

Vertical Response Time for the Clark County Fire Department

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CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions or writings of others.

Signed: _____

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Abstract

The Clark County Fire Department (CCFD) welcomes millions of visitors to the Las Vegas Strip each year. Unfortunately, tens of thousands of visitors staying in some of the largest hotels in the world require medical assistance. The problem is the CCFD does not currently account for its vertical response time in high-rise properties. The purpose of this research is to evaluate if the vertical response time encountered in our high-rise properties, when added to our current reported response time, exceeds the departments response time goal. To achieve this, the following questions need to be answered:

1. What is vertical response time?
2. What are the department's current response times?
3. What internal documents make measuring vertical response time critical for the CCFD?
4. What percent of the time, on a cardiac arrest response does the CCFD achieve its response time goal when vertical response is included?
5. What percent of the time, on all responses to the Las Vegas Strip, does the CCFD achieve its response time goal when vertical response is included?

Evaluative research will be used to analyze the department's current response time data and determine if response goals are being met using the current methodology or the process needs to be modified to more accurately reflect the total response time. A FlexField was added to the reporting system that allowed the capture of the department's vertical response time. Two-months of data was tabulated and interviews were conducted to triangulate what the information implied. The results established the

current method used were inaccurate and lead to a misrepresentation of the department's ability to reach patients in a timely manner. The recommendations utilized short-term, mid-term and long-term goals to systematically address hurdles the CCFD's must overcome to achieve its mission of protecting lives.

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Vertical Response Time Study for the Clark County Fire Department

The Clark County Fire Department (CCFD) is home to the famous Las Vegas Strip. Millions of visitors come to the Strip each year for business and pleasure and stay in some of the largest hotels in the world. Unfortunately, tens of thousands of visitors staying in these state of the art resorts require medical assistance during their stay and utilize the 911 system. The CCFD provides emergency medical response on the Strip and frequently must ascend to the upper floors in hotel to access their patient. The problem is the CCFD does not currently account for its vertical response time in high-rise properties. The purpose of this research is to evaluate if the vertical response time encountered in our high-rise properties, when added to our current reported response time, exceeds the departments response time goal. To achieve this, the following questions need to be answered:

1. What is vertical response time?
2. What are the department's current response times?
3. What internal documents make measuring vertical response time critical for the CCFD?
4. What percent of the time, on a cardiac arrest response does the CCFD achieve its response time goal when vertical response is included?
5. What percent of the time, on all responses to the Las Vegas Strip, does the CCFD achieve its response time goal when vertical response is included?

Evaluative research will be used to analyze the department's current response time data and determine if response goals are being met using the current methodology or the process needs to be modified to more accurately reflect the total response time.

Background and Significance

The Clark County Fire Department (CCFD) is the largest fire department in Nevada. The CCFD is a combination department that protects just less than 8,000 square miles of land. Approximately 300 square miles of which make up the urban response area. Clark County is also home to the famed Las Vegas Strip, as well as McCarran International Airport. McCarran International Airport is the nation's eighth busiest airport and welcomed approximately 40,000,000 visitors to the Las Vegas Valley in 2012.

The CCFD has 29 full-time fire stations and over 800 personnel, including approximately 650 firefighters, 88 prevention and investigation officers, and 70 administration, training and support staff. The department also oversees the state's largest volunteer force with nearly 200 personnel, who serve in the rural parts of the County at 13 volunteer stations (CCFD, n.d.).

The CCFD offers the following services to the community it serves: urban fire rescue, rural fire rescue, aircraft rescue firefighting, emergency medical services including advanced life support response from every urban fire apparatus, urban search and rescue team (FEMA National Response Team), fire prevention (including permits, inspections and plan reviews), fire investigations, disaster and emergency preparedness and public education (CCFD, n.d.).

The mission of the CCFD is to provide for the safety and health of our Southern Nevada Communities and our visitors through professional emergency response, fire prevention and public education (CCFD, n.d.). This ambitious statement resonates the core values of the fire service industry. At the heart of the CCFD's core values is

protecting lives. The vision of the CCFD is to be a global leader in the fire service and provide the safest community and resort destination in the world (CCFD, n.d.).

McCarran International Airport welcomed approximately 40,000,000 visitors in 2012.

Using statistics compiled by Las Vegas Convention and Visitors Authority from the years 2007-2011, 76% of visitors who arrive at McCarran International Airport stay in the hotels that comprise the famous Las Vegas Strip (GLS Research, 2011). With roughly 30,000,000 visitors staying on the Las Vegas Strip last year, it is not surprising that the hospitality industry is the largest employer in Clark County. With that many visitors staying on the Las Vegas Strip, it also produces the highest frequency of emergency responses. Figure #1 illustrates the call concentration for the Las Vegas Valley. The one square mile districts that surround Station 32, which is located in the heart of the Strip, generate 7,500 responses annually. Figure #1 shows that a majority of the 160,000 emergency responses handled by the CCFD are occurring along the Strip Corridor.

them are located along the Strip corridor in which the CCFD responds. The sheer size of these properties creates a significant distance emergency response personnel must traverse just to reach the emergency. The CCFD currently has no way to track this time segment and no plans to address the risk it poses to our visitors and employees within these properties.

Understanding exactly how long it takes for emergency personnel to reach the patient's side is essential for Chief Officers and County Managers to make decisions on how the department's resources should be deployed. The CCFD, like many other fire departments across the country, bases its resource deployment and quality control measures off response time data that could be misleading and incomplete (Davis, 2005). Departments across the United States like Los Angeles, New York and San Diego have been scrutinized for their incomplete and/or misleading response times, forcing them to overcome political, media and economic pressure to install new practices. The CCFD has the opportunity to proactively address potential problems in their response time data collection before public embarrassment and possible litigation occur. The data generated from this research can be utilized to deploy resources in the most advantageous manner to reduce the risk of death to sudden cardiac arrest victims who either work at, or are visiting the Las Vegas Strip.

The Executive Analysis of Community Risk Reduction Student Manual, Unit 3: Intervention, Program Design and Evaluation, states, "The students will be able to design a draft plan for a local risk reduction initiative," which is precisely what this research intends to accomplish (U.S. Department of Homeland Security, 2008, p. SM 3-1). This research paper will be the first step in helping the CCFD establish a vertical response

program as well as fulfill the United States Fire Administration's goal to "Reduce risk at the local level through prevention and mitigation" (U.S. Department of Homeland Security, n.d., p. 2).

Literature Review

The research conducted will center on data collected within the CCFD, but in order to have a global perspective of the issues involved, the literature review will examine both internal and external factors that contribute to the significance of vertical response time. The literature review will focus on expanding the breadth of the research problem. The intent is to provide information that will help answer the individual research questions.

The literature review section will address the research questions in chronological order. Research on response times is limited to individual fire department and private companies that service fire department data. The methodology of collection is slightly different from one organization to another, therefore making comparisons difficult.

1. What is vertical response time?

To understand vertical response time and the difficulties of its measurement, one needs to have a firm grasp on where it lies in the measurement of total response time. On the surface response time appears to be fairly straightforward. In layman's terms, response time is the time interval from receipt of emergency call until emergency personnel arrive and begin to take care of the problem. The National Fire Protection Association (NFPA) sets the standard on how long it should take fire apparatus to respond, but the language within the guideline leaves room for interpretation. When times specifically start and stop leaves room for departments to insert their own

interpretation. The differing manner in which times are calculated creates problems in producing comparable data (United States Fire Administration, 2006).

Vertical response time, or initiating action/ intervention time, is the time interval from when an apparatus arrives on the scene until the initiation of emergency mitigation (NFPA, 2010). The United States Fire Administration (2006) acknowledged there might be a significant time from when crews arrive at the location of the emergency until mitigation actually begins in its topical report on response times.

2. What are the department's current response times?

Response times are frequently used to measure system performance because on the surface they appear to be objective performance measurement (Fitch, 2007). In 2001, NFPA issued the first edition of 1710, which was the first standard to address defining service levels, deployment capabilities and staffing levels for career fire departments (NFPA, 2010). The most recent edition of 1710 was issued in 2010 after being approved as an American National Standard on June 15, 2009 (NFPA, 2010). The current edition of 1710 standardizes and refines terminology with an emphasis on total response time (NFPA, 2010). It includes the time interval that occurs at the end of travel time and before initiating action/ intervention time actually begins (NFPA, 2010).

In this portion of the literature review NFPA 1710 will be dissected in an attempt to glean the most applicable sections that have relevance to the research.

NFPA Definitions

3.3.53.1 Alarm Answering Time. The time interval between when the alarm is received and when the alarm is acknowledged at the dispatch center (NFPA, 2010).

3.3.53.2 Alarm Handling Time. The time interval from receipt of alarm until the beginning of transmittal of response information to emergency responders (NFPA, 2010).

3.3.53.3 Alarm Processing Time. The time interval from alarm acknowledgement until transmittal to emergency responders (NFPA, 2010).

3.3.53.5 Initiating Action/ Intervention Time. The time interval from when an apparatus arrives on the scene until the initiation of emergency mitigation (NFPA, 2010). This is where vertical response time occurs in high-rise buildings.

3.3.53.8 Turnout Time. The time interval that begins when emergency response notification begins in the fire station and ends at the beginning point of travel time (NFPA, 2010).

3.3.53.7 Travel Time. The time interval begins when emergency apparatus goes en route and stops when same apparatus arrives at the scene (NFPA, 2010).

3.3.53.6 Total Response Time. The time interval from the receipt of the alarm until the emergency responders begin intervening to control the incident (NFPA, 2010).

Chapter 1 Administration

1.3.2 The standard is a benchmark for the most common responses and a platform for developing the appropriate plan for deployment of resources for fires in higher hazard occupancies or more complex incidents.

Chapter 4 Organization

4.1.2.1 The fire department shall establish the following objectives:

(5) 480 seconds or less travel time for the arrival of an advanced life support (ALS) unit at an emergency medical incident, where this service is provided by

the fire department provided a first responder with AED or basic life support (BLS) unit arrived in 240 seconds or less travel time.

4.1.2.2 The fire department shall document the initiating action/ intervention time.

4.1.2.5 Evaluations

4.1.2.5.1 The fire department shall evaluate its level of service and deployment delivery and alarm handling time, turn-out, and travel time objectives on an annual basis.

4.1.2.6 The fire department shall provide the Authority Having Jurisdiction with a written report annually.

4.1.2.6.1 The annual report shall define the geographic areas and/ or circumstances in which the requirements of this standard are not being met.

4.1.2.6.2 The annual report shall explain the predictable consequences of these deficiencies and address the steps that are necessary to achieve compliance.

A.3.3.28 High-Hazard Occupancy. These occupancies include schools, hospitals, and other special medical facilities, nursing homes, high-risk residential occupancies, neighborhoods with structures in close proximity to one another, high-rise buildings, explosives plants, refineries, and hazardous materials occupancies.

In Annex A, of the Total Response Time section, the “cascade of events” is used to illustrate the correlation between NFPA 1221 and NFPA 1710. It states there are three phases that make up the total response time. Figure #2 illustrates the three phases: phase one- alarm handling time, phase two- turnout and travel time and phase three- initiation action/ intervention time, which is currently not addressed by any NFPA standards

(NFPA, 2010). Vertical response time is synonymous with initiation action/ intervention time.

Figure 2: Cascade of Events

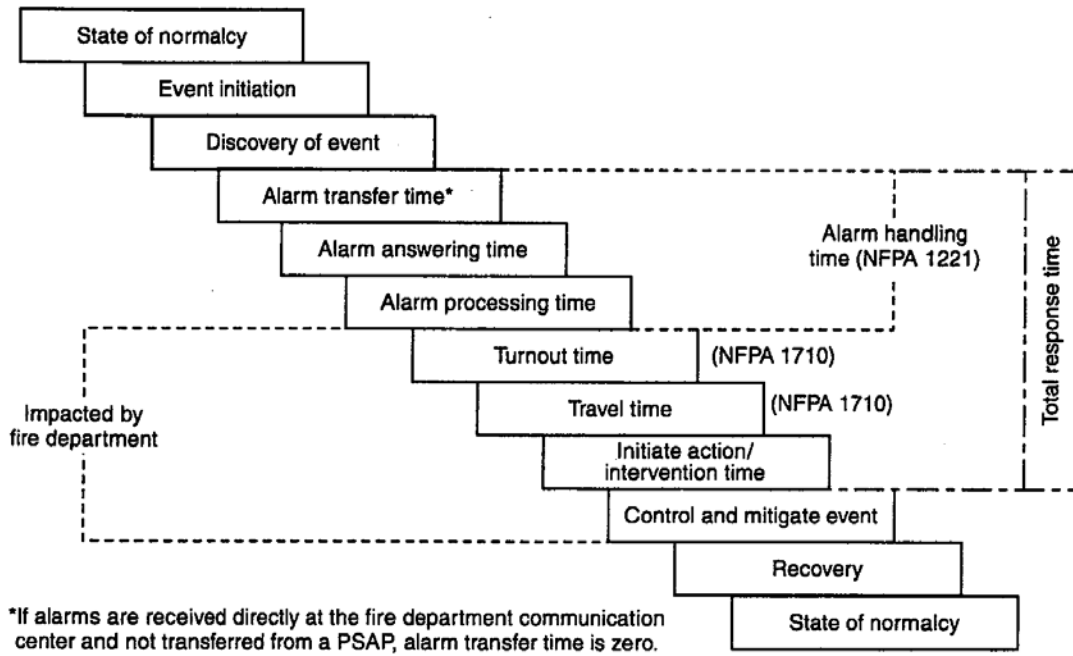


Figure 2 (NFPA, 1710)

While on the surface, the emergency response may appear to meet the standard, further evaluation shows the time being recorded stops when the apparatus arrives on-scene, not when emergency responders begin to intervene and address the problem. Stopping the response clock before intervention begins discounts vital minutes that have the potential to save lives. Fitch (2007) feels that the only correct way to measure a response time is from the patient’s perspective. When the response times stop at the patient, the department frequently fails to meet its stated standard (Blaney, et al., 2007). Accounting for the vertical response time can aid in the overall system evaluation and help decision makers develop plans for improvement (Fitch, 2007).

The Los Angeles Fire Department (LAFD), New York Fire Department (FDNY) and San Diego Medical Service have recently been scrutinized for response time data generated by their respective departments. In 2009, the Los Angeles Fire Department changed its formula on how it calculates apparatus response time (Lopez & Linthicum, L.A. Fire Chief says response standard should have been disclosed, 2012). Data collected prior to the change showed that emergency medical call response times were met approximately 80% of the time, but the new formula reduced that percentage to 64% of the time (Lopez & Linthicum, L.A. Fire Chief says response standard should have been disclosed, 2012). The better response numbers were cited when the City Council was deciding how many fire engines, ambulances and fire stations would be closed due to budget cuts (Lopez & Linthicum, L.A. Fire Chief says response standard should have been disclosed, 2012). This controversy caused Mayor Antonio Villaraigosa to bring in a nationally recognized expert to fix the problems associated with the dispatch data (Lopez, Linthicum, & Welsh, Expert says L. A. Fire Department didn't give help to fix response data, 2012). The expert expressed the need for a complete overhaul of the mentality of the command staff and went on to state, "Being partly right does not work in this business... That data is the resource you use to make command decisions to run your department" (Lopez, Linthicum, & Welsh, Expert says L. A. Fire Department didn't give help to fix response data, 2012).

New York has reported record low response times since 2008. It was not until the fire department communications chief explained the FDNY no longer records the time from when the police call takers make contact with the caller until it gets to the fire dispatch system that this phenomena could be explained (Margolin, 2012). Under the

previous system, police call takers received fire calls and usually within four seconds transferred the calls to fire dispatch for a lengthier interview (Margolin, 2012). In 2008, the system changed and police call takers took over the entire interview and that portion of the FDNY response has never been included in response time data (Margolin, 2012).

San Diego response policies were brought to light after a two-year old boy choked to death and paramedics did not arrive for almost ten minutes after the 911 call was placed (Gustafson, 2011). A city auditor found that response times were a minute to a minute and a half longer than reported because of a policy not to start the response time clock until the call had been routed through a dispatcher to the fire department (Gustafson, 2011). The auditors report stated, “ We found that the mayor and the City council are not accurately informed on the true actual response time statistics, from when a citizen calls 911 to when (emergency personnel) arrive on scene.” Because of the lack of accounting for every second the City Council could not possibly assess the performance of the fire department or the degree the public may be at risk (Gustafson, 2011).

3. What internal documents make measuring vertical response time critical for the CCFD?

In 2001 the CCFD hired an outside company to conduct a comparable entity survey project designed to compare its operations to that of similar fire departments around the country in an effort to identify areas for improvement (Deloitte & Touche, 2001). The project acknowledged the CCFD was handling more calls, with less personnel and less equipment than other comparable fire departments (Deloitte & Touche, 2001). The project recommended using the Fire Protection Planning Element

document to determine when additional stations, apparatus and personnel were needed (Deloitte & Touche, 2001). The Clark County Fire and Emergency Services Report, or Fire Protection Planning Element documents objective is to assist in guiding the Planning Commission and Board of County Commissioners in land use, service level and policy decisions regarding the CCFD (Clark County Department of Comprehensive Planning, 2008).

The 2008 Fire Protection Element acknowledges that Clark County was one of the fastest growing counties in the United States and the demand for service from the fire department should be expected to increase as the population continued to grow (Clark County Department of Comprehensive Planning, 2008). See Appendix A for an example of Clark County's resident and daily visitor population from 1980 thru 2035. The County's comprehensive plan states the goal of the CCFD is to make response times as low as possible to maintain public safety, reduce property damage and minimize insurance costs to the public (Clark County Department of Comprehensive Planning, 2008). To achieve its stated purpose a response time goal of seven-minutes or less, 90% of the time for urban and suburban areas was adopted (Clark County Department of Comprehensive Planning, 2008).

The CCFD is annually one of the top 20 busiest departments in the United States. In 2009, the CCFD reported it responded to 124,035 emergency calls, which made it the 15th busiest department in the United States (Neroulas & Roche, 2009). With this type of call volume already occurring, fire department leaders recognized there was a response capacity for fire apparatus. They decided, based on best practices of the fire service and the specific needs and circumstances of the CCFD, that anything over 3,000 responses a

year did not allow for a high level of customer service and productivity of their personnel that emphasized firefighter safety (Clark County Department of Comprehensive

Table 1: Suburban and Urban Area Response Rates¹

Planning, 2008).

In forecasting for future needs, the Fire Protection Element document utilized two ways to determine when additional support would be needed. The document used a project level forecast, which broke down the number of responses per acre based upon land use to determine the probable impact on emergency services (Clark County Department of Comprehensive Planning, 2008). It was determined, based upon response data, that 8.24 emergency responses would be generated per acre when that acre was zoned for high-rise / hotel use (Clark County Department of Comprehensive Planning, 2008). This information is shown on Table #1.

Land Use	Responses	Total Acres	Response Per Acre
Single Family ²	30,672	30,245	1.01
Multi-Family	24,421	6,594	3.70
Hotel	16,817	2,042	8.24
Office	5,645	2,457	2.30
Neighborhood Retail	8,120	3,720	2.18
Community Retail	717	1,220	0.59
Regional Retail	5,082	816	6.23
Open Space	321	5,410	0.06
School	1,796	2,291	0.78
Industrial	1,833	4,000	0.46
Non-Retail Other	5,213	9,107	0.57
Vacant	3,623	52,997	0.07
ROW	19,457	-na-	-na-
Unassigned	20,822	-na-	-na-
Total	144,539	120,900	

¹ Rights of Way, McCarran Airport, and unassigned responses not used in calculations.

² Single Family average density of 5.79 units per acre and multi-family average density of 21.84 in 2006. Clark County Fire Department, Clark County Assessor's Office, Clark County Comprehensive Planning, 2006.

The second method was a community level forecast which broke down the number of response by population (Clark County Department of Comprehensive Planning, 2008). The response per person rate has changed only slightly over the years, therefore it can be calculated that there will be 0.14 responses per person in the urban and suburban portions of Clark County (Clark County Department of Comprehensive Planning, 2008). This information is shown on Table #2.

Table 2: Suburban and Urban Area Career Units Forecast (current units = 42)

Factor	Year					
	2010	2015	2020	2025	2030	2035
Population¹	1,196,152	1,484,073	1,672,109	1,773,116	1,826,649	1,874,197
Response per person²	0.14	0.14	0.14	0.14	0.14	0.14
Responses³	166,956	207,143	233,388	247,487	254,959	261,595
Total Units⁴	56	69	78	82	85	87

¹ Resident and Daily Visitors from Clark County Comprehensive Planning based on UNLV-CBER REMI population forecast, 2007; LVCVA Visitor Survey; Clark County Assessor's Office data, 2006.

² Clark County Comprehensive Planning GILIS 2006 data; Clark County Fire Department 2006 responses.

³ Clark County Fire Department response data, 2006.

⁴ Assumes workload of 3,000 responses per year for engine companies and rescues.

The policy recommendations included maintaining an overall staffing ratio of 1.22 fire personnel per 1,000 citizens, which is less than the NFPA recommended 1.72 fire personnel per 1,000 (Stanton, 2011). It also recommends that career unit's response capacity not to exceed 3,000 responses per year (Clark County Department of Comprehensive Planning, 2008). The recommendations were to ensure the objectives of the report were met.

In 2012 the Fire Protection Element document was revisited, 52% of the 2008 participants returned, as with any new document there were additions, modification and deletions of key components. One such instance can be found in the resource distribution section. The CCFD's stated response time stayed the same, but its methodology on response vehicles maximum capacity was deleted. The new standard states, "in the future, the department will conduct research, analyze data, and provide for nationally recognized response times that indicate sufficient deployment of resources and positive outcomes for the community" (Clark County Department of Comprehensive Planning, 2012). It goes on to explain that resource arrangement should assure an effective response can assemble to stop a serious health event before cardiac arrest occurs (Clark

County Department of Comprehensive Planning, 2012). Future deployment of apparatus and staffing levels will be determined by the CCFD's ability to deliver reliable, on scene personnel within national response time goals and incident outcomes (Clark County Department of Comprehensive Planning, 2012). Fitch (2007) agrees in the establishment of performance standards and explains that policy makers should use objective information to justify when additional resources are required. Table #3 shows the CCFD's anticipated response volume. Somewhere between the year 2020 and 2025 the CCFD will respond to 200,000 emergencies in a 12-month period (Clark County Department of Comprehensive Planning, 2012).

Table 3: CCFD Metropolitan, Urban, and Suburban Area Fire Services Response Forecast

Factor/ Function¹	2007 – 2010 Average	2015	2020	2025	2030	2035
Population²	866,188³	974,382	1,069,379	1,154,166	1,236,733	1,317,081
Medical	108,138	121,645	133,505	144,090	154,398	164,429
Fire	20,372	22,917	25,151	27,145	29,087	30,977
Vehicle Accidents	19,292	21,702	23,818	25,706	27,545	29,334
Technical Services	4,254	4,785	5,252	5,668	6,074	6,468
Public Assistance	2,657	2,989	3,280	3,541	3,793	4,041
Total	154,712	174,038	191,006	206,150	220,897	235,249

¹ Clark County Fire Department response data, 2011.

² Resident Population for Clark County Fire District 1 taken from UNLV-CBER REMI population forecast, 2011; calculated as a proportional increase based on the 0.44391 X 2010 Clark County population figure of the Las Vegas Valley Urban Final Population Forecast including Laughlin and Jean, Clark County Comprehensive Planning, 2012.

³ The population figure is for 2010 only (not average population) for Uninc. LVV, Laughlin, and Jean.

In 2012 the CCFD applied for a SAFER grant from FEMA. The grant application states in January of 2008 the total number of operational career personnel was 622 and that by June of 2011 that number had risen by only three people for a total of 625. The call volume for the department increased approximately 30,000 responses during the same time period. The grant application explains, the CCFD faces severe response time challenges due to a number of issues including high visitor volume in the resort corridor and large facilities with areas that can take in excess of 10 minutes for crews to access (Clark County Fire Department, 2012). The application goes on to state that the CCFD was currently meeting the nationally recognized NFPA 1710 response time standard only 44% of the time (Clark County Fire Department, 2012).

4. What percent of the time, on a cardiac arrest response does the CCFD achieve its response time goal when vertical response is included?

There are numerous cities around the United States that have high-rise buildings in which emergency responders operate. The NFPA recognizes that high-rise structures present unique and difficult hazards for emergency responders. In its fire protection handbook, the NFPA classifies high-rise buildings with hospitals, nursing homes, explosive plants, refineries and schools as high-hazard occupancies that present a significant life hazard (Urban Fire Forum, n.d.).

Communities like New York, Chicago and Los Angeles all have high-rise structures in which a risk assessment must occur. A community's risk level is established by developing an overall profile based on demographics, socioeconomic factors, occupancy risk, fire management zones and the level of services currently provided

(Urban Fire Forum, n.d.). Organizational leaders assess the high-hazard occupancies within their jurisdiction and utilize the resources within their organization to assure customers have sufficient resources available when an emergency response is required (Urban Fire Forum, n.d.).

Resources must be distributed according to risk, geography of the community and travel time to emergencies (Urban Fire Forum, n.d.). If reported response times are within established limits, that is an indicator the resources are sufficient and communities should expect a positive outcome from emergencies (Urban Fire Forum, n.d.). However, if response times are outside the established limit that is an indicator the department's resources are insufficient and the community will probably encounter a negative outcome from emergencies (Urban Fire Forum, n.d.).

The Society for Academic Emergency Medicine (2007) published a study done in New York that measured the time interval from arrival on-scene to the patient's side. It acknowledged the unreported vertical response time segment and suggests that total response time would be better represented by measuring from call assignment to arrival at patients side (Blaney, et al., 2007). Data was collected on 487 calls that required ALS response. After excluding 38 total calls, (33 were cancelled and five on-scene times were not recorded) 449 calls or 96.5% of the calls were evaluated (Blaney, et al., 2007). The study found that the time from call assignment to on-scene report was less than six-minutes in 61.5% of calls, but once vertical response time was added, arrival within six-minutes fell to 28.5% (Blaney, et al., 2007). Other studies around the world have found similar vertical response issues. Toronto, Canada's study produced a 2.4-minute vertical

response time (Angelini, Morrison, Schwartz, & Vermeulen, 2005). Singapore, Indonesia produced a 2.5-minute vertical response time (Blaney, et al., 2007).

In response to research done by the City of Las Vegas Fire Department, a Seattle Times article declared that Las Vegas might want to consider changing its catch phrase from the entertainment capitol of the world to the cardiac arrest capital of the world (Bluethman, 1997). The City of Las Vegas Fire Department, which borders the CCFD conducted research from January 1993 to June of 1996 evaluating response times to sudden out-of-hospital cardiac arrests in Las Vegas casinos (Graff, Ho, Karch, & Young, 1998). The study examined 736 people who suffered cardiac arrest at a Las Vegas resort or McCarran International Airport (Graff, Ho, Karch, & Young, 1998). The study was the first local effort to identify the unreported time from when a fire apparatus arrives on-scene to when fire department members arrive at the patient's side. The study found that stopping response time when fire apparatus arrived at the casino yielded a time interval of 5.0 minutes, but when the response time stopped at the patient it increased to 6.88 minutes (Graff, Ho, Karch, & Young, 1998). At the time of the study, only a few hotel casinos had Automated External Defibrillator (AED) and the primary reason for the research was to show the benefit the equipment could provide to our visitors and locals who worked in the hotel industry. Today, every hotel along Las Vegas Boulevard (The Strip) has multiple AED's throughout their properties.

The USA Today conducted a study of the 50 biggest cities in the United States and found that only a small portion report the total response time (Davis, The price of just a few seconds lost: people die, 2005). The article suggests these cities are lying to themselves about their ability to deliver quality EMS service and intentionally only

showing response data that looks the most favorable for their departments (Davis, The price of just a few seconds lost: people die, 2005; Davis, The method: measure how many victims leave the hospital alive, 2005). Every minute counts during a cardiac arrest call, therefore every minute must be accounted for during the response but cities continue to rely on imprecise response times (Davis, The price of just a few seconds lost: people die, 2005). The American Heart Association estimates 250,000 cardiac arrests occur annually and of that number only 5% are saved, yet there are departments whose survival rate exceed 20% (Davis, The price of just a few seconds lost: people die, 2005). The departments that save the most people improved their performance by first changing the way they measure response time. They made changes to their systems based on weaknesses revealed by the data (Davis, The price of just a few seconds lost: people die, 2005). The American Heart Association estimates that if the percentage increased from 5% to just 20% an additional 40,000 people would be saved each year (Davis, The method: measure how many victims leave the hospital alive, 2005).

The City of Houston increased its survival rate from near zero to 21% when it began measuring total response time and addressing problems that the new data revealed (Davis, The price of just a few seconds lost: people die, 2005). A study published in the *Annals of Emergency Medicine* used a multiple linear regression model to determine survival rates for out of hospital cardiac arrests. If CPR, defibrillation and ACLS were performed immediately upon the patients collapse, the person would have a 67% chance of survival (Cummins, Eisenberg, Hallstrom, & Larsen, n.d.). “Without treatment (CPR, defibrillatory shock or definitive care) the decline in survival rate is the sum of the three coefficients, or 5.5% per minute” (Cummins, Eisenberg, Hallstrom, & Larsen, n.d.). Dr.

Roger White from the Mayo Clinic agrees and explained that a one-minute decrease in the time from when the call is received to when the first shock is delivered increases the patient's odds of survival by 57% (Davis, *The price of just a few seconds lost: people die*, 2005).

The international gold standard for measuring cardiac arrest survival rates is the Utstein template (Davis, *The method: measure how many victims leave the hospital alive*, 2005). The template originated during a meeting in the Utstein Abbey outside Norway in 1991 and was revised in 2004 (Eisenberg, 2012). The original document spelled out exactly how to report cardiac arrest data and the revision clarified definitions and required data elements (Eisenberg, 2012). Seattle, which boasts the highest save rate in the nation at 45%, uses this template to constantly evaluate the critical time intervals (Davis, *The price of just a few seconds lost: people die*, 2005). The formalized process of data collection helps identify strengths and weaknesses within the system and is the truest measure of an emergency system's performance (Davis, *The price of just a few seconds lost: people die*, 2005).

5. What percent of the time, on all responses to the Las Vegas Strip, does the CCFD achieve its response time goal when vertical response is included?

On average, once a day in the United States someone dies when firefighters arrive too late (Dedman, *Slower arrival at fires in US is costing lives*, 2005). In the 1970's, the National Institute of Standards and Technology (NIST) found that when a fire breaks out the people involved have just over fifteen minutes to escape. In 2005, NIST found that time had decreased to approximately three-minutes (Dedman, *Slower arrival at fires in US is costing lives*, 2005). Primarily for this reason in 2001 the National Fire Protection

Association (NFPA) set a six-minute response time standard (Dedman, Slower arrival at fires in US is costing lives, 2005). The basic breakdown of the standard allows 1-minute for dispatch handling, 1-minute for emergency responders to get to the apparatus and 4-minutes to drive to the fire.

The six-minute guideline by NFPA also affects emergency response to medical calls, based on the time before a cardiac event will begin to cause damage to the brain (Dedman, Slower arrival at fires in US is costing lives, 2005). In 1991, the American Heart Association (AHA) coined the term, Chain of Survival (Zoll, n.d.). The chain, as illustrated in Figure #3, has six independent links: Early intervention, Access, CPR, Defibrillation, ACLS and Post Resuscitative Care (American Heart Association, 2000).

Figure 3: American Heart Association's Chain of Survival



Figure 3: <http://www.zoll.com/resources/chain-of-survival/>

Emergency responders have tried to focus on individual links in the chain for compliance, but the effectiveness of a system can only be evaluated by grading the performance of the entire chain (American Heart Association, 2000). For patients to

have the best opportunity to survive a cardiac arrest, they must receive CPR and defibrillation within three to four-minutes followed by Advanced Life Support (ALS) within eight-minutes (Zoll, n.d.).

The need to intervene early in cardiac arrest responses is documented extensively by the American Heart Association. Although cardiac arrests statistically represent a small portion of the department's overall call volume, there are other types of responses that require a timely response. Research shows a timely response has positive effects on trauma and drowning patients as well (Fitch, 2007). Without a timely response, these types of emergencies will continue to worsen until the patient is no longer viable (Urban Fire Forum, n.d.).

Fire departments across the United States have battled response time issues for many years. The communities we work in today are much different than those of years past regarding litigation (Binder, 2007). The most common cause of litigation is negligence, which can be broadly defined as the failure to exercise reasonable care under the circumstances (Binder, 2007). Plaintiffs have to establish four elements for negligence to exist, they are: duty, breach, causation and damages (Binder, 2007).

Professional and industry standards are not legally binding, however, they are frequently incorporated into statutes and ordinances in which the rules of negligence apply (Binder, 2007). Although not legally binding, NFPA standards can be used as evidence to establish a standard of care (Varone, 2012). Because these standards are permissible as evidence, failure to comply may constitute a breach of the department's

duty of care (Binder, 2007). The bottom line is that the courts retain the ability to second-guess professional and industry standards as inadequate (Binder, 2007). The question frequently becomes, what could the defendant (i.e. fire department) have done to reduce or limit the risk the victim encountered (Binder, 2007)?

If a department recognizes or should have recognized inadequacies in response times or criteria and a alternative solution was viable but they refused to adapt, punitive damages may be awarded to the plaintiff (Binder, 2007). An attorney that practices civil/governmental law in Nevada explained that at some point there needs to be a balancing of how many resources a department commits to high-call volume areas versus lower-call volume areas (personal communication, February 19, 2013). Departments who disregard known risks can be viewed as, “willful, wanton or reckless disregard of the rights of another” in which punitive damages are appropriate (Binder, 2007).

An example of a public entity being held negligent can be found by examining the *Steering Committee v. Port Authority of New York and New Jersey*. In 1993, terrorists placed a truck bomb in the underground parking garage of the World Trade Center killing six and injuring countless others (Binder, 2007). In the early 1980’s, the Port Authority became aware of potential terrorist activities (Supreme Court, New York County, 2004). In a ten-year period lasting from 1983-1993, the Port Authority received no less than five reports from separate people/ organizations that identified the underground parking garage as highly vulnerable to an attack (Supreme Court, New York County, 2004). The director of the World Trade Department responded in writing to the Port Authority’s Executive Director and said that addressing the underground parking recommendations listed in the reports would not be implemented and cited various reasons including: it was

impractical, too expensive and inconvenient (Supreme Court, New York County, 2004). In October of 2004, a Manhattan jury ruled against the Port Authority and found that it was negligent in safeguarding the World Trade Center (Hartocollis, 2005). More than 400 plaintiffs have lawsuits against the Port Authority seeking damages in excess of 1.8 billion dollars (Hartocollis, 2005).

There are a number of factors that contribute to meeting, or failing to meet response time objectives. Station design, cultural attitudes toward the type of response, activity being done prior to alarm activation and the number of times a day a station responds to calls are just a few of the factors that may contribute to the efficiency in which crews respond. Identifying factors in advance of the emergency response is a vital step in the process of improving response times (Blaney, et al., 2007). Soptich (2005) found that stations with more calls had shorter turnout times, possibly due to the higher repetition of the turnout process leading to improved performance. However, there must be a balance between higher repetitions and too many repetitions. With each additional emergency response, the probability of that piece of apparatus being busy when needed also increases (Urban Fire Forum, n.d.).

Station location is a critical factor in meeting response time goals. The NFPA travel time goal is four minutes, which is approximately 1.5 miles if the apparatus average response time speed is 25 miles per hours (Emergency Services Consulting, 2010). CCFD Station 32 was built as part of the master planned City Center project in the heart of the Las Vegas Strip. It houses one engine and one rescue unit that responded to more than 10,000 emergency responses in 2011. Reed Construction (2012) put an estimated price tag for the fire station at 28 million dollars. It appears clear from the

price that brick and mortar fire stations with a Las Vegas Blvd. address are fiscally unattainable.

The overall footprint of large high-rise structures presents challenges in a timely response (Blaney, et al., 2007). Vincent Dunn, a retired Deputy Chief from FDNY, explained in a newsletter on high-rise fires that response time to upper floors may be 15 minutes or more. He explains that part of this time is due to firefighters having to walk 100 – 200 feet through large lobbies (Dunn, 2000). The MGM Grand Hotel sits on 114 acres of land and boasts impressive square footage. It has 171,500 sq. ft. of casino, 600,000 sq. ft. of meeting space and over 5,000 hotel rooms (MGM Grand, 2012). There are 14 separate hotels on the Las Vegas Strip that have over 3,000 rooms, with the largest having over 7,000 (VegasTodayAndTomorrow, 2012). This creates a tremendous distance emergency responders must traverse before they reach the elevators and begin their ascent to the patient's location.

A study in New York found that an average of 50 seconds can be added to the vertical response time in residential buildings that require elevator use (Lite, 2005). In addition to the 50 seconds, it takes for the elevator to reach the desired floor, each unwanted stop will add an additional 54 seconds to the vertical response time (Lite, 2005).

A study found a reduction in delays when escorts met emergency responders and lead them to the location of the emergency (Blaney, et al., 2007). They found when EMS providers are given an escort to the exact location of the emergency the vertical response time decreased from 2.5 to 1.9 minutes (Lite, 2005). The significant decrease in time was

attributed to escorts overcoming barriers like locked doors, securing elevators and providing direction to the exact location (Blaney, et al., 2007).

Traffic controlling devices that are operating correctly can significantly decrease travel time (Emergency Services Consulting, 2010). The United States Fire Administration (2004) released a report in describing how these devices increase the speed and safety of emergency responses. Studies have shown traffic lights are the most common location for accidents to occur and that traffic controlling devices can decrease the frequency of collisions and improve response times (Emergency Services Consulting, 2010).

In summary, the literature indicates that vertical response time contributes to overall response time. Researchers in the United States and abroad have found that the unreported time segment can account for a significant portion of the overall response time. A thorough understanding of what vertical response time is and how it can impact a patient's outcome is imperative for Chief Officers and government officials.

The CCFD's internal documents clearly articulate the department's responsibility to provide timely service and need for additional resources to accommodate the size of structures currently present on the Las Vegas Strip. While other cities in the United States have high-rise buildings, those departments do not mitigate emergency responses in hotels the size of what is located in the CCFD's response area.

The need to collect accurate data when responding to these large structures is more important now than any other time in history. With the litigious world we live in today departments response capabilities are being scrutinized like never before. Combine

our society's attitude toward litigation with the department's responsibility to act and lack of accurate measurement and the CCFD finds itself in a precarious situation.

The truest measurement of an emergency system is how it responds to the most serious calls like cardiac arrests. The Utstein method for tracking cardiac arrest response is the gold standard internationally and could help the CCFD identify areas that need improvement in response to cardiac arrests thus providing a roadmap to increase its survival rate for sudden cardiac arrest patients.

Procedures

This process began at the NFA's Learning Resource Center. Due to the relatively short period of on-campus time, this research focused explicitly on past Executive Fire Officer Applied Research Papers.

The literature search was continued via Internet and Intranet upon returning from the NFA. There were multiple sessions conducted between January of 2012 and August of 2013. These sessions primarily utilized Google, Yahoo, and Bing search engines. Search terms included: NFPA 1710, Response Times, American Heart Association, Cardiac Chain of Events, Regression Analysis, Fire Department Response Model, Community Risk Assessment, High Rise Emergency Response, Workload Analysis, Community Vulnerability.

The literature search included acquiring internal documents that directly and indirectly affect the CCFD's ability to respond within established national standards. These documents included: CCFD Transport Agreement with private ambulance companies, CCFD Fire Protection Element (2008 edition and 2012 edition), and a FEMA SAFER Grant application.

Literature review was conducted to answer the following research questions:

1. What is vertical response time?
2. What are the department's current response times?
3. What internal documents make measuring vertical response time critical for the CCFD?
4. What percent of the time, on a cardiac arrest response, does the CCFD achieve its response time goal when vertical response is included?
5. What percent of the time, on all responses to the Las Vegas Strip, does the CCFD achieve its response time goal when vertical response is included?

Cardiac Arrest Information

The initial method chosen to measure the CCFD's vertical response time was cardiac arrest responses during the years 2011 and 2012 (Appendix B and Appendix C). Since cardiac arrests can be considered the most serious medical response, it is frequently used as a measuring stick in the emergency medical environment. The process involved gathering data already tracked in the CCFD Sansio reporting system. This was accomplished by running reports in the Sansio software program.

To extract the data needed, the following process was followed: On the in-station desktop computer double click "HealthEMS Capts Dashboard" tab. On toolbar of home screen move mouse over "eChart" and scroll down to "Advanced ePCR Search" and click. Enter date range to be searched. Scroll down to "Provider Impression, Mechanism Of Injury, Injury Area, ICD-9" section. Under this tab find "Prov. Imp.(s):" section and click on "Click to load filter options." Scroll through options until "Cardiac Arrest" is located and click on it. Scroll down to bottom of the page and click "Search."

This will bring up the “Advanced ePCR Search Results” screen. At the top of the screen click the drop down box that states, “Send results to.” Scroll down to “Excel export of Call / Patient Info” and click on it. While holding down the “Ctrl” key click on the blue “GO” box. Do not depress the “Ctrl” key. An Excel pop up will occur that asks if you want to open or save the document. While still holding down the “Ctrl” key click on “open.” This will bring you to the “Patient And Call Information” spreadsheet. You can now depress the “Ctrl” key.

In an effort to glean only the needed data, certain fields were removed from the excel spreadsheet that was created. They were: Branch, Call #, Booklet #, Matching #, Registration, Shift #, First Resp. Agency, Onset Date, Onset Time, Start Mileage, On Scene Mileage, At Destination Mileage, Crew Member ID1, Crew Member 1 First Name, Crew Member 1 MI, Crew Member 1 Last Name, Driver To Scene 1, Driver To Hospital 1, Completed Document 1, Crew Member ID2, Crew Member 2 First Name, Crew Member 2 MI, Crew Member 2 Last Name, Driver To Scene 2, Driver To Hospital 2, Completed Document 2, Crew Member ID3, Crew Member 3 First Name, Crew Member 3 MI, Crew Member 3 Last Name, Driver To Scene 3, Driver To Hospital 3, Completed Document 3, Crew Member ID4, Crew Member 4 First Name, Crew Member 4 MI, Crew Member 4 Last Name, Driver To Scene 4, Driver To Hospital 4, Completed Document 4, Vehicle Description, Lights To Scene, Lights To Destination, Requested By 911, Requested By Private, Requested By Code, Requested By Description, Run Type, Resource Code, Upgraded To Scene, Downgraded To Scene, Upgraded To Destination, Downgraded To Destination, Destination Determination, Diverted From Code, Diverted From Description, Diverted Time, Transport From, Transport From Code, Transferred To

Code, # Of Patients, Protocol 1, Protocol 2, Incident Apt. Number, Incident City, Incident County, Incident State, Incident Zip, Latitude, Longitude, Driver License, First Name, MI, Last Name, Street Address, Apt. Number, City, County, State, Zip, Age Modifier, Weight, Pounds, Kilograms, Home Phone, Social Security #, Date Of Birth, Ethnicity, Insurance Type 1, Insurance Company Name 1, Payer 1, Policy #1, Group #1, Insurance Type 2, Insurance Company Name 2, Payer 2, Policy #2, Group #2, Insurance Type 3, Insurance Company Name 3, Payer 3, Policy #3, Group #3, Insurance Type 4, Insurance Company Name 4, Payer 4, Policy #4, Group #4, Agency Definable 1, Agency Definable 2, Dispatched Service Level, Recommended Service Level, Exported To State, Billed Status, Avg QA Score.

The edited spreadsheet was left with the following row headings: Service Date, Incident #, Time Call Received, Dispatched, En Route, On Scene, Patient Contact Time, Left Scene, At Destination, In Service, Vehicle Unit #, Run Disposition, Dispatch Reason, Dispatch Code, Transport From, Transport To Description, Incident Address, Age and Gender.

The following column headings were added to the edited spreadsheet to provide space for the calculated data: Turnout Time, Travel Time, Reported Response Time, Vertical Response Time, Actual Travel Time, Actual Response Time and Hotel Name.

Searching the database for “Cardiac Arrest” responses yielded over 1,000 results of ePCRs that matched the criteria during the timeframe searched. Unfortunately, the software only allows 200 to be seen at a time. Due to this software limitation, the procedural process described above was repeated five times per year, entering smaller

date searches until both years were evaluated. Each incident was sorted manually to find “Las Vegas Blvd” address while all other incidents were deleted from the sample group.

The information gleaned had two key identifiers. The first was the response was deemed by the care provider to be a “Cardiac Arrest” and the second was that it occurred on “Las Vegas Blvd.” This group contained hotels in Primm, NV and Stateline, NV as well as smaller casinos well to the North of the “Strip” corridor. These areas were removed from the data in an effort to focus solely on the center of Las Vegas Blvd, which contains our community’s largest structures. Thus the area of Las Vegas Blvd identified ran from Russell Rd. (at the South) to Sahara Ave. (at the North).

Vertical Response information

Collecting response times from the data already in the database did not identify when crews actually went vertically into the structure. All of the data generated thus far produced response times and patient contact times to structures along Las Vegas Blvd., but there was no way to track when crews actually had to enter an elevator and go aloft to reach a patient. What that meant in simple terms was the numbers generated may be skewed to show the CCFD was responding within its stated goal at a higher average than was actually happening. Example: if the patient was on the side of the road in front of an address, the vertical response time would be near zero and the response time would more than likely be met.

In an effort to extract the true vertical response time, a vertical response identifier was added to the Sansio reporting system. The researcher contacted the CCFD medical QA person and explained the “FlexField” he wanted to add to the software program. The FlexField would allow the researcher to identify any response to a property that was

coded as a high-rise/ casino structure. Medical QA explained that the request would have to be forwarded to the regional Sansio administrator who was located in Los Angeles. The request was submitted and two weeks later the FlexField was in place and ready to start generating data.

With the new FlexField in place, the next step was to educate emergency responders about the new FlexField. A department wide email was sent out explaining the parameters of the FlexField and what it was going to be used to collect and what the emergency responders role was in the data collection process (Appendix D). Attached to the email was a picture of what the FlexField would look like (Appendix E). The email was sent two weeks prior to the launch of data collection in an effort to answer questions and address any issues that might have surfaced.

The next research procedure involved gathering data that was specifically tagged to fall within the FlexField parameters in the Sansio reporting system. To extract the data needed, the following process was followed: on the in-station desktop computer double click “HealthEMS Capts Dashboard” tab. On toolbar of home screen move mouse over “eChart” and scroll down to “Advanced ePCR Search” and click. Enter date range to be searched. Scroll down to “FlexFields” section. Under this tab find “[Add FlexField Filter]” section and click on it. “Add FlexField Filter” screen will pop up. Scroll through options until “Transport From Facility-Casinos” is located and click on it. Click on “yes” on the “Filter: yes, no” option and then click, “Add Filter” box. Scroll down to bottom of the page and click “Search.”

This will bring up the “Advanced ePCR Search Results” screen. At the top of the screen, click the drop-down box that states, “Send results to.” Scroll down to “Excel

export of Call / Patient Info” and click on it. While holding down the “Ctrl” key click on the blue “GO” box. Do not depress the “Ctrl” key. An Excel pop up will occur that asks if you want to open or save the document. While still holding down the “Ctrl” key click on open. This will bring you to the “Patient And Call Information” spreadsheet. You can now depress the “Ctrl” key.

In an effort to glean only the needed data, certain fields were removed from the excel spreadsheet that was created. They were: Branch, Call #, Booklet #, Matching #, Registration, Shift #, First Resp. Agency, Onset Date, Onset Time, Start Mileage, On Scene Mileage, At Destination Mileage, Crew Member ID1, Crew Member 1 First Name, Crew Member 1 MI, Crew Member 1 Last Name, Driver To Scene 1, Driver To Hospital 1, Completed Document 1, Crew Member ID2, Crew Member 2 First Name, Crew Member 2 MI, Crew Member 2 Last Name, Driver To Scene 2, Driver To Hospital 2, Completed Document 2, Crew Member ID3, Crew Member 3 First Name, Crew Member 3 MI, Crew Member 3 Last Name, Driver To Scene 3, Driver To Hospital 3, Completed Document 3, Crew Member ID4, Crew Member 4 First Name, Crew Member 4 MI, Crew Member 4 Last Name, Driver To Scene 4, Driver To Hospital 4, Completed Document 4, Vehicle Description, Lights To Scene, Lights To Destination, Requested By 911, Requested By Private, Requested By Code, Requested By Description, Run Type, Resource Code, Upgraded To Scene, Downgraded To Scene, Upgraded To Destination, Downgraded To Destination, Destination Determination, Diverted From Code, Diverted From Description, Diverted Time, Transport From, Transport From Code, Transferred To Code, # Of Patients, Protocol 1, Protocol 2, Incident Apt. Number, Incident City, Incident County, Incident State, Incident Zip, Latitude, Longitude, Driver License, First Name,

MI, Last Name, Street Address, Apt. Number, City, County, State, Zip, Age Modifier, Weight, Pounds, Kilograms, Home Phone, Social Security #, Date Of Birth, Ethnicity, Insurance Type 1, Insurance Company Name 1, Payer 1, Policy #1, Group #1, Insurance Type 2, Insurance Company Name 2, Payer 2, Policy #2, Group #2, Insurance Type 3, Insurance Company Name 3, Payer 3, Policy #3, Group #3, Insurance Type 4, Insurance Company Name 4, Payer 4, Policy #4, Group #4, Agency Definable 1, Agency Definable 2, Dispatched Service Level, Recommended Service Level, Exported To State, Billed Status, Avg. QA Score.

The edited spreadsheet was left with the following row headings: Service Date, Incident #, Time Call Received, Dispatched, En Route, On Scene, Patient Contact Time, Left Scene, At Destination, In Service, Vehicle Unit #, Run Disposition, Dispatch Reason, Dispatch Code, Transport From, Transport To Description, Incident Address, Age and Gender.

The following column headings were added to the edited spreadsheet to provide space for the calculated data: Turnout Time, Travel Time, Reported Response Time, Vertical Response Time, Actual Travel Time, Actual Response Time and Hotel Name.

Searching the database utilizing the FlexField that identified only those responses that occurred on or above the fourth floor yielded a result of 470 ePCRs that matched the criteria from November 17, 2012 to January 17, 2013. Unfortunately, the software only allows 200 to be seen at a time. Due to this software limitation, the procedural process described above was repeated three times, entering smaller date searches until the two month test period could be evaluated. Each incident was sorted manually to ensure it occurred between the Russell Rd. (South) and Sahara Ave. (North) parameters.

Interviews

In an effort to triangulate data generated during the quantitative data collection portion of the research, interviews were conducted. Questions focused on the areas in which each interviewee was a subject matter expert. Interviewee's are identified by title in an effort to promote holistic transferability. In addition to the subject matter experts, the researcher interviewed the Fire Chief and the Assistant County Manager. The qualitative data allowed the researcher to clarify the meaning and impact of the information generated during the data collection phase of this research.

Limitations

The CCFD responds to over 100,000 emergency responses annually. Software restrictions were the primary hindrance. The researcher was unable to control some of the fields presented in the Sansio software. It was requested that when any emergency responder pressed the button "at patient" that the time would auto-populate to the time of the clock in the CAD system. This request did not occur, so all "at patient" data was manually filled in by the emergency responder on scene. This introduces the possibility of human manipulation. One responder may use the clock on the computer and another responder may use the clock on their watch.

The results were concluded over a two-month time period. It would be desired to conduct the same research over a 12-month time period to address fluctuations in call volume and call dispersion. The data collected on "peak time" rescues is promising, but the data pool was too small to draw a sustainable conclusion on their effectiveness.

Results

This research was designed to provide both quantitative and qualitative data for the organization's management. Quantitatively, data was collected and analyzed to provide key statistical information regarding total response time in our largest high-rise buildings along Las Vegas Blvd. Qualitatively, interviews were conducted to provide perspective about how the CCFD might address extended response issues, in an effort to make transferable recommendations. The collected data is the most up-to-date information for management to base their resource allocation decisions (See Appendix F for the complete vertical response results).

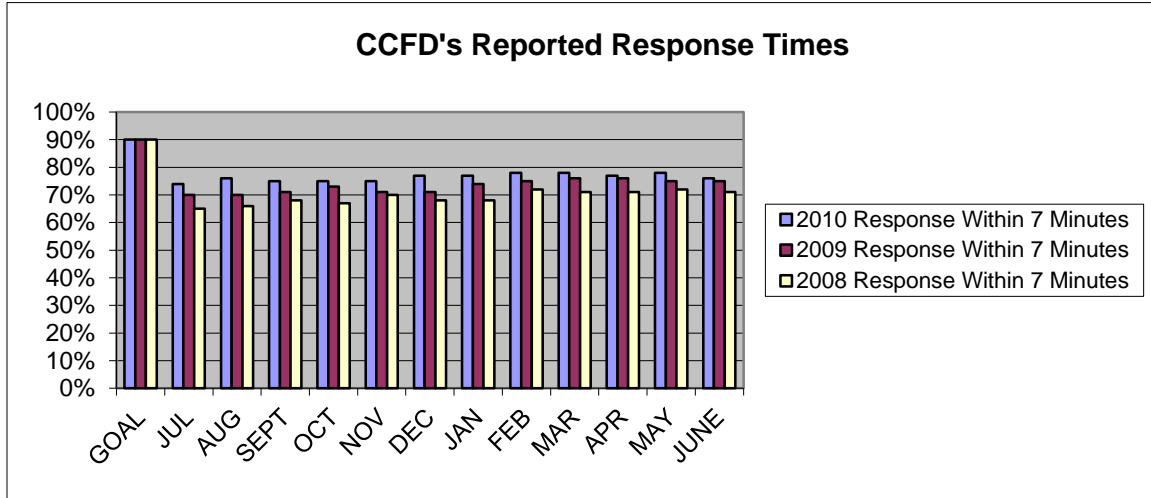
1. What is vertical response time?

Results for the definition of vertical response time were gleaned from the literature review process. According the NFPA (2010) vertical response time or mitigation time measures the time interval between apparatus arriving on scene and the crew arriving at the patient or fire to initiate emergency mitigation. It is recognized that most departments do not measure this integral portion of the total response time. However, organizational effectiveness can be tied to total response time, which makes the quest to understand each component of the department's total response times a lucrative investment.

2. What are the department's current response times?

The reported response time for the CCFD for the years 2008 thru 2010 ranged from 65% to 78% of the CCFD seven-minute goal. Figure 4 shows the average for each year with the goal of 90% within seven minutes. Each year the CCFD's response time improved using the current response time measurements.

Figure 4



3. What internal documents make measuring vertical response time critical for the CCFD?

The CCFD has a number of documents that make measuring vertical response time critical for the department's well being. The researcher focused on documents that have been produced to guide the department in its quest to move forward and provide better service. Deloitte and Touche (2001) was commissioned to assist the CCFD, but many of the problems unearthed then have still not been addressed.

The Clark County Fire Protection Element addresses planning for new apparatus, stations and personnel for the fire department. This document is a pivotal piece of how the CCFD plans for the future. NFPA 1710 is an industry wide document that addresses response times and is important for the CCFD to understand as it addresses response time issues.

The Safer Grant application is one of the more important documents the CCFD has produced. In the application, the CCFD admits they have a problem that they do not totally understand how to solve. This research is the first step toward understanding the problem and identifying possible solutions.

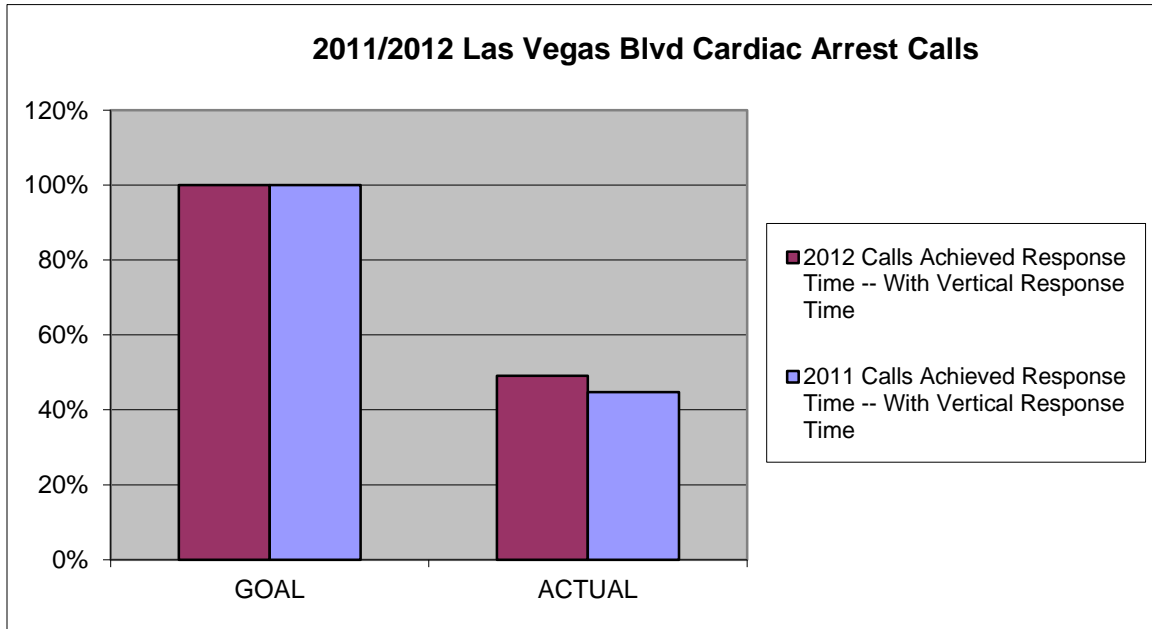
4. What percent of cardiac arrest responses does the CCFD achieve its response time goal when vertical response is included?

In 2011 there were 1092 cardiac arrests in Clark County. Of the 1092 cardiac arrests, 111 or 10.2% of them occurred on the Las Vegas Strip. Using the current response time measurements, the CCFD failed to meet its response time goal to 16 or 14.4% of the cardiac arrests on Las Vegas Blvd. However, when the vertical response time was added into the current measurement response times deteriorated significantly. With vertical response time added, the CCFD failed to meet its response time goal to 56 or 50.4% of the time in 2011.

In 2012 there were 1112 cardiac arrests in Clark County. Of the 1112 cardiac arrests, 93 or 8.4% of them occurred on the Las Vegas Strip. Using the current response time measurements, the CCFD failed to meet its response time goal to 21 or 22.5% of the time. However, when the vertical response time was added into the current measurement performance deteriorated significantly. With vertical response time added, the CCFD failed to meet its response time goal to 52 or 55.9% of the time in 2012.

Figure 5 shows the percentage of time the CCFD met its response time goal in a high-rise structure with vertical response time added into the equation.

Figure 5:



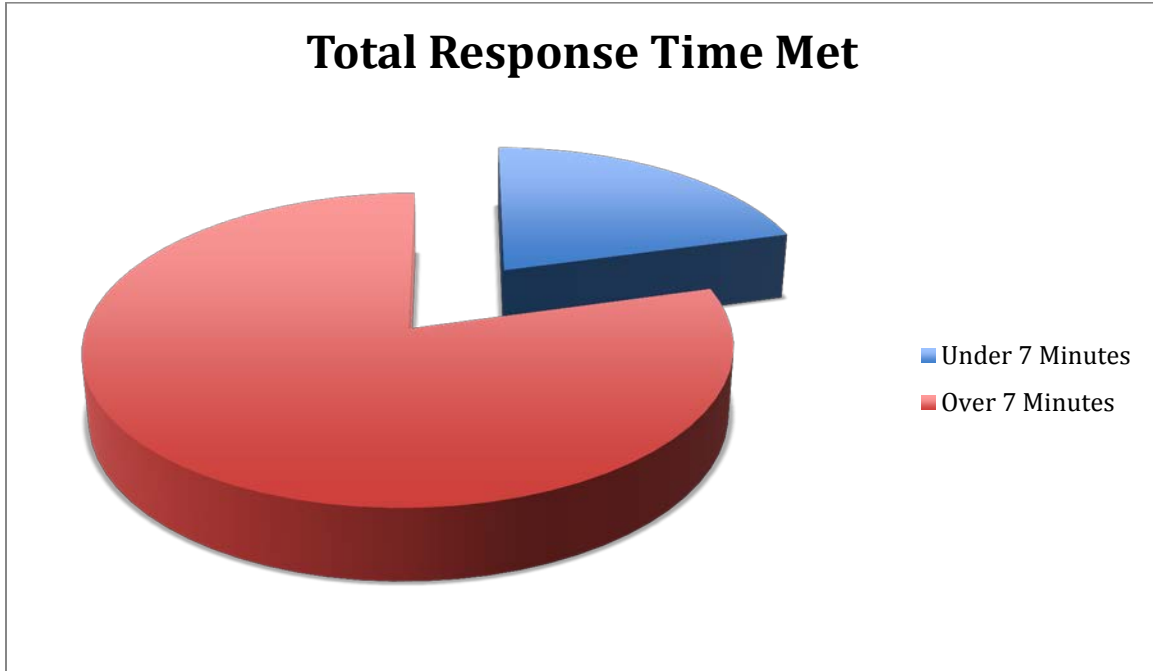
5. What percent of all responses to the Las Vegas Strip does the CCFD achieve its response time goal when vertical response is included?

One limitation in collecting vertical response times from the data already in the database was there was no trigger as to when crews actually went vertically into the structure. All of the data generated from the 2011 and 2012 cardiac arrest responses accounted for patient contact times to Las Vegas Blvd. addresses, but there was no way to track when crews actually had to enter an elevator and go aloft to reach a patient. What that meant in simple terms was the numbers generated may be skewed to show the CCFD was responding within its stated goal at a higher average than was actually happening. If the patient was on the side of the road in front of an address, the vertical response time would be negligent and the response time would more than likely be met.

FlexField

Searching the database utilizing the FlexField that identified only those responses that occurred on, or above, the fourth floor yielded a result of 470 ePCRs that matched the criteria from November 17, 2012 to January 17, 2013. The 470 responses that met the FlexField criteria were manually sorted to ensure they occurred on Las Vegas Blvd. between Russell Rd. (South) and Sahara Ave. (North). The manual sorting identified 115 that fell outside the stated parameters and, therefore, were deleted. This left 347 responses that occurred within the established parameters to evaluate. Of the 347 responses, 32 were cancelled prior to arrival and thus did not provide all the data needed and, therefore, were deleted. This left 315 responses to evaluate. Of the 315 responses, 23 did not fill in all the fields needed for unknown reasons and thus were deleted from the study. This left a total of 292 responses to evaluate. Of those 292 responses, the CCFD's actual percentage of response time met within its stated goals was 20.7%. Figure 6 shows the CCFD's total response time when vertical response time is added to the equation.

Figure 6:



By Station

In order to reflect the significance each station responding to the Strip Corridor had on total response times, each station was analyzed separately to identify its impact on the whole. Tables 7, 8, 9, 10 and 11 show each station's total response time with vertical response time added into the equation. The results show stations that are geographically closer to the hotels to which they respond have a higher probability of reaching the patient in a timely manner. Figure 7 shows station 11, which handles most responses on the South end of Las Vegas Blvd., met their time 7 of 58 responses (12.0%) during the sample period.

Figure 7:

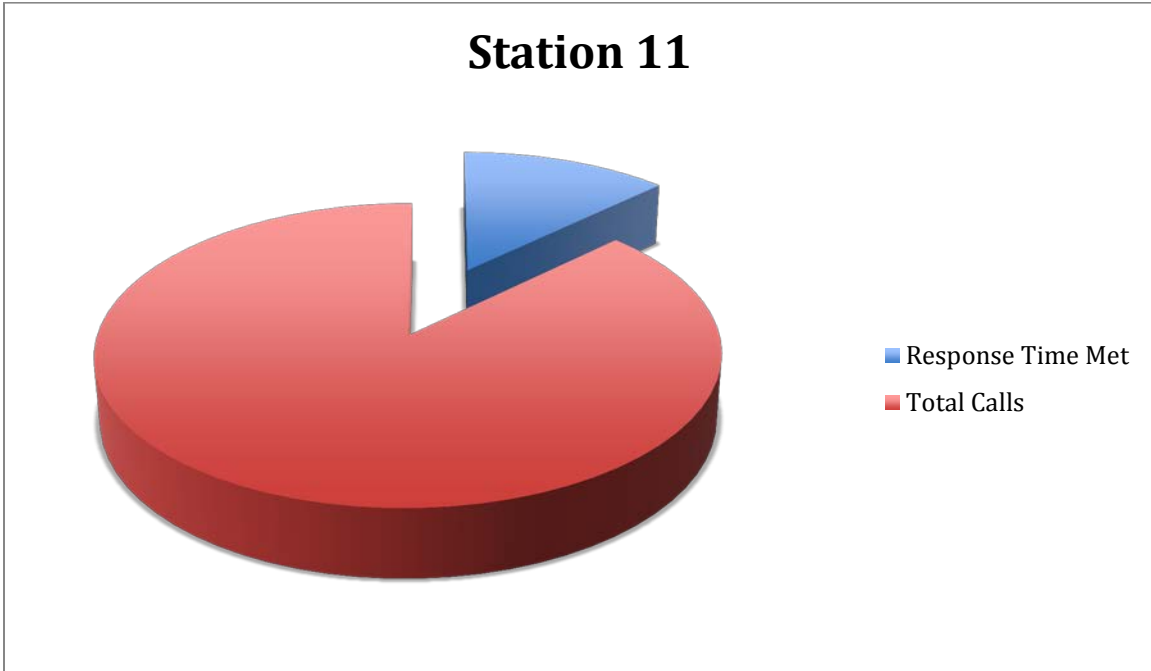


Figure 8 shows station 12, which responds on the North end of Las Vegas Blvd., met their time 16 of 71 responses (22.5%) during the sample period.

Figure 8:

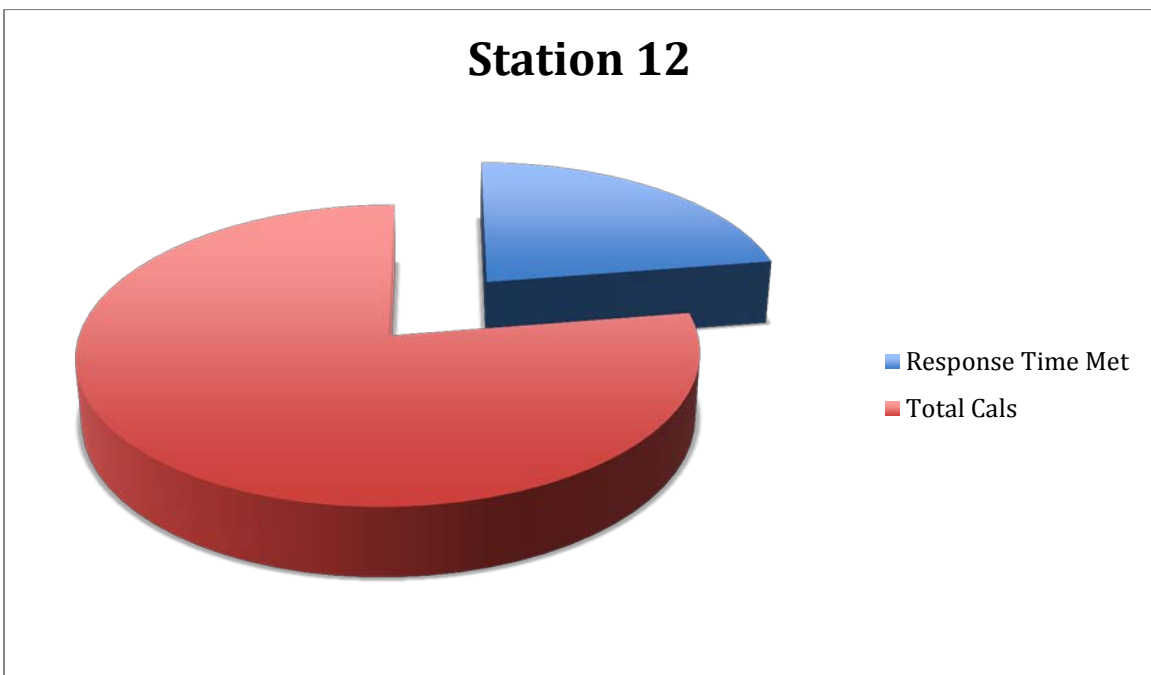


Figure 9 shows station 18, which responds in the middle of Las Vegas Blvd., met their time 3 of 47 responses (6.3%) during the sample period.

Figure 9:

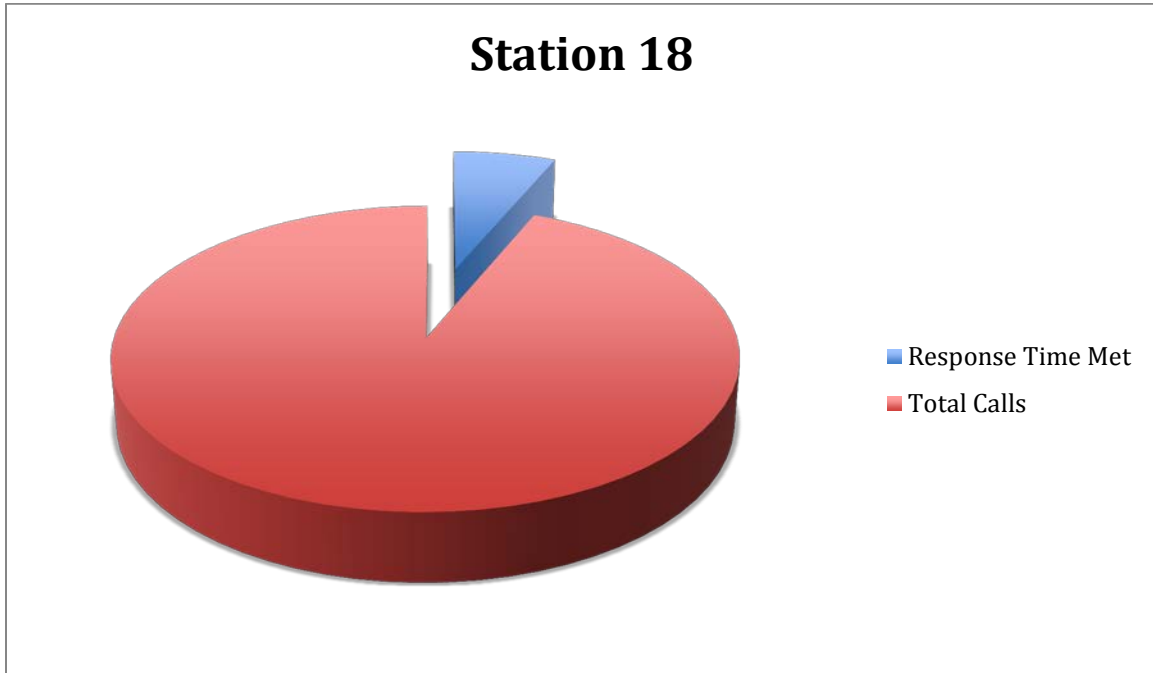


Figure 10 shows station 32, which responds to the majority of emergency responses in the middle of Las Vegas Blvd., met their time 46 of 104 responses (44.2%) during the sample period.

Figure 10:

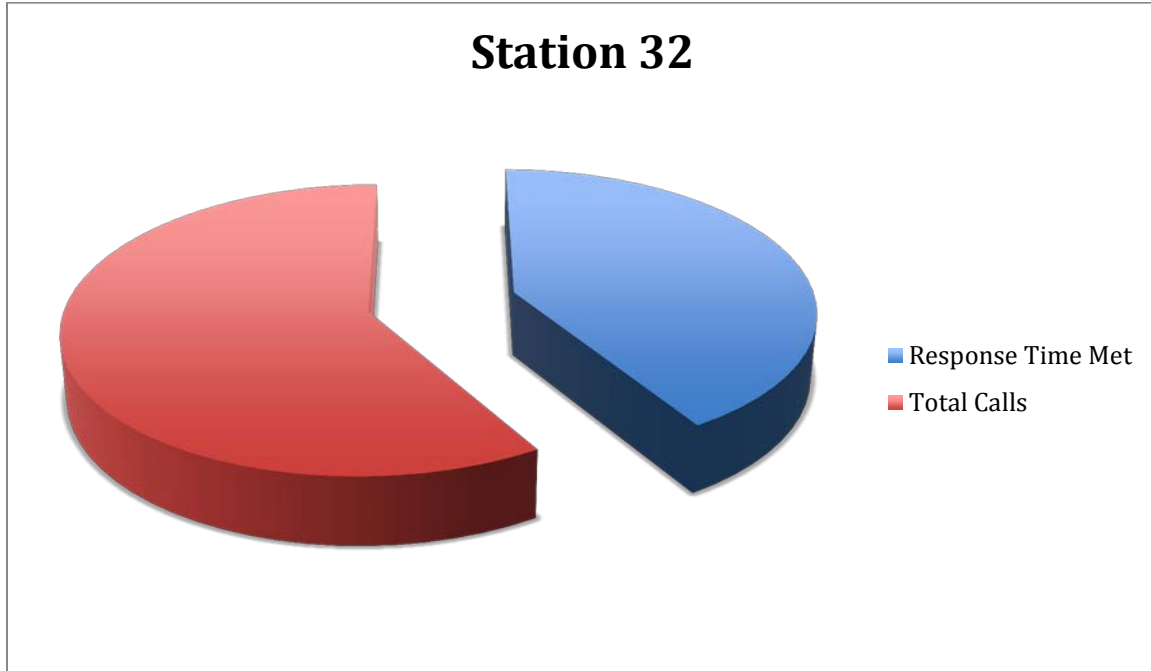
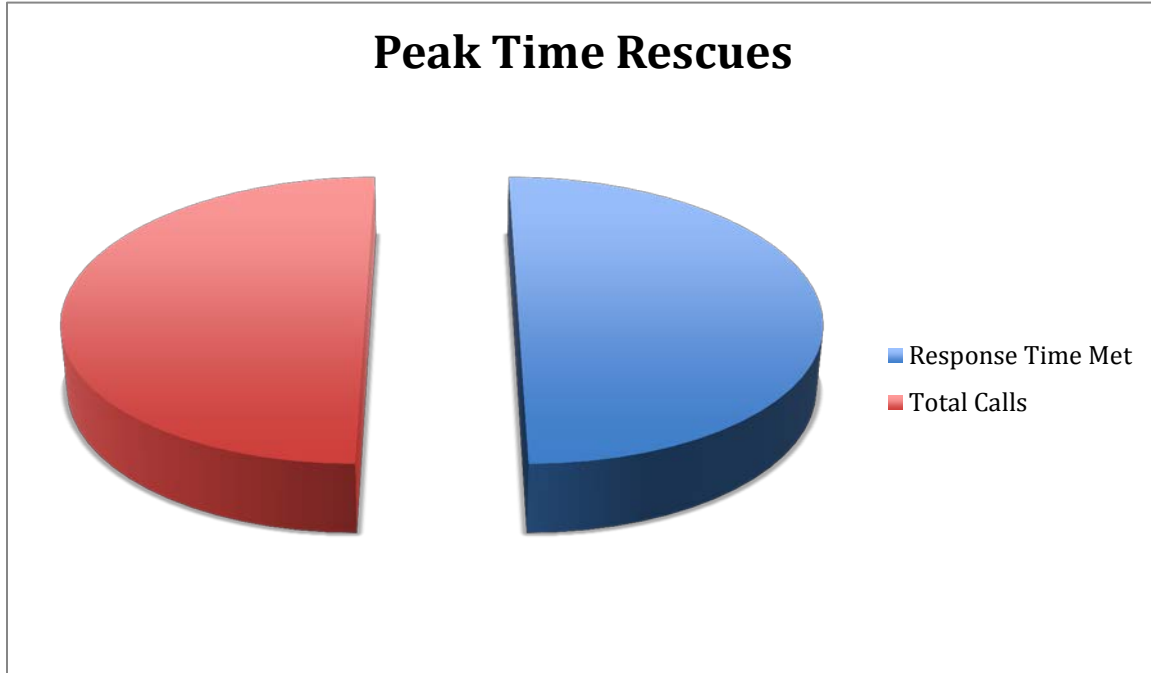


Figure 11 shows peak time rescues, which are put in service during holiday weekends or during periods of higher than normal call volumes, met their time 8 of 16 responses (50%) during the sample period.

Figure 11:



By Hotel:

Figure 12 shows each hotel that requested an emergency response and the percent of time the CCFD met their response time goal.

Figure 12

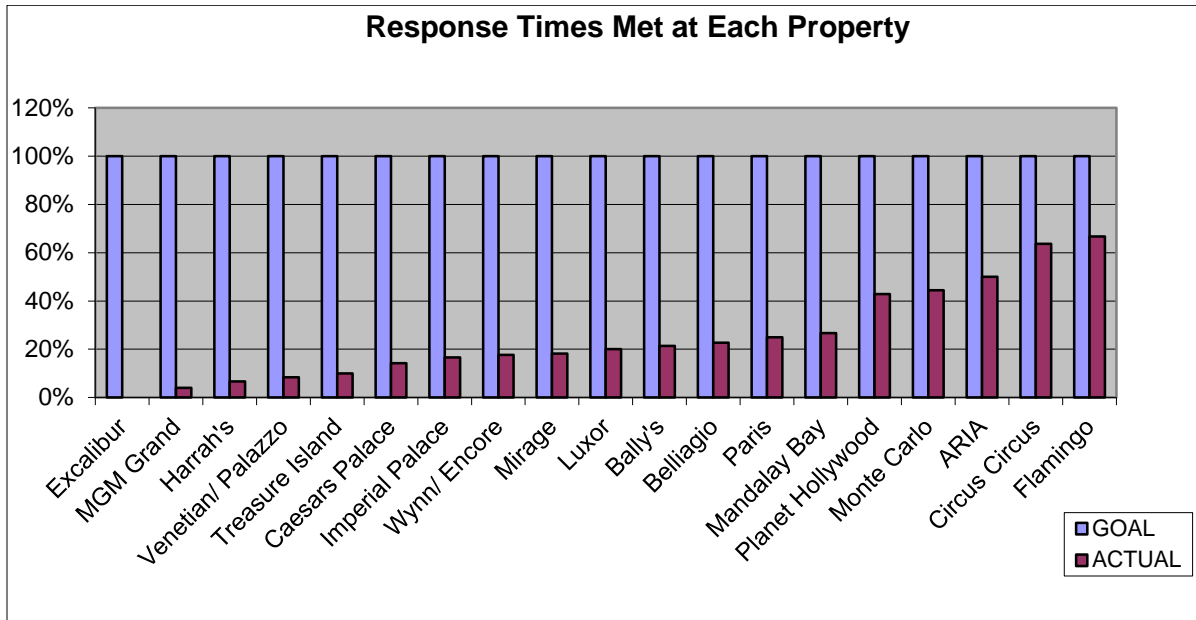


Table 4 shows each hotel that requested an emergency response and the response time met by size of property.

Table 4: Size of Hotel and Response Time Met

Hotel	Number of Rooms	Response Times Met
Venetian	7,128	8%
MGM Grand	5,044	4%
Wynn/ Encore	4,750	17%
Luxor	4,408	20%
Mandalay Bay/ The Hotel	4,332	27%
Excalibur	4,008	0%
Aria	4,004	50%
Caesars Palace	3,998	14%
Bellagio	3,993	23%
Circus Circus	3,774	64%
Planet Hollywood	3,697	43%
Flamingo	3,565	67%
Mirage	3,004	18%
Monte Carlo	3,002	44%
Paris	2,916	25%
Treasure Island	2,885	10%
Bally's	2,814	21%
Imperial Palace	2,635	17%
Harrah's	2,576	7%

Discussion

Literature review and research support the premise that vertical response time adds a significant amount of time to the CCFD's total response time. As such, it may prohibit the CCFD from accomplishing its mission and inadvertently endanger lives. The discussion section will address each research question individually and talk through possible explanations.

The first research question asked, what is vertical response time. The definition of vertical response time is found in NFPA 1710, however the importance of measuring it is often debated. The principle criticism in measuring vertical response time it is not required by NFPA 1710 and therefore departments do not need to. In Annex A of NFPA 1710, section A.3.353.6 illustrates what encompasses total response time (NFPA, 1710). The "cascade of events" clearly shows that initiation/ intervention, or vertical response time has an impact on a department's total response time. Fitch (2007) explains response times are frequently used by city councils and county boards to measure system performance because they appear to be objective. But, when external audits dig deeper they frequently find discrepancies like they have in Los Angeles, New York and San Diego. Gustafson (2011) reported the mayor and City Council of San Diego were not accurately informed of the actual response time, "from when a citizen calls 911 to when (emergency) personnel arrive on scene." Because of the lack of accounting for every second, the City Council could not possibly assess the performance of the fire department or the degree the public may be at risk (Gustafson, 2011).

A principal member of NFPA 1710 was interviewed and describes the CCFD's environment as unique because no other city has the concentration of large hotels like

Clark County (Appendix G). Of the 27 largest hotels in the world, 20 of them are in the CCFD's response area (Appendix H). The principal member from the NFPA 1710 committee explained the committee members recognize this is an area of concern; however, the committee is still working on some of the more basic issues regarding response time. In order for the CCFD to fulfill its vision statement (Appendix I) to the citizens and visitors of Clark County, the fire department needs to be able to account for every second during an emergency response. This philosophy supports including vertical response time into the reported total response time reported to the County Manager and County Commissioners.

The second research question addressed the CCFD's current response times. The literature review addressed response times over a three-year period. The three-year period was not to focus on the best or worst times, but to establish an average. These percentages were essential to establish a baseline.

Starting in 2008, the department had response time percentages in the mid sixties of the CCFD seven-minute goal and gradually increased as the year progressed. This trend continued through 2010 with percentages reaching the upper 70's most of that year. The response time percentages are a critical factor on how fire administration, the County Manager and County Commissioners measure the effectiveness of the CCFD. The CCFD is not alone in reporting only a portion of their total response time. In 2005, the USA Today studied the 50 largest cities in the United States and found that only a small portion report their total response time (Davis, The price of just a few seconds lost: people die, 2005). In the article Davis (2005) suggests cities are lying to themselves

about their ability to deliver quality EMS service to the citizens and visitors they are sworn to serve.

The method to collect response times has not changed in many years. In all fairness to fire departments across the United States, many do not have the software programs that would allow them to collect mitigation/ vertical response time data. The CCFD changed computer software programs in December of 2009 to Sansio's EMS software program (personal communication, Medical QA March 13, 2013). The Sansio product allows for the collection of mitigation/ vertical response time data, but that portion of the program was not utilized until this research began in November of 2012. Utilizing this portion of the software allows the CCFD to show the significant difference in total response time when vertical response time is added.

The third research question addressed what internal documents make measuring vertical response time critical. Over the past few decades, the CCFD has continued to work to improve its overall service delivery to the citizens of Clark County. The comparable entity project undertaken in 2001 attempted to see where the CCFD stood as it related to size, service and productivity. Deloitte and Touche found the CCFD was handling more calls, with fewer personnel and less equipment than other comparable fire departments (Deloitte & Touche, 2001). The project was the first to suggest the use of the Fire Protection Planning Element to forecast when additional apparatus stations and personnel should be added to the department to meet the needs of the growing County (Deloitte & Touche, 2011).

The Fire Protection Element established a seven-minute response time in 2008 as the standard that should be met 90% of the time or greater (Clark County Department of

Comprehensive Planning, 2008). This time standard was raised by one-minute over NFPA 1710's recommended six-minute response time (NFPA 1710, 2012). It goes on to explain that resource arrangement should assure an effective response can assemble to stop a serious health event before cardiac arrest occurs (Clark County Department of Comprehensive Planning, 2012). It is clear from the results that the CCFD does not fulfill this obligation to people who are staying on our Strip Corridor.

The Fire Protection Element goes on to state that future deployment of apparatus and staffing levels will be determined by the CCFD's ability to deliver reliable, on scene personnel within national response time goals and incident outcomes (Clark County Department of Comprehensive Planning, 2012). There are three glaring inconsistencies within this one statement:

1. The CCFD does not deliver personnel within its own organizationally set time, which is a minute longer than the national standard.
2. The CCFD does not measure the entire response event, thus reporting times that do not accurately reflect their ability to deliver the service in which they have promised.
3. The CCFD does not have any mechanisms in place to research incident outcomes, therefore making this statement invalid for future planning.

The CCFD administration is aware of the vertical response time problem. In its own 2012 SAFER grant application it wrote, the CCFD faces severe response time challenges due to a number of issues including high visitor volume in the resort corridor and large facilities with areas that can take in excess of 10-minutes for crews to reach (Clark County Fire Department, 2012). In an interview conducted with a attorney

practicing civil/ governmental law in Nevada, they explained that at some point there needs to be a balancing of how many resources a department commits to high call volume areas versus lower call volume areas (Appendix J). Binder (2007) states if a department recognizes or should have recognized inadequacies in response times or criteria and a alternative solution was viable, but they refused to adapt, punitive damages may be awarded to the plaintiff. Departments who disregard known risks can be viewed as, “willful, wanton or reckless disregard of the rights of another” in which punitive damages are appropriate (Binder, 2007).

Research question four addressed what percent the CCFD arrived within its stated response time goal. The American Heart Association recognizes the importance of time in cardiac emergencies and in 1991 coined the phrase, Cardiac Chain of Survival (Zoll, n.d.). Emergency responders have tried to focus on individual links in the chain for compliance, but the effectiveness of a system can only be evaluated by grading the performance of the entire chain (American Heart Association, 2000). In 1993, a major study was conducted in Las Vegas that focused on early defibrillation. The study changed the landscape of how AEDs are used in the Strip Corridor, but as the American Heart Association stated in 2000, the entire chain needs to be strengthened, not individual links.

The research found that in 2011 the CCFD met its response time goal, when responding to a high-rise, 85.6% of the time. However, when vertical response was added into the equation the CCFD met its response time goal only 49.6% of the time.

The research found similar percentages in its 2012 high-rise response times. During this year the CCFD met its response time goal, when responding to a high-rise,

77.5% of the time. However, when vertical response was added into the equation the CCFD met its response time goal only 44.1% of the time.

The cardiac arrest data gathered in 2011 and 2012 lacked the ability to differentiate between a cardiac arrest that occurred at the ground level of a high-rise or in the upper floors. It was possible the response time percentages would be less favorable once the vertical response was isolated and dissected in research question five.

Matching resource allocation to risk is common practice within the United States fire service. A community's risk level is established by developing an overall profile based on demographics, socioeconomic factors, occupancy risk, fire management zones and the level of services currently provided (Urban Fire Forum, n.d.). If reported response times are within established limits, that is an indicator the resources are sufficient and communities should expect a positive outcome from emergencies (Urban Fire Forum, n.d.). However, if response times are outside the established limit that is an indicator the department's resources are insufficient and the community will probably encounter a negative outcome from emergencies (Urban Fire Forum, n.d.).

The current response times to the Strip Corridor are some of the best in the County, which would lead Chief Officers and County management to believe sufficient resources are in place to handle the call volume appropriately, but the data is misleading. The Society for Academic Emergency Medicine (2007) published a study completed in New York which measured the time interval from arrival on-scene to the patient's side. It acknowledged the unreported vertical response time segment and suggests total response time would be better represented by measuring from call assignment to arrival at patient's side (Blaney, et al., 2007). The study found the time from call assignment to

on-scene report was less than 6-minutes in 61.5% of calls, but once vertical response time was added, arrival within 6-minutes fell to 28.5% (Blaney, et al., 2007). Similar findings were found in Toronto, Canada, and Singapore, Indonesia, which further validates the findings of the research conducted in Clark County.

In 2005, the USA Today conducted a study of the 50 biggest cities in the United States. They found only a small portion of these cities report the total response time, which includes vertical response time (Davis, The price of just a few seconds lost: people die, 2005). The article suggests these cities are lying to themselves about their ability to deliver quality EMS service and intentionally only showing response data that looks the most favorable for their departments (Davis, The price of just a few seconds lost: people die, 2005). If departments account for every second, they would be holding themselves to a higher standard than what is currently expected from NFPA 1710. The questions departments need to ask themselves are what is morally and ethically the right thing to do for our citizens? Accounting for every minute of an emergency response is especially important during particular emergencies. Every second counts during a cardiac arrest call; therefore every second must be accounted for during the response, but cities continue to rely on imprecise response times (Davis, The price of just a few seconds lost: people die, 2005).

Research question five evaluated every vertical response that occurred during the two-month test period to determine the actual vertical response time. From November 17, 2012 to January 17, 2013 a FlexField was added to the EMS software program to capture when crews went above the fourth floor in a high-rise coded structure within the established response area criteria. After manually sorting each report, 292 responses fit

the criteria and of those the CCFD only met its response time goal of 7-minutes 20.7% of the time.

The data was dissected further in an attempt to identify if the times were equal among all responding stations or if individual stations exceeded the response time goals more than other stations. Breaking the response times up by station identified some key factors. The stations with the best response times were the peak time rescues (8 of 16, or 50%) and Station 32 (46 of 104, or 44.2%).

The peak time rescues do not respond from a brick and mortar station, they are on duty at specific high volume times and stage on the Las Vegas Strip in their apparatus. Station 32 was part of the City Center construction project. Their station is attached to the 60-story Vdara Tower on Las Vegas Blvd. Both the peak time units and Station 32 apparatus have minimal distance to travel during a response to the Strip Corridor, thus increasing the probability of their arrival at the patient's side in the appropriate time.

Conversely, Station 11 (7 of 58, or 12%) and Station 18 (3 of 47, or 6.3%) have a further distance to travel for each response to the Strip Corridor. The extra distance and traffic encountered add significant time to their total response time.

The data was also dissected by hotel in an attempt to identify if the property contributed to the response time. Some of the largest properties located on the Strip Corridor had the worst response times. Excalibur (0 of 6, or 0%), MGM Grand (1 of 25, or 4%), Venetian/ Palazzo (2 of 24, or 8%) and Wynn/ Encore (3 of 17, or 17%) all had less than desirable response times. Excalibur and MGM Grand are both within Station 11's response area. They are both on the farthest corner that Station 11 must respond. Wynn/ Encore and Venetian/ Palazzo are both on the farthest corner that Station 12 must

respond. These four properties represent four of the six largest properties on the Las Vegas Strip, and are the farthest distance from their responding fire station. These two factors contribute to their low percentages.

Conversely, Planet Hollywood (3 of 7, or 43%), Monte Carlo (4 of 9, or 44%), Aria (9 of 18, or 50%), Circus Circus (7 of 11, or 64%) and the Flamingo (4 of 6, or 67%) had the best response times. These times have a direct correlation to distance from a fire station and size of property. Planet Hollywood, Monte Carlo, Aria and the Flamingo are in Station 32's response area. Circus Circus is immediately to the North of Station 12. Again demonstrating the significance of apparatus placement and its effect on total response time.

There are multiple factors that contribute to the total response time in high-rise structures on Las Vegas Blvd. Identifying factors in advance of the emergency response is a vital step in the process of improving response times (Blaney, et al, 2007). There are factors the fire department has direct control over, some control over and no control over. Alarm handling time and turnout time are examples of areas the fire department has direct control over, but there are many external areas departments have less control. Travel time, building size, elevator operations, and escorts to the call are all contributing either positively or negatively to the travel time component of total response time. Further studies in each of these areas are needed for the CCFD to maximize efficiency during a response.

The American Heart Association estimates 250,000 suffer cardiac arrest annually and of that number only 5% are saved (Davis, The price of just a few seconds lost: people die, 2005). The City of Houston increased its survival rate from near zero to 21% when it

began measuring total response time and addressing problems the new data revealed (Davis, The price of just a few seconds lost: people die, 2005). If Clark County followed the City of Houston's example and implemented the Utstein model to track cardiac arrest incidents, it could anticipate more positive outcomes. If Clark County encountered the same level of success as the City of Houston, of the 111 cardiac arrests in 2011, 22.2 people would survive a cardiac arrest in the Strip Corridor instead of 5.55 people. Of the 93 cardiac arrests in 2012, 18.6 people would survive a cardiac arrest in the Strip Corridor instead of 4.65 people. The mission of the CCFD is to provide for the safety and health of our Southern Nevada Communities and our visitors through professional emergency response, fire prevention and public education (CCFD, n.d.). The mission is clear, protect lives and implementing the needed changes hit the core of the mission. Using 2011 and 2012 cardiac arrest numbers and using the City of Houston's success rate, Clark County could have saved the lives of 40.8 people instead of only 10.2. A difference of 15 lives saved each year.

Recommendations

In the short-term (0-3 months), it is recommended the CCFD continue the use of peak time rescues to assist in decreasing total response time in the Strip Corridor. As stated in the results section, peak time rescues have the highest percentage of compliance to the seven-minute response goal. The CCFD should utilize existing software to identify high impact times and locations to evaluate possible staging locations could be the most beneficial to achieving the desired response times.

In addition to continued use of peak time rescues the CCFD should begin to review on-site security procedures with each property. This review should address

commonly overlooked barriers that contribute to extended response times. The review should include: ensure common terminology of entrances, ensure closest entrance to the patient is used, ensure escorts are available to bring emergency responders to patient in the most expeditious manner, review elevator lockout procedures and review of AED procedures. Standardizing these areas can reduce precious time when responding to emergency events.

In the mid-term (3-6 months), while the short-term objectives are being completed, a formal coalition of stakeholders should be formed to begin the process of addressing long-term solutions. Possible members of the coalition may include: CCFD EMS Chief, Director of Security for each major property, Las Vegas Visitors and Convention Association, CCFD Medical Director and a member from the Southern Nevada Health District. The coalition should begin by reviewing the results of this research, the short-term objectives that are occurring and addressing legal response standards and assigning responsibility.

The CCFD high impact agreement documents should be reviewed and utilizes where appropriate. In an interview with the CCFD's Fire Chief, high impact agreements were discussed (Appendix K). He stated the current version of the high impact agreement requires properties to furnish fire stations and fire apparatus, but what we need is people. By reworking the existing high impact agreement the County could have the ability to off set the cost of personnel who respond along the Strip Corridor.

The updated high impact agreement can be used to fund a new pilot program where CCFD personnel are positioned within one of the Strip Corridor's larger properties. The program would eliminate the need of brick and mortar fire stations that

could save the County millions of dollars while providing better response times. It would also eliminate the need to purchase fire apparatus that would save the County between \$250,000 (approximate cost of CCFD rescue). The two-person foot patrol would respond with hotel security on all medical events that occur within the property during a 24-hour period, thus eliminating the turnout time and travel time segments of the CCFD's total response time.

The Medical Director for the CCFD should follow the necessary steps to have the department become part of the Cardiac Arrest Registry to Enhance Survival (CARES) reporting system. The CARES network is designed to help communities improve their performance during Out-of-Hospital Cardiac Arrests (OHCA). Without the collection of specific time intervals during an OHCA, any attempt at improving the CCFD's cardiac arrest save rate would be fictionally based.

In the long-term (6+ months), continual evaluation of the short-term and mid-term objectives should occur. The coalition of stakeholders should continue to meet at designated time intervals to evaluate data produce and adjust objectives as needed. The data should continue to be collected and evaluated to ensure the desired outcomes are occurring.

A thorough evaluation of the pilot program should occur during the first 12-month period. At the end of the test period a decision should be made to expand, modify or adjust the use of two-person teams within the CCFD's high impact properties. If the program performs as expected, it should be expanded on an annual basis. Each year the data should be reviewed to determine if more two-person teams are required to meet response time goals.

It is recommended that researchers in Honolulu (16th largest hotel), Nashville (23rd largest hotel) and Orlando (24th largest hotel) attempt to replicate this study. These three cities are the only fire departments in the United States that have properties of similar size within their jurisdiction. More research needs to be conducted on large hotels and the dangers they pose to medical patients. Research of this nature has the ability to develop response models that can truly save lives.

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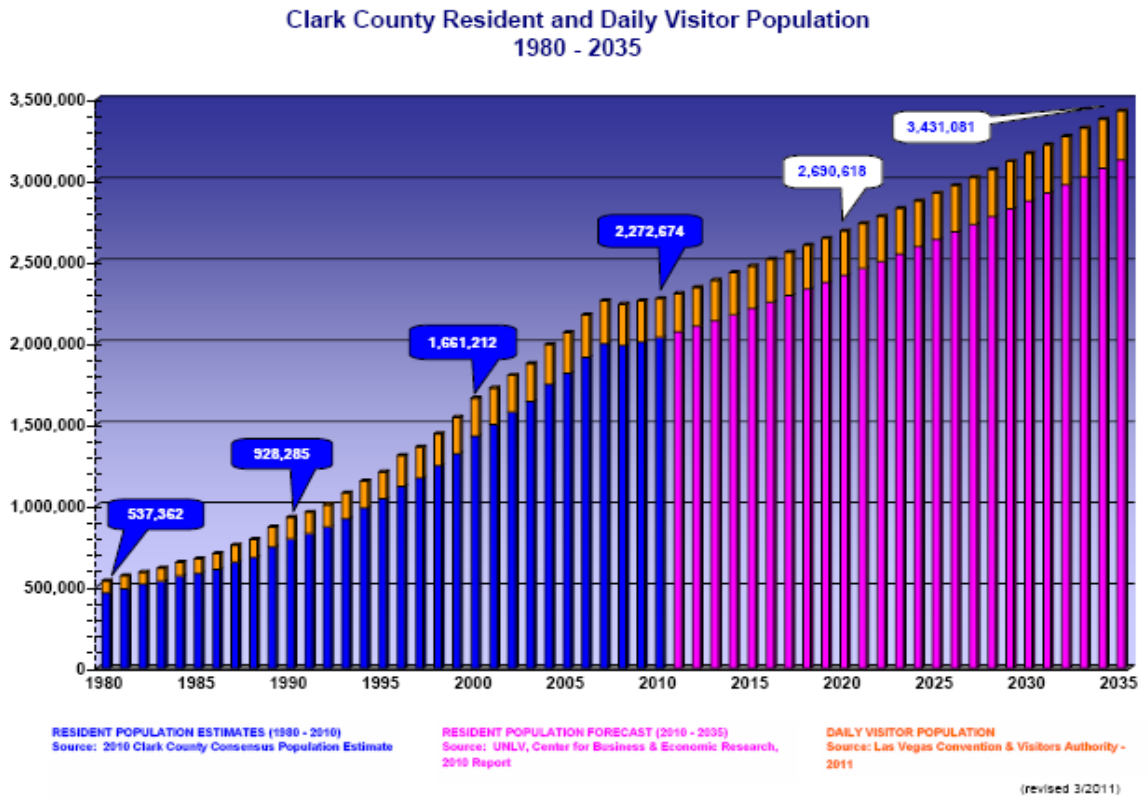
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Appendix A

Clark County Resident and Daily Visitor Population



Appendix B

2011 Cardiac Arrest Data

Service Date	Time Call Received	Dispatch Time	En Route	Turnout Time	On Scene	Travel Time	Reported Response Time	Patient Contact Time	Vertical Response Time	Actual Travel Time	Actual Response Time	Vehicle Unit #
02/12/2011	22:20:31	22:20:40	22:21:48	0:01:08	22:27:13	0:05:25	0:06:42	22:29:00	0:01:47	0:07:12	0:08:29	R11
02/26/2011	11:16:52	11:16:58	11:18:20	0:01:22	11:21:05	0:02:45	0:04:13	11:23:00	0:01:55	0:04:40	0:06:08	R11
03/17/2011	10:12:30	10:15:08	10:15:18	0:00:10	10:16:49	0:01:31	0:04:19	10:21:00	0:04:11	0:05:42	0:08:30	R11
03/30/2011	11:53:48	11:53:57	11:56:04	0:02:07	11:57:57	0:01:53	0:04:09	11:59:00	0:01:03	0:02:56	0:05:12	R11
04/13/2011	01:20:36	01:20:40	01:22:21	0:01:41	01:26:42	0:04:21	0:06:06	01:28:00	0:01:18	0:05:39	0:07:24	R11
05/11/2011	16:59:50	17:00:37	17:00:52	0:00:15	17:04:27	0:03:35	0:04:37	17:06:00	0:01:33	0:05:08	0:06:10	E11
05/11/2011	16:59:50	17:00:06	17:00:58	0:00:52	17:04:58	0:04:00	0:05:08	17:05:00	0:00:02	0:04:02	0:05:10	R11
05/11/2011	18:46:47	18:48:46	18:49:33	0:00:47	18:53:53	0:04:20	0:07:06	18:56:00	0:02:07	0:06:27	0:09:13	E11
05/15/2011	09:02:12	09:02:19	09:05:27	0:03:08	09:07:44	0:02:17	0:05:32	09:09:00	0:01:16	0:03:33	0:06:48	R11
05/31/2011	21:16:42	21:17:16	21:17:31	0:00:15	21:17:35	0:00:04	0:00:53	21:20:00	0:02:25	0:02:29	0:03:18	R11
06/10/2011	17:11:50	17:12:00	17:13:07	0:01:07	17:20:35	0:07:28	0:08:45	17:20:35	0:00:00	0:07:28	0:08:45	R11
07/02/2011	12:30:09	12:30:18	12:31:02	0:00:44	12:34:06	0:03:04	0:03:57	12:35:00	0:00:54	0:03:58	0:04:51	E11
09/06/2011	17:38:55	17:39:16	17:40:30	0:01:14	17:42:22	0:01:52	0:03:27	17:47:00	0:04:38	0:06:30	0:08:05	R11
10/26/2011	11:06:51	11:07:14	11:07:31	0:00:17	11:13:05	0:05:34	0:06:14	11:15:00	0:01:55	0:07:29	0:08:09	E11
11/02/2011	19:05:18	19:11:22	19:11:25	0:00:03	19:11:27	0:00:02	0:06:09	19:14:00	0:02:33	0:02:35	0:08:42	R11
12/13/2011	08:16:22	08:16:41	08:17:58	0:01:17	08:20:00	0:02:02	0:03:38	08:23:00	0:03:00	0:05:02	0:06:38	R11
12/18/2011	16:16:25	16:16:32	16:16:39	0:00:07	16:19:51	0:03:12	0:03:26	16:21:00	0:01:09	0:04:21	0:04:35	R11
12/23/2011	18:17:49	18:17:55	18:19:24	0:01:29	18:22:42	0:03:18	0:04:53	18:23:00	0:00:18	0:03:36	0:05:11	R11
12/29/2011	08:48:43	08:48:50	08:49:41	0:00:51	08:52:59	0:03:18	0:04:16	08:54:00	0:01:01	0:04:19	0:05:17	R11
01/01/2011	17:02:41	17:03:04	17:04:02	0:00:58	17:06:56	0:02:54	0:04:15	17:11:00	0:04:04	0:06:58	0:08:19	E12
01/01/2011	17:02:41	17:03:04	17:04:05	0:01:01	17:06:54	0:02:49	0:04:13	17:11:00	0:04:06	0:06:55	0:08:19	R12
02/18/2011	12:40:03	12:40:13	12:40:49	0:00:36	12:43:09	0:02:20	0:03:06	12:45:00	0:01:51	0:04:11	0:04:57	R12
02/22/2011	13:17:34	13:17:42	13:18:49	0:01:07	13:21:32	0:02:43	0:03:58	13:21:32	0:00:00	0:02:43	0:03:58	R12
02/24/2011	23:17:21	23:17:27	23:20:21	0:02:54	23:23:11	0:02:50	0:05:50	23:23:11	0:00:00	0:02:50	0:05:50	E12
03/01/2011	21:48:03	21:48:26	21:49:32	0:01:06	21:52:01	0:02:29	0:03:58	21:56:00	0:03:59	0:06:28	0:07:57	E12
03/01/2011	21:48:03	21:48:26	21:49:35	0:01:09	21:52:12	0:02:37	0:04:09	21:55:00	0:02:48	0:05:25	0:06:57	R12
03/09/2011	03:02:21	03:02:33	03:04:15	0:01:42	03:07:08	0:02:53	0:04:47	03:08:00	0:00:52	0:03:45	0:05:39	R12
03/11/2011	02:10:35	02:10:44	02:12:40	0:01:56	02:16:09	0:03:29	0:05:34	02:20:00	0:03:51	0:07:20	0:09:25	R12
03/28/2011	18:27:00	18:28:00	18:29:00	0:01:00	18:34:17	0:05:17	0:07:17	18:36:00	0:01:43	0:07:00	0:09:00	E12
03/31/2011	05:29:16	05:29:46	05:31:29	0:01:43	05:34:00	0:02:31	0:04:44	05:37:00	0:03:00	0:05:31	0:07:44	E12
04/16/2011	09:51:11	09:51:16	09:52:21	0:01:05	09:55:00	0:02:39	0:03:49	09:59:00	0:04:00	0:06:39	0:07:49	R12
04/16/2011	13:58:41	13:58:51	13:59:47	0:00:56	14:01:00	0:01:13	0:02:19	14:02:00	0:01:00	0:02:13	0:03:19	R12
05/23/2011	14:39:36	14:39:40	14:40:25	0:00:45	14:44:00	0:03:35	0:04:24	14:44:00	0:00:00	0:03:35	0:04:24	E12
06/01/2011	01:39:03	01:39:31	01:41:20	0:01:49	01:46:00	0:04:40	0:06:57	01:48:00	0:02:00	0:06:40	0:08:57	E12
06/01/2011	04:30:58	04:31:23	04:33:30	0:02:07	04:35:00	0:01:30	0:04:02	04:41:00	0:06:00	0:07:30	0:10:02	E12
06/21/2011	15:13:45	15:13:54	15:15:31	0:01:37	15:17:58	0:02:27	0:04:13	15:19:00	0:01:02	0:03:29	0:05:15	E12

Service Date	Time Call Received	Dispatch Time	En Route	Turnout Time	On Scene	Travel Time	Reported Response Time	Patient Contact Time	Vertical Response Time	Actual Travel Time	Actual Response Time	Vehicle Unit #
07/25/2011	15:11:05	15:11:24	15:12:08	0:00:44	15:14:31	0:02:23	0:03:26	15:15:00	0:00:29	0:02:52	0:03:55	E12
09/15/2011	21:07:45	21:07:54	21:08:43	0:00:49	21:10:00	0:01:17	0:02:15	21:13:00	0:03:00	0:04:17	0:05:15	E12
10/08/2011	06:36:07	06:36:14	06:38:02	0:01:48	06:41:59	0:03:57	0:05:52	06:43:00	0:01:01	0:04:58	0:06:53	E12
10/24/2011	22:20:54	22:47:34	22:49:25	0:01:51	22:51:39	0:02:14	0:30:45	22:52:00	0:00:21	0:02:35	0:31:06	E12
10/24/2011	22:20:54	22:21:06	22:22:55	0:01:49	22:26:23	0:03:28	0:05:29	22:26:23	0:00:00	0:03:28	0:05:29	R12
11/23/2011	11:10:19	11:10:28	11:11:59	0:01:31	11:14:57	0:02:58	0:04:38	11:14:57	0:00:00	0:02:58	0:04:38	R12
12/28/2011	09:26:22	09:26:35	09:27:23	0:00:48	09:28:00	0:00:37	0:01:38	09:31:00	0:03:00	0:03:37	0:04:38	R12
01/01/2012	22:41:28	22:41:36	22:44:05	0:02:29	22:48:44	0:04:39	0:07:16	22:52:00	0:03:16	0:07:55	0:10:32	R12
01/27/2011	07:41:13	07:41:21	07:41:58	0:00:37	07:47:02	0:05:04	0:05:49	07:50:00	0:02:58	0:08:02	0:08:47	R218
01/31/2011	01:36:52	01:37:04	01:39:18	0:02:14	01:43:57	0:04:39	0:07:05	01:45:00	0:01:03	0:05:42	0:08:08	R218
02/02/2011	21:51:25	21:51:42	21:52:27	0:00:45	21:56:00	0:03:33	0:04:35	22:00:00	0:04:00	0:07:33	0:08:35	R18
05/08/2011	18:31:58	18:33:09	18:34:34	0:01:25	18:37:00	0:02:26	0:05:02	18:39:00	0:02:00	0:04:26	0:07:02	R18
05/31/2011	02:35:56	02:36:10	02:38:36	0:02:26	02:42:50	0:04:14	0:06:54	02:44:00	0:01:10	0:05:24	0:08:04	R218
06/01/2011	21:03:58	21:04:19	21:05:08	0:00:49	21:08:23	0:03:15	0:04:25	21:12:00	0:03:37	0:06:52	0:08:02	E18
06/14/2011	21:04:15	21:04:58	21:06:27	0:01:29	21:08:57	0:02:30	0:04:42	21:10:00	0:01:03	0:03:33	0:05:45	R218
06/23/2011	13:24:34	13:24:43	13:26:23	0:01:40	13:31:13	0:04:50	0:06:39	13:32:00	0:00:47	0:05:37	0:07:26	R18
06/30/2011	07:18:19	07:18:48	07:18:49	0:00:01	07:23:00	0:04:11	0:04:41	07:28:00	0:05:00	0:09:11	0:09:41	R18
07/02/2011	16:50:37	16:50:44	16:51:58	0:01:14	16:57:46	0:05:48	0:07:09	17:01:00	0:03:14	0:09:02	0:10:23	R218
07/10/2011	07:34:46	07:34:53	07:35:44	0:00:51	07:39:03	0:03:19	0:04:17	07:43:00	0:03:57	0:07:16	0:08:14	R18
08/27/2011	19:43:53	19:44:13	19:45:13	0:01:00	19:49:29	0:04:16	0:05:36	19:52:00	0:02:31	0:06:47	0:08:07	R18
09/17/2011	01:45:54	01:46:04	01:47:58	0:01:54	01:51:22	0:03:24	0:05:28	01:55:00	0:03:38	0:07:02	0:09:06	R218
09/17/2011	01:45:54	01:46:04	01:47:55	0:01:51	01:52:00	0:04:05	0:06:06	01:52:00	0:00:00	0:04:05	0:06:06	E18
09/29/2011	08:31:50	08:32:03	08:32:51	0:00:48	08:38:12	0:05:21	0:06:22	08:41:00	0:02:48	0:08:09	0:09:10	R18
11/04/2011	13:37:14	13:37:21	13:38:19	0:00:58	13:45:00	0:06:41	0:07:46	13:48:00	0:03:00	0:09:41	0:10:46	E18
12/28/2011	21:55:25	21:55:49	21:57:30	0:01:41	22:00:47	0:03:17	0:05:22	22:05:00	0:04:13	0:07:30	0:09:35	R218
12/28/2011	22:59:46	22:59:56	23:00:49	0:00:53	23:02:00	0:01:11	0:02:14	23:05:00	0:03:00	0:04:11	0:05:14	R18
01/11/2011	13:41:38	13:41:44	13:42:36	0:00:52	13:45:48	0:03:12	0:04:10	13:46:00	0:00:12	0:03:24	0:04:22	R32
01/26/2011	18:01:02	18:01:21	18:01:32	0:00:11	18:02:55	0:01:23	0:01:53	18:04:00	0:01:05	0:02:28	0:02:58	R32
02/05/2011	21:43:15	21:45:39	21:46:49	0:01:10	21:49:04	0:02:15	0:05:49	21:50:00	0:00:56	0:03:11	0:06:45	R32
02/11/2011	05:23:20	05:23:30	05:25:46	0:02:16	05:28:19	0:02:33	0:04:59	05:30:00	0:01:41	0:04:14	0:06:40	E32
02/26/2011	07:19:29	07:19:34	07:20:57	0:01:23	07:22:44	0:01:47	0:03:15	07:24:00	0:01:16	0:03:03	0:04:31	E32
03/07/2011	02:40:28	02:40:35	02:42:29	0:01:54	02:44:48	0:02:19	0:04:20	02:47:00	0:02:12	0:04:31	0:06:32	R32
03/15/2011	08:40:35	08:41:43	08:41:53	0:00:10	08:45:07	0:03:14	0:04:32	08:47:00	0:01:53	0:05:07	0:06:25	E32
03/19/2011	21:11:37	21:11:52	21:11:52	0:00:00	21:20:43	0:08:51	0:09:06	21:24:00	0:03:17	0:12:08	0:12:23	R32

03/31/2011	03:34:59	03:35:10	03:37:08	0:01:58	03:38:28	0:01:20	0:03:29	03:41:00	0:02:32	0:03:52	0:06:01	E32
03/31/2011	03:34:59	03:35:10	03:36:56	0:01:46	03:38:28	0:01:32	0:03:29	03:38:28	0:00:00	0:01:32	0:03:29	R32

Service Date	Time Call Received	Dispatch Time	En Route	Turnout Time	On Scene	Travel Time	Reported Response Time	Patient Contact Time	Vertical Response Time	Actual Travel Time	Actual Response Time	Vehicle Unit #
04/14/2011	00:58:19	00:58:38	01:00:42	0:02:04	01:02:55	0:02:13	0:04:36	01:06:00	0:03:05	0:05:18	0:07:41	R32
04/14/2011	00:58:19	00:58:38	01:00:38	0:02:00	01:03:34	0:02:56	0:05:15	01:05:00	0:01:26	0:04:22	0:06:41	E32
05/02/2011	03:16:53	03:17:06	03:18:56	0:01:50	03:22:07	0:03:11	0:05:14	03:25:00	0:02:53	0:06:04	0:08:07	E32
05/02/2011	03:16:53	03:17:16	03:19:00	0:01:44	03:21:12	0:02:12	0:04:19	03:23:00	0:01:48	0:04:00	0:06:07	R32
05/08/2011	18:31:58	18:32:04	18:32:51	0:00:47	18:34:35	0:01:44	0:02:37	18:35:00	0:00:25	0:02:09	0:03:02	E32
05/10/2011	21:31:51	21:32:21	21:33:59	0:01:38	21:39:08	0:05:09	0:07:17	21:39:08	0:00:00	0:05:09	0:07:17	R32
05/17/2011	08:32:05	08:32:22	08:33:42	0:01:20	08:34:48	0:01:06	0:02:43	08:38:00	0:03:12	0:04:18	0:05:55	R32
05/21/2011	16:03:38	16:03:47	16:04:47	0:01:00	16:07:00	0:02:13	0:03:22	16:08:00	0:01:00	0:03:13	0:04:22	R32
05/31/2011	02:35:56	02:40:03	02:41:01	0:00:58	02:46:30	0:05:29	0:10:34	02:55:00	0:08:30	0:13:59	0:19:04	E32
05/31/2011	21:16:42	21:16:49	21:17:55	0:01:06	21:21:09	0:03:14	0:04:27	21:27:00	0:05:51	0:09:05	0:10:18	R32
06/25/2011	04:16:34	04:16:39	04:17:45	0:01:06	04:20:09	0:02:24	0:03:35	04:26:00	0:05:51	0:08:15	0:09:26	R32
06/27/2011	01:07:17	01:07:24	01:09:03	0:01:39	01:11:21	0:02:18	0:04:04	01:12:00	0:00:39	0:02:57	0:04:43	E32
07/06/2011	00:41:51	00:42:03	00:43:38	0:01:35	00:47:00	0:03:22	0:05:09	00:51:00	0:04:00	0:07:22	0:09:09	R32
08/06/2011	09:34:29	09:34:37	09:35:43	0:01:06	09:38:27	0:02:44	0:03:58	09:40:00	0:01:33	0:04:17	0:05:31	E32
10/19/2011	06:52:50	06:52:55	06:54:24	0:01:29	06:58:43	0:04:19	0:05:53	06:59:00	0:00:17	0:04:36	0:06:10	R32
11/02/2011	19:05:18	19:05:25	19:05:42	0:00:17	19:10:02	0:04:20	0:04:44	19:12:00	0:01:58	0:06:18	0:06:42	E32
12/29/2011	08:48:43	08:51:32	08:53:40	0:02:08	08:57:00	0:03:20	0:08:17	08:58:00	0:01:00	0:04:20	0:09:17	E32
12/31/2011	05:15:14	05:15:55	05:16:03	0:00:08	05:16:48	0:00:45	0:01:34	05:20:00	0:03:12	0:03:57	0:04:46	R32
11/23/2011	05:59:33	06:00:45	06:02:02	0:01:17	06:04:26	0:02:24	0:04:53	06:07:00	0:02:34	0:04:58	0:07:27	R32
02/20/2011	06:46:05	06:46:11	06:47:10	0:00:59	06:53:13	0:06:03	0:07:08	06:57:00	0:03:47	0:09:50	0:10:55	E33
06/30/2011	07:18:19	07:18:25	07:18:37	0:00:12	07:23:00	0:04:23	0:04:41	07:26:00	0:03:00	0:07:23	0:07:41	E15
10/31/2011	00:30:11	00:30:18	00:31:35	0:01:17	00:37:28	0:05:53	0:07:17	00:40:00	0:02:32	0:08:25	0:09:49	R38
07/04/2011	01:53:41	01:54:12	01:54:15	0:00:03	01:56:00	0:01:45	0:02:19	01:56:00	0:00:00	0:01:45	0:02:19	R21
07/13/2011	04:55:58	04:56:08	04:58:31	0:02:23	05:02:18	0:03:47	0:06:20	05:02:48	0:00:30	0:04:17	0:06:50	R23
11/16/2011	02:49:03	02:49:11	02:51:42	0:02:31	03:04:59	0:13:17	0:15:56	03:05:19	0:00:20	0:13:37	0:16:16	R23
09/17/2011	10:48:01	10:48:07	10:49:07	0:01:00	10:56:00	0:06:53	0:07:59	11:01:00	0:05:00	0:11:53	0:12:59	E29
10/11/2011	08:44:53	08:45:04	08:45:57	0:00:53	08:50:11	0:04:14	0:05:18	08:51:00	0:00:49	0:05:03	0:06:07	E24
01/04/2011	14:02:34	14:06:02	14:06:05	0:00:03	14:10:00	0:03:55	0:07:26	14:11:00	0:01:00	0:04:55	0:08:26	E65
02/25/2011	11:38:08	11:38:17	11:38:50	0:00:33	11:46:15	0:07:25	0:08:07	11:48:00	0:01:45	0:09:10	0:09:52	R65
03/24/2011	14:23:59	14:24:09	14:25:09	0:01:00	14:29:18	0:04:09	0:05:19	14:30:00	0:00:42	0:04:51	0:06:01	R65
03/24/2011	14:23:59	14:24:09	14:25:09	0:01:00	14:29:23	0:04:14	0:05:24	14:29:23	0:00:00	0:04:14	0:05:24	E65
05/15/2011	05:59:08	05:59:19	06:01:21	0:02:02	06:21:14	0:19:53	0:22:06	06:21:14	0:00:00	0:19:53	0:22:06	E65

Vertical Response Time

06/12/2011	09:45:31	09:45:37	09:46:16	0:00:39	09:50:59	0:04:43	0:05:28	09:54:00	0:03:01	0:07:44	0:08:29	E65
09/12/2011	07:59:04	07:59:13	08:00:03	0:00:50	08:04:34	0:04:31	0:05:30	08:04:34	0:00:00	0:04:31	0:05:30	R65
09/20/2011	12:03:09	12:03:14	12:04:25	0:01:11	12:08:53	0:04:28	0:05:44	12:11:00	0:02:07	0:06:35	0:07:51	E65
10/12/2011	13:20:12	13:20:18	13:21:16	0:00:58	13:25:37	0:04:21	0:05:25	13:27:00	0:01:23	0:05:44	0:06:48	E65

Service Date	Time Call Received	Dispatch Time	En Route	Turnout Time	On Scene	Travel Time	Reported Response Time	Patient Contact Time	Vertical Response Time	Actual Travel Time	Actual Response Time	Vehicle Unit #
10/30/2011	19:28:01	19:28:04	19:29:31	0:01:27	19:36:35	0:07:04	0:08:34	19:38:00	0:01:25	0:08:29	0:09:59	R65
02/26/2011	04:46:08	04:46:15	04:49:12	0:02:57	05:01:38	0:12:26	0:15:30	05:02:00	0:00:22	0:12:48	0:15:52	R87
05/15/2011	05:59:08	05:59:19	06:00:48	0:01:29	06:03:15	0:02:27	0:04:07	06:05:00	0:01:45	0:04:12	0:05:52	R87
11/13/2011	09:26:28	09:26:36	09:28:08	0:01:32	09:41:48	0:13:40	0:15:20	09:41:48	0:00:00	0:13:40	0:15:20	R87

Appendix C

2012 Cardiac Arrest Data

Vertical Response Time

Service Date	Time Call Received	Dispatch Time	En Route	Turnout Time	On Scene	Travel Time	Reported Response Time	Patient Contact Time	Vertical Response Time	Actual Response Time	Vehicle Unit #
02/16/2012	21:43:17	21:43:25	21:45:17	0:01:52	21:48:36	0:03:19	0:05:19	21:52:00	0:03:24	0:08:43	R11
03/01/2012	01:27:22	01:27:28	01:29:54	0:02:26	01:34:11	0:04:17	0:06:49	01:37:00	0:02:49	0:09:38	E11
03/08/2012	21:36:45	21:36:58	21:38:52	0:01:54	21:43:00	0:04:08	0:06:15	21:45:00	0:02:00	0:08:15	E11
04/06/2012	18:28:16	18:28:22	18:29:47	0:01:25	18:32:43	0:02:56	0:04:27	18:35:00	0:02:17	0:06:44	R11
06/22/2012	06:04:49	06:04:59	06:07:21	0:02:22	06:13:19	0:05:58	0:08:30	06:15:00	0:01:41	0:10:11	R11
07/27/2012	10:25:05	10:25:16	10:26:08	0:00:52	10:28:41	0:02:33	0:03:36	10:28:41	0:00:00	0:03:36	E11
10/12/2012	15:03:14	15:03:23	15:04:04	0:00:41	15:07:32	0:03:28	0:04:18	15:11:00	0:03:28	0:07:46	R11
10/18/2012	22:35:48	22:35:55	22:37:17	0:01:22	22:41:37	0:04:20	0:05:49	22:44:00	0:02:23	0:08:12	R11
11/04/2012	19:20:57	19:21:09	19:22:19	0:01:10	19:25:24	0:03:05	0:04:27	19:26:00	0:00:36	0:05:03	E11
11/05/2012	12:31:47	12:31:53	12:32:00	0:00:07	12:35:11	0:03:11	0:03:24	12:39:00	0:03:49	0:07:13	E11
11/05/2012	12:31:47	12:31:53	12:32:41	0:00:48	12:34:57	0:02:16	0:03:10	12:38:00	0:03:03	0:06:13	R11
12/14/2012	20:31:10	20:31:25	20:32:00	0:00:35	20:45:09	0:13:09	0:13:59	20:46:00	0:00:51	0:14:50	E11
01/01/2012	22:41:28	22:41:36	22:44:05	0:02:29	22:48:44	0:04:39	0:07:16	22:52:00	0:03:16	0:10:32	R12
01/08/2012	10:10:13	10:10:19	10:11:04	0:00:45	10:13:00	0:01:56	0:02:47	10:15:00	0:02:00	0:04:47	E12
02/02/2012	00:27:04	00:27:11	00:29:45	0:02:34	00:33:35	0:03:50	0:06:31	00:35:00	0:01:25	0:07:56	R12
02/07/2012	20:44:04	20:44:11	20:45:47	0:01:36	21:08:33	0:22:46	0:24:29	21:16:00	0:07:27	0:31:56	R12
02/13/2012	23:40:46	23:40:56	23:42:58	0:02:02	23:44:59	0:02:01	0:04:13	23:52:00	0:07:01	0:11:14	R12
02/15/2012	07:05:03	07:05:08	07:06:26	0:01:18	07:08:22	0:01:56	0:03:19	07:13:00	0:04:38	0:07:57	R12
02/20/2012	16:48:23	16:48:31	16:49:13	0:00:42	16:52:00	0:02:47	0:03:37	16:53:00	0:01:00	0:04:37	R12
02/28/2012	16:32:09	16:32:18	16:33:00	0:00:42	16:35:00	0:02:00	0:02:51	16:40:00	0:05:00	0:07:51	R12
03/18/2012	06:27:20	06:27:27	06:29:39	0:02:12	06:35:07	0:05:28	0:07:47	06:38:00	0:02:53	0:10:40	E12
03/18/2012	06:27:20	06:27:27	06:28:33	0:01:06	06:31:07	0:02:34	0:03:47	06:35:00	0:03:53	0:07:40	R12
03/26/2012	13:59:18	14:01:09	14:01:24	0:00:15	14:04:49	0:03:25	0:05:31	14:04:49	0:00:00	0:05:31	R12
04/02/2012	21:40:07	21:40:18	21:41:41	0:01:23	21:44:30	0:02:49	0:04:23	21:46:00	0:01:30	0:05:53	E12
04/23/2012	14:26:42	14:32:15	14:33:09	0:00:54	14:36:11	0:03:02	0:09:29	14:36:11	0:00:00	0:09:29	E12
05/17/2012	07:01:37	07:01:47	07:02:36	0:00:49	07:05:00	0:02:24	0:03:23	07:05:00	0:00:00	0:03:23	E12
05/20/2012	03:02:55	03:03:05	03:04:55	0:01:50	03:11:26	0:06:31	0:08:31	03:15:00	0:03:34	0:12:05	E12
08/13/2012	22:51:24	22:51:43	22:54:00	0:02:17	22:54:55	0:00:55	0:03:31	22:57:00	0:02:05	0:05:36	E12
08/13/2012	22:51:24	22:51:43	22:53:06	0:01:23	22:55:09	0:02:03	0:03:45	22:58:00	0:02:51	0:06:36	R12
09/09/2012	17:52:30	17:52:36	17:53:28	0:00:52	17:56:00	0:02:32	0:03:30	17:59:00	0:03:00	0:06:30	E12
10/28/2012	16:31:45	16:31:53	16:32:54	0:01:01	16:35:52	0:02:58	0:04:07	16:35:52	0:00:00	0:04:07	R12
11/28/2012	07:26:29	07:26:35	07:27:27	0:00:52	07:30:19	0:02:52	0:03:50	07:32:00	0:01:41	0:05:31	R12
11/28/2012	07:26:29	07:31:18	07:31:57	0:00:39	07:34:04	0:02:07	0:07:35	07:36:00	0:01:56	0:09:31	E12
12/16/2012	21:07:53	21:08:02	21:08:47	0:00:45	21:10:00	0:01:13	0:02:07	21:13:00	0:03:00	0:05:07	E12
12/18/2012	14:34:46	14:34:55	14:35:46	0:00:51	14:38:00	0:02:14	0:03:14	14:38:00	0:00:00	0:03:14	E12
02/02/2012	15:48:46	15:49:21	15:49:36	0:00:15	15:52:57	0:03:21	0:04:11	15:55:00	0:02:03	0:06:14	E18

Service Date	Time Call Received	Dispatch Time	En Route	Turnout Time	On Scene	Travel Time	Reported Response Time	Patient Contact Time	Vertical Response Time	Actual Response Time	Vehicle Unit #
02/14/2012	10:19:56	10:20:10	10:21:30	0:01:20	10:25:02	0:03:32	0:05:06	10:28:00	0:02:58	0:08:04	R218
03/07/2012	10:02:20	10:02:29	10:03:27	0:00:58	10:06:20	0:02:53	0:04:00	10:11:00	0:04:40	0:08:40	R18
03/15/2012	06:17:17	06:17:25	06:18:53	0:01:28	06:22:39	0:03:46	0:05:22	06:27:00	0:04:21	0:09:43	E18
04/29/2012	10:11:12	10:11:23	10:11:35	0:00:12	10:15:59	0:04:24	0:04:47	10:19:00	0:03:01	0:07:48	E18
05/05/2012	07:21:30	07:21:43	07:21:59	0:00:16	07:25:00	0:03:01	0:03:30	07:28:00	0:03:00	0:06:30	R18
05/12/2012	11:04:36	11:04:58	11:06:15	0:01:17	11:13:32	0:07:17	0:08:56	11:20:00	0:06:28	0:15:24	R18
05/18/2012	11:36:42	11:36:50	11:38:30	0:01:40	11:45:07	0:06:37	0:08:25	11:50:00	0:04:53	0:13:18	E18
06/27/2012	20:11:39	20:11:46	20:13:06	0:01:20	20:15:50	0:02:44	0:04:11	20:19:00	0:03:10	0:07:21	E18
07/26/2012	09:55:02	09:55:29	09:55:31	0:00:02	09:58:37	0:03:06	0:03:35	10:03:00	0:04:23	0:07:58	R18
09/09/2012	05:38:06	05:40:33	05:40:37	0:00:04	05:41:00	0:00:23	0:02:54	05:44:00	0:03:00	0:05:54	R218
09/13/2012	12:39:19	12:39:49	12:39:53	0:00:04	12:44:12	0:04:19	0:04:53	12:48:00	0:03:48	0:08:41	R218
10/20/2012	19:07:22	19:07:47	19:08:40	0:00:53	19:13:33	0:04:53	0:06:11	19:19:00	0:05:27	0:11:38	R218
10/21/2012	08:44:55	08:45:01	08:45:53	0:00:52	08:50:46	0:04:53	0:05:51	08:51:00	0:00:14	0:06:05	E18
11/10/2012	22:48:58	22:49:10	22:51:08	0:01:58	22:54:54	0:03:46	0:05:56	22:56:00	0:01:06	0:07:02	R18
11/10/2012	22:48:58	22:49:10	22:50:52	0:01:42	22:54:57	0:04:05	0:05:59	22:57:00	0:02:03	0:08:02	E18
12/02/2012	13:59:52	14:00:31	14:01:25	0:00:54	14:05:56	0:04:31	0:06:04	14:07:00	0:01:04	0:07:08	R218
02/02/2012	00:27:04	00:36:42	00:38:21	0:01:39	00:41:49	0:03:28	0:14:45	00:47:00	0:05:11	0:19:56	E32
02/10/2012	11:42:55	11:43:08	11:44:02	0:00:54	11:46:29	0:02:27	0:03:34	11:49:00	0:02:31	0:06:05	R32
02/10/2012	11:42:55	11:43:08	11:44:19	0:01:11	11:46:22	0:02:03	0:03:27	11:49:00	0:02:38	0:06:05	E32
02/28/2012	05:13:51	05:13:58	05:15:59	0:02:01	05:17:39	0:01:40	0:03:48	05:19:00	0:01:21	0:05:09	R32
03/01/2012	07:33:16	07:33:42	07:34:30	0:00:48	07:36:00	0:01:30	0:02:44	07:37:00	0:01:00	0:03:44	R32
03/01/2012	16:20:18	16:20:24	16:21:10	0:00:46	16:23:32	0:02:22	0:03:14	16:29:00	0:05:28	0:08:42	R32
04/19/2012	00:15:01	00:15:09	00:16:03	0:00:54	00:19:00	0:02:57	0:03:59	00:24:00	0:05:00	0:08:59	E32
05/07/2012	09:14:44	09:15:00	09:17:00	0:02:00	09:25:01	0:08:01	0:10:17	09:27:00	0:01:59	0:12:16	E32
05/08/2012	07:00:13	07:00:20	07:00:34	0:00:14	07:10:47	0:10:13	0:10:34	07:11:00	0:00:13	0:10:47	R32
05/09/2012	11:14:08	11:14:24	11:15:28	0:01:04	11:18:00	0:02:32	0:03:52	11:23:00	0:05:00	0:08:52	E32
05/18/2012	19:26:53	19:27:00	19:28:47	0:01:47	19:32:11	0:03:24	0:05:18	19:36:00	0:03:49	0:09:07	E32
05/27/2012	18:19:48	18:19:55	18:21:30	0:01:35	18:23:27	0:01:57	0:03:39	18:24:00	0:00:33	0:04:12	R32
06/07/2012	23:46:10	23:46:18	23:47:18	0:01:00	23:51:57	0:04:39	0:05:47	23:51:57	0:00:00	0:05:47	E32
06/15/2012	10:15:30	10:15:45	10:16:41	0:00:56	10:18:00	0:01:19	0:02:30	10:20:00	0:02:00	0:04:30	E32
06/24/2012	16:32:36	16:32:42	16:34:02	0:01:20	16:35:45	0:01:43	0:03:09	16:37:00	0:01:15	0:04:24	E32
07/05/2012	21:14:09	21:16:47	21:17:09	0:00:22	21:22:44	0:05:35	0:08:35	21:24:00	0:01:16	0:09:51	R32
08/02/2012	22:49:32	22:49:38	22:50:20	0:00:42	22:53:27	0:03:07	0:03:55	22:53:27	0:00:00	0:03:55	E32

Vertical Response Time

08/05/2012	02:34:27	02:35:10	02:36:23	0:01:13	02:36:23	0:00:00	0:01:56	02:36:23	0:00:00	0:01:56	E32
08/25/2012	08:15:35	08:15:50	08:16:46	0:00:56	08:20:18	0:03:32	0:04:43	08:25:00	0:04:42	0:09:25	E32
08/26/2012	04:57:28	04:57:33	04:58:44	0:01:11	05:02:34	0:03:50	0:05:06	05:04:00	0:01:26	0:06:32	R32

Service Date	Time Call Received	Dispatch Time	En Route	Turnout Time	On Scene	Travel Time	Reported Response Time	Patient Contact Time	Vertical Response Time	Actual Response Time	Vehicle Unit #
08/26/2012	14:24:49	14:24:58	14:26:34	0:01:36	14:28:00	0:01:26	0:03:11	14:30:00	0:02:00	0:05:11	E32
08/26/2012	20:45:07	20:45:31	20:46:39	0:01:08	20:53:00	0:06:21	0:07:53	20:56:00	0:03:00	0:10:53	E32
08/31/2012	01:14:08	01:14:15	01:15:50	0:01:35	01:15:50	0:00:00	0:01:42	01:16:00	0:00:10	0:01:52	R32
09/15/2012	04:17:28	04:17:45	04:19:12	0:01:27	04:21:37	0:02:25	0:04:09	04:26:00	0:04:23	0:08:32	E32
09/21/2012	10:54:41	10:57:15	10:57:31	0:00:16	10:59:52	0:02:21	0:05:11	11:00:00	0:00:08	0:05:19	R32
10/01/2012	13:09:55	13:10:05	13:11:46	0:01:41	13:15:51	0:04:05	0:05:56	13:17:00	0:01:09	0:07:05	E32
10/07/2012	14:32:26	14:39:39	14:40:33	0:00:54	14:42:17	0:01:44	0:09:51	14:42:17	0:00:00	0:09:51	R32
11/14/2012	03:41:18	03:41:24	03:42:28	0:01:04	03:44:25	0:01:57	0:03:07	03:45:00	0:00:35	0:03:42	E32
04/05/2012	17:22:16	17:29:12	17:30:04	0:00:52	17:35:26	0:05:22	0:13:10	17:35:26	0:00:00	0:13:10	R87
05/29/2012	19:32:40	19:32:47	19:33:09	0:00:22	19:34:42	0:01:33	0:02:02	19:35:00	0:00:18	0:02:20	R87
12/15/2012	09:41:45	09:42:53	09:43:46	0:00:53	09:50:17	0:06:31	0:08:32	09:51:00	0:00:43	0:09:15	R87
12/31/2012	20:44:32	20:44:44	20:45:51	0:01:07	20:56:00	0:10:09	0:11:28	20:57:00	0:01:00	0:12:28	E24
05/13/2012	02:33:10	02:34:03	02:34:03	0:00:00	02:36:12	0:02:09	0:03:02	02:37:00	0:00:48	0:03:50	R212
06/28/2012	22:40:37	22:40:58	22:41:02	0:00:04	22:47:06	0:06:04	0:06:29	22:48:00	0:00:54	0:07:23	E65
11/10/2012	20:47:07	20:50:40	20:50:49	0:00:09	20:50:58	0:00:09	0:03:51	20:51:00	0:00:02	0:03:53	R65
10/28/2012	02:34:33	02:34:41	02:35:40	0:00:59	02:37:55	0:02:15	0:03:22	02:47:00	0:09:05	0:12:27	R932
12/08/2012	00:57:57	01:00:32	01:00:45	0:00:13	01:02:03	0:01:18	0:04:06	01:12:00	0:09:57	0:14:03	E24
12/24/2012	06:49:38	06:49:44	06:50:32	0:00:48	06:56:47	0:06:15	0:07:09	06:57:00	0:00:13	0:07:22	E29
12/25/2012	08:06:00	08:06:06	08:07:20	0:01:14	08:10:04	0:02:44	0:04:04	08:11:00	0:00:56	0:05:00	R23

Appendix D

Letter to CCFD Members Explaining New FlexField in Sansio Reporting System

10-15-2011

Clark County Fire Department Members,

Starting in mid November the Clark County Fire Department will begin to gather data to quantify our vertical response time in high-rise casinos. Any CCFD unit that responds to a property that is coded as a casino will need to fill out this FlexField to complete their report. Just to be clear the FlexField will consist of **one** question.

We all recognize there is a time delay between when we press “on scene” and when we actually reach the patient’s side. The Sansio reporting system has helped address this problem by allowing us to enter “First Patient Contact” on the “Call Information” page. However, we are unable to determine if the patient was in the security office, outside on the sidewalk or in the high-rise tower. The FlexField will be removed after 30-days and the results will be evaluated.

What we need from you:

1. When you respond to an address that has been coded as a casino, the FlexField will ask if the call you responded to was on, or above the 4th floor. If it was, simply click “yes” and if it was not, click “no.”
2. If you clicked “yes” ensure your patient contact time is accurate in your Sansio report.

Of the 20 largest hotels in the world, 16 of them call Clark County home. The data collected will be compared to studies done in other cities such as New York and Toronto to determine if our response model needs to be adjusted based upon the size of

our structures. It will also be measured against the American Heart Associations “Cardiac Chain of Events” to ensure we are providing the highest level of service within the established time parameters to our residents and guests.

Thank you,

Captain Rian Glassford

Appendix E

Screenshot of Sansio Program

Transport From Code

Was this patient at a Casino Pool or Nightclub? Yes No

Was this call above the 4th floor of Casino? Yes No

OK Cancel

Appendix F

Vertical Response Data

Vertical Response Time

Service Date	Time Call Received	Dispatch Time	En Route	Turnout Time	On Scene	Travel Time	Reported Response Time	Patient Contact Time	Vertical Response Time	Actual Response Time	Vehicle Unit #
11/17/2012	14:17:12	14:17:24	14:18:38	0:01:14	14:23:47	0:05:09	0:06:35	14:27:00	0:03:13	0:09:48	E11
11/20/2012	01:42:08	01:42:16	01:44:18	0:02:02	01:49:06	0:04:48	0:06:58	01:57:00	0:07:54	0:14:52	E11
11/21/2012	20:49:29	20:50:01	20:50:33	0:00:32	20:55:32	0:04:59	0:06:03	21:00:00	0:04:28	0:10:31	E11
11/23/2012	12:58:37	12:58:50	12:59:23	0:00:33	13:05:00	0:05:37	0:06:23	13:11:00	0:06:00	0:12:23	E11
11/24/2012	20:31:57	20:32:03	20:33:12	0:01:09	20:35:09	0:01:57	0:03:12	20:38:00	0:02:51	0:06:03	E11
11/25/2012	12:46:35	12:46:40	12:47:19	0:00:39	12:49:39	0:02:20	0:03:04	12:53:00	0:03:21	0:06:25	E11
11/30/2012	03:14:00	03:15:00	03:16:00	0:01:00	03:20:00	0:04:00	0:06:00	03:23:00	0:03:00	0:09:00	E11
12/02/2012	01:50:37	01:50:44	01:52:24	0:01:40	01:58:39	0:06:15	0:08:02	02:01:00	0:02:21	0:10:23	E11
12/02/2012	10:01:57	10:02:10	10:02:57	0:00:47	10:05:31	0:02:34	0:03:34	10:10:00	0:04:29	0:08:03	E11
12/05/2012	02:29:53	02:29:58	02:30:03	0:00:05	02:30:06	0:00:03	0:00:13	02:33:00	0:02:54	0:03:07	E11
12/09/2012	23:23:29	23:23:37	23:25:07	0:01:30	23:28:54	0:03:47	0:05:25	23:33:00	0:04:06	0:09:31	E11
12/10/2012	03:37:03	03:37:15	03:39:00	0:01:45	03:44:00	0:05:00	0:06:57	03:45:00	0:01:00	0:07:57	E11
12/10/2012	05:06:44	05:06:49	05:08:45	0:01:56	05:12:14	0:03:29	0:05:30	05:18:00	0:05:46	0:11:16	E11
12/12/2012	04:07:39	04:07:46	04:09:25	0:01:39	04:12:54	0:03:29	0:05:15	04:17:00	0:04:06	0:09:21	E11
12/13/2012	22:41:13	22:41:23	22:41:26	0:00:03	22:45:00	0:03:34	0:03:47	22:49:00	0:04:00	0:07:47	E11
12/14/2012	06:23:00	06:23:11	06:25:04	0:01:53	06:28:00	0:02:56	0:05:00	06:33:00	0:05:00	0:10:00	E11
12/15/2012	01:50:03	01:50:11	01:51:16	0:01:05	01:54:05	0:02:49	0:04:02	02:06:00	0:11:55	0:15:57	E11
12/15/2012	04:49:50	04:49:58	04:51:04	0:01:06	04:57:48	0:06:44	0:07:58	04:59:00	0:01:12	0:09:10	E11
12/16/2012	07:17:17	07:17:32	07:18:03	0:00:31	07:23:15	0:05:12	0:05:58	07:26:00	0:02:45	0:08:43	E11
12/16/2012	09:19:14	09:19:21	09:19:54	0:00:33	09:24:57	0:05:03	0:05:43	09:29:00	0:04:03	0:09:46	E11
12/17/2012	05:45:03	05:45:11	05:46:32	0:01:21	05:50:19	0:03:47	0:05:16	05:55:00	0:04:41	0:09:57	E11
11/17/2012	03:02:02	03:02:10	03:04:10	0:02:00	03:06:00	0:01:50	0:03:58	03:09:00	0:03:00	0:06:58	E12
11/17/2012	17:25:50	17:26:02	17:27:17	0:01:15	17:32:00	0:04:43	0:06:10	17:39:00	0:07:00	0:13:10	E12
11/17/2012	22:17:51	22:17:58	22:19:14	0:01:16	22:22:00	0:02:46	0:04:09	22:28:00	0:06:00	0:10:09	E12
11/18/2012	09:32:49	09:32:56	09:33:29	0:00:33	09:36:25	0:02:56	0:03:36	09:42:00	0:05:35	0:09:11	E12
11/19/2012	21:52:18	21:52:26	21:53:56	0:01:30	21:57:09	0:03:13	0:04:51	22:00:00	0:02:51	0:07:42	E12
11/20/2012	10:51:07	10:51:25	10:51:41	0:00:16	10:52:00	0:00:19	0:00:53	10:57:00	0:05:00	0:05:53	E12
11/21/2012	04:39:26	04:39:33	04:40:26	0:00:53	04:44:00	0:03:34	0:04:34	04:50:00	0:06:00	0:10:34	E12
11/21/2012	04:59:12	05:01:33	05:01:40	0:00:07	05:04:00	0:02:20	0:04:48	05:05:00	0:01:00	0:05:48	E12
11/21/2012	20:11:29	20:11:37	20:12:10	0:00:33	20:16:04	0:03:54	0:04:35	20:19:00	0:02:56	0:07:31	E12
11/22/2012	09:34:33	09:34:40	09:34:51	0:00:11	09:38:47	0:03:56	0:04:14	09:44:00	0:05:13	0:09:27	E12
11/23/2012	04:22:55	04:23:06	04:24:20	0:01:14	04:28:00	0:03:40	0:05:05	04:31:00	0:03:00	0:08:05	E12
11/24/2012	04:28:37	04:28:45	04:30:53	0:02:08	04:35:00	0:04:07	0:06:23	04:39:00	0:04:00	0:10:23	E12
11/25/2012	08:34:02	08:34:08	08:35:00	0:00:52	08:40:00	0:05:00	0:05:58	08:43:00	0:03:00	0:08:58	E12
11/26/2012	12:17:36	12:17:42	12:18:21	0:00:39	12:23:00	0:04:39	0:05:24	12:27:00	0:04:00	0:09:24	E12

Vertical Response Time

Service Date	Time Call Received	Dispatch Time	En Route	Turnout Time	On Scene	Travel Time	Reported Response Time	Patient Contact Time	Vertical Response Time	Actual Response Time	Vehicle Unit #
11/26/2012	13:31:28	13:31:37	13:32:18	0:00:41	13:34:00	0:01:42	0:02:32	13:39:00	0:05:00	0:07:32	E12
11/27/2012	07:00:08	07:00:15	07:02:23	0:02:08	07:03:00	0:00:37	0:02:52	07:08:00	0:05:00	0:07:52	E12
11/27/2012	16:01:31	16:01:37	16:02:20	0:00:43	16:06:00	0:03:40	0:04:29	16:07:00	0:01:00	0:05:29	E12
11/27/2012	19:13:37	19:13:46	19:13:57	0:00:11	19:17:02	0:03:05	0:03:25	19:21:00	0:03:58	0:07:23	E12
11/28/2012	06:51:15	06:51:23	06:52:41	0:01:18	06:55:31	0:02:50	0:04:16	06:58:00	0:02:29	0:06:45	E12
11/28/2012	07:26:29	07:31:18	07:31:57	0:00:39	07:34:04	0:02:07	0:07:35	07:36:00	0:01:56	0:09:31	E12
11/30/2012	14:10:43	14:11:00	14:12:23	0:01:23	14:16:42	0:04:19	0:05:59	14:23:00	0:06:18	0:12:17	E12
12/01/2012	01:49:13	01:50:27	01:51:12	0:00:45	01:53:09	0:01:57	0:03:56	01:58:00	0:04:51	0:08:47	E12
12/01/2012	19:13:52	19:14:00	19:15:05	0:01:05	19:23:00	0:07:55	0:09:08	19:24:00	0:01:00	0:10:08	E12
12/02/2012	08:22:17	08:22:22	08:23:21	0:00:59	08:25:00	0:01:39	0:02:43	08:26:00	0:01:00	0:03:43	E12
12/02/2012	23:18:10	23:18:17	23:20:07	0:01:50	23:25:13	0:05:06	0:07:03	23:28:00	0:02:47	0:09:50	E12
12/06/2012	19:21:00	19:21:17	19:22:00	0:00:43	19:26:00	0:04:00	0:05:00	19:31:00	0:05:00	0:10:00	E12
12/08/2012	19:13:23	19:13:27	19:14:33	0:01:06	19:20:00	0:05:27	0:06:37	19:20:00	0:00:00	0:06:37	E12
12/11/2012	07:48:21	07:48:29	07:49:17	0:00:48	07:53:00	0:03:43	0:04:39	07:57:00	0:04:00	0:08:39	E12
12/11/2012	12:05:08	12:05:17	12:06:04	0:00:47	12:09:00	0:02:56	0:03:52	12:12:00	0:03:00	0:06:52	E12
12/11/2012	20:11:40	20:11:50	20:12:47	0:00:57	20:14:00	0:01:13	0:02:20	20:19:00	0:05:00	0:07:20	E12
12/11/2012	21:11:26	21:11:35	21:12:35	0:01:00	21:15:00	0:02:25	0:03:34	21:17:00	0:02:00	0:05:34	E12
12/13/2012	07:22:01	07:22:07	07:22:58	0:00:51	07:29:00	0:06:02	0:06:59	07:32:00	0:03:00	0:09:59	E12
12/13/2012	18:47:33	18:47:45	18:48:22	0:00:37	18:53:00	0:04:38	0:05:27	18:56:00	0:03:00	0:08:27	E12
12/15/2012	17:28:28	17:28:35	17:29:51	0:01:16	17:42:00	0:12:09	0:13:32	17:47:00	0:05:00	0:18:32	E12
12/15/2012	22:57:45	22:57:51	22:59:29	0:01:38	23:02:23	0:02:54	0:04:38	23:06:00	0:03:37	0:08:15	E12
12/16/2012	02:05:05	02:05:14	02:07:13	0:01:59	02:09:00	0:01:47	0:03:55	02:10:00	0:01:00	0:04:55	E12
11/19/2012	05:15:57	05:16:04	05:17:07	0:01:03	05:21:00	0:03:53	0:05:03	05:26:00	0:05:00	0:10:03	E18
11/20/2012	08:06:37	08:06:42	08:07:02	0:00:20	08:09:43	0:02:41	0:03:06	08:12:00	0:02:17	0:05:23	E18
11/29/2012	07:36:01	07:36:10	07:37:12	0:01:02	07:45:29	0:08:17	0:09:28	07:49:00	0:03:31	0:12:59	E18
12/03/2012	21:57:59	21:58:11	21:59:07	0:00:56	22:06:30	0:07:23	0:08:31	22:10:00	0:03:30	0:12:01	E18
12/04/2012	21:48:22	21:48:33	21:50:12	0:01:39	21:54:00	0:03:48	0:05:38	21:57:00	0:03:00	0:08:38	E18
12/05/2012	09:41:47	09:41:59	09:42:39	0:00:40	09:46:00	0:03:21	0:04:13	09:53:00	0:07:00	0:11:13	E18
12/06/2012	12:51:45	12:51:54	12:52:45	0:00:51	13:06:00	0:13:15	0:14:15	13:11:00	0:05:00	0:19:15	E18
12/06/2012	17:42:31	17:42:49	17:42:57	0:00:08	17:46:00	0:03:03	0:03:29	17:52:00	0:06:00	0:09:29	E18
12/08/2012	02:11:29	02:11:48	02:13:23	0:01:35	02:17:24	0:04:01	0:05:55	02:24:00	0:06:36	0:12:31	E18
12/14/2012	14:49:50	14:50:01	14:51:28	0:01:27	14:57:34	0:06:06	0:07:44	15:03:00	0:05:26	0:13:10	E18
12/14/2012	20:29:37	20:29:47	20:29:59	0:00:12	20:41:00	0:11:01	0:11:23	20:46:00	0:05:00	0:16:23	E18
12/17/2012	11:14:45	11:14:53	11:16:14	0:01:21	11:21:00	0:04:46	0:06:15	11:24:00	0:03:00	0:09:15	E18
12/02/2012	19:22:53	19:27:48	19:27:52	0:00:04	19:27:54	0:00:02	0:05:01	19:32:00	0:04:06	0:09:07	E212

Vertical Response Time

Service Date	Time Call Received	Dispatch Time	En Route	Turnout Time	On Scene	Travel Time	Reported Response Time	Patient Contact Time	Vertical Response Time	Actual Response Time	Vehicle Unit #
11/17/2012	08:12:51	08:13:02	08:13:52	0:00:50	08:15:00	0:01:08	0:02:09	08:20:00	0:05:00	0:07:09	E32
11/17/2012	14:23:22	14:26:07	14:26:49	0:00:42	14:30:16	0:03:27	0:06:54	14:33:00	0:02:44	0:09:38	E32
11/17/2012	20:09:20	20:09:27	20:10:12	0:00:45	20:13:00	0:02:48	0:03:40	20:16:00	0:03:00	0:06:40	E32
11/18/2012	04:25:53	04:26:00	04:27:12	0:01:12	04:32:10	0:04:58	0:06:17	04:34:00	0:01:50	0:08:07	E32
11/18/2012	17:24:02	17:24:43	17:24:46	0:00:03	17:27:28	0:02:42	0:03:26	17:32:00	0:04:32	0:07:58	E32
11/19/2012	19:28:25	19:28:33	19:29:19	0:00:46	19:31:19	0:02:00	0:02:54	19:34:00	0:02:41	0:05:35	E32
11/19/2012	20:12:33	20:17:26	20:17:32	0:00:06	20:21:29	0:03:57	0:08:56	20:24:00	0:02:31	0:11:27	E32
11/19/2012	21:28:41	21:28:51	21:29:38	0:00:47	21:33:37	0:03:59	0:04:56	21:39:00	0:05:23	0:10:19	E32
11/20/2012	07:08:41	07:08:46	07:10:13	0:01:27	07:12:00	0:01:47	0:03:19	07:12:00	0:00:00	0:03:19	E32
11/20/2012	07:48:27	07:48:36	07:49:50	0:01:14	07:49:50	0:00:00	0:01:23	07:51:00	0:01:10	0:02:33	E32
11/21/2012	14:28:27	14:28:33	14:29:09	0:00:36	14:32:59	0:03:50	0:04:32	14:34:00	0:01:01	0:05:33	E32
11/21/2012	16:51:59	16:52:07	16:52:26	0:00:19	16:56:07	0:03:41	0:04:08	16:58:00	0:01:53	0:06:01	E32
11/21/2012	22:23:19	22:23:27	22:24:12	0:00:45	22:27:35	0:03:23	0:04:16	22:30:00	0:02:25	0:06:41	E32
11/24/2012	00:56:12	00:56:20	00:57:50	0:01:30	01:05:25	0:07:35	0:09:13	01:07:00	0:01:35	0:10:48	E32
11/24/2012	05:22:23	05:22:35	05:22:53	0:00:18	05:26:15	0:03:22	0:03:52	05:29:00	0:02:45	0:06:37	E32
11/25/2012	10:04:28	10:04:36	10:05:39	0:01:03	10:06:39	0:01:00	0:02:11	10:10:00	0:03:21	0:05:32	E32
11/25/2012	18:25:33	18:25:46	18:26:46	0:01:00	18:29:13	0:02:27	0:03:40	18:32:00	0:02:47	0:06:27	E32
11/25/2012	22:58:58	23:00:21	23:00:25	0:00:04	23:00:25	0:00:00	0:01:27	23:05:00	0:04:35	0:06:02	E32
11/27/2012	07:19:22	07:19:28	07:20:18	0:00:50	07:26:34	0:06:16	0:07:12	07:29:00	0:02:26	0:09:38	E32
11/27/2012	18:49:09	18:49:19	18:50:47	0:01:28	18:52:00	0:01:13	0:02:51	18:56:00	0:04:00	0:06:51	E32
11/28/2012	00:37:37	00:37:45	00:39:53	0:02:08	00:43:08	0:03:15	0:05:31	00:46:00	0:02:52	0:08:23	E32
11/28/2012	08:26:21	08:26:29	08:27:18	0:00:49	08:32:00	0:04:42	0:05:39	08:36:00	0:04:00	0:09:39	E32
11/28/2012	13:42:53	13:43:14	13:43:58	0:00:44	13:46:53	0:02:55	0:04:00	13:51:00	0:04:07	0:08:07	E32
11/29/2012	17:44:08	17:44:19	17:45:20	0:01:01	17:49:00	0:03:40	0:04:52	17:54:00	0:05:00	0:09:52	E32
11/29/2012	22:38:16	22:38:24	22:38:57	0:00:33	22:42:40	0:03:43	0:04:24	22:47:00	0:04:20	0:08:44	E32
11/29/2012	23:07:49	23:08:01	23:08:05	0:00:04	23:10:48	0:02:43	0:02:59	23:15:00	0:04:12	0:07:11	E32
11/30/2012	06:52:32	06:52:45	06:53:22	0:00:37	06:56:22	0:03:00	0:03:50	07:02:00	0:05:38	0:09:28	E32
12/01/2012	23:05:21	23:09:03	23:09:05	0:00:02	23:09:06	0:00:01	0:03:45	23:11:00	0:01:54	0:05:39	E32
12/02/2012	06:10:07	06:10:16	06:12:12	0:01:56	06:15:49	0:03:37	0:05:42	06:20:00	0:04:11	0:09:53	E32
12/02/2012	22:16:05	22:16:18	22:17:23	0:01:05	22:22:17	0:04:54	0:06:12	22:26:00	0:03:43	0:09:55	E32
12/03/2012	06:32:56	06:33:04	06:35:03	0:01:59	06:37:30	0:02:27	0:04:34	06:40:00	0:02:30	0:07:04	E32
12/04/2012	09:22:55	09:23:04	09:23:41	0:00:37	09:26:31	0:02:50	0:03:36	09:28:00	0:01:29	0:05:05	E32
12/04/2012	20:36:22	20:36:34	20:37:15	0:00:41	20:40:17	0:03:02	0:03:55	20:44:00	0:03:43	0:07:38	E32
12/05/2012	05:56:12	05:56:18	05:57:16	0:00:58	06:00:37	0:03:21	0:04:25	06:01:00	0:00:23	0:04:48	E32
12/09/2012	04:01:27	04:01:36	04:03:34	0:01:58	04:06:43	0:03:09	0:05:16	04:08:00	0:01:17	0:06:33	E32

Vertical Response Time

Service Date	Time Call Received	Dispatch Time	En Route	Turnout Time	On Scene	Travel Time	Reported Response Time	Patient Contact Time	Vertical Response Time	Actual Response Time	Vehicle Unit #
12/10/2012	00:01:01	00:01:09	00:02:16	0:01:07	00:06:59	0:04:43	0:05:58	00:10:00	0:03:01	0:08:59	E32
12/10/2012	11:19:35	11:19:42	11:20:27	0:00:45	11:27:05	0:06:38	0:07:30	11:30:00	0:02:55	0:10:25	E32
12/12/2012	15:54:50	15:54:58	15:55:40	0:00:42	15:58:41	0:03:01	0:03:51	16:01:00	0:02:19	0:06:10	E32
12/13/2012	01:20:33	01:20:43	01:23:02	0:02:19	01:25:58	0:02:56	0:05:25	01:31:00	0:05:02	0:10:27	E32
12/14/2012	22:50:00	22:50:09	22:51:07	0:00:58	22:55:06	0:03:59	0:05:06	22:59:00	0:03:54	0:09:00	E32
12/15/2012	10:28:47	10:28:55	10:29:47	0:00:52	10:37:07	0:07:20	0:08:20	10:40:00	0:02:53	0:11:13	E32
12/15/2012	10:52:26	10:53:30	10:53:37	0:00:07	10:59:18	0:05:41	0:06:52	11:02:00	0:02:42	0:09:34	E32
12/15/2012	11:47:50	11:48:02	11:48:51	0:00:49	11:52:18	0:03:27	0:04:28	11:54:00	0:01:42	0:06:10	E32
12/15/2012	20:15:03	20:15:15	20:16:11	0:00:56	20:17:44	0:01:33	0:02:41	20:21:00	0:03:16	0:05:57	E32
12/15/2012	21:58:57	21:59:04	21:59:58	0:00:54	22:08:28	0:08:30	0:09:31	22:12:00	0:03:32	0:13:03	E32
12/16/2012	06:18:08	06:18:15	06:19:42	0:01:27	06:22:26	0:02:44	0:04:18	06:26:00	0:03:34	0:07:52	E32
12/16/2012	09:48:45	09:48:51	09:50:06	0:01:15	09:52:14	0:02:08	0:03:29	09:55:00	0:02:46	0:06:15	E32
12/16/2012	11:35:53	11:35:59	11:36:53	0:00:54	11:39:40	0:02:47	0:03:47	11:43:00	0:03:20	0:07:07	E32
12/16/2012	20:27:12	20:27:18	20:28:04	0:00:46	20:30:46	0:02:42	0:03:34	20:35:00	0:04:14	0:07:48	E32
12/17/2012	01:17:52	01:18:02	01:19:26	0:01:24	01:22:00	0:02:34	0:04:08	01:26:00	0:04:00	0:08:08	E32
12/17/2012	21:38:53	21:39:03	21:40:12	0:01:09	21:43:26	0:03:14	0:04:33	21:47:00	0:03:34	0:08:07	E32
11/18/2012	10:44:51	10:44:58	10:45:41	0:00:43	10:49:43	0:04:02	0:04:52	10:54:00	0:04:17	0:09:09	R11
11/21/2012	18:40:59	18:42:39	18:42:42	0:00:03	18:50:07	0:07:25	0:09:08	18:54:00	0:03:53	0:13:01	R11
11/24/2012	13:57:08	13:57:13	13:57:53	0:00:40	14:00:00	0:02:07	0:02:52	14:04:00	0:04:00	0:06:52	R11
11/25/2012	11:05:05	11:05:11	11:06:16	0:01:05	11:09:00	0:02:44	0:03:55	11:12:00	0:03:00	0:06:55	R11
11/26/2012	07:36:34	07:36:40	07:37:30	0:00:50	07:41:56	0:04:26	0:05:22	07:44:00	0:02:04	0:07:26	R11
11/27/2012	05:08:46	05:08:59	05:10:51	0:01:52	05:13:50	0:02:59	0:05:04	05:14:00	0:00:10	0:05:14	R11
11/29/2012	23:39:18	23:39:24	23:41:00	0:01:36	23:46:16	0:05:16	0:06:58	23:51:00	0:04:44	0:11:42	R11
11/30/2012	09:51:51	09:52:06	09:53:13	0:01:07	09:56:34	0:03:21	0:04:43	09:59:00	0:02:26	0:07:09	R11
12/02/2012	02:06:29	02:06:39	02:08:15	0:01:36	02:12:00	0:03:45	0:05:31	02:19:00	0:07:00	0:12:31	R11
12/02/2012	09:40:39	09:41:39	09:42:08	0:00:29	09:46:01	0:03:53	0:05:22	09:52:00	0:05:59	0:11:21	R11
12/02/2012	20:11:24	20:11:34	20:12:56	0:01:22	20:15:14	0:02:18	0:03:50	20:20:00	0:04:46	0:08:36	R11
12/02/2012	21:35:50	21:36:13	21:38:26	0:02:13	21:40:50	0:02:24	0:05:00	21:44:00	0:03:10	0:08:10	R11
12/06/2012	07:48:46	07:49:02	07:50:06	0:01:04	07:54:42	0:04:36	0:05:56	07:58:00	0:03:18	0:09:14	R11
12/08/2012	02:53:49	02:55:03	02:57:13	0:02:10	03:00:45	0:03:32	0:06:56	03:01:00	0:00:15	0:07:11	R11
12/09/2012	05:05:42	05:05:48	05:07:39	0:01:51	05:12:57	0:05:18	0:07:15	05:15:00	0:02:03	0:09:18	R11
12/10/2012	03:50:20	03:50:59	03:53:16	0:02:17	03:57:16	0:04:00	0:06:56	04:00:00	0:02:44	0:09:40	R11
12/11/2012	07:25:58	07:26:04	07:26:49	0:00:45	07:30:24	0:03:35	0:04:26	07:33:00	0:02:36	0:07:02	R11
12/14/2012	22:00:31	22:00:40	22:01:45	0:01:05	22:05:31	0:03:46	0:05:00	22:09:00	0:03:29	0:08:29	R11
12/15/2012	00:32:33	00:32:43	00:34:45	0:02:02	00:40:39	0:05:54	0:08:06	00:45:00	0:04:21	0:12:27	R11
12/15/2012	22:40:02	22:40:26	22:40:34	0:00:08	22:44:14	0:03:40	0:04:12	22:48:00	0:03:46	0:07:58	R11
12/15/2012	23:26:02	23:28:26	23:28:28	0:00:02	23:29:26	0:00:58	0:03:24	23:33:00	0:03:34	0:06:58	R11

Service Date	Time Call Received	Dispatch Time	En Route	Turnout Time	On Scene	Travel Time	Reported Response Time	Patient Contact Time	Vertical Response Time	Actual Response Time	Vehicle Unit #
12/17/2012	05:34:57	05:35:06	05:37:02	0:01:56	05:42:19	0:05:17	0:07:22	05:46:00	0:03:41	0:11:03	R11
12/17/2012	07:20:02	07:20:08	07:20:59	0:00:51	07:26:56	0:05:57	0:06:54	07:30:00	0:03:04	0:09:58	R11
11/17/2012	13:48:07	13:48:15	13:49:25	0:01:10	13:52:37	0:03:12	0:04:30	13:52:37	0:00:00	0:04:30	R12
11/17/2012	23:37:34	23:37:42	23:40:04	0:02:22	23:42:39	0:02:35	0:05:05	23:45:00	0:02:21	0:07:26	R12
11/18/2012	23:15:09	23:15:16	23:16:27	0:01:11	23:19:23	0:02:56	0:04:14	23:22:00	0:02:37	0:06:51	R12
11/20/2012	11:00:41	11:00:48	11:01:42	0:00:54	11:02:00	0:00:18	0:01:19	11:11:00	0:09:00	0:10:19	R12
11/21/2012	18:43:43	18:43:48	18:44:48	0:01:00	18:49:34	0:04:46	0:05:51	18:52:00	0:02:26	0:08:17	R12
11/22/2012	00:24:15	00:24:20	00:26:13	0:01:53	00:33:13	0:07:00	0:08:58	00:38:00	0:04:47	0:13:45	R12
11/22/2012	17:07:04	17:07:09	17:07:59	0:00:50	17:11:00	0:03:01	0:03:56	17:18:00	0:07:00	0:10:56	R12
11/23/2012	07:38:31	07:38:44	07:38:50	0:00:06	07:46:38	0:07:48	0:08:07	07:49:00	0:02:22	0:10:29	R12
11/24/2012	10:22:19	10:22:29	10:23:00	0:00:31	10:25:00	0:02:00	0:02:41	10:28:00	0:03:00	0:05:41	R12
11/24/2012	18:46:08	18:46:18	18:47:00	0:00:42	18:48:00	0:01:00	0:01:52	18:52:00	0:04:00	0:05:52	R12
11/24/2012	22:27:32	22:27:42	22:28:38	0:00:56	22:31:00	0:02:22	0:03:28	22:38:00	0:07:00	0:10:28	R12
11/25/2012	07:51:08	07:51:17	07:52:41	0:01:24	07:55:00	0:02:19	0:03:52	07:59:00	0:04:00	0:07:52	R12
11/25/2012	11:28:34	11:28:43	11:30:16	0:01:33	11:33:18	0:03:02	0:04:44	11:41:00	0:07:42	0:12:26	R12
11/25/2012	21:04:00	21:04:10	21:05:26	0:01:16	21:09:32	0:04:06	0:05:32	21:14:00	0:04:28	0:10:00	R12
11/27/2012	17:27:41	17:27:51	17:28:55	0:01:04	17:31:47	0:02:52	0:04:06	17:36:00	0:04:13	0:08:19	R12
11/29/2012	02:06:35	02:06:43	02:08:49	0:02:06	02:14:53	0:06:04	0:08:18	02:19:00	0:04:07	0:12:25	R12
11/29/2012	11:18:44	11:18:51	11:19:01	0:00:10	11:21:32	0:02:31	0:02:48	11:26:00	0:04:28	0:07:16	R12
11/29/2012	23:31:57	23:32:04	23:35:07	0:03:03	23:38:30	0:03:23	0:06:33	23:39:00	0:00:30	0:07:03	R12
11/30/2012	08:46:55	08:47:04	08:47:10	0:00:06	08:54:00	0:06:50	0:07:05	08:57:00	0:03:00	0:10:05	R12
12/01/2012	15:20:03	15:20:10	15:21:34	0:01:24	15:25:00	0:03:26	0:04:57	15:29:00	0:04:00	0:08:57	R12
12/02/2012	00:55:24	00:55:48	00:57:21	0:01:33	01:02:39	0:05:18	0:07:15	01:05:00	0:02:21	0:09:36	R12
12/03/2012	10:10:05	10:10:19	10:11:00	0:00:41	10:14:00	0:03:00	0:03:55	10:20:00	0:06:00	0:09:55	R12
12/03/2012	12:12:09	12:12:28	12:13:34	0:01:06	12:19:00	0:05:26	0:06:51	12:26:00	0:07:00	0:13:51	R12
12/03/2012	14:08:33	14:10:24	14:10:27	0:00:03	14:12:00	0:01:33	0:03:27	14:20:00	0:08:00	0:11:27	R12
12/03/2012	23:17:32	23:17:42	23:19:49	0:02:07	23:22:00	0:02:11	0:04:28	23:27:00	0:05:00	0:09:28	R12
12/06/2012	23:37:15	23:37:22	23:38:27	0:01:05	23:41:51	0:03:24	0:04:36	23:46:00	0:04:09	0:08:45	R12
12/07/2012	12:10:50	12:10:57	12:11:53	0:00:56	12:14:00	0:02:07	0:03:10	12:16:00	0:02:00	0:05:10	R12
12/07/2012	13:55:07	13:55:15	13:55:19	0:00:04	13:59:00	0:03:41	0:03:53	14:04:00	0:05:00	0:08:53	R12
12/08/2012	04:36:53	04:37:02	04:39:52	0:02:50	04:43:00	0:03:08	0:06:07	04:48:00	0:05:00	0:11:07	R12
12/08/2012	13:09:43	13:09:54	13:10:53	0:00:59	13:15:59	0:05:06	0:06:16	13:22:00	0:06:01	0:12:17	R12
12/09/2012	16:40:53	16:42:29	16:42:34	0:00:05	16:44:00	0:01:26	0:03:07	16:46:00	0:02:00	0:05:07	R12
12/12/2012	02:25:44	02:25:52	02:27:27	0:01:35	02:29:00	0:01:33	0:03:16	02:34:00	0:05:00	0:08:16	R12

Vertical Response Time

12/12/2012	10:35:48	10:35:55	10:36:54	0:00:59	10:40:00	0:03:06	0:04:12	10:41:00	0:01:00	0:05:12	R12
12/14/2012	05:10:29	05:10:39	05:13:16	0:02:37	05:16:29	0:03:13	0:06:00	05:19:00	0:02:31	0:08:31	R12
12/14/2012	16:39:38	16:39:43	16:40:44	0:01:01	16:44:00	0:03:16	0:04:22	16:49:00	0:05:00	0:09:22	R12

Service Date	Time Call Received	Dispatch Time	En Route	Turnout Time	On Scene	Travel Time	Reported Response Time	Patient Contact Time	Vertical Response Time	Actual Response Time	Vehicle Unit #
12/15/2012	00:11:21	00:11:29	00:12:48	0:01:19	00:16:00	0:03:12	0:04:39	00:20:00	0:04:00	0:08:39	R12
12/15/2012	03:43:31	03:43:38	03:45:02	0:01:24	03:51:00	0:05:58	0:07:29	03:52:00	0:01:00	0:08:29	R12
12/15/2012	07:40:05	07:40:11	07:40:43	0:00:32	07:47:14	0:06:31	0:07:09	07:51:00	0:03:46	0:10:55	R12
12/15/2012	15:12:31	15:12:40	15:12:42	0:00:02	15:12:44	0:00:02	0:00:13	15:12:44	0:00:00	0:00:13	R12
11/19/2012	17:55:04	17:56:26	17:56:38	0:00:12	18:00:01	0:03:23	0:04:57	18:06:00	0:05:59	0:10:56	R18
11/20/2012	00:18:49	00:19:10	00:19:25	0:00:15	00:24:43	0:05:18	0:05:54	00:27:00	0:02:17	0:08:11	R18
11/20/2012	21:13:43	21:13:53	21:14:53	0:01:00	21:19:13	0:04:20	0:05:30	21:23:00	0:03:47	0:09:17	R18
11/24/2012	09:15:44	09:15:49	09:16:40	0:00:51	09:21:27	0:04:47	0:05:43	09:24:00	0:02:33	0:08:16	R18
11/24/2012	16:17:37	16:17:54	16:18:52	0:00:58	16:24:00	0:05:08	0:06:23	16:27:00	0:03:00	0:09:23	R18
12/01/2012	14:07:47	14:07:56	14:09:39	0:01:43	14:11:00	0:01:21	0:03:13	14:15:00	0:04:00	0:07:13	R18
12/03/2012	17:09:42	17:09:53	17:11:19	0:01:26	17:14:47	0:03:28	0:05:05	17:25:00	0:10:13	0:15:18	R18
12/07/2012	17:06:00	17:06:17	17:06:28	0:00:11	17:11:00	0:04:32	0:05:00	17:14:00	0:03:00	0:08:00	R18
12/14/2012	00:46:01	00:46:06	00:47:38	0:01:32	00:52:06	0:04:28	0:06:05	00:56:00	0:03:54	0:09:59	R18
12/14/2012	10:04:21	10:04:29	10:05:17	0:00:48	10:09:00	0:03:43	0:04:39	10:15:00	0:06:00	0:10:39	R18
12/15/2012	08:26:07	08:26:13	08:27:16	0:01:03	08:31:27	0:04:11	0:05:20	08:33:00	0:01:33	0:06:53	R18
12/15/2012	19:11:32	19:11:45	19:12:51	0:01:06	19:17:00	0:04:09	0:05:28	19:20:00	0:03:00	0:08:28	R18
12/16/2012	11:44:37	11:44:43	11:45:33	0:00:50	11:50:25	0:04:52	0:05:48	11:55:00	0:04:35	0:10:23	R18
12/16/2012	22:41:47	22:42:01	22:42:59	0:00:58	22:51:43	0:08:44	0:09:56	22:57:00	0:05:17	0:15:13	R18
12/02/2012	15:05:24	15:08:59	15:09:15	0:00:16	15:20:00	0:10:45	0:14:36	15:24:00	0:04:00	0:18:36	R212
12/02/2012	18:19:13	18:20:18	18:20:35	0:00:17	18:26:24	0:05:49	0:07:11	18:27:00	0:00:36	0:07:47	R212
11/18/2012	06:25:44	06:26:00	06:28:09	0:02:09	06:30:57	0:02:48	0:05:13	06:35:00	0:04:03	0:09:16	R218
11/18/2012	21:47:55	21:48:05	21:49:13	0:01:08	21:54:30	0:05:17	0:06:35	21:57:00	0:02:30	0:09:05	R218
11/22/2012	17:21:44	17:22:48	17:22:52	0:00:04	17:27:20	0:04:28	0:05:36	17:31:00	0:03:40	0:09:16	R218
11/23/2012	14:34:11	14:34:17	14:35:08	0:00:51	14:39:04	0:03:56	0:04:53	14:45:00	0:05:56	0:10:49	R218
11/23/2012	19:00:42	19:00:47	19:02:00	0:01:13	19:08:00	0:06:00	0:07:18	19:11:00	0:03:00	0:10:18	R218
11/23/2012	19:37:43	19:41:29	19:41:50	0:00:21	19:45:00	0:03:10	0:07:17	19:50:00	0:05:00	0:12:17	R218
11/24/2012	02:40:41	02:40:56	02:42:41	0:01:45	02:42:41	0:00:00	0:02:00	02:53:00	0:10:19	0:12:19	R218
11/27/2012	08:03:27	08:03:33	08:04:33	0:01:00	08:07:55	0:03:22	0:04:28	08:11:00	0:03:05	0:07:33	R218
12/01/2012	06:21:35	06:22:01	06:23:20	0:01:19	06:27:04	0:03:44	0:05:29	06:31:00	0:03:56	0:09:25	R218
12/01/2012	16:35:30	16:35:47	16:36:08	0:00:21	16:40:47	0:04:39	0:05:17	16:45:00	0:04:13	0:09:30	R218
12/02/2012	16:53:23	16:54:15	16:54:20	0:00:05	16:58:55	0:04:35	0:05:32	17:02:00	0:03:05	0:08:37	R218

Vertical Response Time

12/05/2012	08:46:37	08:46:48	08:47:07	0:00:19	08:52:10	0:05:03	0:05:33	08:54:00	0:01:50	0:07:23	R218
12/07/2012	00:21:54	00:22:06	00:23:50	0:01:44	00:29:24	0:05:34	0:07:30	00:32:00	0:02:36	0:10:06	R218
12/08/2012	22:25:59	22:26:17	22:27:58	0:01:41	22:32:02	0:04:04	0:06:03	22:38:00	0:05:58	0:12:01	R218
12/10/2012	03:23:13	03:23:25	03:24:28	0:01:03	03:30:18	0:05:50	0:07:05	03:34:00	0:03:42	0:10:47	R218
12/12/2012	09:45:24	09:45:36	09:46:40	0:01:04	09:51:18	0:04:38	0:05:54	09:58:00	0:06:42	0:12:36	R218
12/12/2012	10:58:21	10:58:28	10:58:34	0:00:06	11:02:33	0:03:59	0:04:12	11:02:33	0:00:00	0:04:12	R218

Service Date	Time Call Received	Dispatch Time	En Route	Turnout Time	On Scene	Travel Time	Reported Response Time	Patient Contact Time	Vertical Response Time	Actual Response Time	Vehicle Unit #
12/15/2012	23:32:41	23:33:25	23:34:05	0:00:40	23:37:00	0:02:55	0:04:19	23:43:00	0:06:00	0:10:19	R218
12/17/2012	05:19:33	05:19:40	05:22:08	0:02:28	05:30:29	0:08:21	0:10:56	05:34:00	0:03:31	0:14:27	R218
12/17/2012	12:34:19	12:35:15	12:35:20	0:00:05	12:47:00	0:11:40	0:12:41	12:51:00	0:04:00	0:16:41	R218
12/02/2012	19:53:57	19:54:10	19:54:28	0:00:18	19:54:28	0:00:00	0:00:31	20:03:00	0:08:32	0:09:03	R312
12/02/2012	20:31:48	20:31:51	20:31:54	0:00:03	20:34:04	0:02:10	0:02:16	20:48:00	0:13:56	0:16:12	R312
12/02/2012	21:17:12	21:19:12	21:21:01	0:01:49	21:25:24	0:04:23	0:08:12	21:30:00	0:04:36	0:12:48	R312
11/17/2012	10:12:40	10:12:47	10:13:55	0:01:08	10:16:00	0:02:05	0:03:20	10:16:00	0:00:00	0:03:20	R32
11/17/2012	14:27:23	14:27:29	14:28:25	0:00:56	14:30:34	0:02:09	0:03:11	14:32:00	0:01:26	0:04:37	R32
11/18/2012	04:16:26	04:16:38	04:17:31	0:00:53	04:20:31	0:03:00	0:04:05	04:22:00	0:01:29	0:05:34	R32
11/18/2012	16:59:43	17:00:25	17:00:33	0:00:08	17:06:28	0:05:55	0:06:45	17:12:00	0:05:32	0:12:17	R32
11/19/2012	02:09:50	02:10:03	02:11:08	0:01:05	02:15:05	0:03:57	0:05:15	02:20:00	0:04:55	0:10:10	R32
11/19/2012	07:26:18	07:26:24	07:27:05	0:00:41	07:30:12	0:03:07	0:03:54	07:32:00	0:01:48	0:05:42	R32
11/19/2012	08:20:53	08:21:00	08:21:54	0:00:54	08:24:52	0:02:58	0:03:59	08:26:00	0:01:08	0:05:07	R32
11/19/2012	08:45:12	08:47:38	08:47:53	0:00:15	08:47:55	0:00:02	0:02:43	08:48:00	0:00:05	0:02:48	R32
11/20/2012	04:34:00	04:34:10	04:35:31	0:01:21	04:37:36	0:02:05	0:03:36	04:39:00	0:01:24	0:05:00	R32
11/20/2012	05:52:14	05:52:21	05:53:18	0:00:57	05:56:29	0:03:11	0:04:15	05:58:00	0:01:31	0:05:46	R32
11/20/2012	06:22:35	06:23:58	06:24:01	0:00:03	06:26:18	0:02:17	0:03:43	06:28:00	0:01:42	0:05:25	R32
11/20/2012	17:09:48	17:10:00	17:11:03	0:01:03	17:16:53	0:05:50	0:07:05	17:20:00	0:03:07	0:10:12	R32
11/20/2012	18:11:15	18:11:21	18:12:27	0:01:06	18:16:00	0:03:33	0:04:45	18:18:00	0:02:00	0:06:45	R32
11/21/2012	10:14:18	10:15:57	10:16:04	0:00:07	10:17:00	0:00:56	0:02:42	10:19:00	0:02:00	0:04:42	R32
11/21/2012	13:27:01	13:27:22	13:28:17	0:00:55	13:32:20	0:04:03	0:05:19	13:33:00	0:00:40	0:05:59	R32
11/21/2012	15:54:50	15:54:59	15:56:01	0:01:02	15:59:02	0:03:01	0:04:12	16:04:00	0:04:58	0:09:10	R32
11/22/2012	06:16:06	06:16:13	06:17:31	0:01:18	06:20:00	0:02:29	0:03:54	06:22:00	0:02:00	0:05:54	R32
11/24/2012	19:39:59	19:40:10	19:41:08	0:00:58	19:43:40	0:02:32	0:03:41	19:48:00	0:04:20	0:08:01	R32
11/25/2012	13:14:53	13:14:59	13:16:06	0:01:07	13:18:25	0:02:19	0:03:32	13:25:00	0:06:35	0:10:07	R32
11/25/2012	17:09:23	17:11:18	17:11:58	0:00:40	17:12:22	0:00:24	0:02:59	17:16:00	0:03:38	0:06:37	R32
11/26/2012	06:03:58	06:04:04	06:04:22	0:00:18	06:10:23	0:06:01	0:06:25	06:14:00	0:03:37	0:10:02	R32
11/27/2012	02:24:09	02:27:46	02:27:49	0:00:03	02:31:28	0:03:39	0:07:19	02:35:00	0:03:32	0:10:51	R32

Vertical Response Time

11/27/2012	05:59:44	05:59:54	06:00:08	0:00:14	06:03:41	0:03:33	0:03:57	06:07:00	0:03:19	0:07:16	R32
11/28/2012	17:35:48	17:35:56	17:36:57	0:01:01	17:39:08	0:02:11	0:03:20	17:42:00	0:02:52	0:06:12	R32
11/29/2012	15:01:11	15:01:25	15:02:20	0:00:55	15:04:18	0:01:58	0:03:07	15:09:00	0:04:42	0:07:49	R32
11/29/2012	22:59:17	22:59:23	23:00:38	0:01:15	23:02:23	0:01:45	0:03:06	23:07:00	0:04:37	0:07:43	R32
11/30/2012	08:42:45	08:42:51	08:43:39	0:00:48	08:46:51	0:03:12	0:04:06	08:49:00	0:02:09	0:06:15	R32
11/30/2012	11:27:52	11:28:02	11:28:40	0:00:38	11:28:40	0:00:00	0:00:48	11:28:40	0:00:00	0:00:48	R32
11/30/2012	16:37:19	16:37:28	16:38:33	0:01:05	16:41:00	0:02:27	0:03:41	16:48:00	0:07:00	0:10:41	R32
11/30/2012	20:57:20	20:57:24	20:58:20	0:00:56	21:06:05	0:07:45	0:08:45	21:09:00	0:02:55	0:11:40	R32
12/01/2012	01:05:23	01:08:37	01:08:59	0:00:22	01:12:14	0:03:15	0:06:51	01:14:00	0:01:46	0:08:37	R32

Service Date	Time Call Received	Dispatch Time	En Route	Turnout Time	On Scene	Travel Time	Reported Response Time	Patient Contact Time	Vertical Response Time	Actual Response Time	Vehicle Unit #
12/01/2012	04:59:25	04:59:33	05:00:45	0:01:12	05:03:27	0:02:42	0:04:02	05:03:27	0:00:00	0:04:02	R32
12/02/2012	07:38:15	07:38:30	07:39:15	0:00:45	07:45:02	0:05:47	0:06:47	07:48:00	0:02:58	0:09:45	R32
12/03/2012	19:50:36	19:51:09	19:52:25	0:01:16	19:55:37	0:03:12	0:05:01	20:00:00	0:04:23	0:09:24	R32
12/04/2012	01:16:50	01:16:55	01:17:50	0:00:55	01:22:54	0:05:04	0:06:04	01:26:00	0:03:06	0:09:10	R32
12/04/2012	01:32:33	01:33:19	01:33:21	0:00:02	01:33:24	0:00:03	0:00:51	01:36:00	0:02:36	0:03:27	R32
12/05/2012	15:39:05	15:39:22	15:40:12	0:00:50	15:43:15	0:03:03	0:04:10	15:48:00	0:04:45	0:08:55	R32
12/05/2012	23:27:13	23:27:21	23:27:25	0:00:04	23:31:26	0:04:01	0:04:13	23:39:00	0:07:34	0:11:47	R32
12/06/2012	21:47:56	21:48:03	21:49:28	0:01:25	21:52:11	0:02:43	0:04:15	21:55:00	0:02:49	0:07:04	R32
12/06/2012	22:11:38	22:13:11	22:13:18	0:00:07	22:15:44	0:02:26	0:04:06	22:18:00	0:02:16	0:06:22	R32
12/07/2012	01:03:06	01:03:16	01:04:37	0:01:21	01:06:31	0:01:54	0:03:25	01:07:00	0:00:29	0:03:54	R32
12/07/2012	01:14:39	01:16:47	01:17:06	0:00:19	01:17:10	0:00:04	0:02:31	01:20:00	0:02:50	0:05:21	R32
12/07/2012	01:40:08	01:40:17	01:40:29	0:00:12	01:40:53	0:00:24	0:00:45	01:41:00	0:00:07	0:00:52	R32
12/07/2012	04:22:40	04:22:57	04:24:29	0:01:32	04:30:58	0:06:29	0:08:18	04:34:00	0:03:02	0:11:20	R32
12/07/2012	05:16:55	05:17:06	05:18:18	0:01:12	05:21:44	0:03:26	0:04:49	05:23:00	0:01:16	0:06:05	R32
12/07/2012	05:44:18	05:44:30	05:44:39	0:00:09	05:45:52	0:01:13	0:01:34	05:45:52	0:00:00	0:01:34	R32
12/08/2012	05:27:00	05:29:09	05:29:13	0:00:04	05:32:12	0:02:59	0:05:12	05:39:00	0:06:48	0:12:00	R32
12/08/2012	17:19:28	17:20:44	17:20:55	0:00:11	17:23:57	0:03:02	0:04:29	17:29:00	0:05:03	0:09:32	R32
12/08/2012	18:28:36	18:28:51	18:29:36	0:00:45	18:32:07	0:02:31	0:03:31	18:36:00	0:03:53	0:07:24	R32
12/09/2012	02:22:40	02:25:45	02:26:22	0:00:37	02:31:05	0:04:43	0:08:25	02:35:00	0:03:55	0:12:20	R32
12/09/2012	13:45:35	13:45:42	13:46:42	0:01:00	13:49:00	0:02:18	0:03:25	13:54:00	0:05:00	0:08:25	R32
12/09/2012	20:31:46	20:32:01	20:33:11	0:01:10	20:38:58	0:05:47	0:07:12	20:47:00	0:08:02	0:15:14	R32
12/10/2012	11:11:45	11:11:52	11:13:00	0:01:08	11:19:46	0:06:46	0:08:01	11:22:00	0:02:14	0:10:15	R32
12/12/2012	02:36:57	02:37:03	02:39:03	0:02:00	02:41:55	0:02:52	0:04:58	02:46:00	0:04:05	0:09:03	R32
12/13/2012	03:12:38	03:12:43	03:14:00	0:01:17	03:18:08	0:04:08	0:05:30	03:24:00	0:05:52	0:11:22	R32
12/14/2012	00:45:33	00:45:39	00:47:11	0:01:32	00:49:13	0:02:02	0:03:40	00:53:00	0:03:47	0:07:27	R32

Vertical Response Time

12/14/2012	02:59:43	02:59:49	03:02:00	0:02:11	03:04:22	0:02:22	0:04:39	03:06:00	0:01:38	0:06:17	R32
12/14/2012	10:31:41	10:31:50	10:32:14	0:00:24	10:36:00	0:03:46	0:04:19	10:40:00	0:04:00	0:08:19	R32
12/15/2012	11:00:39	11:00:47	11:01:51	0:01:04	11:04:30	0:02:39	0:03:51	11:08:00	0:03:30	0:07:21	R32
12/16/2012	03:32:15	03:32:22	03:32:42	0:00:20	03:35:52	0:03:10	0:03:37	03:41:00	0:05:08	0:08:45	R32
12/16/2012	11:28:37	11:28:46	11:30:20	0:01:34	11:33:05	0:02:45	0:04:28	11:35:00	0:01:55	0:06:23	R32
12/16/2012	22:26:20	22:26:28	22:27:45	0:01:17	22:31:35	0:03:50	0:05:15	22:35:00	0:03:25	0:08:40	R32
11/23/2012	22:57:50	22:57:58	22:58:16	0:00:18	23:02:00	0:03:44	0:04:10	23:04:00	0:02:00	0:06:10	R932
11/23/2012	23:38:22	23:38:30	23:38:48	0:00:18	23:40:00	0:01:12	0:01:38	23:41:00	0:01:00	0:02:38	R932
11/25/2012	01:52:07	01:52:21	01:52:31	0:00:10	01:54:24	0:01:53	0:02:17	01:57:00	0:02:36	0:04:53	R932
11/25/2012	04:32:47	04:32:54	04:33:17	0:00:23	04:36:43	0:03:26	0:03:56	04:40:00	0:03:17	0:07:13	R932
12/07/2012	23:07:40	23:08:36	23:09:10	0:00:34	23:12:32	0:03:22	0:04:52	23:13:00	0:00:28	0:05:20	R932
12/07/2012	23:43:15	23:43:20	23:43:36	0:00:16	23:49:06	0:05:30	0:05:51	23:50:00	0:00:54	0:06:45	R932

Service Date	Time Call Received	Dispatch Time	En Route	Turnout Time	On Scene	Travel Time	Reported Response Time	Patient Contact Time	Vertical Response Time	Actual Response Time	Vehicle Unit #
12/08/2012	00:16:19	00:16:34	00:16:50	0:00:16	00:20:11	0:03:21	0:03:52	00:21:00	0:00:49	0:04:41	R932
12/08/2012	00:46:34	00:46:46	00:47:01	0:00:15	00:52:50	0:05:49	0:06:16	00:53:00	0:00:10	0:06:26	R932
12/09/2012	01:03:46	01:04:02	01:04:20	0:00:18	01:08:42	0:04:22	0:04:56	01:14:00	0:05:18	0:10:14	R932
12/09/2012	04:28:06	04:28:13	04:28:45	0:00:32	04:32:47	0:04:02	0:04:41	04:36:00	0:03:13	0:07:54	R932
12/15/2012	01:39:37	01:40:09	01:40:47	0:00:38	01:46:36	0:05:49	0:06:59	01:49:00	0:02:24	0:09:23	R932
12/08/2012	23:47:59	23:48:07	23:48:16	0:00:09	23:52:06	0:03:50	0:04:07	23:56:00	0:03:54	0:08:01	R933
12/09/2012	00:39:16	00:39:36	00:39:44	0:00:08	00:43:00	0:03:16	0:03:44	00:47:00	0:04:00	0:07:44	R933
12/09/2012	01:41:26	01:41:39	01:41:51	0:00:12	01:45:00	0:03:09	0:03:34	01:46:00	0:01:00	0:04:34	R933
12/09/2012	03:22:50	03:23:24	03:23:42	0:00:18	03:33:42	0:10:00	0:10:52	03:37:00	0:03:18	0:14:10	R933
12/16/2012	01:32:13	01:32:47	01:32:49	0:00:02	01:36:28	0:03:39	0:04:15	01:42:00	0:05:32	0:09:47	R933
11/19/2012	19:44:55	19:45:04	19:46:01	0:00:57	19:48:34	0:02:33	0:03:39	19:53:00	0:04:26	0:08:05	T11
11/20/2012	15:32:27	15:32:31	15:33:19	0:00:48	15:43:08	0:09:49	0:10:41	15:47:00	0:03:52	0:14:33	T11
12/03/2012	09:54:39	09:54:52	09:56:27	0:01:35	10:05:44	0:09:17	0:11:05	10:13:00	0:07:16	0:18:21	T11
12/05/2012	15:45:17	15:45:36	15:46:30	0:00:54	15:50:00	0:03:30	0:04:43	15:54:00	0:04:00	0:08:43	T11
12/11/2012	17:42:29	17:43:04	17:44:06	0:01:02	17:50:49	0:06:43	0:08:20	17:54:00	0:03:11	0:11:31	T11
12/12/2012	08:27:27	08:27:34	08:28:07	0:00:33	08:31:32	0:03:25	0:04:05	08:35:00	0:03:28	0:07:33	T11
12/13/2012	13:29:16	13:29:24	13:31:09	0:01:45	13:36:15	0:05:06	0:06:59	13:40:00	0:03:45	0:10:44	T11
12/14/2012	20:34:24	20:34:45	20:34:55	0:00:10	20:42:03	0:07:08	0:07:39	20:47:00	0:04:57	0:12:36	T11
11/29/2012	02:20:15	02:20:20	02:22:08	0:01:48	02:29:54	0:07:46	0:09:39	02:35:00	0:05:06	0:14:45	T18

Appendix G

Interview with Principal Member of NFPA 1710

Qualitative Assessment Protocol

Interview – (Conducted on 3-13-2013) A principal member of NFPA 1710 technical committee was interviewed regarding their position/ the committee’s position when addressing vertical response time.

Questions:

1. In NFPA 1710’s cascade of events, it states there are three phases that make up total response time. Is the intent of the standard to meet the response time (480 seconds for ALS) including the mitigation time?
2. Is there an appetite within the committee to include this in the next edition of the standard?
3. There has been response time controversy in Los Angeles and New York in recent years, specifically when response time should start and stop. When do you feel the response time clock should be started and when should it be stopped?
4. What is your opinion on Fitch’s (2007) position that the only true way to measure response time is from the patient’s perspective?

Appendix H

Largest Hotels in the World

Rank	Location	Hotel	Rooms	# of Responses			
				2010	2012		
1	Malaysia Las	Genting Highlands	10,000	unknown			
2	Vegas Las	Venetian/ Palazzo	7,128	1,601	0.22	1,100	0.15
3	Vegas Las	MGM Grand	5,044	1,557	0.31	1,339	0.27
4	Vegas Las	Wynn/ Encore	4,750	1,126	0.24	1,005	0.21
5	Vegas Las	Luxor Mandalay Bay/ THE	4,408	784	0.18	858	0.19
6	Vegas	Hotel Ambassador City	4,332	906	0.21	933	0.22
7	Thailand Las	Jomtien	4,210	unknown			0.00
8	Vegas Las	Excalibur	4,008	598	0.15	706	0.18
9	Vegas Las	Aria	4,004	1,120	0.28	1,274	0.32
10	Vegas Las	Caesars Palace	3,998	791	0.20	904	0.23
11	Vegas Las	Bellagio	3,993	1,156	0.29	1,234	0.31
12	Vegas Las	Circus Circus	3,774	566	0.15	628	0.17
13	Vegas	Planet Hollywood	3,697	452	0.12	794	0.21
14	Tokyo Las	Shinagawa Prince Hotel	3,680	unknown			0.00
15	Vegas	Flamingo	3,565	604	0.17	730	0.20
16	Honolulu Las	Hilton Hawaiian Village	3,386	unknown			0.00
17	Vegas Las	Mirage	3,004	627	0.21	753	0.25
18	Vegas	Monte Carlo	3,002	456	0.15	473	0.16
19	China Las	Venetian (Macau)	3,000	unknown			0.00
20	Vegas Las	Las Vegas Hilton	2,956		0.00		0.00
21	Vegas Las	Paris	2,916	455	0.16	630	0.22
22	Vegas	Treasure Island Gaylord Opryland	2,885	401	0.14	422	0.15
23	Nashville	Resort	2,881	unknown			0.00
24	Orlando Las	Disney's Pop Century	2,880	unknown			0.00
25	Vegas	Bally's	2,814	453	0.16	538	0.19

26	Las Vegas	Imperial Palace	2,635	439	0.17	433	0.16
27	Las Vegas	Harrah's	2,576	819	0.32	898	0.35
		www.Vegastodayandtomorrow.com/largesthotels.htm		14,919			

Appendix I

CCFD Vision Statement

The Clark County Fire Department is driven to be a global leader in the Fire Service.

We will become a fully integrated, cohesive, and valued member of our community,
operating at the highest level of efficiency.

Clark County residents, businesses, and visitors can be confident they are in the safest
community and resort destination in the world.

Appendix J

Civil/ Governmental Law Attorney Interview

Qualitative Assessment Protocol

Interview – (Conducted on 2-19-2013) An attorney that practices civil/ governmental law in Nevada was interviewed regarding the CCFD’s legal responsibility in vertical response time.

Questions:

1. Does the CCFD have a Duty to act?
2. If yes, what statute is the duty to act listed in NRS?
3. Are there statutes that protect the CCFD from negligence claims?
4. Based upon the information presented to you today, would a negligence suit have credibility?
5. If the information presented to you today identifies an area that needs to be addressed to protect the CCFD from future litigation, what do you feel the fire department needs to do to reduce its exposure?

Appendix K

Fire Chief Interview

Qualitative Assessment Protocol

Interview – (10-24-2013) An interview was conducted with the Clark County Fire Department's Fire Chief regarding his position on addressing vertical response time.

Questions:

1. The Clark County Fire Departments SAFER grant discussed our inability to reach patients in a timely manner on the Strip Corridor. Does the department have plans to address this?
2. What are possible solutions to the vertical response time problem in Clark County?
3. There has been response time controversy in Los Angeles and New York in recent years, specifically when response time should start and stop. When do you feel the response time clock should be started and when should it be stopped?
4. What is your opinion on Fitch's (2007) position that the only true way to measure response time is from the patient's perspective?
5. Do you feel the way we currently display our response times depicts an accurate picture of our ability to respond within our established response time goal?