best representation of the data available at the time. The map and data are to be used for reference purposes only. The user acknowledges and accepts all inherent limitations of the map, including the fact that the data are dynamic and in a constant state of maintenance.



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Average Total Time by County, 911 EMS Calls, Oklahoma 2010

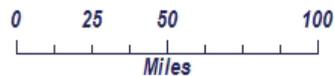


- 1.) Only 911 calls that were Treated and Transported by EMS were included in this analysis.
- 2.) Total Times were used within the range of 10 and 120 minutes with a total N= 261,490.

Data Source: Emergency Systems

Created: 09.30.2011

Projection/Coordinate System : USGSAIbers Equal Area Conic



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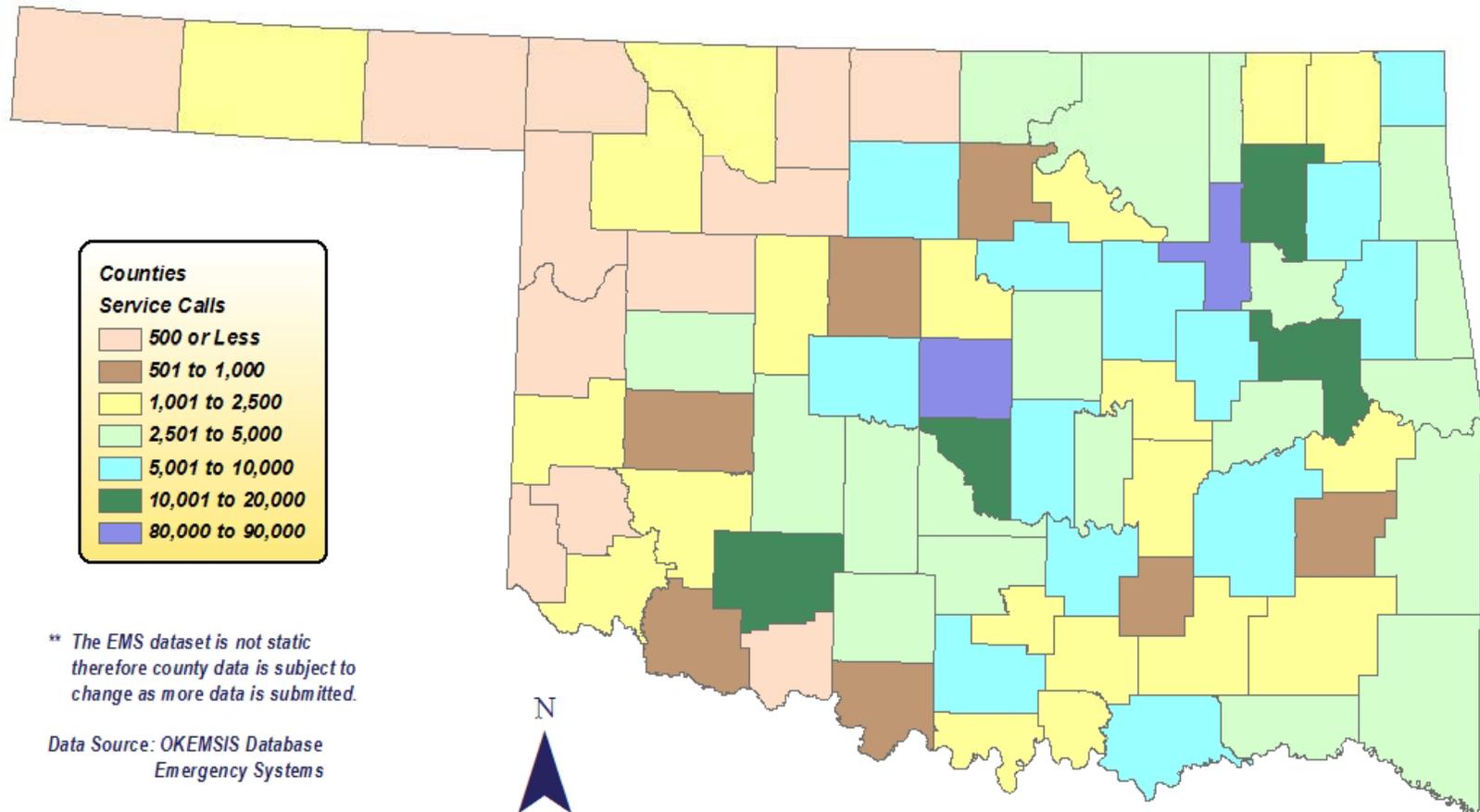
OKEMISIS Summary

- Oklahoma(Region 8) and Tulsa(Region 7) Counties reported the most EMS service calls followed by Muskogee, Cleveland, Comanche, and Rogers Counties (2010 only).
- The majority of calls were female for both years with the 70 to 79 and 80+ age groups accounting for 31.4% of the total run volume for 2009 and 2010.
- ≈ 65% of all service calls reported their race as White followed by Black/African Americans (9.3%) and American Indian/Alaska Natives (4.53%).
- Hispanics accounted for 2.4% of the total call volume in 2009 and 2010.



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EMS Service Calls by County, Oklahoma 2010

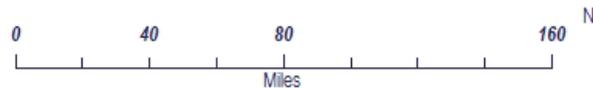


*** The EMS dataset is not static therefore county data is subject to change as more data is submitted.*

Data Source: OKEMSIS Database
Emergency Systems

Created: 11.09.2011

Projection/Coordinate System: USGS Albers Equal Area Conic



Disclaimer: This map is a compilation of records, information and data from various city, county and state offices and other sources, affecting the area shown, and is the best representation of the data available at the time. The map and data are to be used for reference purposes only. The user acknowledges and accepts all inherent limitations of the map, including the fact that the data are dynamic and in a constant state of maintenance.

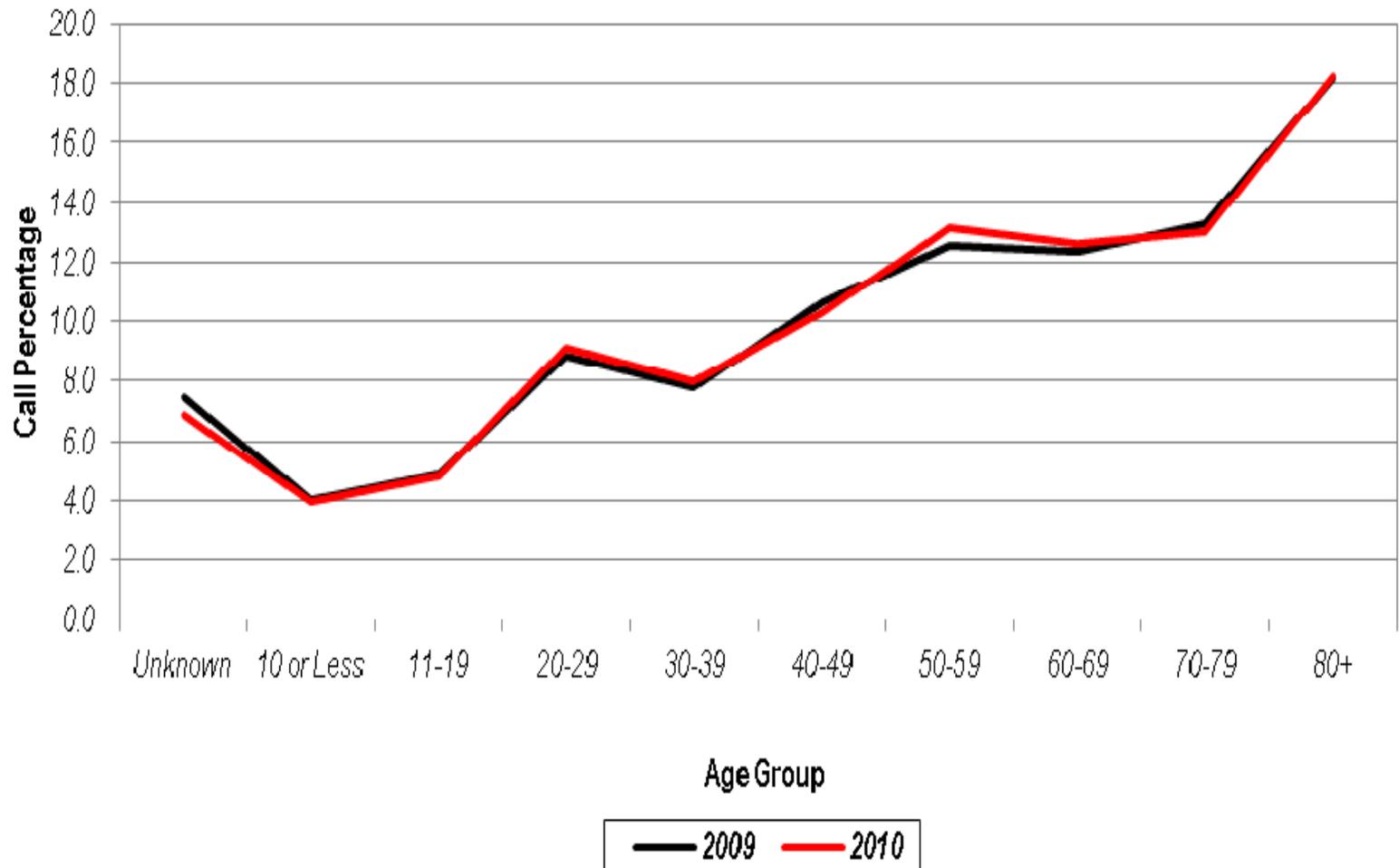


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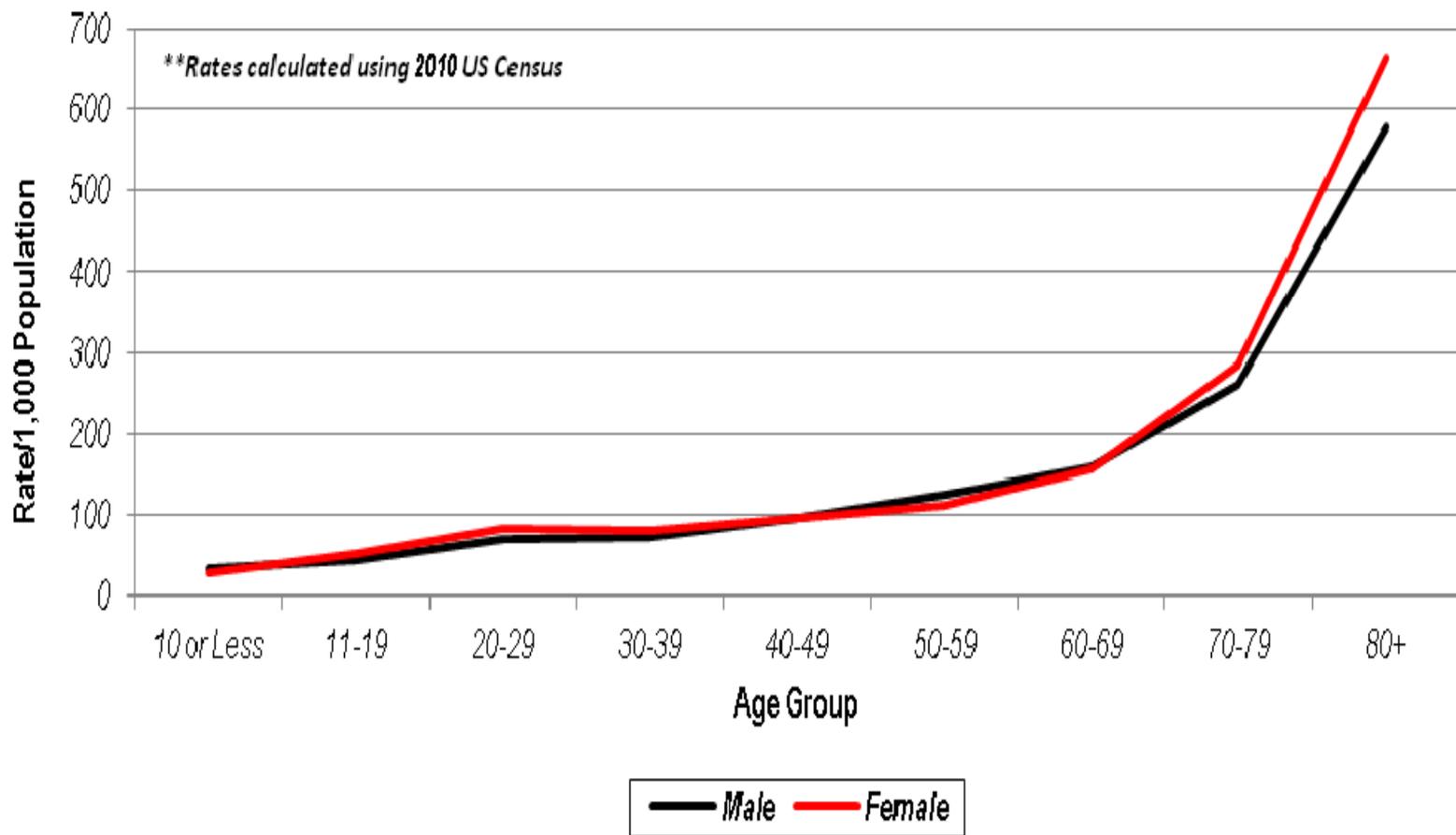


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Proportion of EMS Service Calls by Age Group, Oklahoma 2009-2010



2010 EMS Service Calls by Age and Gender, Rate per 1,000 Population



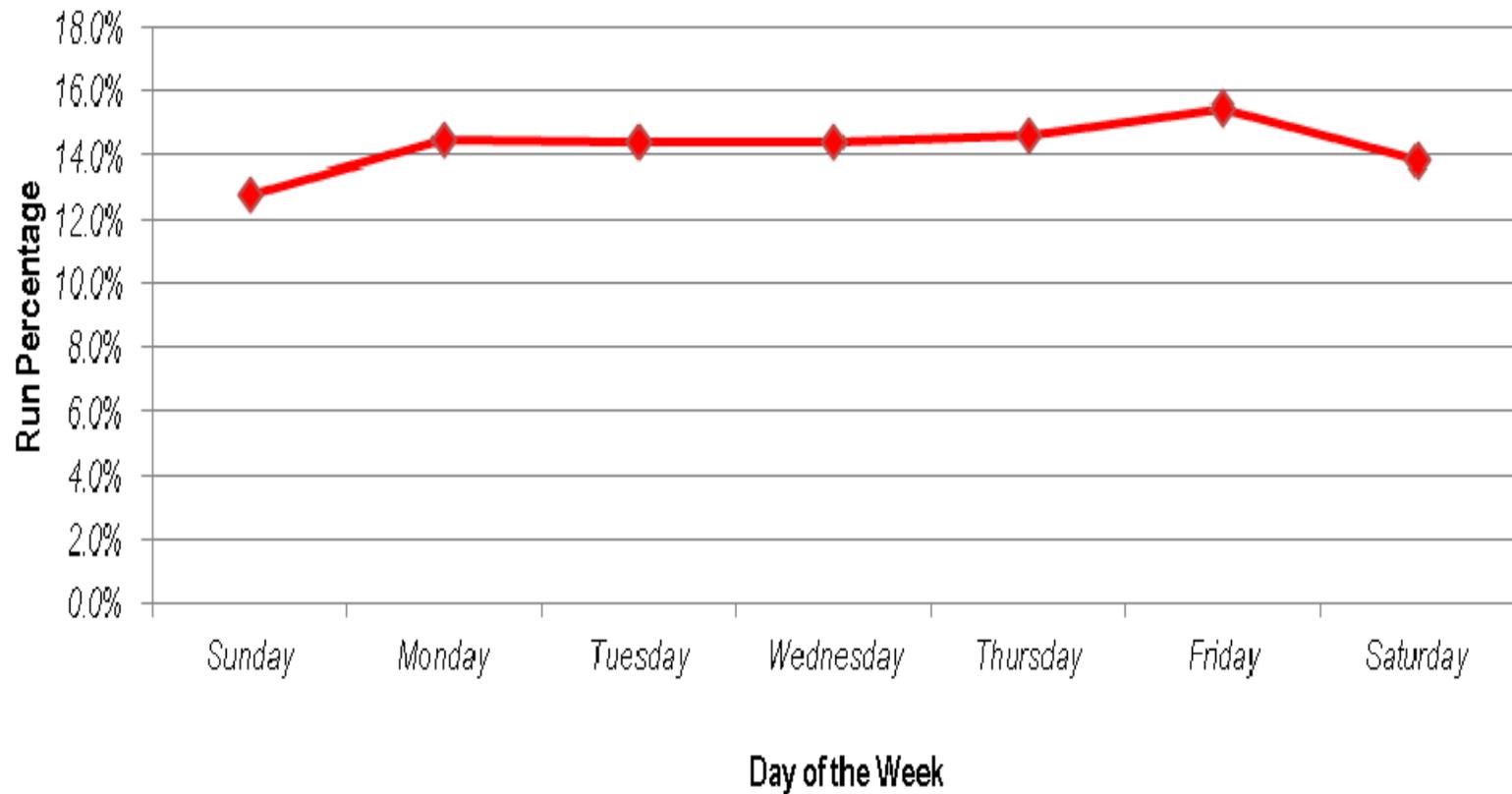
OKEMISIS Summary

- 42% of all service calls occurred on Friday, Saturday, and Sunday for both years.
- Almost 16% of all EMS service calls occurred on Friday followed by Thursday (14.61%).
- Sunday had the lowest percentage of calls with 12.77% of the total run volume for 2009 and 2010.
- Approximately 61% of all calls for 2009 and 2010 occurred between 12:00pm and Midnight.



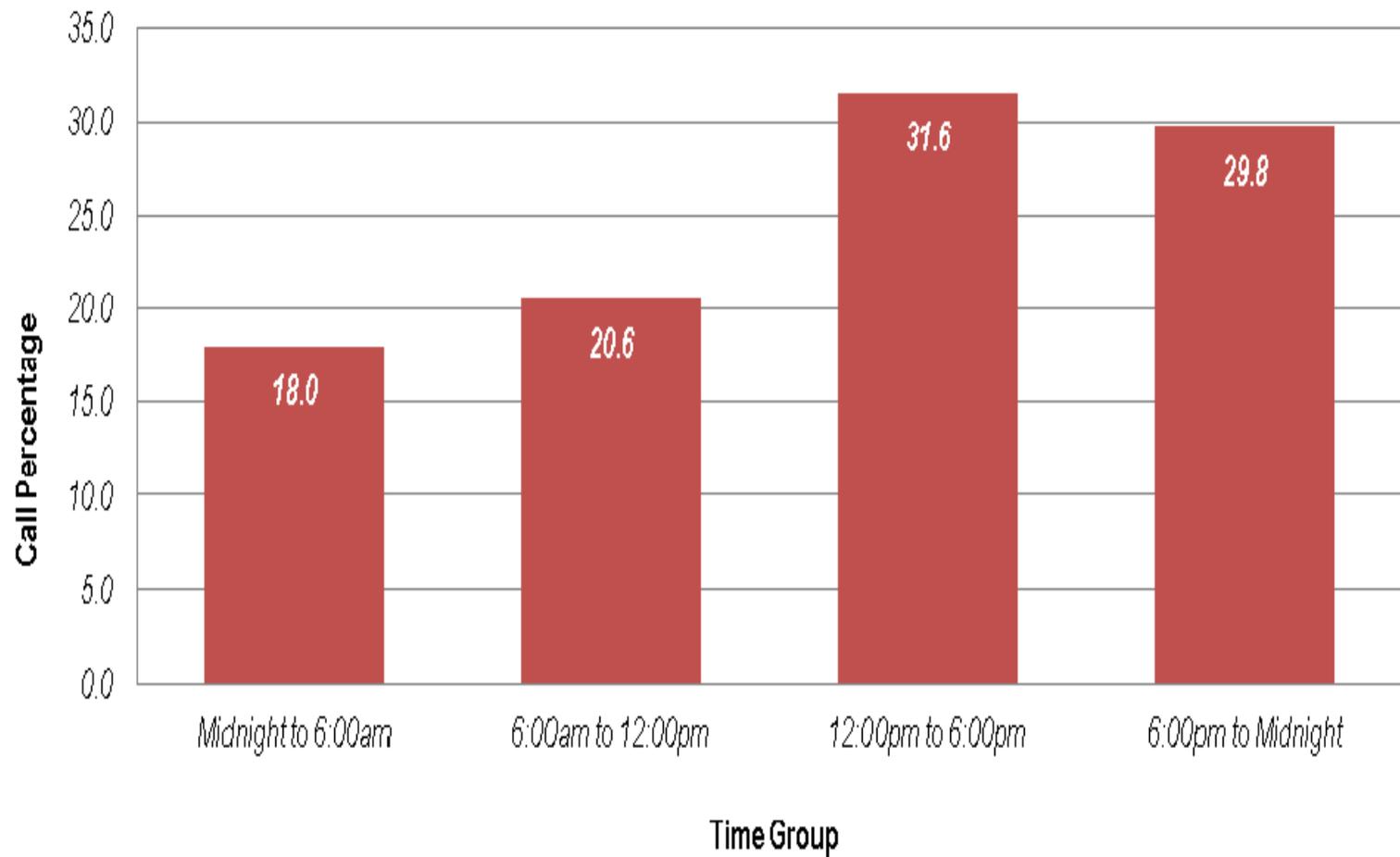
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EMS Service Calls by Day of the Week, Combined Years, Oklahoma 2009-2010



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EMS Service Calls by Time of Day, Combined Years, Oklahoma 2009-2010



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Miscellaneous Tables 2009-2010



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2009-2010 EMS Service Calls by Provider First Impression(Cancelled Calls Excluded)

Provider First Impression	Year		Total # of Calls	% of Calls
	2009	2010		
Unknown	125,412	92,396	217,808	25.47%
Other	68,200	83,843	152,043	17.78%
Traumatic injury	58,554	69,447	128,001	14.97%
Respiratory distress	25,518	30,248	55,766	6.52%
Chest pain/discomfort	25,488	29,424	54,912	6.42%
Altered level of consciousness	22,508	26,024	48,532	5.68%
Abdominal pain/problem	20,896	25,460	46,356	5.42%
Seizure	9,758	11,406	21,164	2.47%
Syncope/fainting	9,887	10,917	20,804	2.43%
Behavioral/psychiatric disorder	9,518	10,990	20,508	2.40%
Diabetic symptoms (hypoglycemia)	7,291	7,283	14,574	1.70%
Poisoning/drug ingestion	5,472	6,767	12,239	1.43%
Stroke/CVA	5,297	6,253	11,550	1.35%
Cardiac rhythm disturbance	5,635	5,838	11,473	1.34%
Cardiac arrest	3,773	4,456	8,229	0.96%
Pregnancy/OB delivery	2,040	2,490	4,530	0.53%
COPD (Emphysema/Chronic Bronchitis)	1,885	1,634	3,519	0.41%
Allergic reaction	1,534	1,843	3,377	0.39%
Obvious death	1,584	1,663	3,247	0.38%
Hypovolemia/shock	1,556	1,523	3,079	0.36%
Airway obstruction	1,190	1,105	2,295	0.27%
CHF (Congestive Heart Failure)	1,237	969	2,206	0.26%
Hyperthermia	900	1,153	2,053	0.24%

1. Table only includes impressions with greater than 1,000 EMS Service Calls for either 2009 or 2010.



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2009-2010 EMS Service Calls by EMS Provider Location

Agency Location	Year		Total # of Calls	% of Calls
	2009	2010		
Region 8	107,060	114,962	222,022	24.91%
Region 7	106,774	113,129	219,903	24.68%
Region 3	48,170	50,470	98,640	11.07%
Region 4	45,841	48,094	93,935	10.54%
Region 2	45,183	45,905	91,088	10.22%
Region 5	37,292	38,621	75,913	8.52%
Region 1	24,387	24,790	49,177	5.52%
Region 6	19,939	20,531	40,470	4.54%
State Totals	434,646	456,502	891,148	100.00%

1. All Call Types included in this table.



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EMS Service Calls by Medication Given, 2009-2010

Medication Given	Year		Total # of Calls	% of Calls
	2009	2010		
Null Values	181,838	259,256	441,094	51.58%
Oxygen by Nasal Cannula	30,895	32,631	63,526	7.43%
Oxygen	25,601	35,894	61,495	7.19%
Normal Saline	18,594	22,447	41,041	4.80%
Nitroglycerin	15,399	16,908	32,307	3.78%
Aspirin (ASA)	12,227	14,385	26,612	3.11%
Albuterol Sulfate	11,688	13,804	25,492	2.98%
Oxygen (non-rebreather mask)	9,166	8,938	18,104	2.12%
Atrovent (Ipratropium Bromide)	7,643	9,216	16,859	1.97%
Morphine Sulfate	8,372	7,528	15,900	1.86%
Dextrose 50% (D50)	5,769	5,620	11,389	1.33%
Methylprednisolone (Solu-Medrol)	4,359	5,555	9,914	1.16%
Oxygen by Positive Pressure Device	4,307	4,802	9,109	1.07%
Naloxone (Narcan)	3,551	4,169	7,720	0.90%
Ondansetron (Zofran)	2,589	4,252	6,841	0.80%
Atropine Sulfate	3,045	3,126	6,171	0.72%
Diphenhydramine (Benadryl)	3,063	2,493	5,556	0.65%
Fentanyl	1,664	2,441	4,105	0.48%
Midazolam (Versed)	1,576	2,144	3,720	0.43%
Epinephrine 1:10,000	1,613	1,726	3,339	0.39%
Diazepam (Valium)	1,389	1,562	2,951	0.35%
Epinephrine 1:1000	1,324	1,411	2,735	0.32%
Meperidine (Demerol)	1,483	927	2,410	0.28%
Sodium bicarbonate	1,022	1,095	2,117	0.25%
Promethazine HCl (Phenergan)	1,014	1,026	2,040	0.24%

1. Table includes Medications used at least 1,000 times in a year, not a complete list.

2. Null values include missing data and Not Applicable, Not Recorded, Not Known, or Not Available responses.



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EMS Service Calls by Procedures Performed, 2009-2010

Procedures	Year		Total # of Calls	% of Calls
	2009	2010		
Cardiac Monitor	111,331	190,355	301,686	21.48%
Null Values	93,834	121,988	215,822	15.36%
Venous Access - Extremity	46,357	147,769	194,126	13.82%
Assessment – Adult	45,700	58,137	103,837	7.39%
Saline Lock	73,027	28,172	101,199	7.20%
Pulse Oximetry	43,679	52,890	96,569	6.87%
Blood Glucose Analysis	33,379	41,079	74,458	5.30%
12 Lead ECG	14,359	18,421	32,780	2.33%
Venous Access-Existing Catheter/IV Monitoring	8,820	12,554	21,374	1.52%
Spinal Immobilization	2,554	18,265	20,819	1.48%
Stretcher	8,812	10,669	19,481	1.39%
Venous Access - Femoral Line	7,446	9,349	16,795	1.20%
Wound Care	6,983	9,788	16,771	1.19%
Spinal Immobilization-Standing Take-Down	11,179	3,353	14,532	1.03%
Airway - Nebulizer Treatment	4,729	9,573	14,302	1.02%
Spinal Immobilization-Long Back Board	6,644	6,666	13,310	0.95%
Other	4,994	7,636	12,630	0.90%
Splinting	5,547	6,846	12,393	0.88%
Venous Access - Blood Draw	5,646	5,976	11,622	0.83%
Airway - Endotracheal Intubation	3,656	4,385	8,041	0.57%
Pain Management	3,319	4,010	7,329	0.52%
Cervical Spinal Immobilization – Rigid Collar	3,357	3,522	6,879	0.49%
Airway – Nasopharyngeal	2,825	3,245	6,070	0.43%
Airway - Suctioning	2,535	3,441	5,976	0.43%
Capnography	773	4,852	5,625	0.40%
CPR - Cardiopulmonary Resuscitation	2,594	2,691	5,285	0.38%
Fetal Monitor	4,789	.	4,789	0.34%
Airway - Ventilator	1,796	2,814	4,610	0.33%
Orthostatic Blood Pressure Measurement	2,015	2,160	4,175	0.30%
Airway – ECO2 Monitoring	3,729	408	4,137	0.29%
Airway - Positive Pressure Ventilation / BVM	1,669	2,418	4,087	0.29%
Assessment - Pediatric	1,750	2,047	3,797	0.27%
Airway - Oropharyngeal	1,035	1,794	2,829	0.20%
Venous Access - Intraosseous (Adult)	1,316	1,453	2,769	0.20%
Airway - Cleared / Opened / or Heimlich	743	1,796	2,539	0.18%
Temperature Management	956	1,137	2,093	0.15%
Restraints-Physical	753	1,314	2,067	0.15%
Spinal Assessment-No Deficits Noted	823	1,026	1,849	0.13%
Injections-SQ/IM	603	1,198	1,801	0.13%

1. Table includes Procedures used at least 1,000 times in a year, not a complete list.
2. Null values include missing data and Not Applicable, Not Recorded, Not Known, or Not Available responses.



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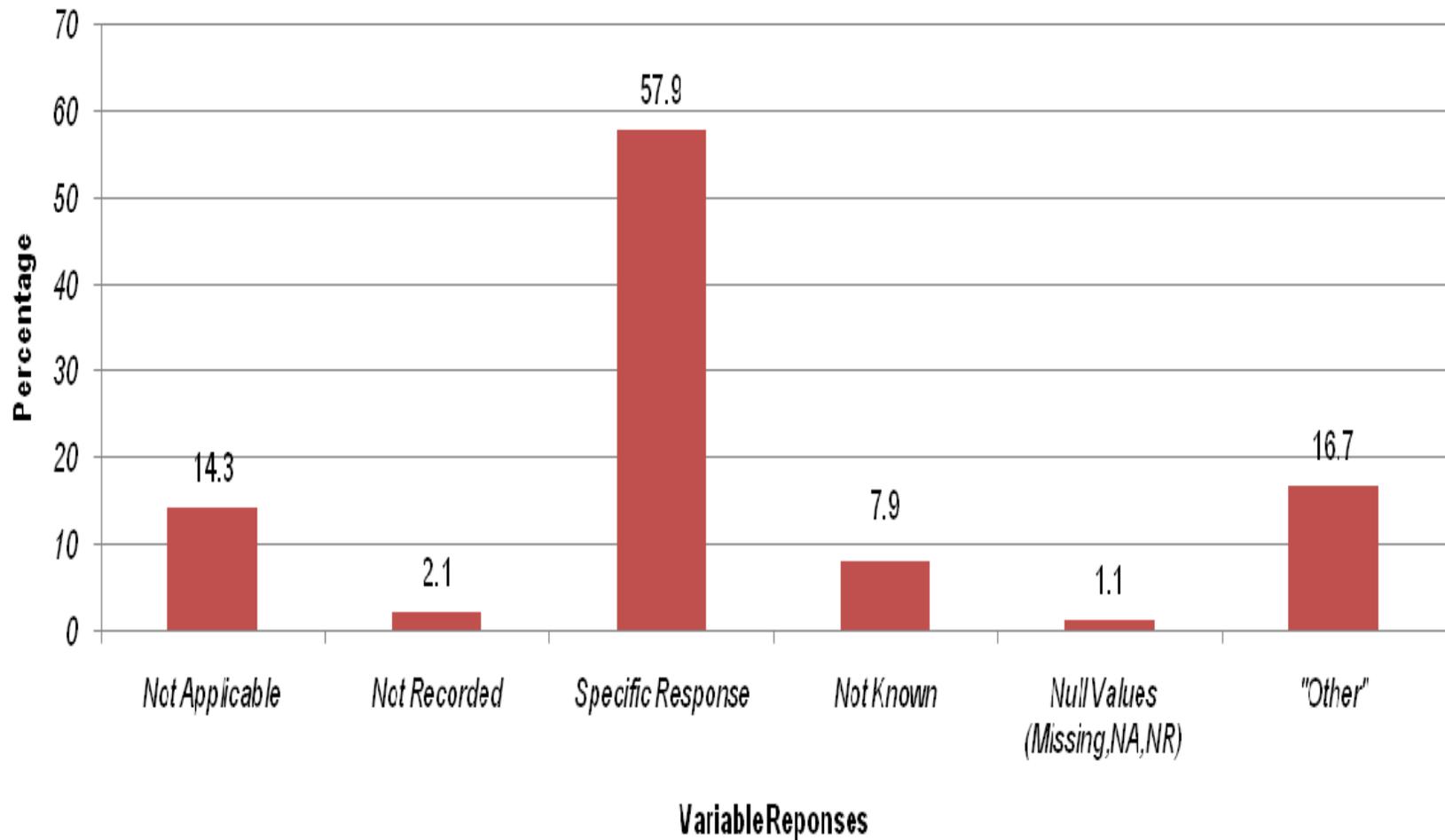
OKEMISIS: Data Quality

- During our analysis of OKEMISIS data, we found some major data quality issues. The following points include a list of some of these major issues.
- **The overuse of “Other”**- Several required variables in OKEMISIS had a high percentage of “Other” as the chosen response. Unfortunately, the non-specific nature of ‘other’ hinders further analyses of that variable.
- Some examples of variables with “other” chosen at a high percentage are provider first and second impression (16.7% “other”, 25.4% null values) and primary/secondary symptoms.



OKEMISIS 2009-Data Quality

Provider First Impression, Response Analysis, OKEMISIS 2009



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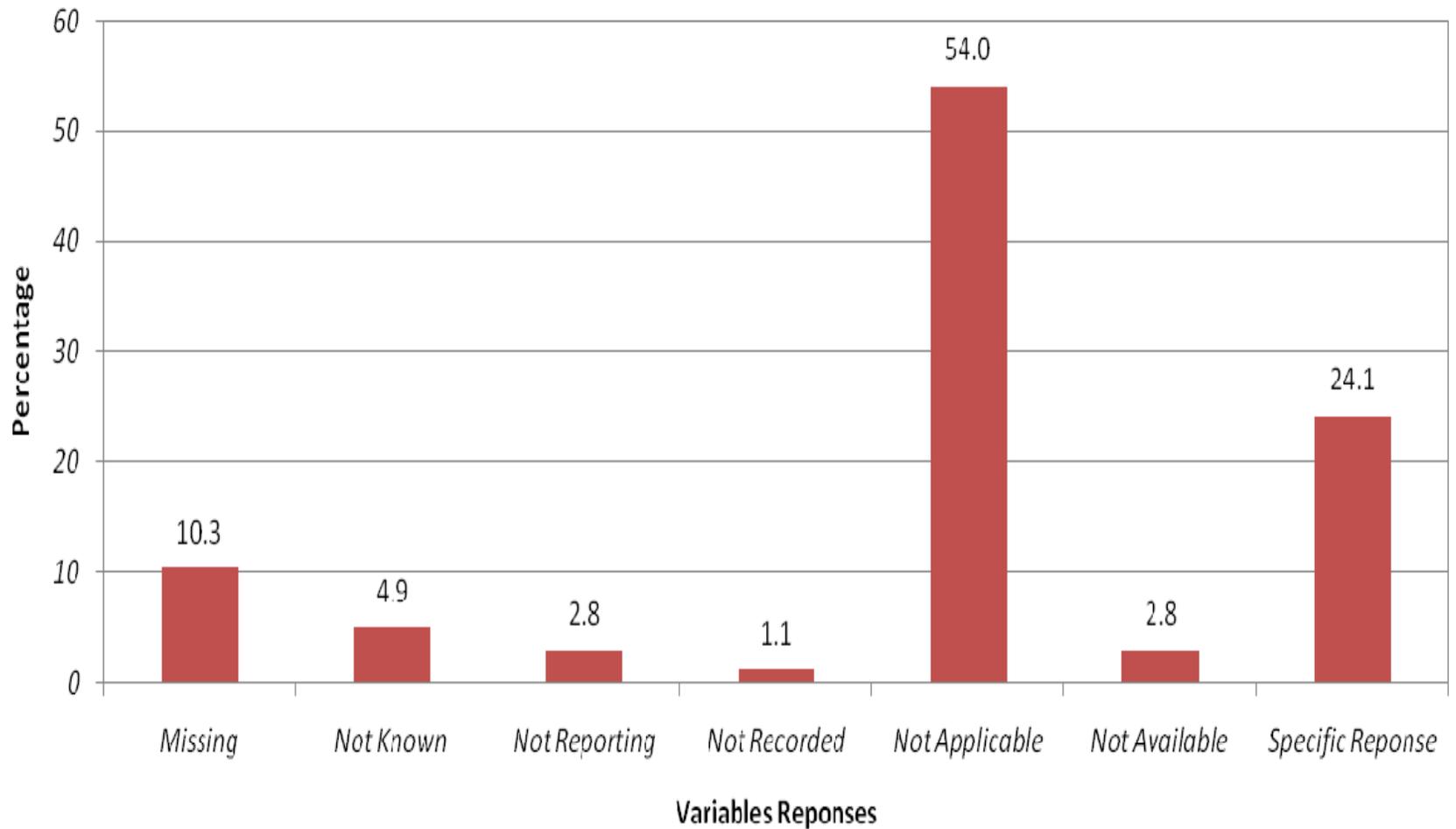
OKEMISIS: Data Quality

- *The Inappropriate use of “Not Applicable”*- Several variables in OKEMISIS had a high percentage of “Not Applicable” when a specific response was required.
- Again, the non-specific nature of ‘not applicable’ hinders further analyses of that variable.
- Some examples include the Possible Injury variable (this is a yes or no question, 51% of the responses were “Not Applicable”) and Condition Codes (54% of the responses were “Not Applicable”).



OKEMISIS 2009-Data Quality

Condition Codes, Response Analysis, OKEMISIS 2009



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OKEMISIS: Data Quality

- “Missing” data- Another data quality issue is missing data for some required data elements. Some variables were completely blank (no response) or had a high percentage of missing values. All variables described in the OKEMISIS data dictionary are required.
- *Analysis cannot be performed if there is no data.*
- One example includes Possible Injury. Most of that variable was blank, not available, or not applicable.



OKEMISIS: Data Quality

- **Data Submission**- If data is not submitted by the required time interval it can skew the results for data analysis causing inaccurate conclusions or delayed analysis.
- EMS data is due by the last business day of the following month (for example, January data is due by the end of February) in Oklahoma according to EMS regulations (***EMS Rules and Regulations, pg. 64, OAC 310:641-3-160, part (b)***).
- Failure to submit data in this time frame will result in an agency being non-compliant unless the EMS service has written the State EMS Director stating reasons for the delay.

OKEMISIS: Updates

- In order to improve data quality, several updates to OKEMISIS have been applied.
- The “My Service” (log-in) page has been cleaned up and broken links have been fixed. This includes links to ImageTrend support and necessary software needed to run certain functions in OKEMISIS.
- New validation rules were added in OKEMISIS with business logic (run disposition dependent, used by other states).
- More options have been added to the Provider first and second impression, primary and secondary symptoms fields.

OKEMSIS State Bridge

Logged in as: Practice User (logout)

Search:

Inbox Help

Report Writer 2.0 My Service Data Exchange Report Writer

OKEMSIS EMS
Fort Sill (US Army), OK 73503

Service Setup
Staff
Training
Add Run
Run History
Inbox (0 Unread)
Reports
Documents
Website
No Runs To Report

OKEMSIS
OKLAHOMA EMS INFORMATION SYSTEM

*******REMINDER: ALL EMS SERVICES*******

DECEMBER, 2011 OKEMSIS DATA SUBMISSION IS DUE BY JANUARY 31ST, 2012. According to EMS Data Submission Regulations and Deadlines (EMS Rules and Regulations, pg. 64, OAC 310:641-3-160, part (b)) monthly data is due by the end of the following month. Exceptions to this regulation must be submitted in writing (or e-mail) to the state EMS director (and approved). Service Directors/EMT's please check to make sure your data is being completed through the month of December or your service will be non-compliant according to EMS Rules and Regulations on February 1st. If you have any questions, please contact Emergency Systems at (405)271-4027 or e-mail at martinl@health.ok.gov.

*******REMINDER: ALL EMS SERVICES*******

*******DYNAMIC RUN FORM NOW AVAILABLE TO ALL EMS SERVICES*******

Related Links:

National EMS Information System
www.nemsis.org

NEMSIS (Version 2.2.1) Data Dictionary
www.nemsis.org/v2/downloads
then click Dataset Dictionaries.

OKEMSIS Data Dictionary, Instructor
[EMSOKEMSISDataDictionaryFinal04](#)

OKEMSIS Validation Rules 2011:
[New Validity Rules 2011.pdf](#)

First and Second Impression, Sy
[new_impression_codes.xlsx](#)

Updated OKEMSIS 2011 XSD file
[XSD.Schemas2011.11.29.zip](#)

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OKEMISIS: Updates

- We adjusted value ranges for importers (XSD file) to include extreme values for some variables. An example is Diastolic Blood Pressure (anything above 200 was previously rejected).
- OKEMISIS training is available on a regional and individual agency basis. The training has been modified to include importing, report writing, and discussing data quality.
- In 2011, 6 regional trainings were held (region 2 and 4, 6 and 8, were combined) along with multiple individual service trainings.
- 42 agencies attended those trainings with a total of 72 EMT's.



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NEMESIS v3.1.1 Update

- Oklahoma submits their EMS data to NEMESIS (National EMS Information system) on a quarterly basis. Most of the required variables in OKEMESIS originates from NEMESIS (currently version 2.2.1).
- One of the primary goals of NEMESIS is to make a national EMS database (repository) for research to improve the pre-hospital system in the United States.
- In order to meet national health data standards (HL7) NEMESIS has released version 3.1.1 with a goal of conversion by the end of 2015.
- The OKEMESIS Data Dictionary sub-committee will decide on a timeline for conversion that is suitable for the state of Oklahoma.

Conclusion

- All agencies have access to their data on OKEMSIS.
- To ensure accuracy, agencies can use the various reports on the OKEMSIS website to check what data is being entered by their respective 3rd party vendors (<https://okemsis.health.ok.gov/>).
- Communication between the agencies, 3rd party vendors, and OSDH Emergency Systems is paramount for improving statewide EMS data.
- Both the EMS summary and power point presentation will be made available on the Protective Health Services/OKEMSIS OSDH website.



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- OKEMSIS Website: [OKEMSIS State Bridge](#)

- OKEMSIS/OSDH Website:

[http://www.ok.gov/health/Protective Health/Emergency
Medical Services/OKEMSIS -
OK EMS Data System/index.html](http://www.ok.gov/health/Protective_Health/Emergency_Medical_Services/OKEMSIS_-_OK_EMS_Data_System_/index.html)



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