Fire-Based Community Paramedicine:

Is it a Cost Effective Program for the City of Albuquerque?

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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 another.

Signed: _____

Abstract

The problem was the City of Albuquerque had not determined if a fire-based community paramedicine program would be cost effective. The purpose of this Applied Research Project paper was to determine if a fire-based community paramedicine program would be cost effective for the City of Albuquerque. The descriptive research methodology was used to answer the following research questions:

1) What type of Fire-Based Community Paramedicine Program can the Albuquerque Fire Department provide?
2) What New Mexico laws regulate Fire-Based Community Paramedicine Programs?
3) What are the costs/benefits of providing a Fire-Based Community Paramedicine Program in the City of Albuquerque?

Procedures used for this Applied Research Project paper included personal interviews, questionnaires, a national survey, written documents, figures, tables, and internet searches on fire-based community paramedicine. The results established a parallel connection with the literature review: fire-based community paramedicine is a cost effective service that will benefit the entire City of Albuquerque. Recommendations included specific directions for the City of Albuquerque and the Albuquerque Fire Department on the implementation and sustainment of a fire-based community paramedicine program.

Keywords: community paramedicine (CP), programs, types, regulations, costs, benefits

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Fire-Based Community Paramedicine:

Is it a Cost Effective Program for the City of Albuquerque?

The Albuquerque Fire Department (AFD) was founded in 1900 as a paid professional fire department for the City of Albuquerque (COA). Staffed with 701 total employees, AFD is the largest fire department in the State of New Mexico (NM) and is the authority having jurisdiction (AHJ) in the COA. As a fire-based emergency medical service (EMS) organization, AFD responds to every emergency 911 scene with the mission of *serving the community by providing all hazards planning, prevention, and response that promotes public safety and trust while ensuring the safety and wellbeing of its firefighters* (Albuquerque Fire Department [Vision, Values, Mission], 2014, p. 1). As the primary response agency for all emergency 911 calls in the COA, AFD responds to 911 customers with a *two-tiered* fire-based EMS system. Some 911 customers require a *scoop and run* response (immediate transport, with all treatment en route to hospital), others need a *stay and play* approach (treating the patient on scene then transporting them to the hospital), and still others only need a helping hand, an answer to a question, or an ear to talk to—but do all of these customers really require an emergency 911 response?

While one emergency 911 call may or may not be a *true* emergency, emergency response units must be deployed. A defined non-emergent call or event, regarding a person's health, is a situation that does not require immediate action (Oxford Dictionaries, n.d.); and the implementation of an AFD community risk reduction (CRR) program, addressing non-emergent 911 calls, can provide the COA's citizens a better quality of life. In fact, by identifying and improving a community risk in the COA, AFD can help provide a sustainable future for all its citizens and fulfill its vision statement: *AFD is dedicated to continuously providing quality risk reduction and emergency services to our community* (Vision, Values, Mission), 2014, p. 1). A

CRR program can be best defined as the steps taken by a community to reduce the impact of risk, such as vulnerability for harm or damage to life, property, or community vitality (U.S. Fire Administration [Community Risk-Reduction], 2011, para. 1; Federal Emergency Management Agency [“FEMA”], 2013, p. SM 1-11)

During the past seven years, AFD has been able to identify several emergency response customers that call 911 for non-emergent reasons. In fact, many of these emergency response customers call 911 more than 20 times a year for non-emergent events. To be clear, AFD responds to all 911 calls; more importantly, customers are helped and treated appropriately and respectfully. Nonetheless, sending a basic life support (BLS) Engine; Ladder; Squad; or an advanced life support (ALS) Rescue or Engine to a non-emergent 911 call, depletes the rest of the COA from those much needed emergency response resources. In reality, sending emergency 911 resources to non-emergent 911 calls incurs considerable costs to the COA. While the recent COA financial outlook and budget has been good, owing to a fiscally responsible Mayor and City Council, maintaining public safety city services and resources comes at a high cost—26.8% of the total budget (City of Albuquerque [FY/15 Proposed Budget], 2014, p. 26).

Right now, AFD provides several fire prevention CRR programs through the Fire Marshal’s Office (FMO; fire education, fire extinguisher training, and building pre-fire plans) and through field personnel (building pre-fire plans, hydrant testing, and fire education at schools and fire houses). In 2014, AFD FMO Captain Jason Garcia stated that AFD received a $130,000 from the Federal Emergency Management Agency (FEMA) Assistance to Firefighters Grant (AFG) for continued fire prevention CRR initiatives (J. Garcia, personal communication, July 1, 2014); however, CRR programs outside of fire prevention activities do not exist. By providing an EMS-based CRR program, AFD can reduce the impact of risk, harm, and damage to life,

while improving community vitality. With the decline of fire calls and incline of EMS calls, over the last 10 years, the COA must look into new ways of providing CRR services to offset the growing number of non-emergent 911 calls. One idea has surfaced: Community Paramedicine (CP). By definition, CP is:

> An organized system of services, based on local need, which are provided by EMTs and Paramedics integrated into the local or regional health care system and overseen by emergency and primary care physicians. This not only addresses gaps in primary care services, but enables the presence of EMS personnel for . . . providing routine use of their clinical skills . . . . (U.S. Department of Health and Human Services [Community Paramedicine Evaluation], 2012, p. 49)

The problem is the COA has not determined if a fire-based CP program would be cost effective. Life safety response issues and cost concerns are justifiable reasons to investigate whether an EMS CRR program is needed. The purpose of this Applied Research Project (ARP) paper is to determine if a fire-based CP program would be cost effective for the COA. The descriptive methodology will be used to answer the research questions. The research questions are:

1) What type of Fire-Based Community Paramedicine Program can the Albuquerque Fire Department provide?
2) What New Mexico laws regulate Fire-Based Community Paramedicine Programs?
3) What are the costs/benefits of providing a Fire-Based Community Paramedicine Program in the City of Albuquerque?

Background and Significance

Located in the center of NM, AFD serves the State's largest city and population—the COA. The COA is located in Bernalillo County, covers an area of 188.8 sq. miles and has an

elevation of 5,355 ft. (City of Albuquerque [Sunport], n.d., para. 4; City of Albuquerque [2013 Annual], 2013, p. 23). With a mayor-council city government, and a base population of 556,495 people, the COA is the 32nd largest city in the United States (U.S. Census Bureau [U.S. Census], 2013). Besides an urban population, the COA also represents rural areas, including: farms, ranches, wildland urban interface, the Rio Grande River, the Bosque (woodlands), and the Sandia Mountain foothills. Demographically, the COA's population has grown by 24% or 100,000 people since the 2000 U.S. Census and is now predominately Latino 46.7%, followed by Caucasian 42.2%, Native American 3.8%, African American 2.9%, Asian 2.4%, Pacific Islander 0.3%, and *other* 1.7% (U.S. Census Bureau [U.S. Census], 2012).

Strategically located throughout the COA, AFD responds to emergency calls from 22 fire stations housed with 22 Engines, 19 Rescues, seven Ladders, four Battalion Commanders, three Brush Trucks, two Hazardous Materials Squads, one Heavy Technical Rescue Squad, one Wildland Urban Interface Engine, and one Quality Assurance Unit. Albuquerque Fire Department staffing includes: 675 full-time professional uniformed firefighter/emergency medical technicians (EMT), 470 at the basic and intermediate levels and 205 at the paramedic level. Work schedules for AFD personnel include three options: 1) 56 hour field work-week (48 hours on/96 hours off), 2) 42 hour support division work-week, and 3) 40 hour administrative work-week. Currently participating in *mutual* and *automatic aid*, AFD has agreements with eight surrounding departments; as well as the State during wildland fire season, and tribal lands for emergencies that are outside the municipal boundaries of the Intra-State Mutual Aid System.

In 2013, AFD responded to 81,448 emergency 911 calls, with 65,058 (80%) medical calls and 1,384 (1.7%) fire calls (structure fires accounted for 717 calls [0.9%]; Albuquerque Fire Department [Chief's Reports - 2013 Year End], 2014, p. 4, 14). If EMS 911 calls continue to

grow in the future, AFD's current resources may be stretched too thin, possibly causing bad outcomes for waiting 911 customers. In a profession where *time is muscle*, AFD must be more proactive in response configurations to meet the needs of the community. At times, proactive changes in the fire service require forethought, aggressive attitudes, and a paradigm shift from the norm (fighting fires). After all, firefighters fight fire—right? Not anymore. One study in 2012 by Alex Tabarrok, *Firefighters Don't Fight Fires,* states that the number of fires in the United States has fallen by more than 40% over the last 35 years (para. 1). In fact, as an all-hazard emergency response organization, AFD has had a direct *hand* in decreasing fires in the COA with fire prevention CRR initiatives—and that is where most fire departments succeed. However, implementing a non-fire based CRR program, like CP, shows a dedicated, savvy fire department providing anticipated future services to its citizens.

Today, firefighters have become the *jack-of-all-trades* in emergency prevention, preparedness, and response. When a customer calls 911 for help, firefighters respond with appropriate units, equipment and personnel—or do they? Sending six firefighters to a 911 call might appear legitimate, but it may also be fiscally irresponsible and excessive. In truth, the emergency 911 system has become today's primary healthcare system. Customers know—having called 911 a few times—exactly what to say when they want an emergency response. If you do not think so; given the opportunity, tune in to 911 call tapes and listen in for key medical terms and phrases used by non-medically trained 911 customers—it may surprise you.

The latest, leading-edge and much hyped EMS *tool* used by today's forward thinking fire departments is CP. Called by many names, CP is the newest hot topic in EMS and most everyone is talking or writing about this new direction of emergency response. Sending non-emergency response units to non-emergent 911 customer calls can save *wear and tear* on both

response vehicles and personnel, saving money for both the customer and the response organization, while appropriately treating customers and using true emergency response units for true emergencies.

The COA Mayor and City Council have spent the last four years *digging* the city out of debt by downsizing government costs and building stronger revenue growth. Previously, in fiscal years 2009 – 2011, the COA was in a $66 million *hole* (Chavez, 2008, p. 1; Berry, 2010, p. 1); while the budget for fiscal year 2015 (FY/15) has the smallest debt gap since fiscal year 2007—$7.4 million—it is a number that can be quickly balanced (City of Albuquerque [Five-Year], 2013, p. 3).

In 2013, during the process of digging the COA out of debt, Mayor Richard Berry tasked AFD to conduct an internal study on CP. The study was to focus on at-risk patients that repeatedly used the 911 system for non-emergency healthcare needs, chronic mental healthcare patients that involved the 911 system, and the known underserved population in the COA (Albuquerque Fire Department [Community Paramedicine], 2013, p. 1). Unfortunately, the Mayor's requested study, and the endeavor itself, never occurred. Nonetheless, former AFD Fire Chief James Breen, during the same time, believed CP was an area that needed to be considered, "The fire department needs to be efficient, providing . . . value to their citizens and system . . . and it is wise to expand our [AFD] stake in the EMS system, including community paramedicine" (J. Breen, personal communication, August 9, 2013).

Today, AFD Fire Chief David Downey believes the time for alternative methods of delivering fire-based EMS is right now. Specifically, Chief Downey supports the need for emergency department (ED) alternatives and preventing hazards for the elderly and chronic abusers (alcohol and drugs) through the implementation of new emergency response methods

(Lohmann, 2014, para. 3). Chief Downey also believes that relief to local hospitals, jails, and emergency response units—through CP—will provide a much needed EMS-based CRR plan; focusing on a better quality of life for all COA citizens (D. Downey, personal communication, July 10, 2014). The COA International Association of Fire Fighters (IAFF) chapter, Local 244 – Albuquerque Area Fire Fighters Union, parallels Chief Downey's view on CP and is willing to provide any support necessary for this initiative; however, in order to make sure the COA's fire and EMS coverage is not affected, Local 244 President Diego Arencón believes that a separate CP Division within EMS must be created (D. Arencón, personal communication, July 3, 2014). In fact, a change of this magnitude will need L-244's help to succeed; as studies have found that local union involvement in new workplace programs has significantly improved labor productivity, labor-management relations, and program success (Brock & Lipsky, 2003, p. 215).

Albuquerque Fire Department Medical Director Andrew J. Harrell IV, M.D., is also a proponent of CP. He believes that "the challenge we [AFD] face is identifying achievable goals and objectives for our proposed community paramedicine program, so that the proper focus of our efforts are useful to the community and the department's mission" (A. Harrell, personal communication, August 8, 2014).

Currently, the COA needs an innovative response program to offset the growing number of 911 calls. During the last 10 years, AFD has experienced a serious increase in Total 911 calls. In 2004, AFD responded to 67,837 total 911 calls; and in 2013 they responded to 81,448—a 20% increase in total 911 calls (Albuquerque Fire Department [2004 Year End Report], 2005; Chief's Reports - 2013 Year End, 2014, p. 20). Further investigation revealed that AFD responded to 54,718 medical calls in 2004; and 65,058 medical calls in 2013—a 19% increase (2004 Year End Report, 2005; Chief's Reports - 2013 Year End, 2014, p. 4). Additionally, AFD fought 2,035

fires in 2004; and in 2013 they fought 1,384 fires—a 32% decrease—clearly supporting Tabarrok's 2012 study, *Firefighters Don't Fight Fires* (2004 Year End Report, 2005; Chief's Reports - 2013 Year End, 2014, p. 14). Of note, since 2004, the COA's population has grown 14% (486,319 in 2004 and 556,495 in 2014) and fire department numbers have grown by 12% (604 in 2004 and 675 in 2014)—indicating that AFD has continued to staff the appropriate number of personnel to population, despite the growing number of 911 calls (IDcide, 2009; City of Albuquerque [Comprehensive Annual Financial Report], 2008, p. 240; FY/15 Proposed Budget, 2014, p. 109).

The first annual budget, FY/15, in Mayor Berry's second term in office was presented to the COA's City Council on April 1, 2014. The proposed operating budget for FY/15 began on July 1, 2014 and ends on June 30, 2015. The COA has projected General Fund revenues of $486.1 million for FY/15, $13.2 million more than the fiscal year 2014 (FY/14) budget (FY/15 Proposed Budget, 2014, p. 27). However, the FY/15 General Fund expenditures have been forecasted at $499.2 million—a 3.1% increase over the FY/14 budget (Five-Year, 2013, p. 7). Of importance, the increases are due to costs of medical benefits, routine and the new Affordable Health Care legislation, transfers to the Risk Fund (for self-insurance), newly created positions in FY/14, and Capital Implementation Project (CIP) operational costs (Five-Year, 2013, p. 7).

Additionally, Mayor Berry's FY/15 proposed budget includes appropriations for *Community Outcomes* (better interactions with individuals with mental health issues) and *Critical Infrastructure Development* (increasing the quality of life for COA residents; FY/15 Proposed Budget, 2014, p. 7). Also proposed to the COA, from City Council members Ken Sanchez and Klarissa Peña, is a new city ordinance, *Essential Services Tax*; if passed, the new ordinance will impose an excise tax equal to one-eighth of 1 % (0.125%) on gross receipts for

the purpose of funding essential City services beginning January 1, 2015 (Essential Services Tax Ordinance Proposal, 2014). Of note, the Essential Services Tax proposal passed (August 18, 2014) the first of two City Council voting sessions for its adoption. The key component of the *Essential Service Tax* is the revenue; with 50% going to inpatient/outpatient mental health services, homelessness services, developmentally disabled services, and substance abuse and at-risk population services (Essential Services Tax Ordinance Proposal, 2014). These newly proposed budget appropriations will provide opportunities for a fire-based CP in the COA.

The Executive Analysis of Community Risk Reduction (EACRR) class, the second course in the Executive Fire Officer Program (EFOP), identified several major areas that directly impact CRR as it relates to CP, specifically: ethical issues, financing, political concerns, and legal issues ("FEMA," 2013, p. SM 1-19). Relationships must be built with all community stakeholders in order to sustain a successful transition to CP in the COA ("FEMA," 2013, p. SM 3-90). As with any significant change, problems will be presented at the most inopportune times during the change process; therefore, the eight stages of successful change were stressed in the EACRR class. The eight stages include: 1) Establishing a sense of urgency; 2) Creating a guiding coalition; 3) Developing a vision and strategy; 4) Communicating the change vision; 5) Removing barriers to action; 6) Creating short-term successes; 7) Consolidating gains; and 8) Anchoring new approaches to culture ("FEMA," 2013, p. SM 4-8 – 4-13).

This ARP will provide COA stakeholders (including all communities and fire/EMS departments in general) the education, information, and knowledge on fire-based CP; while recognizing that CRR can include EMS efforts through the strong support of the EFO's organization and city—AFD and the COA.

This ARP's research correlates with four of the five U.S. Fire Administration (USFA)

course goals: Reduce risk at the local level through prevention and mitigation; Improve local planning and preparedness; Improve the fire and emergency services' capability for response to and recovery from all hazards; and Improve the fire and emergency services' professional status (U.S. Fire Administration [Strategic Plan], 2010, p. 13). The application of a fire-based CP program will allow AFD to provide more appropriate emergency and non-emergency responses—bettering future emergency responses in the COA. By increasing the quality of life in the COA, through EMS prevention (fire-based CP), AFD will mitigate the poor use of its emergency response resources, thus fulfilling the first USFA goal: Reduce risk at the local level through prevention and mitigation (Strategic Plan, 2010, p. 13). Fire-based CP will improve local disaster planning and preparedness by keeping more AFD units on the streets for emergency responses, thus fulfilling the second USFA goal: Improving local planning and preparedness (Strategic Plan, 2010, p. 13). Better responses and faster in-service times from hazards will improve with fire-based CP, thus fulfilling the third USFA goal: Improve the fire and emergency services' capability for response to and recovery from all hazards (Strategic Plan, 2010, p. 13). Finally, responding to customers with fire-based CP will improve patient care knowledge, assessment, and treatment skills, fulfilling the fourth USFA goal: Improve the fire and emergency services' professional status (Strategic Plan, 2010, p. 13).

Literature Review

The intent of this literature review was to investigate and compile previous research information by past authors, on the beginning, evolution, program type, financial sustainability, and legislation of CP.

Helping those in medical need has been around since the dawn of time. Even the Bible presents an example of rendering medical aid—and quite possibly—an example of community-

based healthcare: *The Parable of the Good Samaritan*. To be clear, it was not the Good Samaritan (emergency responder providing medical aid) providing community-based healthcare; in fact, it was the innkeeper:

> But a certain Samaritan, as he journeyed, came where he was. And when he saw him, he had compassion. So he went to him and bandaged his wounds, pouring on oil and wine; and he set him on his own animal, brought him to an inn, and took care of him. On the next day, when he departed, he took out two denarii, gave them to the *innkeeper*, and said to him, '*Take care of him*' . . . (Luke 10:33-35 New King James Version)

Emergency medical services have steadily evolved since biblical times, with the most significant changes having occurred since the mid-1900s. The 1950s and 1960s brought new and innovative EMS care practices with mouth-to-mouth ventilation, Cardiopulmonary Resuscitation (CPR), defibrillation, and paramedicine. Legislatively, EMS needed regulation and by the mid-1960s and early 1970s that direction came from the *Highway Safety Act of 1966*, the *National Traffic and Motor Vehicle Safety Act of 1966*, the *Department of Transportation Act of 1966*, and the *Emergency Medical Services (EMS) Systems Act of 1973*. Additional notable publications impacting EMS came from several other sources, including the 1966 paper on *Accidental Death and Disability: The Neglected Disease of Modern Society*, the 1968 paper on *Medical Requirements for Ambulance Design and Equipment*, the 1973 paper on *America Burning*, the 1993 paper on *National Emergency Medical Services Education and Practice Blueprint*, the 1996 paper on *Emergency Medical Services (EMS) Agenda for the Future*, and two 1998 papers: *Emergency medical services (EMS) Education Agenda for the Future: A Systems Approac*h, and the *Strengthening Consumer Protection: Priorities for Health Care Workforce Regulation*.

During the EMS change process, caused by regulations and professional papers, a couple

of small, yet innovative, *seeds* were planted in Alaska (AK) and Oregon (OR). In the 1960s a community healthcare program was developed in AK due to the high number of unhealthy and underserved populations. Even today roughly 20% of the U.S. population—almost 62 million people—live in rural underserved areas, and only 9% of the nation's physicians practice medicine in those communities (Thomas Jefferson University, n.d., para. 2). Moreover, only 25% of new doctors are becoming primary care physicians and 4.8% of those doctors practice in rural communities (Koenig, 2013, para. 1). The program in AK, *Community Health Aide Program (CHAP)*, began in the 1960s and received formal recognition in 1968 (Alaska Community Health Aide Program [CHAP], n.d., para. 1). Today, there are approximately 550 Community Health Aides/Practitioners (CHA/Ps) working in more than 170 rural Alaskan villages (CHAP, n.d., para. 2). Individual communities select their future CHA/Ps, and send them to one of four training centers in AK for four weeks of training (CHAP, n.d., para. 4). After completion (and passing) of the training, clinical work, practicum, and final examination, the CHA/Ps becomes a qualified practitioner(s).

In 1975, the Springfield Fire Department (OR) and Eugene Fire Department (OR) began dispatching cross-trained fire fighter/EMTs to local businesses in order to provide on-site patient (employees and customers) care for minor medical problems (International Association of Fire Fighters [Monograph 7], 1997, p. 4). Today, OR is still leading the way in healthcare reform. In 2009, the OR Legislature passed, House Bill (HB) 2009, which included the Oregon Health Authority and Patient-Centered Primary Care Home Program. These laws use a Coordinated Care Model (CCM) that provides better prevention and care in the community setting, reducing hospitalization and ED use, while achieving improved outcomes (Oregon Health Authority, 2012, p. 6, 33). Oregon’s proactive role in healthcare has not gone unnoticed, as the State

received a three and a half year $45 million grant in 2013, *State Innovation Model (SIM) Grant*, from the Center for Medicare and Medicaid Services (Oregon Health Policy and Research, n.d., para. 1). Oregon was one of six states (Arkansas, Maine, Massachusetts, Minnesota, and Vermont) to receive the grant for testing new healthcare innovations and lowering healthcare costs; it is also an opportunity to strengthen and support the State CCM model (Oregon Health Policy and Research, n.d., para. 1-2).

The efforts in AK and OR have provided the motivation to expand the traditional role of emergency responders into a more preventive based approach; specifically, CP. The actual term, *community paramedic*, was first used by the former State of Maine Medical Director, Kevin McGinnis, in 2001 (Rowley, 2006, p. 4). Twenty-eight years after CHAP was recognized as a community healthcare program and 21 years after OR EMS began providing on-site patient care, the 1996 Department of Transportation (DOT) paper, *EMS Agenda for the Future*, was published. The need for the *EMS Agenda for the Future* paper came in 1992 at the request of the National Association of EMS Physicians (NAEMSP); and while CP is not directly named in this paper, it is clearly on the future of EMS resources and patient care:

> EMS of the future will be community-based health management that is fully integrated with the overall health care system. It will have the ability to identify and modify illness and injury risks, provide acute illness and injury care and follow-up, and contribute to treatment of chronic conditions and community health monitoring. This new entity will be developed from redistribution of existing health care resources and will be integrated with other health care providers and public health and public safety agencies. It will improve community health and result in more appropriate use of acute health care resources. EMS will remain the public's emergency medical safety net. (U.S.

> Department of Transportation, 1996, p. iii)

During the 1990s CP began taking shape with two programs in NM—Red River and the COA. In 1992, the *Red River Project (RRP)* was planned; and by the fall of 1994 it began operations with $464,000 of funding from the *Rural Health Outreach Grant*, awarded by the Federal Office of Rural Health (Texas A&M University, 2010, para. 4). The RRP was created due to long (48 miles) ambulance drives from Red River to Taos, NM—the location of the closest hospital (Texas A&M University, 2010, para. 2). More importantly, non-emergent patient transports to Taos were taking a valuable emergency response transport resource out-of-service for up to four hours a day. To address the problem, a consortium that included Red River, the University of New Mexico (UNM School of Medicine), and the New Mexico Department of Health (DOH) was created in 1992 to develop a pilot EMS program, expanding the paramedic scope of practice (Hauswald, Raynovich, & Brainard, 2005, p. 250). The RRP paramedics (16 personnel), were trained as community health specialists through the expansion of their paramedic scope of practice—per their Medical Director; however, only three completed the training program (Hauswald et al., 2005, p. 250). Results showed RRP Community Health Specialists removed two-thirds of EMS calls out of the 911 system, thus reducing 911 EMS transports from initially 78% of the call volume to only 11% (Texas A&M University, 2010, para. 4). However, five years later, only one provider was left practicing, causing the RRP Program to ask for five more personnel; which in turn, caused the DOH to direct UNM to perform a formal review (Hauswald et al., 2005, p. 250). By 2000 the RRP Program was defunct and the UNM formal review stated:

> The proximate cause of the program's failure was the influence of local politics and the lack of external quality control. Simply put, the program evolved away from its original

> goal of allowing a limited kind of primary care to be delivered conveniently to a rural population. It became a functionally unsupervised acute care clinic that did a limited variety of apparently low quality care. In the end, it refused even to adequately cooperate with the review mandated by the state agency that originally developed it. (Hauswald et al., 2005, p. 253)

Also in 1992, Sandia National Laboratories (SNL), located on Kirtland Air Force Base in the COA, expanded the roles of their paramedics in order to save the company and the employee time and money. Within SNL's Medical Clinic, and in between 911 responses, paramedics began giving on-site allergy shots to Sandia employees. SNL Management believed they could save money for both the company (keeping workers on site) and their employees (not paying co-pays or using vacation time) by keeping workers on-campus with free on-site healthcare. Over the last 22 years, paramedic job functions within SNL's medical clinic have evolved and now include: walk-in patient triaging, flu and allergy shots, blood pressure and blood glucose checks, and investigating/treating/navigating scheduled and unscheduled patients prior to seeing on-site physicians, nurse practitioners, physician assistants, and registered nurses. The Medical Clinic Manager for SNL, Anne DeCoste, stated that paramedics provided 4,433 allergy shots in 2013, saving both SNL $376,895 and the employees $221,650 in time-off losses (A. DeCoste, personal communication, July 9, 2014).

Moving forward, in 1996, the Phoenix Fire Department (PFD) began using a *Mobile Health One (MHO)* pilot program. The MHO program included a firefighter/paramedic, a registered nurse, and a physician assistant responding to specified emergency scenes with the purpose of keeping patients at home and out of the ED. The MHO firefighter/paramedic provided a wide range of care under the direction of the physician assistant, including:

immunizations, suturing, patient referrals, physicals, and prescriptions. At the conclusion of the pilot program, PFD determined that the MHO program provided only small monetary savings for the citizen, healthcare organizations, and the City of Phoenix—and not enough monetary savings to continue the program (International Association of Fire Fighters [Monograph 6], 1997, p. 10).

In the 1997 *Emergency Medical Services: Paramedic Expanded Scope – Monograph 6* report, IAFF General President Harold A. Schaitberger declared that fire departments were already providing care beyond their traditional EMS scope of practice; and that by answering the challenge of change, fire departments could continue to serve their communities in the most appropriate manner (Schaitberger, 1997, p. 3). The report, based on community concerns and deficiencies, indicated that fire departments needed to expand upon their normal service delivery roles, including non-emergency units responding to 911 EMS calls (Pratt, n.d., p. 107-108).

In 2004, the San Francisco Fire Department (SFFD) began operating the *Homeless Outreach and Medical Emergency (HOME) Team Program*. The HOME Program was financed by the City of San Francisco's general fund ($150,000 per year) and was in operation for five years (Mund, 2010, para. 17). Initiated over the increasing and expensive repetitive non-emergent EMS 911 calls, the HOME Program quickly identified 56 individuals who had utilized 911 over 360 times in just one month (Mund, 2010, para. 3). The HOME Program's goal was to send veteran, highly trained, and street smart SFFD paramedics to work with non-emergent customers (poor, homeless, mentally ill, elderly, disabled, and substance abusers) as outreach workers. All HOME SFFD paramedics received specialized training in clinical awareness, psychosocial assessments, motivational techniques, clinical psychology, substance abuse treatment, gerontology and had the ability to execute psychiatric holds (Mund, 2010, para. 10). HOME Program members focused on the high population of homeless people in the City, even

investigating as to why they repeatedly called 911. Positive and supportive in their roles, and more direct than social workers, HOME Program members used specialized interventional techniques based on psychosocial assessments to motivate these individuals to accept care and treatment (Mund, 2010, para. 11, 12). During one 18 month evaluation period, 911 calls by the top 35 non-emergent users fell from a maximum of 163 calls to a low of 25 calls (Mund, 2010, para. 16). Overall results of the HOME Program showed a reduction in the homeless population's total emergency call runs by nearly 75%; saving the City of San Francisco approximately $12 million—ironically, the program stopped operations in 2009 due to funding problems (Johnson, 2011, para. 20).

In 2006, the Seattle and King County Division of Emergency Medical Services developed a pilot program to investigate whether EMS personnel could have an active prevention role in disease identification for South King County customers. Specifically, the goal was to prevent future 911 calls through the early identification of potential life-threatening conditions in patients. The program, *Supporting Public Health with Emergency Responders (SPHERE),* was directed by Seattle King County Public Health EMS Division Medical Director Mickey Eisenberg, M.D. The SPHERE Program evaluated two community disease problems: *Hypertension (HTN)* and *Diabetes*. The selected diseases were based on high numbers and lack of knowledge, simply put: one in three patients have HTN without knowledge; while roughly 7 million Americans have type II diabetes, again, with no knowledge (Treviño, White, Meischke, & Eisenberg, 2008, para. 7).

No specific laws or regulations were needed to incorporate SPHERE since the skills used by EMS responders fell within their scope of practice. The SPHERE program was initially funded through a federal grant for the first three years; now, it receives its funding from the *EMS*

Property Tax Levy (M. Eisenberg, personal communication, July 8, 2014). SPHERE began operations in 2007 and was piloted by several King County fire departments, including: South King Fire & Rescue (formally Federal Way Fire Department), the Port of Seattle Fire Department, Kent Fire & Life Safety, and the Auburn Fire Department. During EMS responses, South King County customers found to be suffering from a higher than normal blood pressure or blood sugar were provided a card with the results of their assessment and were advised to follow-up with their primary care physician. They were also advised that they would receive a follow-up call in a month from EMS personnel to help assure that physician contact was initiated. The program was a success and was officially adopted into county-wide operations in 2008 (M. Eisenberg, personal communication, July 8, 2014). In all, the study revealed that 10,597 EMS customers were seen, with 7,106 (67%) confirming they had HTN (6,111 or 86%) or diabetes (995 or 14%) following their visit to a healthcare professional; in short, the use of EMS is an effective way to reach, identify, and improve the quality of life for large numbers of community residents (Meischke, Fahrenbruch, Ike, Hannon, & Harris, 2012, para. 3; Meischke et al., 2013, p. 916; Treviño et al., 2008, para. 11).

In 2009, MedStar Mobile Healthcare, the EMS provider for over 880,000 people in the Fort Worth, Texas (TX) area, began operating a *Community Health Program (CHP)* using Mobile Healthcare Practitioners (MHP). The CHP Program, implemented over the increasing costs of readmitted 911 customers, reported that 21 individual patients were transported to area EDs more than 2,000 times in 2008—racking up $962,429 in ambulance charges and accounting for 1% of all 911 calls (Medstar Mobile Healthcare [Overview], n.d., para. 1; Johnson, 2011, para. 11). MedStar’s goal is threefold: Improve the Patient's Experience, Improve Patient Care, and Reduce Costs; the goals are met through patient navigation and mobile integrated healthcare

(Overview, n.d., para. 12). Between January 2010 and April 2014, the CHP Program worked directly with 88 patients, saving almost $4.2 million in healthcare expenses, while lowering their ED visits by 84.3% over the last 12 months post-enrollment (Medstar Mobile Healthcare [Expenditure Savings Analysis], 2014; Medstar Mobile Healthcare [High Utilizer], 2013). As part of the CHP Program, enrolled patients receive regularly scheduled home visits from MHPs, who provide medical assessments, medication check-ups, and primary care provider follow-ups.

In 2010, the Western Eagle County Ambulance District (WECAD) in Eagle, CO began a five year CP pilot program. The CP program provided healthcare services, through expanded paramedic roles, to residents where access to a physician, clinics, or hospitals was difficult or non-existing (Eagle County Paramedic Services, n.d., para. 1). Data from the 2011 Western Eagle County Health Services District *Community Paramedic Program Handbook* revealed that 52 of the 64 Colorado counties (81%) are either fully or partially designated as Health Professional Shortage areas; 50.2% of patients who were readmitted had no follow-up care with a physician; 22% of Eagle County residents were uninsured; 56% of Eagle County Households are affected by chronic health issues, and 80% of all Colorado ED visits were for non-emergent, non-acute issues (p. 34).

The WECAD community paramedics are sent by physicians to patients' homes to focus on preventative care, vaccinations, fall prevention, and blood glucose monitoring. In addition, community paramedics assist individuals in finding the appropriate social service and physician needs and help assure the home is a safe environment with heat and appropriate food. Between September 2010 and June 2012, the CP program made 97 visits to 36 patients, preventing 244 nursing visits, 47 physician visits, 15 ambulance transports, 13 ER visits, and three hospital admissions/readmissions—totaling $124,071 in healthcare cost savings (Franz, 2013, para. 13).

Moving forward, the Mesa Fire Department began their version of a fire-based CP program, *Transitional Response Vehicles (TRV)*, in 2006 as a pilot program, and fully implemented it in 2011. Like most of the country, the City of Mesa had budgetary and financial problems in 2008, and with the help of their fire department, they were able to save a large amount of money. The combination of sending large expensive firefighting units ($750,000 each) and personnel to the bulk of Mesa's 911 calls (80% medical calls) just seemed fiscally irresponsible (Nelson, 2013, para. 2; Beck & Smith, 2010, p. 4); however, the poor economic times provided the necessary catalyst for their unique change in fire service delivery. In fact, in 2012, the Mesa Fire Department changed their name to the Mesa Fire and Medical Department in order to better identify with what they provide their citizens. During the beginning of the program, the TRV units were staffed with a Paramedic Captain and a Firefighter; now, the program has begun partnerships with local Nurse Practitioners (Mountain Vista Medical Center) and Mental Health Crisis Counselors (City of Mesa). Currently, the TRV Program has four staffed units on duty for 40 hours per week (and one back-up), with a goal of putting more units on the streets and providing the service 24 hours a day; not a substantial request considering the combined TRV units work 160 hours a week and the City is still receiving a high number of 911 calls for recently released readmitted patients—25% of the total 911 call volume in the City of Mesa (Nelson, 2013, para. 9, 19).

In November 2013, the Tempe Fire, Medical and Rescue Department (TFMRD) partnered with St. Luke's Hospital to begin operating a *Patient Advocate Service Program*. The program provides one TFMRD paramedic and one St. Luke's registered nurse; together they respond to the homes of frequent 911 callers in their *Care 7* van. The goal of the program is to present better patient-centered care, increase healthcare management coordination services, and

reduce overall EMS costs. Within one month (December) the program had 33 clients, visited 20 homes, and had 26 follow-ups (Tempe Fire, Medical and Rescue Department, 2013, para. 1-3).

Though CP was initially *born* from the lack of accessible EMS and healthcare to rural communities, over-all program growth has been due to the heavy increase in emergency 911 calls and ED visits by non-emergent customers—a problem affecting EMS Systems world-wide. From 1996 – 2006, hospital ED visits experienced a 36% increase in patient visits (Pitts, Niska, Xu, & Burt, 2008, p. 1); and a 2008 study on the homeless, *Food, shelter and safety needs motivating homeless persons' visits to an urban emergency department*, reported that 29% of homeless patients and 10% of non-homeless patients visited EDs for food, shelter, and safety—not health related issues (Rodriguez, Fortman, Chee, Ng, & Poon, 2008, p.598). Another study from 2009, *Frequent Users of Emergency Departments: The Myths, the Data, and the Policy Implications*, stated that four or more ED visits per year, per person comprised of 4.5% – 8% of all ED patients—but accounted for 21% – 28% of all ED visits (LaCalle & Rabin, 2009, p. 1). Putting those numbers in perspective using the COA's current population would mean that 12.6% (53,377 people) of all adults would be identified as frequent ED users.

In a 2010 discussion paper on CP, *State Perspectives Discussion Paper on Development of Community Paramedic Programs*, it was noted that up to 40% of all EMS responses were for non-emergent patients (National Association of State EMS Officials, 2010, p. 3). Another study from 2010, *Many Emergency Department Visits Could Be Managed at Urgent Care Centers and Retail Clinics*, reported that 13.7% – 27.1% of all hospital ED visits in the United States were unnecessary; in fact, those customers could be seen at non-emergent healthcare facilities which could potentially save the healthcare industry $4.4 billion annually (Weinick, Burns, & Mehrotra, 2010, para. 1 or p. 1630). The 2011 National Center for Health Statistics study, *Emergency*

Room Use Among Adults Aged 18–64: Early Release of Estimates From the National Health Interview Survey, estimated that nearly 80% of adults visited the ED in the last 12 months for reasons including: no physician availability, doctor's office was not open, and no other place to go—none of these non-emergent patient hospital visits were admitted—ironically, 55% believed that only a hospital could help them (Gindi, Cohen, & Kirzinger, 2012, p. 1).

Legislatively, there are no national laws regulating CP. While the *Patient Protection and Affordable Care Act of 2010 (PPACA)* is law, and will be fully implemented by October 2014, there is absolutely nothing within it that directly regulates CP. In fact, in the 906 page Government Printing Office (GPO) PPACA document, there is almost more written about firearms (10 times) than about firefighters, paramedics, and EMS combined (12 times). The purpose of the PPACA is to control the costs of healthcare, which directly affects the financial wellbeing of the Center for Medicare and Medicaid Services (CMS). The regulations within the PPACA expand the coverage of Medicare (Federal) and Medicaid (State)—with some caveats. In short, there is more financial and medical intervention coverage for both Medicare and Medicaid; however, Medicare will require more regulations for financial reimbursement.

The CMS, with direction from the PPACA, will contract Accountable Care Organizations (ACO), groups of healthcare workers and hospitals, through the Medicare Shared Savings Program (MSSP), to control the reimbursements for healthcare providers. The ACO is responsible for the quality, cost, care and management of at least 5,000 Medicare fee-for-service beneficiaries and can deny or reduce payment(s) if the provider is not meeting quality standards; therefore, it is in the hospital's best interest to make sure the patient does not immediately get readmitted for the same problem (Ludwig, 2013, para. 13; U.S. Department of Health and Human Services, 2014, p. 5).

The PPACA does cover three significant areas that can potentially impact the future of CP: Community-Based Care Transitions Program (CCTP), Grants to Promote the Community Health Workforce, and the Hospital Readmissions Reductions Program (HRRP). Section 3025, in the PPACA, *Hospital Readmissions Reductions Program,* added section 1886(q) to 42 CFR Part 412 (formally known as the *Social Security Act of 1935*), Subpart I: §412.150 - §412.154; which allows Medicare's HRRP Program to impose financial penalties to all hospitals, paid by Medicare's Inpatient Prospective Payment System (IPPS), that violate the 30 day readmit rule (Patient Protection and Affordable Care Act of 2010). The costs of Medicare are enormous and the penalties will be significant:

> Medicare patients returning to the hospital shortly after they are discharged impose an enormous cost to Medicare that could be avoided with better post-discharge care. In its patient safety and quality initiative, the CMS has estimated the cost of avoidable readmissions at more than $17 billion a year. Medicare plans to reduce payments for readmissions, exposing hospitals to considerable financial risks. In fiscal year 2013, hospitals face a penalty equal to 1% of their total Medicare billings if an excessive number of patients are readmitted. The penalty rises to 2% in 2014 and 3% in 2015. (Goodman, Fisher, & Chang, 2012, p. 2)

In 2012, more than 2,200 U.S. hospitals were financially penalized $280 million; and in 2013, 2,225 U.S. hospitals were penalized $227 million (James, 2013, para. 15, 16).

Section 3026 in the PPACA, *Community-Based Care Transitions Program*, states that the Secretary of Health and Human Services shall provide up to $500 million to the CMS for fiscal years 2011 – 2015 to complete CCTP services (Patient Protection and Affordable Care Act of 2010). The purpose of the CCTP Program is to improve patient care while furnishing transition

services to high-risk Medicare beneficiaries—patients suffering from cognitive impairment, depression, multiple readmissions, and any other chronic disease or risk factor as determined by the Secretary of Health and Human Services.

Section 5313 in the PPACA, *Grants to Promote the Community Health Workforce*, subsection (b) *Use of Funds*, portion (4) states that grant funds will be awarded to those that "identify, educate, refer, and enroll underserved populations to appropriate healthcare agencies and community based programs and organizations in order to increase access to quality healthcare services and to eliminate duplicative care" (Patient Protection and Affordable Care Act of 2010). So far, funding has supported 190 construction and renovation projects, 67 new health center sites across the country, and will support more than 485 new health facility centers and 245 new community health center sites; additionally, the PPACA will provide $9.5 billion to expand healthcare services over the next five years (U.S. Department of Health and Human Services [Health Care Law], 2012, para. 1-3).

Although there are no current national regulations directly guiding CP, individual States can implement their own laws, reimbursements, and educational/training standards. In the 2013 National Association of State EMS Officials (NASEMSO) study on *Community Paramedicine State Enabling Legislation*, State EMS officials were asked if their State law(s) enabled or prohibited CP and whether their law(s) could be interpreted in either manner; results showed that 26 States (70.3%) either allowed or did not prohibit CP (p. 1). While the NASEMSO study overwhelmingly indicated that States are not opposed to CP, in actuality, only a small number are actually performing this service. In the 2013 *Community Paramedicine/Mobile Integrated Healthcare Survey (CP/MIHC)*, results revealed that only 232 (6%) of the 3,781 surveyed fire and EMS organizations currently use CP in some form or another (National Association of

Emergency Medical Technicians [NAEMT], 2013).

Currently, only five States have passed legislation on CP: Maine (LD 1837, An Act To Authorize the Establishment of Pilot Projects for Community Paramedicine), Missouri (HB 335 - Public Safety and HB 336 - Emergency Services), Nevada (AB 361 [BDR S-1040] – Community Paramedicine), Pennsylvania (EMS System Act 37, §8102), and Minnesota (HF 262/SF 119 – Community Paramedicine Bill). Of these five States, Minnesota has passed the most significant legislation on CP and Medicaid reimbursement.

In 2011 Minnesota Governor Mark Dayton signed into law the *Community Paramedic Bill (HF 262/SF 119)*; creating a new EMT certification with educational and training requirements. In order to become a Minnesota community paramedic, the applicant must be a certified paramedic with two years of full-time experience or part-time equivalent. The educational and training requirements for a CP program must include a complete training and clinical program from a board approved, or accredited, college or university; and be under the supervision of an ambulance medical director, advanced practice registered nurse, physician assistant, or public health nurse (Minnesota Statutes, 2010).

The exact hours of education, training, and core classes are up to the educational/training institution—the law only stipulates that it must be supervised and board approved or accredited. The goal of the Minnesota CP educational program is to *expand* the role of the paramedic, not change the scope of practice. Expanded services will cover primary care, emergency care, public health, disease management, prevention, wellness, and mental health; with focused care on pathophysiology, pharmacology, lab work, wound care, social services, and physical exams.

In 2012, Minnesota Governor Mark Dayton signed into law Senate Bill *SF 1543, Medical Assistance (MA) Community Paramedic Services Reimbursement Coverage Authorization*,

allowing community paramedics to bill Minnesota Medicaid for its services. Services covered under Minnesota Medicaid CP billing include: health assessments, immunizations, vaccinations, chronic disease monitoring and education, lab specimens, medication checks, discharge follow-up care, and minor medical procedures (Erich, 2013, para. 3).

Procedures

This ARP used the descriptive research method for the two personal interviews, three questionnaires, and nationwide survey. Information and data, from an assortment of resources, were used for the purpose of answering the research questions and the development of recommendations. Additional information gathered to answer the research questions came from the internet, fire service manuals and journals, EMS journals, and technical reports. The collected evidence provided specific information and understanding on fire-based CP.

The procedures used to assemble and endorse the information for this ARP began at the Learning Resource Center (LRC) at the USFA National Emergency Training Center (NETC) in February 2014. Supplementary information searches took place at the University of New Mexico (UNM) Zimmerman Library, East Mountain Public Library (Tijeras, NM), and the AFD Training Academy Library. Furthermore, the internet contributed other areas and locations to gather more research information for this ARP. The literature review was used to gather as much knowledge on the subject of fire-based CP as possible. New and specific research data came from personal interviews, questionnaires, a national survey, and internet searches.

The personal interviews were conducted to better answer the research questions. While CP has been rising up around the United States, the COA is unaware if it can provide these services and therefore, for this ARP, the need for professional-based knowledge and experience was needed. The questions selected for each interviewee were dependent on their professional

field of work. The sample size, two, was based on the need for representatives with experience in the fields of fire and EMS.

The first interview was with Dallas Fire-Rescue Department Assistant Chief Norman Seals. The purpose of this interview was to gain knowledge about the types of programs, laws, and funding sources involved with CP. This interview took place by phone July 3, 2014. See Appendix A for a list of all questions and answers. The second interview was with Lane Fire Authority Assistant Chief Chris Heppel. The purpose of this interview was to learn about the types of programs, laws, and funding sources involved with CP. This interview took place by phone July 3, 2014. See Appendix B for a list of all questions and answers.

Questionnaires were used for additional information to answer the research questions. The questionnaires were sent to three individuals with valued education and experience on CP. The sample size, three, was chosen and selected based on the need for current specific data involving CP. Each questionnaire was developed around the research questions and each individual's profession.

The first questionnaire was sent to UNM EMS Academy Director Robert McDaniels. The purpose of these questions was to gain specific information on NM CP requirements and funding. The questions were sent via email on June 19, 2014 and the results were received on July 26, 2014. See Appendix C for a list of all questions and answers. The second questionnaire was sent to NM Department of Health EMS Bureau Chief Kyle Thornton. The purpose of these questions was to gain specific information on NM fire-based CP programs, laws, and regulations. The questions were sent via email on June 19, 2014 and the results were received on July 28, 2014. See Appendix D for a list of all questions and answers. The third questionnaire was sent to Green Bay Fire Department Chief of EMS Melissa Spielman. The purpose of these questions

was to gain data on a current operating fire-based community health program. The questions were sent via email on June 19, 2014 and the results were received on July 11, 2014. See Appendix E for a list of all questions and answers.

A nationwide survey, the *Community Paramedicine Survey (CPS)*, was developed and distributed by this researcher using Survey Monkey. The CPS Survey Monkey was developed using the *Create Survey* option, which provided customization of the questions, privacy, format, and access time for the end user. The purpose of the CPS survey was to determine the organization type, staffing model, programs, response type, funding, legislation, and educational and training requirements of current fire and ambulance services operating a CP program.

The Sandia National Laboratories Clinic paramedics were used to review the CPS survey questions for *Content Validity* and *Alternate-Form Reliability*—the questions were found to be both valid and reliable. During the literature review, this researcher was unable to find a reliable survey for this ARP and therefore the CPS survey was developed. The sample size chosen by this researcher was 225 fire and ambulance organizations throughout the United States and Canada. The surveyed fire and ambulance organizations included: paid, volunteer, and combination organizations; EMS and non-EMS agencies; and small to large departments. In order to gain a wide variety of information on the research questions, this researcher used a large number of survey participants.

The survey was distributed via Survey Monkey email on June 12, 2014 and remained open until midnight, August 12, 2014. The survey samples came from three sources: *Stratified Sampling*, *Convenience Sampling*, and *Judgment Sampling*. The Stratified Samples came from former NFA classmates providing this researcher with their newest fire and EMS department email addresses. The Convenience Samples came from this researcher's prior collected email

addresses from past NFA, fire, and EMS courses. The Judgment Samples came from internet searches by this researcher. Procedures used for CPS survey follow-up included four reminder emails from Survey Monkey, bi-weekly, to those participants that had not answered the survey. Noted survey limitations included: blocked email addresses, non-random participants, anonymous participation, truthfulness, and question comprehension. In all, 104 (46.2%) fire and ambulance organizations completed at least a portion of the CPS survey. A copy of the CPS survey email, questions, and answers, is located in Appendix F; a list of fire and ambulance CPS survey participants is located in Appendix G.

Information gathered from AFD's Records Management Services (RMS) allowed this researcher to develop two COA Frequent Customer Encounter Tables located in Appendix H; one informational page on Projected COA Reduced Call Volume Cost Savings located in Appendix I; four Projected COA Costs and Savings Tables located in Appendix J; one informational page on CPS Survey Organizations with Populations of 500,000 or more in Appendix K; and one informational page on AFD Emergency Response Numbers for 2004 – 2013, gathered from AFD RMS, in Appendix L.

Results

Answers to the research questions were attained through the descriptive method, and are supported by compiled data from personal interviews, questionnaires, a national survey, and document analysis of prior written reports.

The results for the first research question, *What type of Fire-Based Community Paramedicine Program can the Albuquerque Fire Department provide?*, came from personal interviews, questionnaires, written sources, informational tables, and the CPS survey. A community-based program provided by a fire department, outside the traditional services and

primary mission of the organization, is referred to as a *formal program*. Examples of formal programs include: child car-seat inspection and installation programs, bicycle safety training programs, teen-driver safety programs, physical-fitness programs, home safety inspection programs, hazardous materials recycling programs, and alternative response programs (Stowell, 2004, p. 246-247). While there are several community-based programs listed, only one program applies to CP—Alternative Response Programs.

Within an alternative response program lays community connectors and community service units that provide a link between fire/EMS and other service providers through the use of non-emergent interventions (Stowell, 2004, p. 398). Today, CP clearly falls within the confines of an alternative response program. As an alternative response program, CP offers many different unique types of programs; however, each community must decide what program(s) they need and can implement. In NM, Department of Health EMS Bureau Chief Kyle Thornton stated that there are only a few types of CP programs in the State right now and each is different; more importantly, they are not being tracked, nor are they reportable, as long as responders do not go beyond their scope of practice (K. Thornton, Personal Communication, July 28, 2018).

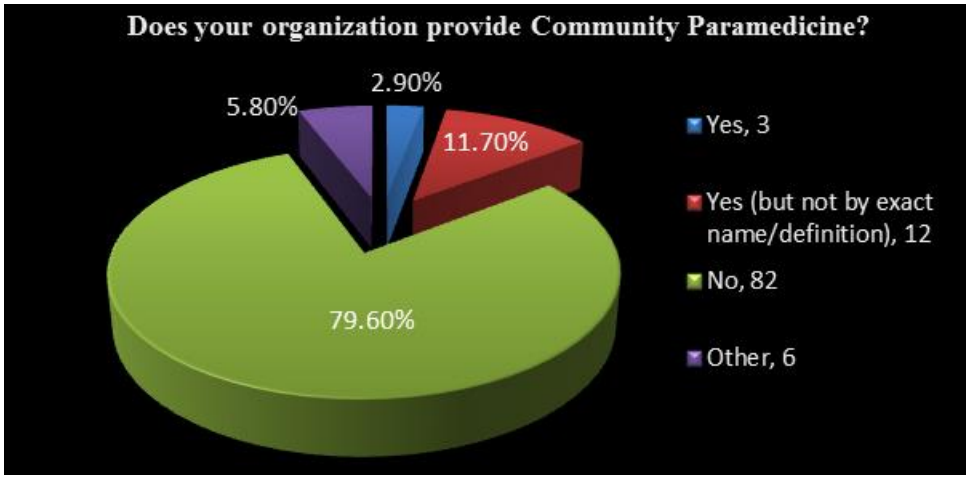


Figure 1. CPS Survey – Question 5 (Survey Monkey [S.M.], 2014)

While the types of CP programs appear to be only limited by one's innovations, realistically, they must meet both the individual needs and financial capabilities of the city providing the service. The COA must concentrate CP efforts on areas that can show positive results through easy wins and low costs. More importantly, the COA must determine types of CP programs that will attract partnerships with other city organizations and businesses. During the research process several types of CP programs became known; yet, as a whole, there are not many organizations providing this service.

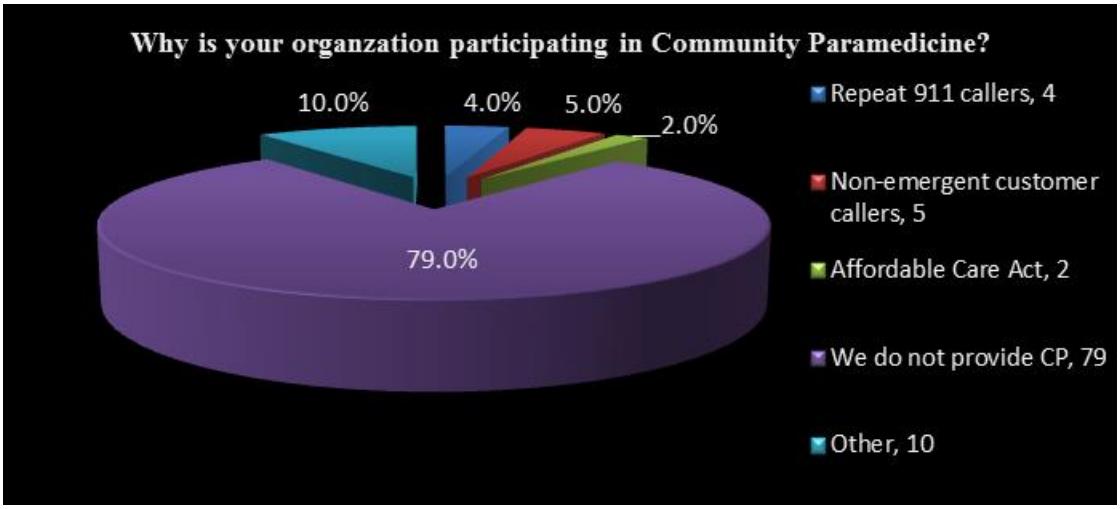


Figure 2. CPS Survey – Question 6 (S.M., 2014)

According to the CPS survey, only 14.6% (combined 'Yes' responses) of the participants currently provide CP while a staggering 79.6% (82) do not; however, all six of the organizations in the *Other* category are looking into providing CP in the future (see Figure 1). Those participating in CP provide the service for one of four reasons: 1) Non-emergent customer calls at 5%; 2) Repeat 911 callers at 4%; 3) the PPACA at 2%; and 4) *Other* at 10% (half of this group indicated "frequent callers"; see Figure 2). In a questionnaire completed by UNM EMS Academy Director Robert McDaniels it was pointed out that there are generally four types of CP programs out there: 1) Pre-navigation; 2) Discharge follow-up; 3) Rural primary care

supplementation; and 4) Wellness and frequent flyer programs (R. McDaniels, personal communication, July 26, 2014). Examples of different types of fire-based CP include: Green Bay Metro Fire Department, Lane Fire Authority, and the Dallas Fire-Rescue Department.

The City of Green Bay, Wisconsin began operating a community-based healthcare (CP) initiative pilot program, *Hook and Ladder Program*, in 2013. According to Green Bay Metro Fire Department (GBMFD) Chief of EMS Melissa Spielman, GBMFD partnered with Bellin Health Care Systems, a local healthcare facility, to check up on recently released hospital patients from March – September 2013 (M. Spielman, personal communication, July 11, 2014). The patients were recently released from the hospital after suffering a heart ailment, such as heart attacks, congestive heart failure, and heart surgeries (Murray, 2013, para. 3). This simple, yet effective, type of community-based healthcare, provided by GBMFD EMTs and paramedics, also allowed firefighters to check smoke detectors and assess home safety concerns, such as slips, trips, and falls (Beck & Zavadsky, 2014, p. 12).

The Lane Fire Authority (LFA), in Veneta, OR, began operating a community-based healthcare initiative (CP) in February 2014. Lane Fire Authority Assistant Chief Chris Heppel stated that LFA is a combination fire department (30 paid, 120 volunteers) that provides EMS services to 35,000 people over 425 sq. miles and that the very rural, wide-open district played a large part in establishing a CP service (C. Heppel, personal communication, July 3, 2014). The CP program, *Lane Fire Authority Community Based Healthcare Program*, runs out of a local primary care clinic through a partnership with a 501(c)(3) non-profit organization, Rural Oregon Access Medical (ROAM). On the second Saturday of each month the program provides volunteer doctors, nurses, pharmacists, social workers, EMTs, paramedics, and an herbalist for four hours of community healthcare (C. Heppel, personal communication, July 3, 2014). The

involved LFA paramedics provide triaging and patient navigation. Implementation of the program was based on the need to contribute medical help to rural OR residents, keeping them from unnecessary trips to the ED; so far they are seeing between 20 and 30 patients with a 50% return rate of previously seen patients; more importantly, these patients are not calling 911 for non-emergent reasons (C. Heppel, personal communication, July 3, 2014).

The City of Dallas, TX began operating a CP program, *Mobile Community Healthcare Program (MCHP),* in March 2014. The Dallas Fire-Rescue Department (DFRD) sends MCHP paramedics to scheduled home visits with frequent non-emergent 911 callers. The program was created to offset the large amount of repeat non-emergent 911 callers in the City of Dallas. Right now, the DFRD has identified 253 frequent 911 callers that have called at least once a month over the past year. The use of 911 for non-emergent issues has become so bad that DFRD Assistant Chief Norman Seals addressed it before the Dallas City Council Public Safety Committee: 'For a fact, we have some people who know the cafeteria menu at the hospital, and they'll call us [911] to get a ride to the hospital just to get a good meal' (Seals, 2013). The DFRD, in order to reach and provide sustainable healthcare measures to their clients, identified 911 frequent callers as anyone that calls 15 or more times over a 90 day period (N. Seals, personal communication, July 3, 2014). Currently, six personnel are on a Monday – Friday 40 hour work-week schedule, responding as community paramedics; three additional personnel will be joining the program this September (N. Seals, personal communication, July 3, 2014). MCHP personnel respond in Ford Escapes to the homes of the top 36 emergency 911 callers in the City Dallas (N. Seals, personal communication, July 3, 2014).

Presently, the COA has a large problem with frequent non-emergent 911 callers. Frequent non-emergent 911 callers, identified through AFD's patient tracking system, are

customers that have called 911 at least six times in a calendar year. From 2008 – 2012, an average of 394 customers called 911 six or more times a year, averaging 6.47% of all emergency 911 EMS calls in the COA (see Table H1). When moving the frequent caller number from six times a year to 12 times a year, over the same period (2008 – 2012), the number of customers dropped to 68, averaging 2% of all emergency 911 EMS calls in the COA (see Table H2). In 2012, AFD began looking into ways to offset the large amount of frequent non-emergent 911 calls in the COA. The goal was to keep AFD field units available for true emergencies, lowering the costs of responses to frequent caller dispatches (wear, tear, fuel; and unit hours on-scenes), and keeping hospital beds open for *real* customers.

Table H1

AFD Six or More Frequent Customer Encounters (2008 – 2014)

Year	Total EMS Calls	*6 or more 911 calls*	Number of Calls for Group	Groups % of EMS Calls
2008	63,690	408	4,219	6.62%
2009	59,890	416	4,043	6.75%
2010	59,429	353	3,651	6.14%
2011	60,917	381	3,918	6.43%
2012	63,272	410	4,046	6.39%
2013	65,058	242	2,232	3.43%
2014	33,318	152	1,394	4.18%

Note. (Albuquerque Fire Department [AFD Frequent Customer Encounters], 2014)

Solving a frequent 911 repeat customer problem can be very complex due to many factors ranging from psycho-social issues, fragmented care, lack of follow-up, and an aging population ("Intel," 2011, p. 1). While investigating the frequent caller data it was revealed that many of those customers suffered from chronic inebriation; so in April 2013, in order to help lower the frequent customer call volume, the COA (AFD and Albuquerque Police Department [APD]) began a partnership program, *Public Inebriate Intervention Program (PIIP)*, with the

University of New Mexico Hospital (UNMH) and the Bernalillo County Metropolitan Assessment and Treatment Services (MATS) Center.

Table H2

AFD Twelve or More Frequent Customer Encounters (2008 – 2014)

Year	Total EMS Calls	*12 or more 911 calls*	Number of Calls for Group	Groups % of EMS Calls
2008	63,690	68	1,254	1.97%
2009	59,890	71	1,304	2.18%
2010	59,429	61	1,252	2.11%
2011	60,917	71	1,330	2.18%
2012	63,272	68	1,300	2.05%
2013	65,058	35	625	0.96%
2014	33,318	17	273	0.82%

Note. (AFD Frequent Customer Encounters, 2014)

The PIIP unit, staffed with one AFD Firefighter and one APD Officer responding in a van or police squad car, makes contact with public inebriates and offers transportation to those that qualify (no medical issues and non-violent) to MATS, where they will be provided food, shelter, and a safe environment to recover from acute intoxication (Albuquerque Fire Department [Public Inebriate], 2013, p. 2). To be clear, the PIIP unit does not provide medical interventions—apart from basic vital signs and hands-only CPR; however, the PIIP unit can dispatch a 911 medical response if needed. At the end of 2013, PIIP numbers and customer names were evaluated and the data indicated that the program was having a positive impact on overall frequent customer encounter numbers; more importantly, most of the revealed customer names were also names listed on AFD's frequent caller lists. The 2013 PIIP results showed that the six times a year frequent caller numbers fell from an average of 394 customers to 242, with total EMS call volume falling from 6.47% to 3.43%; and the 12 times a year frequent caller numbers fell from an average of 68 customers to 35 and total EMS call volume fell from 2% to 0.96% (see Tables H1 and H2). The frequent customer encounter numbers for six and 12 calls per year through the

first two quarters of 2014 (January 1 – June 30) are also on pace with the 2013 numbers—152 callers and 4.18%, and 17 callers and 0.82%, respectively (see Tables H1 and H2).

Looking beyond the positive impacts of PIIP, one can see that there are still roughly 240 or more customers calling 911 six times or more a year for reasons other than inebriation. However, in order to provide a long-term successful CP program, AFD must concentrate on a smaller, more realistic, category of patient—such as the 35 frequent customer encounters calling 911 at least 12 times a year. For example, the San Diego Fire-Rescue Department (San Diego, CA) and Rural/Metro Ambulance coordinated a *San Diego Resource Access Program (RAP)* in 2008 to combat individuals who repeatedly called 911. The study consisted of 51 adults who were transported by EMS 10 or more times within a 12 month period; and the positive impacts of helping a smaller group of customers was significant. The data, collected over a 31 month time period from December 2006 to June 2009, showed that 911 encounters by EMS crews declined by 37.6% and hospital visits declined 28.1% (Tadros et al., 2012, p. 541). A smaller number of people can be more efficiently and effectively helped using a realistic *span-of-control*. Therefore, in answering the first research question, the *type* of fire-based CP program the COA can provide is a frequent customer encounter CP program (specifically focusing on customers that call 911 twelve or more times a year).

Results from NM statutes, governing bodies, questionnaires, an ordinance, a protocol, and the CPS survey provided information to answer the second research question: *What New Mexico laws regulate Fire-Based Community Paramedicine Programs?* Presently, NM has two governing bodies that can regulate EMS: NM Department of Health (DOH) and the NM Public Regulation Commission (PRC); additionally, the COA has one EMS governing body, the EMS Authority (EMSA). Besides governing bodies, EMS services must also comply with State law,

such as the NM *Motor Carrier Act of 1978* (Chapter 65 – Motor Carriers – Article 2A and Article 6) and the NM *Emergency Medical Services Act of 1978* (Chapter 24 – Health and Safety – Article 10B); as well as State, County, and City EMS protocols.

Within the DOH is the Division of Epidemiology and Response—home to the State EMS Bureau, the actual governing body over all non-compensated EMS services in NM, as well as *all* State EMS practitioner licensures (compensated or non-compensated). "Non-compensated organizations in NM include: fire departments, transport and non-transport capable medical rescues, search and rescue units, EMS dispatch services and special event EMS agencies" (Soto, 2013, p. 49). The DOH has full authority to establish all regulations for non-compensated EMS and fire agencies through the State Emergency Medical Services Act of 1978. The DOH Administrative Code (NMAC) that directly applies to all EMS organizations is Title 7 – Health, Chapter 27 – Emergency Medical Services (Parts 2-7; 10; Emergency Medical Services, 2014). Furthermore, the DOH establishes all State EMS scopes of practice and protocols for all EMS First Responders and EMTs at the basic, intermediate, and paramedic level (EMT B, I, and P). The DOH also establishes all education, special skills, training, initial licensing, and licensure renewal and reciprocity. On August 15, 2014 the DOH released their new and amended 7.27.11 NMAC formally addressing CP; however, CP is a term that will not be used, instead it will be *Community EMS* (Emergency Medical Services, 2014; K. Thornton, personal communication, July 28, 2014). The new 7.27.11 NMAC regulatory language read as follows:

> Community emergency medical services programs. Community EMS programs shall be provided by EMS caregivers who, after completing a bureau approved community EMS caregiver course, are functioning as part of a community emergency medical services program that has been reviewed and approved by the EMS bureau. The providers must

> be authorized by their medical director to perform the skills listed in their application as part of the community EMS program. These programs may include referrals that involve transport to non-hospital locations, and for non-transport decisions. Skills and interventions may include any of the approved skills and interventions for the appropriate level; any skill that exceeds the scope of practice must be approved through the special skill process. (Emergency Medical Services, 2014)

To be clear, those CP programs practicing outside their scope of practice, based on skill level, will require approval from the DOH; and approval occurs at one of four quarterly State Medical Direction Committee (MDC) meetings (R. McDaniels, personal communication, July 26, 2014).

The Emergency Medical Services Act of 1978 establishes medical equipment and operational health and safety standards for EMS organizations not regulated by the PRC; as well as ensuring the highest standards of competence and skills by EMS service providers in NM. Unfortunately, the Emergency Medical Services Act of 1978 does not address anything on CP.

The PRC governs all *fee-for-service* (compensated) transportation organizations in NM with their Transportation Division (Applications / Compliance Bureau). The PRC has full authority to establish all regulations for compensated EMS transport services through the Motor Carrier Act of 1978; as well as billing tariffs; and transport unit requirements, equipment, and licensing. The PRC NMAC for compensated EMS services is Title 18 – Transportation and Highways, Chapter 3 – Motor Carrier General Provisions (Parts 1-15); currently, there is nothing within this administrative code, or the PRC itself, that addresses CP (Motor Carrier Rules, 2002/2005).

The Motor Carrier Act of 1978 fosters the development, coordination and preservation of a safe, sound, and adequate system. The Motor Carrier Act requires financial responsibility and

accountability from motor carriers through state licensing and regulation; and it directly applies to all EMS ambulances and their organizations. However, nothing within the Motor Carrier Act is applicable to EMS job functions, including CP.

In the COA, the EMS system falls under one additional governing body and regulation: the EMSA and the Albuquerque/Bernalillo County EMS Protocols (ABC EMS Protocols). The COA, with authority from the State to implement its own laws, created the EMS Authority Ordinance in 1989 (American Legal, n.d., p. 81). The purpose of the EMS Authority Ordinance is to provide a governing body, the EMSA, to ensure all State, County, and City EMS system laws (regulations, ordinances, and protocols) are followed and that appropriate customer care is being delivered by all agencies responding to 911 calls in the COA (EMS Authority Ordinance, 1989/Am. Ord. 12-1991; Am. Ord. 9-1993; Am. Ord. 40-1997; Am. Ord. 25-1999). While the EMS Authority Ordinance does state, if needed, that the reforming of the EMS system for the benefit of the community is appropriate, there have been no amendments to the ordinance since 1999 and nothing currently within it regulates CP.

The ABC EMS Protocols provide all patient care direction for EMT B, I, and P in the COA and Bernalillo County. The ABC EMS Protocols, a *living* document, can be changed, updated, or amended by the COA's Providers Advisory Committee (PAC) and Medical Control Board (MCB). It is also the fastest way, in the State, to implement a CP regulation in the COA. Right now, current protocols do not cover CP in any capacity; however, as long as community paramedics do not provide patient care outside the ABC EMS protocol paramedic scope of practice, the protocol document does not require changes.

The CPS survey also provided information on nationwide CP regulations. Survey participants were asked who regulates (by law) their CP program. The results indicated that

most regulating laws came from individual States, followed by, and in order, *othe*r (both indicated “Medical Director”), county, city and organizations (see Figure 3). Of note, six of the 13 comments stated that their States are currently working on CP legislation (see Figure 3). Therefore, in answering the second research question, there is *one current law regulating* fire-based CP in NM—7.27.11 NMAC.

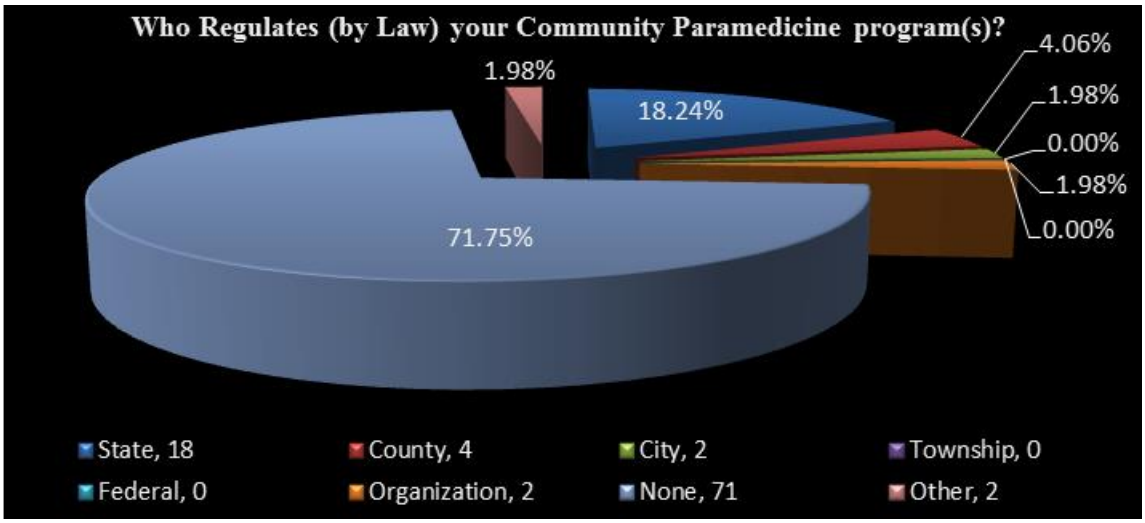


Figure 3. CPS Survey – Question 13 (S.M., 2014)

The results from personal interviews, questionnaires, written reports and documents, informational tables, and the CPS survey provided information to answer the third research question: *What are the costs/benefits of providing a Fire-Based Community Paramedicine Program in the City of Albuquerque?* Public service organizations perform critical functions most effectively when the organization involves feedback on current practices and future needs from the customer (Rainey, 2009, p. 419, 423). The implementation of a CP program in the COA will obviously come at a cost; however, the benefits of this program can outweigh the financial *bottom-line*. The benefits of a CP program can be defined by the lives saved through healthcare prevention measures and overall financial cost savings. Finding the costs/benefits of providing a public service can be difficult, but it is the essence of economic reasoning; indeed,

only by comparing costs and benefits can a decision-maker determine whether a CP program should be implemented in the COA (Aronson & Schwartz, 2004, p. 133).

The COA must determine the costs/benefits of providing CP based on current conditions; including lives saved and preventive care. According to Kenneth Brahme's 1992 Fire Chief Magazine article, *A Fire Officer Comments*, there are four steps to follow when evaluating the costs/benefits of a program: 1) Make direct financial comparisons between public and private service providers; 2) Evaluate the performance of fire agency EMS programs based on costs and benefits to the community; 3) Set fair, reasonable, competitive values on services provided; and 4) Perform comparisons with other agencies of comparable size and circumstance that apply to the same model (as cited in Carter & Rausch, 2008, p. 248). Hence, in order to provide a more realistic cost/benefit evaluation on fire-based CP in the COA, several areas within the City will be explored further, including: funding for CP, frequent customer encounters, the PIIP Program, Medicaid and Medicare, and ED use. Of importance, the COA *covers* all 911 response costs with current staffing via the fiscal budget; however, for the purpose of answering the research question an actual cost will be associated with each EMS call/response.

The cost of a CP program in the COA will be expensive; and the first cost to be considered is resources: personnel, vehicles, and equipment. The size of a CP program will have an effect on resource costs, but regardless of size, it must meet the needs of the community while maintaining fiscal responsibility. For example, Bellin Health Care Systems funded the City of Green Bay's community-based healthcare pilot program and reimbursed the city $50 each time GBMFD was dispatched to check on a discharged patient (M. Spielman, personal communication, July 11, 2014). During the pilot period, March 2013 – September 2013, GBMFD visited 17 patients and collected $850 in reimbursement (M. Spielman, personal

communication, July 11, 2014). While the program is no longer in effect due to a grievance filed by GBMFD's union, the program, small and simple, did add value to the fire department, created strong partnerships within the community, and benefited the hospital and patients (Beck & Zavadsky, 2014, p. 12; M. Spielman, personal communication, July 11, 2014).

Table J3

Projected AFD Costs for One, Two, & Three Staffed CP Units

Resources	Type	Amount	Cost per 1		Amount	Cost per 2		Amount	Cost per 3	Explanation
Equipment	Disposables	1	$2,187.00		2	$4,374.00		3	$6,561.00	Recurring Cost
	Non-Disposables	1	$35,000.00		2	$70,000.00		3	$105,000.00	One time purchase
Personnel	Paramedic Driver	1	$77,246.00		2	$154,492.00		3	$231,738.00	Includes fringe
	FF/EMT-Basic	1	$64,530.00		2	$129,060.00		3	$193,590.00	Includes fringe
Vehicle	Chevy Impala	1	$18,530.00		2	$37,060.00		3	$55,590.00	One time purchase
TOTAL Start-Up Cost		1	$197,493.00		2	$394,986.00		3	$592,479.00	Staffed CP Units
Total Yearly Recurring Cost		1	$143,963.00		2	$287,926.00		3	$431,889.00	Staffed CP Units

Note. (Soto, 2014)

In comparison to GBMFD, but on a much larger scale, DFRD's CP program has had large costs and impacting benefits. In 2013 DFRD responded to 193,820 EMS calls—up 6.5% from 2012—with an astounding number of uninsured clients (54%) and unpaid EMS bills (51%; Kalthoff, 2013, para. 4-6; N. Seals, personal communication, July 3, 2014). To combat increasing costs and patients, the Dallas City Council set aside $660,000 for the Mobile Community Healthcare Program (MCHP) to begin operations in 2014; a cost that will soon see $1 million by September 2014 (N. Seals, personal communication, July 3, 2014). The benefits of the MCHP program include: frequent non-emergent 911 callers getting the help they need, field units responding to appropriate emergency 911 calls, a 22% drop in total emergency 911 calls in the City of Dallas, and a 72% drop in 911 calls by MCHP clients (N. Seals, personal communication, July 3, 2014). Like DFRD, AFD is a large fire department responding to emergencies in a large city, and thus, will have similar CP program costs. According to current

COA resource costs for equipment, personnel, and vehicles; AFD will spend as much as $197,493 per a two firefighter staffed (1 paramedic, 1 EMT-basic) CP unit (see Table J3). A cost that will continue to grow as the program expands; however, funding sources can help.

To offset the costs of a CP program in the COA, all funding sources must be investigated. Sources of funding may include government grants (federal and state), private industry grants and awards, self-funding, and local hospitals. Other possible funding sources include public/private insurance companies, rural/tribal healthcare grants, and gap funding (R. McDaniels, personal communication, July 26, 2014). According to the CPS survey, the largest funding source for current CP programs came from the organizations themselves with 13.5% (see Figure 4).

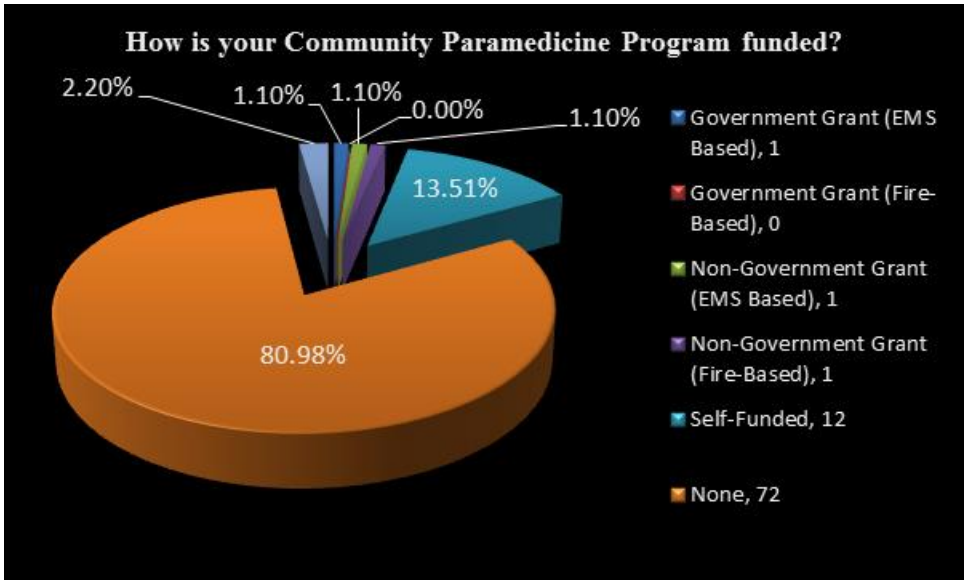


Figure 4. CPS Survey – Question 22 (S.M., 2014)

Government grants can also fund CP; however, grants that involve rural communities are not available for urban communities like the COA. FEMA's Assistance to Firefighters Grant Program (AFG) and the CMS Health Care Innovation Challenge Award are two available funding resources that can provide AFD millions of dollars to implement a CP program.

Moreover, grant funding can also come from private industry like local hospitals. For example, UNMH ED is constantly "overcrowded [with] patients that are in need of detoxification services" and in order to alleviate those numbers UNMH has awarded MATS (the receiving end of PIIP Program customers) the *Serial Inebriate Intervention Program Grant* ("University of Health Sciences," 2013, p. 1). The grant is for $416,000 ($104,000 per year, January 2013 – January 2017) and will be used to keep serial inebriates and substance abuse customers out of UNMH's ED ("University of Health Sciences," 2013, p. 1).

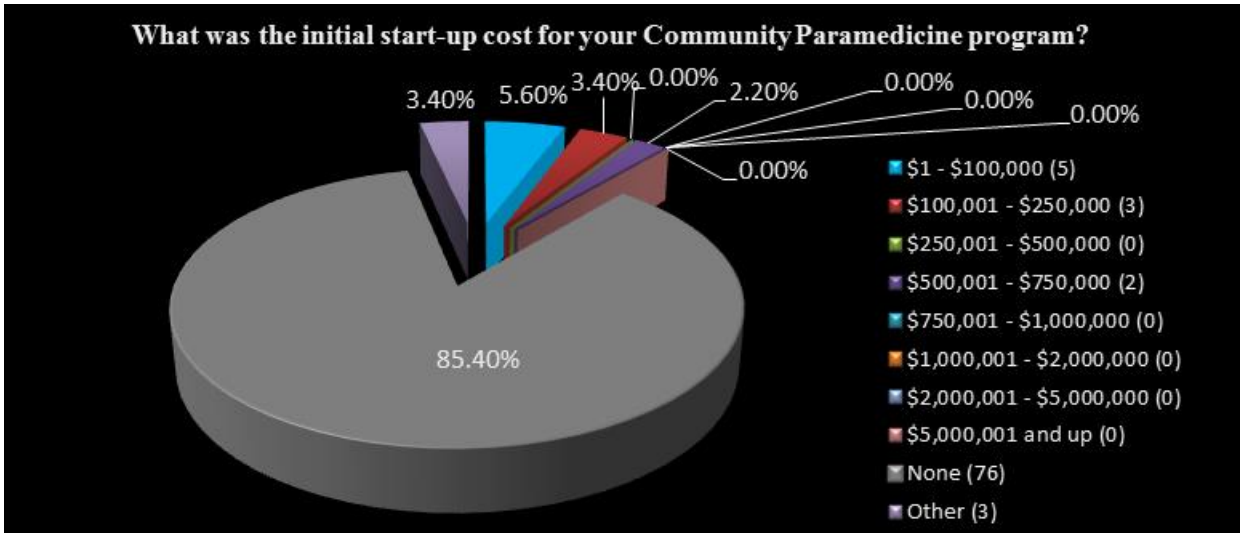


Figure 5. CPS Survey – Question 23 (S.M., 2014)

Another non-governmental CP funding source that can be considered is the Patient-Centered Outcomes Research Institute (PCORI), which awards millions of dollars to organizations for new ways of improving healthcare systems. Based on funding choices, local hospitals may be the most successful funding source for a CP program. In the COA, an ED visit is eight times more costly than an Urgent Care Clinic visit, $1,423 versus $178, respectively (New Mexico Department of Health [NMDOH], 2010, p. 7). In short, funding an AFD CP program, keeping frequent 911 callers out of the EMS system, is a smart hospital investment.

Using the CPS survey as a cost comparison for future hospital funded CP programs, one can see that the start-up and yearly costs are less than $750,000 and $500,000 for most of the survey participants, respectively (see Figures 5, 6). Of importance, five of the 12 CPS participants, comparable in size to the COA (500,000 or more people), are participating in CP and their costs are included in Figures 5 and 6, as well as Appendix K.

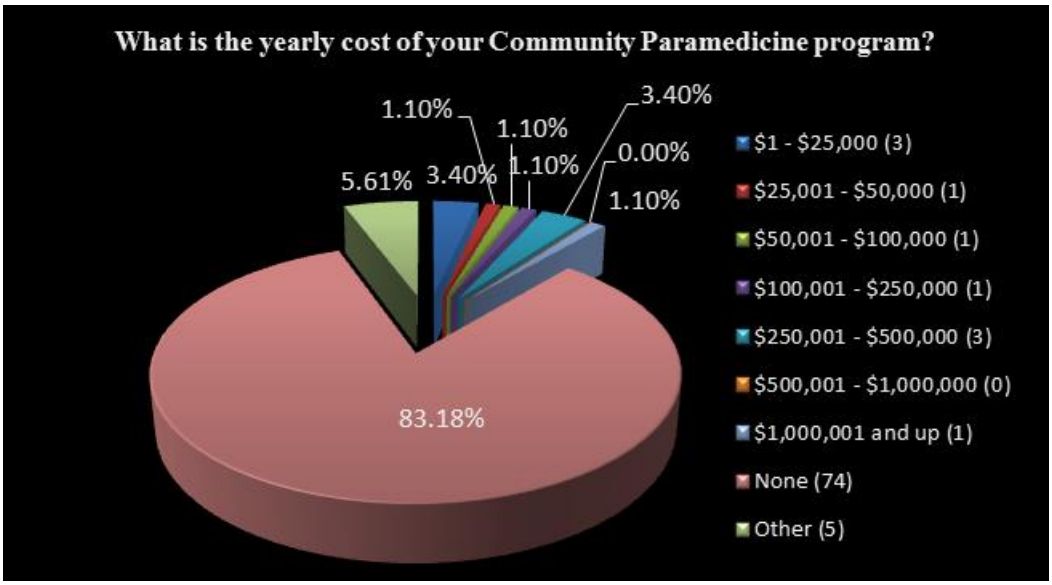


Figure 6. CPS Survey – Question 24 (S.M., 2014)

In 2013, and through the second quarter of 2014, there was an average of 35 customers who called the COA emergency 911 system 12 or more times in a year, totaling 898 times (see Table J4). The total cost for 898 calls is between $108,945.36 and $221,806, based on whether one AFD Rescue ($121.32/hour) or one AFD Engine ($247/hour) was dispatched to the call (see Table J4). While both AFD units could have been sent to the same 911 call, depending on dispatch coding, it is highly unlikely. In fact, the top four Medical Priority Dispatch System (MPDS) codes for the 898 calls, which made up 70% (629 calls) of the call volume, were single unit BLS dispatches: 1) 23 Bravo, Overdose (25%); 2) 32 Bravo, Unknown (25%); 3) 25 Alpha,

Psychiatric Problem (10%); and 4) 26 Alpha, Sick Call (10%; AFD Frequent Customer Encounters, 2014).

Since 2013, frequent customer encounter numbers (2008 – 2012) have gone down, revealing cost savings directly tied to the PIIP Program, based on Rescue ($81,891) and Engine ($166,725) hourly rates (see Table J4). For example, the fiscal success of San Diego's RAP Program, with only 51 patients, resulted in a savings of $221,349 in EMS charges, a decrease in EMS task time by 262 hours (39.8%) and mileage by 1,940 miles (47.5%; Tadros et al., 2012, p. 541). One local San Diego hospital that benefited from the RAP Program had a 12.7% decrease in ED charges ($52,631) and a 27.9% decrease in ED hospitals stays—a decrease of $314,406 in hospital charges (Tadros et al., 2012, p. 541). The implementation of a COA fire-based frequent customer CP program responding to 911 customers calling 12 or more times a year can provide up to an additional $221,806 in cost savings (see Table J4).

Table J4

Projected AFD Costs for Twelve or More Frequent Customer Encounters (2008 – 2014)

Year	*12 or more 911 calls*	Number of Calls for Group	PIIP	COA/AFD Cost - Rescue	COA/AFD Cost - Engine
2008	68	1,254		$152,135.28	$309,738.00
2009	71	1,304		$158,201.28	$322,088.00
2010	61	1,252		$151,892.64	$309,244.00
2011	71	1,330		$161,355.60	$328,510.00
2012	68	1,300		$157,716.00	$321,100.00
2013	35	625	*	$75,825.00	$154,375.00
2014	17	273	*	$33,120.36	$67,431.00
2013-14	35 callers (average)	898 (2013-14 Total)	*	$108,945.36	$221,806.00
	Callers removed due to PIIP in 2013	Calls removed due to PIIP in 2013		2013 Rescue Savings from PIIP	2013 Engine Savings from PIIP
	33	675		$81,891.00	$166,725.00

Note. (AFD Frequent Customer Encounters, 2014; Soto, 2014)

The PIIP Program—a non-EMS based example of a CP program—is a benefit to the COA; however, there are still costs involved with providing this program and they will be comparable to a future CP program. Currently, the COA is paying $127,000 to staff the 40 hour work-week PIIP Program with one AFD Firefighter (regular time) and one APD Officer

(overtime; see Table J5). Besides reducing the amount of frequent 911 calls and customers by roughly half from previous years (see Table J4), the PIIP Program is directly saving the COA fuel and wear and tear costs for expensive fire and police units. By not sending an Engine or Rescue to frequent 911 callers, AFD can increase the *life* of their response units, saving the City time and money on future unit purchases.

Table J5

Projected Total COA and PIIP Partner Costs and Savings (2013 – 2014)

Company	Explanation	Expense	Total Contacts	MATS Transports	EMS Transports	Refusals	Costs	Savings	Total Cost Savings
AFD	1 PIIP FF						$47,000.00	$0.00	$47,000.00
APD	1 Officer (OT)						$80,000.00	$0.00	$80,000.00
UNMH			1935						
	Current ETOH -	$1,423.00		1465				$2,084,695.00	
	UNMH ER Admit	$1,423.00			209		$297,407.00		$2,058,691.00
		$1,423.00				261		$371,403.00	
	Grant for MATS						$100,000.00		
AAS			1935						
	AAS Tariff for -	$566.40		1465				$829,776.00	
	BLS Emergency -	$566.40			209		$118,377.60		$859,228.80
	Transport	$566.40				261		$147,830.40	
Total COA (AFD & APD) cost savings									$0.00
Total COA (AFD & APD) costs									$127,000.00
Total cost savings (direct and indirect) by the other three companies from COAs PIIP Actions									$2,917,919.80

Note. (Soto, 2014)

In truth, the COA spends $500,000 per new Engine and $186,000 per new Rescue, with a unit life expectancy of 10 and 5 years, respectively (see Appendix I). By removing 1% of AFD's 911 EMS calls (650 calls or 35 frequent customer clients) with CP, AFD can theoretically extend the life of one Engine or one Rescue by 35% and 26.5% over a 10 and 5 year period, saving $175,000 and $49,290, respectively (see Appendix I). Furthermore, AFD's contracted transport provider, Albuquerque Ambulance Service (AAS), owned by Presbyterian Hospital, has saved $859,228 in BLS emergency transports, over a one year period, *by not responding* to 1,465 PIIP customer transports—provided free of charge by AFD and APD (see Table J5; Albuquerque Ambulance Service, 2014, p. 5).

The present medically underserved and elderly populations in the COA can also benefit from a CP program. In the *2013 Point in Time Count Results* report, the New Mexico Coalition to End Homelessness reported that there were 1,170 homeless individuals in the COA ("New Mexico Coalition," 2013, p. 5). The 2012 *American Community Survey on Demographic and Housing Estimates* reported that the elderly population (65 years or older) in the COA was at 70,983 (12.8% of total population); the poverty level was at 18% (99,975 people); and the uninsured population was at 15.6% (86,054 people; U.S. Census, 2012). Given the current underserved and elderly populations in the COA, certainly a new initiative like CP can be provided for future preventive healthcare measures.

The benefits of using CP to help those that cannot afford healthcare or those that may just need minor first aid cannot always be calculated monetarily; however, the impacts of lowering Medicare and Medicaid costs in the COA can be. The requirements for Medicare and Medicaid in the COA are the same as any other; Medicare (Federal) covers almost everyone 65 or older, certain people on Social Security disability, and some people with permanent kidney failure; Medicaid (State) covers those with low-incomes and in financial need, including those over 65 who are also on Medicare ("NOLO," n.d., para. 5, 11).

In 2012, the Medicare population in NM was at 16% or 329,994 people; and in 2013, the Medicaid population in NM was at 29% or 603,000 people; with about 12% or 72,000 Medicaid users also on Medicare (Domrzalski, 2014, para. 2; Henry J. Kaiser Family Foundation, 2012). Based on NM's 2011 Medicaid costs ($3.8 billion for 508,338 people = $7,475.34 per person) and the 2012 U.S. Government's Medicare costs ($2.6 billion for 329,994 people = $8,120 per person), NM submitted a budget request of $1 billion to the NM State Legislature and an additional $4.8 billion to the U.S. Government for the next fiscal year in order to cover the total

number of anticipated CMS participants (700,000 people) in 2015 (Henry J. Kaiser Family Foundation, 2012; "New Mexico Human," 2013, p. 3, 56; Boyd, 2013, para. 10, 21).

Presently, it can be hypothetically assumed that 16% (89,039 people) and 29% (161,400) of COA residents are on Medicare and Medicaid, costing the U.S. Government and State a combined $2 billion a year. By lowering 1% of EMS 911 calls in the COA with CP (650 calls or 35 frequent customer encounters clients from Table H1), it can be logically assumed that Medicare and Medicaid dual-role costs can also be lowered by $545,836 per year (35 x [$7,475.34 + $8,120]). In a 2010 study by the NM Department of Health, *University of New Mexico Hospitals' Urgent Care Task Force*, results showed that 37.7% of yearly UNMH ED patients are on Medicare (8.8%) and Medicaid (28.9%); resulting in $61.5 million (7,579 patients x $8,120) in Medicare costs and $185 million (24,807 patients x $7,475.34) in Medicaid costs (p. 6). More importantly, new PPACA and CMS requirements state that hospital EDs readmitting Medicare patients within 30 days of their initial discharge, without just cause, will be financially penalized up to 1% of total ED Medicare costs—a $615,000 penalty for UNMH based on their 2010 study (Domrzalski, 2013, para. 1).

While for-profit facilities provide a higher level of access to recipients of Medicare and Medicaid, their focus is on cost-cutting procedures that can, at times, compromise the quality of patient care (Rainey, 2009, p. 421-422). The opposite is true for CP, as it indirectly reduces the costs of Medicare and Medicaid with more appropriate care through prevention and navigation. Interestingly enough, Medicare and Medicaid users accruing $5,000 or more in yearly costs make up less than 15% of total users; however, they account for over 75% of all spending in NM ("New Mexico Human," 2013, p. 15).

The results from the PIIP Program (April 2013 – June 2014) have been very compelling. Regardless of PIIP partnerships the program positively impacts all EDs in the COA. Besides preventing regular on-duty police and fire units from responding to the 1,935 non-emergent customer call-outs, the PIIP unit directly saved local EDs 1,465 avoidable admits—a $2 million savings based on UNMH's average cost per ED visit ($1,423; see Table J5; NMDOH, 2010, p. 7). Ironically, none of the top 10 reasons for seeking care at local COA EDs included anything about inebriation or mental health; however, they are both included in the top 10 (inebriate at #3, mental health #9) for patient diagnoses by physicians (NMDOH, 2010, p. 6-7). A 2007 study by the Association for Community Affiliated Plans (ACAP), *The Impact of Community Health Centers & Community-Affiliated Health Plans on ED Use,* stated:

> According to the National Center for Health Statistics, there were 110.2 million visits to hospital EDs in 2004 – an increase of 18% over the last 10 years. This rise in ED visits occurred despite the fact that the number of hospital EDs in the US dropped by 12.4% over the same time. This figure takes into account the total number of ED visits by State and assumes that 35% of all ED visits are avoidable. (p. 1-2)

In fact, in 1990 there were 2,446 urban hospitals with EDs in the United States and by 2009 that number had fallen to 1,779 (Domrzalski, 2011, para. 7). The ACAP study also showed that NM spent $1.1 billion in avoidable ED visits in 2006 ("Association," 2007, p. 16). A CP program in the COA *will* benefit hospitals by keeping resources available for true emergencies.

Finally, the benefits of a fire-based CP program go further than just financial and medical cost savings. A CP program can provide home safety assessments (slips, trips, and falls) and smoke/Carbon Monoxide alarm testing. An example from the GBMFD showed that while checking on patients their personnel also provided smoke detector tests and home safety

assessments for slips; trips; and falls; which resulted in one smoke detector problem found and fixed out of 17 home visits (Beck & Zavadsky, 2014, p. 12; M. Spielman, personal communication, July 11, 2014).

Table J6

Projected COA CP Cost Savings for 35 Customers (1% EMS call volume [650 calls])

Service Usage for 35 Frequent Customer Encounters or 1% EMS call volume (650 calls)	Projected CP Costs	Projected CP Savings
AFD Engine (wear & tear savings from a drop in 650 EMS calls)	$0.00	$17,500.00
AFD Rescue (wear & tear savings from a drop in 650 EMS calls)	$0.00	$9,858.00
AFD Engine (response savings for 35 frequent customers) Table 4 - 2013	$0.00	$154,375.00
AFD Rescue (response savings for 35 frequent customers) Table 4 - 2013	$0.00	$75,825.00
Hospital ED (usage based off of ED cost savings for 650 calls)	$0.00	$889,375.00
Medicaid (35 frequent customers x $7,475.34 = usage savings)	$0.00	$261,636.90
Medicare (35 frequent customers x $8,120 = usage savings) *Can be Penalized per PPACA/CMS	$0.00	$284,200.00
Contracted Ambulance Service (usage based off of BLS transport cost savings for 650 calls)	$0.00	$354,000.00
Start-up costs for 3 AFD CP Units	$592,479.00	$0.00
Totals	$592,479.00	$2,046,769.90
TOTAL PROJECTED SAVINGS - Using 3 COA/AFD Fire-Based Community Paramedicine Units		$1,454,290.90

Note. (Soto, 2014)

Therefore, in answering the third research question, the *costs/benefits* of providing a fire-based CP program in the COA includes positive funding capabilities, better patient care and navigation, opportunities for home safety inspections, and overall cost savings through program responses to frequent 911 customers. Furthermore, based on the 35 frequent customer encounter costs for 2013, City Medicaid and Medicare costs, AFD contracted ambulance service costs, and ED costs; the overall projected cost savings of a fire-based CP program in the COA is $1.4 million (see Table J6).

Discussion

The purpose of this ARP was to determine if a fire-based CP program would be cost effective for the COA. The projected costs and benefits (cost analysis versus benefit analysis) were created using current and past State and City financial budgets. The answers to the research questions were provided by new research and are supported by the literature review.

While many factors in CP must be discussed further, certainly the results of this research paper will contribute to the future of EMS in the COA. The overall explanation of this research paper is clear: The COA can provide a *cost effective* fire-based CP program.

The knowledge provided by the first research question affirmed that there is one definitive type of fire-based CP program for the COA—frequent customer encounters. Thirty-five frequent customers calling 911 at least 12 times a year (625 emergency calls in 2013) is enough clientele to support a fire-based CP program. The comparison between AFD's frequent customer encounter numbers and the same clientele used by other like-sized organizations with CP programs is compelling. For example, SFFD's Homeless Outreach and Medical Emergency (HOME) Team Program, initiated for repetitive and expensive non-emergent 911 EMS callers, identified 56 of city's highest calling clients; of which 35 were selected to participate in the program (Mund, 2010, para. 3, 16). The SFFD program proved that a smaller group of clientele could be effectively helped—the HOME Program reduced the total emergency call runs by 75% in the first 18 months of the program (Johnson, 2011, para. 20).

In San Diego, the Resource Access Program (RAP) study consisted of only 51 adults, with EMS encounters and hospital visits decreasing by 37.6% and 28.1%, respectively; of significance, RAP study results demonstrated that a CP program was an effective means of decreasing 911 frequent users in the City of San Diego (Tadros et al., 2012, p. 541). In Dallas, DFRD implemented the Mobile Community Healthcare Program (MCHP) due to the large amount of repeat non-emergent 911 callers. The DFRD identified 253 frequent 911 clients in Dallas and reduced that number to 36—the number of clients they believed that they could positively impact (N. Seals, personal communication, July 3, 2014). Since the inception of the program, March 19, 2014, DFRD has already seen a 72% decrease in 911 calls by their current

clients; which has also dropped the total number of 911 calls by 22% (N. Seals, personal communication, July 3, 2014). As a *smaller* city providing CP, the COA's impact on frequent 911 customers (35) will be proportionate to the positive clientele numbers of San Diego, Dallas, and San Francisco with 51, 36, and 35 respectively.

Finally, additional correlations between AFD's proposed frequent customer CP program and the success of a smaller, more concentrated group of clients can be seen with agencies outside of the fire department, such as the MedStar Mobile Healthcare program. Medstar reported that 88 clients (21 were transported to area EDs more than 2,000 times) were effectively treated over a four year time-line with their Community Health Program (CHP); lowering those patients' ED visits by 84.3% (Overview, n.d., para.1; Expenditure Savings Analysis, 2014; High Utilizer, 2013). Therefore, the *type* of fire-based CP program that the COA can deliver is a frequent customer CP program.

The documentation gathered from the second research question presented several regulations and regulatory authorities currently providing EMS oversight in NM, specifically: Motor Carrier Act of 1978, EMS Act of 1978, Public Regulation Commission (PRC), Department of Health (DOH), and the COA (EMS Authority Ordinance and EMS Protocols); however, there is only one true regulatory body that can implement CP in NM: The DOH - Division of Epidemiology and Response - EMS Bureau. According to the NM DOH EMS Bureau, Community EMS (CP) has been regulated in the State as of August 15, 2014 (7.27.11 NMAC); with future CP programs requiring: completion of an approved caregiver course, authorization from the organization's medical director, and final approved by the EMS Bureau (Emergency Medical Services, 2014; K. Thornton, personal communication, July 28, 2014).

With such a new way of doing business, CP, for the most part, is still much in the infancy phase of its progression. However, current laws and regulations impacting CP throughout the United States can be used by NM to continue providing more CP legislation. In fact, in comparison to the rest of the United States, NM is right where all but five States are—finding their path; nonetheless, individual State Congressional legislation on CP has been passed. States with passed Congressional legislation include:

1. Maine: LD 1837, An Act To Authorize the Establishment of Pilot Projects for CP
2. Missouri: HB 335 - Public Safety and HB 336 - Emergency Services
3. Nevada: AB 361 [BDR S-1040] – Community Paramedicine
4. Pennsylvania: EMS System Act 37, §8102
5. Minnesota:
    a. HF 262/SF 119 – Community Paramedicine Bill
    b. SF 1543 – MA CP Services Reimbursement Coverage Authorization Senate Bill

Minnesota's *Medical Assistance (MA) Community Paramedic Services Reimbursement Coverage Authorization Senate Bill (SF 1543)* is the most significant precedent State regulation thus far, as it allows community paramedics to bill Medicaid for its services (Minnesota Statutes, 2010; Erich, 2013, para. 3).

According to the 2013 National Association of State EMS Officials (NASEMSO) study, *Community Paramedicine State Enabling Legislation*, 37 of the 50 U.S. States participated, with 46% interpreting their EMS State statute as allowing CP (within current scope of practice); 5% interpreting their EMS State statute as prohibiting CP; and 86.5% stating that their EMS State statute or regulations were not going to be amended to enable or prohibit CP (p. 1). Also in 2013, the *Community Paramedicine/Mobile Integrated Healthcare Survey (CP/MIHC)* stated

that 86.5% of the 37 participating States did not help or hinder CP in their State; in fact, there are presently 44 States, plus the District of Columbia and Puerto Rico, currently practicing some form of non-regulated CP—ironically, the data included NM (NAEMT, 2013). However, the current research findings are conclusive: fire-based CP is regulated by law (7.27.11 NMAC) in the State of NM.

The material collected from the third research question confirmed that a fire-based CP program in the COA is a benefit. The current information on COA frequent customer encounter numbers, PIIP Program savings, Medicaid and Medicare costs, and ED use; were used to develop a projected cost savings fire-based CP program. The projected fire-based CP program cost savings parallels the cost savings of other programs throughout the United States. The COA's projected $1.4 million (see Table J6) fire-based CP cost savings is similar to the City of San Francisco's HOME Program and the Medstar Mobile Healthcare CHP Program. The HOME Program saved the City of San Francisco $12 million in the first 18 months of operation (Johnson, 2011, para. 20); and the CHP Program saved the City of Fort Worth $4.2 million over the last 4 years of operation (Expenditure Savings Analysis, 2014; High Utilizer, 2013).

With the number of nationwide hospital ED visits continuously growing (36% increase from 1996 – 2006) with non-emergent (39%) and repeat customers (18.8%), opportunities now exist for new programs like CP (Pitts et al., 2008, p. 1; Rodriguez et al. 2008, p.598; Goodman et al., 2012, p. 33). In the COA, the same opportunities exist for a CP program based on non-emergent (28%) and repeat customer (17.4%) ED visits; worse, 14 NM hospitals began receiving CMS ED readmit penalties from the U.S. Government in October 2013 (Domrzalski, 2011, para. 14; Goodman et al., 2012, p. 46; Domrzalski, 2013, para. 1). The 2013 CMS penalties for NM's 14 hospitals ranged from 0.04% to 0.52% and are included in the U.S. hospital penalty total of

$227 million (Domrzalski, 2013, para. 1-2; James, 2013, para. 15, 16).

The COA's largest amount of fire-based CP cost savings can be directly tied to local hospitals through the use of the PPACA and CMS. With the costs of non-emergent hospitalizations and readmits soaring, the CMS, through PPACA direction, has implemented financial penalties (to hospitals) based on the Hospital Readmissions Reductions Program (HRRP). Using the two largest EDs in the COA (and the State), Presbyterian Hospital and UNMH Hospital, and their 30 day readmit percentages of 18% and 20%, respectively, it can be reasonably assumed that it would be more fiscally responsible for both hospitals to pay for a CP program than for continued growing CMS ED readmit penalties—penalties that will grow to 2% and 3% in 2014 and 2015, respectively ("Intel," 2011, p.5; Goodman et al., 2012, p. 2, 50). Since Table J6 is based on the 35 frequent customer encounters that call 911 at least 12 times a year or more in the COA, it is then logical to assume that these customers are also being seen in EDs within the CMS 30 day penalty window at a cost of $284,200 to Medicare.

With frequent 911 customer encounters continually perpetuating financial problems for several key COA services, there has never been a better time for a fire-based CP program. Presbyterian Hospital believes patients who receive detailed after-hospital care instructions and follow-up care are 30% less likely to visit the ED within 30 days; however, they do not have the employees to provide this service—but AFD does ("Intel," 2011, p. 4). In fact, the initial funding of three AFD fire-based CP units will cost $592,479, with yearly costs of $431,889 (see Table J3); nevertheless, it is a number that can be fully funded through the combined financial efforts of the COA's 10 local hospitals. Keeping frequent non-emergent 911 customers out of the EMS system, with a fire-based CP program, is an asset to the entire COA community.

Recommendations

The subsequent recommendations parallel and support the Vision, Values, and Mission of AFD and the COA, and are based on all information within this ARP.

- Present this ARP's findings to the COA Mayor, City Councilors, and Fire Chief.
- Direct the COA and AFD to form an Ad Hoc Committee on fire-based CP program.
- Direct the COA to hire a firm to further investigate a future with fire-based CP.
- Direct the COA to make an amendment to the EMS Ordinance, granting fire-based CP.
- Direct the COA and AFD to create a CP partnership with Federal, State, County, and City agencies for future funding and resources.
    - Partners to include: CMS Medicare, NM State Medicaid, local hospitals (10), local EMS organizations, Bernalillo County and MATS, and insurance agencies.
- Direct the COA and AFD to form a local ED hospital coalition, Albuquerque Emergency Department Frequent Customer Encounter Coalition (FCEC).
    - Direct the COA and AFD to enter negotiations with the 10 FCEC members on future fire-based CP funding—$50,000 a year ($500,000 total) per hospital.
    - Funding based on AFD keeping frequent 911 customers out of local hospital EDs.
        - Keeping recently released hospital patients out of the EDs for at least 30 days will save local hospitals on CMS/PPACA financial penalties.
        - Keeping frequent non-emergent 911 customers out of EDs will provide more beds, equipment, and medical professionals for true patients.
- Direct the COA and AFD to add CP language to the Ambulance Service Contract (ASC).
    - Direct the COA to enter negotiations with Albuquerque Ambulance Services (AAS) on fire-based CP reimbursement.

- Keeping AAS from responding, treating, and transporting frequent customer encounters will allow them to respond to true 911 customers.

The opportunity to implement a successful fire-based CP program in the COA, based on these recommendations, is at hand; yet, it will take time and patience for these directions and positive changes to come to fruition. With partnerships, AFD and the COA can provide its citizens a better EMS, hospital, and response service through CP.

Clearly, this ARP paper is not applicable to every organization in the country; however, the recommendations can add value to the fire service as a whole, by providing guidance for future researchers investigating fire-based CP.

References

Alaska Community Health Aide Program. (n.d.). About the Alaska CHAP program. Retrieved from http://www.akchap.org/html/about-chap.html

Albuquerque Ambulance Service. (2014). AAS tariff: Rules, regulations, rates, and charges. Retrieved from http://www.nmprc.state.nm.us/consumer-relations/company-directory/ambulances/Albuquerque%20Ambulance%20Service-01168.pdf

Albuquerque Fire Department. (2005). *2004 Year end report*. Albuquerque, NM: Author.

Albuquerque Fire Department. (2013). *Community paramedicine* (No. 127). Albuquerque, NM: Author.

Albuquerque Fire Department. (2013). *Public inebriate intervention program* (SOG 3-1-01). Albuquerque, NM: Author.

Albuquerque Fire Department. (2014) *AFD emergency response numbers for 2004 – 2013*. Albuquerque, NM: Author.

Albuquerque Fire Department. (2014). *AFD frequent customer encounters*. Albuquerque, NM: Author.

Albuquerque Fire Department. (2014). *Vision, values, mission and strategic goals* (No. 118). Albuquerque, NM: Author.

Albuquerque Fire Department. (2014). *Chief's reports - 2013 year end*. Albuquerque, NM: Author.

American Legal. (n.d.). Historical postscript. Retrieved from https://www.cabq.gov/council/documents/charter-review-task-force/city_charter.pdf

Aronson, J. R., & Schwartz, E. (Eds.). (2004). *Management policies in local government finance* (5th ed.). Washington, DC: ICMA.

Association for Community Affiliated Plans. (2007). *The impact of community health centers & community-affiliated health plans on emergency department use*. Retrieved from http://www.nachc.com/client/documents/publications-resources/IB_EMER_07.pdf

Beck, E., & Zavadsky, M. (2014). *Mobile integrated healthcare: Current happenings!* [Lecture notes]. Retrieved from http://mihsummit.com/z-pdf/handouts/1_MIH_Program_Updates.pdf

Beck, H., & Smith, G. (2010). Fire-based EMS: The next generation. Retrieved from http://www.mesaaz.gov/fire/PDF/FireHouse_World_2014_Presentation.pdf

Berry, R. J. (2010, July 30). [Letter to Ken Sanchez, President, Albuquerque City Council]. City of Albuquerque budgets (FY 2011), Albuquerque, NM.

Boyd, D. (2013, September 30). NM says it's ready to expand Medicaid. *Albuquerque Journal*. Retrieved from http://www.abqjournal.com/271818/news/nm-says-its-ready-to-expand-medicaid.html

Brock, J., & Lipsky, D. B. (Eds.). (2003). *Going public*. Champaign, IL: Industrial Relations Research Association.

Carter, H. R., & Rausch, E. (2008). *Management in the fire service* (4th ed.). Sudbury, MA: Jones and Bartlett.

Chavez, M. J. (2008, August 31). [Letter to Brad Winter, President, Albuquerque City Council]. City of Albuquerque budgets (FY 2009), Albuquerque, NM.

City of Albuquerque. (2008). *Comprehensive annual financial report year ended June 30, 2008*. Retrieved from http://www.dacbond.com/dacContent/doc.jsp?id=0900bbc780114d00

City of Albuquerque. (2013). *2013 Annual information statement, dated January 28, 2013, in connection with bonds and other obligations*. Retrieved from City of Albuquerque:

http://www.cabq.gov/dfa/documents/investordocuments/AISFinal12813W1844803.PDF/view

City of Albuquerque. (2013). *Five-year forecast: Fiscal year 2014-2018*. Retrieved from http://lintvkrqe.files.wordpress.com/2014/03/five-year-forecast.pdf

City of Albuquerque. (2014). *FY/15 Proposed budget*. Retrieved from City of Albuquerque: http://documents.cabq.gov/budget/fy15-proposed-budget.pdf

City of Albuquerque. (n.d.). Sunport facilities. Retrieved from http://www.cabq.gov/airport/about-the-sunport/facts-and-figures

Domrzalski, D. (2011, August 8). Nonemergency ER visits costly to patients' health, pocketbooks. *Albuquerque Business First*. Retrieved from http://www.bizjournals.com/albuquerque/print-edition/2011/08/05/nonemergency-er-visits-costly-to.html?page=all

Domrzalski, D. (2013, August 5). NM hospitals face penalties for patient readmissions. *Albuquerque Business First*. Retrieved from http://www.bizjournals.com/albuquerque/news/2013/08/05/hospitals-rate-cuts-patient-readmissions.html

Domrzalski, D. (2014, March 26). Medicaid enrollment explodes in New Mexico. *Albuquerque Business First*. Retrieved from http://www.bizjournals.com/albuquerque/news/2014/03/26/medicaid-enrollment-explodes-in-new-mexico.html?page=all

Eagle County Paramedic Services. (n.d.). Community paramedic. Retrieved from http://eaglecountyparamedics.com/community-paramedic/

Emergency Medical Services, 7.27.11 N.M. D.O.H. Stat. §§ 1-11 (2014).

Emergency Medical Services Act, 24-10B N.M. Stat. §§ 1-12 (1978 & Suppl. 1983, 2003).

EMS Authority Ordinance, § 9-4-4-1 Albuquerque Code of Ordinances §§ 1-14, 99 (1989 & Suppl. Am. Ord. 12-1991; Am. Ord. 9-1993; Am. Ord. 40-1997; Am. Ord. 25-1999).

Erich, J. (2013). How Minnesota got its community medics paid. *EMSWorld*. Retrieved from http://www.emsworld.com/article/10913443/medicaid-reimbursement-for-community-paramedics-in-minnesota

Essential Services Ordinance Proposal, Albuquerque Code of Ordinances. (2014). Retrieved from https://cabq.legistar.com/LegislationDetail.aspx?ID=1735139&GUID=818A9FBC-4D4E-4AEA-BA7F-D1F508973A42&Options=ID|Text|&Search=o-14-14

Federal Emergency Management Agency. (2013). *Executive analysis of community risk reduction* (2nd ed.). Emmitsburg, MD: FEMA.

Franz, D. (2013). Health care of the future. *Vail Daily*. Retrieved from http://www.vaildaily.com/article/20130213/NEWS/130219995

Gindi, R. M., Cohen, R. A., & Kirzinger, W. K. (2012). *Emergency room use among adults aged 18–64: Early release of estimates from the national health interview survey*. Retrieved from http://www.cdc.gov/nchs/data/nhis/earlyrelease/emergency_room_use_january-june_2011.pdf

Goodman, D. C., Fisher, E. S., & Chang, C. H. (2012). *After hospitalization: A Dartmouth atlas report on post-acute care for Medicare beneficiaries*. Retrieved from http://www.dartmouthatlas.org/downloads/reports/Post_discharge_events_092811.pdf

Hauswald, M., Raynovich, W., & Brainard, A. H. (2005). Expanded emergency medical services: The failure of an experimental community health program. *Prehospital Emergency Care*, *9*(2), 250-253.

Henry J. Kaiser Family Foundation. (2012). New Mexico: Medicare indicators. Retrieved from http://kff.org/state-category/medicare/?state=NM

IDcide. (2009). Albuquerque, NM profile. Retrieved from http://www.idcide.com/citydata/nm/albuquerque.htm

Intel Corporation. (2011). Reducing readmissions at Presbyterian Healthcare Services. Retrieved from http://www.intel.com/content/dam/www/public/us/en/documents/white-papers/intel-healthcare-it-and-coordinating-care-reduces-readmissions-paper.pdf

International Association of Fire Fighters. (1997). *Emergency medical services: Adding value to a fire-based EMS system: Monograph 7*. Washington, DC: IAFF.

International Association of Fire Fighters. (1997). *Emergency medical services: Paramedic expanded scope – Monograph 6*. Washington, DC: IAFF.

James, J. (2013). Health policy brief: Medicare hospital readmissions reduction program. *Health Affairs*. Retrieved from http://www.healthaffairs.org/healthpolicybriefs/brief.php?brief_id=102

Johnson, K. (2011). Responding before a call is needed. *The New York Times*. Retrieved from http://www.nytimes.com/2011/09/19/us/community-paramedics-seek-to-prevent-emergencies-too.html?_r=0

Kalthoff, K. (2013). Dallas paramedics to make nonemergency house calls. Retrieved from http://www.nbcdfw.com/news/local/Dallas-Paramedics-to-Make-Nonemergency-House-Calls-232432001.html

Koenig, B. (2013). U.S. physician shortage to impact rural, poor urban areas. *The New American*. Retrieved from http://www.thenewamerican.com/usnews/health-care/item/15744-u-s-physician-shortage-to-impact-rural-poor-urban-areas

LaCalle, E., & Rabin, E. (2009, July). Frequent users of emergency departments: The myths, the data, and the policy implications. *Annals of Emergency Medicine*, *56*(1), 42-48.

Lohmann, P. (2014, May 5). ABQ fire chief looking at new ways to cut ER visits. *Albuquerque Journal*. Retrieved from http://www.abqjournal.com/394493/news/abq-fire-chief-looking-at-ways-to-cut-emergency-room-visits.html

Ludwig, G. (2013). How the Affordable Care Act will change EMS. *JEMS*. Retrieved from http://www.jems.com/article/administration-and-leadership/how-affordable-care-act-will-change-ems

Medstar Mobile Healthcare. (2013). High utilizer 9-1-1/emergency department patients. Retrieved from http://www.medstar911.org/Websites/medstar911/files/Content/1089414/MedStar_CHP_Program_Overview.pdf

Medstar Mobile Healthcare. (2014). Expenditure savings analysis. Retrieved from http://www.medstar911.org/Websites/medstar911/files/Content/1089414/MedStar_CHP_Econ_Analysis_thru_6-30-14.pdf

Medstar Mobile Healthcare. (n.d.). Overview. Retrieved from http://www.medstar911.org/community-health-program

Meischke, H., Ike, B. R., Fahrenbruch, C., Kuniyuki, A., Hannon, P., Parks, M. R., Forehand, M., Weaver, M., & Harris, J. R. (2013, December). Hypertension identification via emergency responders: A randomized controlled intervention study. *Preventive Medicine*, *57*(6), 914-919.

Meischke, H., Fahrenbruch, C., Ike, B. R., Hannon, P., & Harris, J. R. (2012, February). Feasibility of partnering with emergency medical services to identify people at risk for

uncontrolled high blood pressure. *Preventing Chronic Disease, 9*. http://dx.doi.org/10.5888/pcd9.110063

Minnesota Statutes 2010, section 144E.001, subdivision 5f; MN. Stat. 144E.001 (2010) MN. Stat. Ann. 144E.001 (2011).

Motor Carrier Act, 65-2A N.M. Stat. §§ 1-35 (1978 & Suppl. 2013).

Motor Carrier Rules, 18.3.1 N.M. P.R.C. Stat. §§ 1-15 (2002 & Suppl. 2005).

Mund, E. (2010). Grounding frequent flyers. *EMSWorld*. Retrieved from http://www.emsworld.com/article/10319160/grounding-frequent-flyers?page=2

Murray, P. (2013). Green Bay hospital enlists fire department to visit patients at home. *Wisconsin Public*. Retrieved from http://www.wpr.org/green-bay-hospital-enlists-fire-department-visit-patients-home

National Association of Emergency Medical Technicians. (2013). *Community paramedicine/mobile integrated healthcare survey summary* [PowerPoint slides]. Retrieved from http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0CCcQFjAB&url=http%3A%2F%2Fwww.emsweekideas.org%2FFileContents.phx%3Ffileid%3Dea90afe6-ba4c-4c1e-a65d-76be5e2d9852&ei=Za3FU9jcDIbBigL14IHYAQ&usg=AFQjCNEpwVv3rM_er5Xv4aUNrbjxnd5-Wg&sig2=Ig0ksILa0zzjvH-H3id9wQ&bvm=bv.71126742,d.cGE

National Association of State EMS Officials. (2010). *State perspectives discussion paper on development of community paramedic programs*. Retrieved from http://www.ruralcenter.org/sites/default/files/Community%20Paramedic%20Programs.pdf

National Association of State EMS Officials. (2013). *Community paramedicine state enabling legislation*. Retrieved from http://www.nasemso.org/Projects/MobileIntegratedHealth/documents/State-CP-Legislative-Status-Oct2013.pdf

Nelson, G. (2013). Mesa seeks to boost 911, emergency response services. *The Republic*. Retrieved from http://www.azcentral.com/community/mesa/articles/20130827mesa-seeks-boost-emergency-response-services.html

NOLO Law for ALL. (n.d.). Medicare and Medicaid: What's the difference? Retrieved from http://www.nolo.com/legal-encyclopedia/medicare-medicaid-whats-difference-29615.html

Non-Emergency. (n.d.). In *Oxford dictionaries*. Retrieved from http://www.oxforddictionaries.com/us/definition/american_english/nonemergency?q=non+emergency

New Mexico Coalition to End Homelessness. (2013). *2013 Point in time count results*. Retrieved from http://nmceh.org/pages/reports/ABQ%20PIT%20Count%20Report%20-%20Final%20March%202013.pdf

New Mexico Department of Health. (2010). *University of New Mexico Hospital's urgent care task force*. Retrieved from http://www.nmlegis.gov/Sessions/InterimCommittees/LHHS/2010/Memorial%20Reports/HM33%20Draft%20Report%20Final%2011-1-10.pdf

New Mexico Human Services Department. (2013). *Quality strategy for the New Mexico State Medicaid managed care program*. Retrieved from

http://www.hsd.state.nm.us/uploads/files/Providers/Manuals%20and%20Guides/Quality%20Strategy/NM%20Quality%20Strategy%20Final.pdf

Oregon Health Authority. (2012). *Oregon healthcare innovation plan*. Retrieved from http://www.oregon.gov/oha/OHPB/2013MeetingMaterials/OHPB%20final%20recommendations%20to%20Governor%20Kitzhaber.pdf

Oregon Health Policy and Research. (n.d.). State innovation model grant. Retrieved from http://www.oregon.gov/oha/OHPR/Pages/sim/index.aspx

Patient Protection and Affordable Care Act, 42 U.S.C. § 18001 et seq. (2010).

Pitts, S. R., Niska, R. W., Xu, J., & Burt, C. W. (2008, August 6). National hospital ambulatory medical care survey: 2006 Emergency department summary. *National Health Statistics Reports*, *7*, 1-40.

Pratt, F. (Ed.). (n.d.). *Emergency medical services: A guidebook for fire-based systems* (4th ed.). Washington, DC: IAFF.

Rainey, H. G. (2009). *Understanding and managing public organizations* (4th ed.). San Francisco, CA: Jossey-Bass.

Rodriguez, R. M., Fortman, J., Chee, C., Ng, V., & Poon, D. (2008, May). Food, shelter and safety needs motivating homeless persons' visits to an urban emergency department. *Annals of Emergency Medicine*, *53*(5), 598-602.

Rowley, T. D. (2001, Fall). Solving the paramedic paradox. *Rural Health News*, 8, 1-6.

Schaitberger, H. A. (1997). Foreword. In *emergency medical services: Paramedic expanded scope – Monograph 6*. Washington, DC: IAFF.

Seals, N. (2013, December 11). Dallas paramedics to make nonemergency house calls (Ken Kalthoff, Interviewer). *Dallas Fort Worth News*. Retrieved from

http://www.nbcdfw.com/news/local/Dallas-Paramedics-to-Make-Nonemergency-House-Calls-232432001.html

Soto, Jr., F. W. (2013). *The feasibility of fire-based transports by the Albuquerque Fire Department* (efo48013). Emmitsburg, MD: National Fire Academy.

Soto, Jr., F. W. (Cartographer). (2014). AFD emergency response numbers for 2004 – 2013. Edgewood, NM: Frank Soto Jr.

Soto, Jr., F. W. (Cartographer). (2014). CPS survey organizations with populations of 500,000. Edgewood, NM: Frank Soto Jr.

Soto, Jr., F. W. (Cartographer). (2014). Projected AFD costs for one, two, & three staffed community paramedicine units. Edgewood, NM: Frank Soto Jr.

Soto, Jr., F. W. (Cartographer). (2014). Projected AFD costs for twelve or more frequent customer encounters (2008 – 2014). Edgewood, NM: Frank Soto Jr.

Soto, Jr., F. W. (Cartographer). (2014). Projected city of Albuquerque (COA) reduced call volume cost savings. Edgewood, NM: Frank Soto Jr.

Soto, Jr., F. W. (Cartographer). (2014). Projected total COA and PIIP partner costs and savings (2013 – 2014). Edgewood, NM: Frank Soto Jr.

Soto, Jr., F. W. (Cartographer). (2014). Projected total community paramedicine cost savings for COA. Edgewood, NM: Frank Soto Jr.

Stowell, F. M. (2004). *Chief officer* (2nd ed.). B. Adams (Ed.). Stillwater: Oklahoma State University.

Survey Monkey. (Cartographer). (2014). CPS survey [survey chart]. Retrieved from http://www.surveymonkey.com/MySurveys.aspx

Tabarrok, A. (2012). Firefighters don't fight fire. Retrieved from http://marginalrevolution.com/marginalrevolution/2012/07/firefighters-dont-fight-fires.html

Tadros, A. S., Castillo, E. M., Chan, T. C., Jensen, A. M., Patel, E., Watts, K., & Dunford, J. V. (2012, October-December). Effects of an emergency medical services–based resource access program on frequent users of health services. *Prehosiptal Emergency Care, 16*(4), 541-547.

Tempe Fire, Medical and Rescue Department. (2013). Patient advocate services. Retrieved from http://www.tempe.gov/city-hall/fire-department/patient-advocate-services-

Texas A&M University. (2010). Models for practice, focus area: Access. Retrieved from http://sph.tamhsc.edu/centers/rhp2010/html/access/ems/redriver.htm

Thomas Jefferson University. (n.d.). Physician shortage area program (PSAP). Retrieved from http://www.jefferson.edu/university/jmc/psap.html

Treviño, M. H., White, L., Meischke, H., Eisenberg, M.S. (2008). A new sphere for EMS. *EMSWorld*. Retrieved from http://www.emsworld.com/article/10320824/a-new-sphere-for-ems

University of Health Services Center (UNMH HSC) Grant for Serial Inebriate Intervention Program Contract Agreement, U.N.M.H. – M.A.T.S., January 1, 2013, FR-2013.

U.S. Census Bureau. (2012). *American community survey demographic and housing estimates* [American FactFinder]. Retrieved from http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_12_1YR_DP05&prodType=table

U.S. Census Bureau. (2013). *Annual estimates of the resident population for incorporated places of 50,000 or more, ranked by July 1, 2013 population* [American FactFinder]. Retrieved from http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk

U.S. Department of Health and Human Services. (2012). *Community paramedicine evaluation tool*. Retrieved from http://www.hrsa.gov/ruralhealth/pdf/paramedicevaltool.pdf

U.S. Department of Health and Human Services. (2012). *Health care law helps community health centers build, renovate facilities, serve more patients*. Retrieved from http://www.hhs.gov/news/press/2012pres/05/20120501a.html

U.S. Department of Health and Human Services. (2014). *Summary of final rule provisions for accountable care organizations under the Medicare shared savings program*. Retrieved from http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/sharedsavingsprogram/Downloads/ACO_Summary_Factsheet_ICN907404.pdf

U.S. Department of Transportation. (1996). *Emergency medical services agenda for the future*. Retrieved from http://www.ems.gov/pdf/2010/EMSAgendaWeb_7-06-10.pdf

U.S. Fire Administration. (2010). *Strategic plan fiscal years 2010 - 2014*. Retrieved from http://www.usfa.fema.gov/downloads/pdf/strategic_plan.pdf

U.S. Fire Administration. (2011). *Becoming a community risk-reduction champion*. Retrieved from https://www.usfa.fema.gov/downloads/pdf/coffee-break/fm/fm_2011_1.pdf

Weinick, R. M., Burns, R. M., & Mehrotra, A. (2010, September) Many emergency department visits could be managed at urgent care centers and retail clinics. *Health Affairs*, *29*(9), p. 1630-1636.

Western Eagle County Health Services District. (2011). *Community paramedic program handbook*. Retrieved from http://www.njmedics.com/assets/cp/reports/WECAD%20Community%20Paramedic%20Handbook.pdf

Appendix A

Interview Questions for Dallas Fire-Rescue Department (DFRD) Assistant Chief Norman Seals

July 3, 2014

1. *What types of Community Paramedicine Programs does your fire department provide?*

    a. Right now the DFRD provides a **Mobile Community Healthcare Program (MCHP)**. Six personnel, on a Monday – Friday 0800 – 1700 40 hour work week schedule, to respond as Community Paramedics to the City's most frequent 911 callers. Three additional personnel will be ready to join this unit in September 2014; with a goal of providing the service 24 hours a day.

    b. Frequent 911 callers have been identified by the DFRD's ePCR. Dallas is a very large city, so identifying a 'frequent caller' can be hard. Right now DFRD identifies a frequent caller as anyone that calls 15 or more times over a 90 day period; DFRD has 36 people in their program right now.

    c. Each of the MCHP personnel responds to their patients in their own Ford Escape. Two respond on initial visit then only ones responds thereafter—unless circumstances dictate two or more.

    d. The program officially started on March 19, 2014—and DFRD received a lot of help from Medstar (they currently run their own Community Paramedicine program). Two phases within the program: 1. Responding to high frequency patients (doing right now); and 2. Recouping fees from local hospitals (keeping readmits out of the hospitals).

2. *How do you determine how many customers to allow—if you will—into your program?*

    a. We have not yet been fully determined what our cap will be. As we enter into our second phase later this year we are estimating that we will be seeing approximately 200 patients per week (dependent on the number of referrals from the hospital). This will be with eight medics and one Lieutenant. That will be a fairly aggressive schedule but we feel that it is do-able. Most of these will be hospital referrals which do not require as much service delivery time as the high frequency patients do.

3. *What laws regulate your Community Paramedicine Program?*

    a. None. There are no Texas laws, regulations or training requirements on Community Paramedicine at this time. The State does have *Delegated Practice*; which means the Medical Director sets the *bars* on how DFRD medically provides their MCHP program.

    b. DFRD does require their MCHP personnel to go through a 2 month long program from Collin College that educates the students on patient navigation, advocacy,

social service programs, pathophysiology, medical terminology and long –term disease management.

c. MCHP Paramedics must be enthusiastic, people oriented, confident, outside the box thinkers, innovator, and good communicator. Personnel are not picked just because of seniority or short-long scene times.

4. *How many customer visits do you require by your personnel per day?*

    a. At this point we do not have a requirement for this but when we ramp up later this year there will be a requirement to see about 7 patients in a 10 hour day. This is based on a 1-hour visit per patient time. If most of the patient visits are less than 1 hour, as will likely be the case, and then they should be able to see more patients. Another key component of this is the streamlining of the data entry process which is another area that we're working on now.

5. *What is the cost of your response unit?*

    a. The Ford Escapes that we are utilizing were approximately $20,000 apiece. There was another $7,000 per vehicle for striping, lights etc. added by our shop after we received the units. This pricing is through the City's master agreement process.

6. *How do you fund your Community Paramedicine Program?*

    a. The MCHP program is fully funded by the City of Dallas right now. The Dallas City Council approved the initial budget for the program: $660,000 (will be over $1 million in September due to the addition of the 3 new personnel and all their equipment).

    b. The goal is to use the PPACA to get Dallas area hospitals to pay for this program in the future. By keeping these frequent callers out of the EDs, the hospital has more beds to treat those that need it and they save money by not paying penalties for readmits.

7. *What are your benefits for providing Community Paramedicine?*

    a. Patients get the help they need instead of just being shuffled around in the system.

    b. DFRD field units respond to appropriate emergency 911 calls, instead of non-emergent ones.

    c. The hospitals save money and the fire department can fund their program, expanding it too more clients that need help.

    d. DFRD, since March 19, 2014, has already seen a 72% decrease in 911 calls by their current clients; which has, during the same time, dropped the total number of 911 calls by 22%.

Appendix B

Interview Questions for Lane Fire Authority (LFA) Assistant Chief Chris Heppel

July 3, 2014

1. *What types of Community Paramedicine Programs does your fire department provide?*

    a. The LFA provides the **Lane Fire Authority Community Based Healthcare Program**. The program began in February 2014, and is partnered with a local 501 C 3 non-profit organization: Rural Oregon Access Medical (ROAM). We respond to 35,000 people over 425 sq. miles with 30 paid and 120 volunteers. It's a very rural and wide-open district.

    b. The program meets in a healthcare clinic on the second Saturday of each month for 4 hours. The program is staffed by volunteer doctors, nurses, pharmacists, social workers, EMTs, Paramedics, and one herbalist. Right now the program is seeing 20 to 30 customers and it is open to anyone. And 50% are repeat customer. If we cannot fix the problem then we will navigate the patient to someone that can help them.

2. *What laws regulate your Community Paramedicine Program?*

    a. There are no Oregon laws or regulations that over-see this community healthcare program. The goal was to expand the role of our Paramedics and EMTs; we didn't want to encroach upon other medical personnel's scope of practice. Oregon law will hopefully allow for community paramedicine reimbursement soon.

3. *How do you fund your Community Paramedicine Program?*

    a. The program is run 100% by donations and volunteers. We will be putting in for a State grant with the Oregon Health Authority through Cover Oregon in the fall.

4. *What are your benefits for providing Community Paramedicine?*

    a. Helping those that really need it (not letting them fall through the cracks)

    b. Providing another layer of service without another layer of provider

    c. Educating everyone on the benefits of Paramedics

    d. Provides several alternative to just calling 911. We're not tracking the numbers, but we have noticed a dip in 911 calls.

Appendix C

Questionnaire Questions for University of NM EMS Academy Director Robert McDaniels

July 26, 2014

1. *Community Paramedic/Mobile Integrated Healthcare Types.*

    a. I chose to break-up the different types giving them useful labels not to suggest that each is stand-alone or stovepipe, but rather to organize the reader as to resource management and healthcare functional areas.

        i. **Pre-navigation**: Utilizing EMS resources to assess patients and route them to alternative healthcare settings other than Emergency Departments. This type of program is beneficial for both rural and urban settings. This is most often done with specially trained Paramedics with rigid protocols and inclusion criteria for low acuity patients (Alpha and Bravo). In addition, for patients with special needs like behavioral health, public inebriate, etc. could have alternative destinations such as social services, outpatient DETOX, etc. Public and Private medical insurance companies are in the best position to fund this innovative idea. The cost to insurance companies is much less in primary care/urgent care setting.

        ii. **Discharge follow-up**: Utilizing EMS resources to visit patients at home after they are discharged from the hospital to conduct a wellness check, discharge instruction compliance, pharmacy compliance, primary care follow-up, post-surgical wound check/care, or to follow-up on specific discharge physicians concerns. This type of program is beneficial primarily for urban settings. This is most often done with specially trained Paramedics with guidelines, discharge physician's orders, and telemedicine. This type of program is most useful in the first 7-days after discharge at which time many patients could be handed over to home health resources. In some areas or patient sub-groups where home health resources are not available this type of program can become integrated with primary care services. The cost to large healthcare/hospital systems is very high due to the new affordable care act post discharge readmission penalties for MI, CHF, and pneumonia patients. The savings from a decrease in penalties is a possible funding source for this program.

        iii. **Rural Primary care supplementation**: Working directly with or being contract by primary care providers to perform house call visits for patients who are chronically ill (diabetes, CHF, renal patients, etc.), have social or behavioral concerns, or have special concerns from the primary care provider. This type of program is beneficial primarily for rural settings. This type is specifically addressed in the national Community Paramedic curriculum consisting of specially trained Paramedics with guidelines, primary care physicians order's, telemedicine/online medical control.

Sometimes this type is referred to as “adopt-a-patient model”. Another alternative for this type of program is to work for or contract with home health services. In some cases the EMS service obtains a home health license. This program is likely funded through rural/tribal healthcare grants, primary care providers, and/or insurance companies.

iv. **Wellness and Frequent flyer programs**: Working in the existing EMS system to identify patients who represent a substantial financial or operational cost to the EMS system and utilizing existing resources visit those patients in an effort to prevent unnecessary 9/11 usage. The # of these patients tend to be low but the cost to the system is very high. Often with very little effort and resources these patients’ healthcare needs can be satisfied with wellness checks, social service information, patient education, etc. This type of program is beneficial for both rural and urban settings. In this type of program any level of EMS provider can be successfully utilized with rigid guidelines/protocols, and traditional medical control. The intent of this model is not to provide medical care rather it is to engage the high utilizer and provide appropriate resources to assist in their overall health. The cost to EMS and ED systems is high in this type of program. Funding can potential be found in the gap savings from lowering high utilizers from EMS and ED.

2. *What types of Community Paramedicine Programs can a fire department provide?*

a. **Pre-navigation**: In Albuquerque, this type of program would require the active participation and explicit approval of the Fire Department(s). This program has the potential to be the most beneficial for the system as a whole. Shifting inappropriate EMS patients and ED admissions to appropriate healthcare settings such as primary and urgent care would save the entire systems a substantial amount of money, as well as, improve the patients experience with the medical system. As much as this would change the system, the cost and complication of starting such a program is high. More than any other type of CP/MIH program, these paramedics need the most specialized training with direct involvement of Physicians. This program also has the highest liability for negative patient outcomes if the patient is inappropriately routed away from ED.

i. Bottom line:

1. Largest funding stream; biggest positive impact on the healthcare system and patients.

2. Highest operational cost; highest training; highest liability.

b. **Wellness and Frequent flyer programs**: This type of community paramedic program is the most common type for Fire Department systems. It is cheap and easy and in most cases can be implemented with existing personnel and resources in the department. Often departments deploy in-service units to do wellness

checks between calls. This can be difficult for busy stations so in some areas light duty fire fighters. The added benefit is the interaction with the community has been shown to increase support and community satisfaction. Department medical director's involvement is key although unless there is a medical component to this program outside medical control should be limited.

3. *What oversight does a Medical Director have with a Community Paramedicine Program?*

    a. Department medical director must support and be involved in any planning, protocols, QI/QA, guidelines, and system design. In cases where medical treatment or decision-making is involved 24 hour medical control/over sight is required. In some cases, special skills applications will require approval from the MDC.

4. *What NM State education requirements are required to provide Community Paramedicine?*

    a. New Mexico EMS Bureau must approve any Community EMS programs. Most of the approved EMS Education programs in the state offer the Community Paramedic curriculum. This depends on the type and autonomy of the EMS provider. In the case of Pre-navigation it is estimated 520 hours of additional training (including clinical rotations) if the Paramedic is required to make the decision. A rigorous protocol, telemedicine, or direct physician involvement reduces the training hours to 220 in line with the traditional Community Paramedic curriculum. The Discharge Follow-up, Primary Care supplement can be accomplished with the traditional Community Paramedic curriculum as long as some of the material is customized to meet the protocols/guidelines of the program. The Wellness program only needs enough training to properly use the protocols/guidelines and new procedures.

5. *What funding is available for a Community Paramedicine Program?*

    a. I discuss this by program type in the first part of this paper. Most of the funding comes from grants or gap funding (funding from reduction in cost) because of improving the efficiency/cost of the healthcare system.

Appendix D

Questionnaire Questions for NM DOH EMS Bureau Kyle Thornton

July 28, 2014

1. *What types of Community Paramedicine Programs can a fire department provide?*

    a. I believe that there are no limits to what a fire department can do (unless of course they want to do something that requires a special skill approval). Patient outreach, telemedicine, patient navigation, medical follow up and exams…all of these should be on the radar for fire departments.

2. *What types of Community Paramedicine Programs are being provided throughout the state of New Mexico?*

    a. Currently, there are only three or four programs that are up and running that the EMS Bureau is aware of; one is the AFD program. I know that AAS is also doing some community EMS activity, especially in the realm of hospice as I understand it. Santa Fe Fire has a program that they are in the beginning phases, which is also a patient outreach type program. And Rio Rancho has a small program that involves patient follow ups. Keep in mind, there is no requirement to notify the EMS Bureau as of yet, so there could be others that we simply don't know about.

3. *What New Mexico laws (NM DOH, NM PRC, NM State) regulate Community Paramedicine Programs?*

    a. At this time, there is really nothing. However, when the new rule publishes on August 15, 2014, there is some new regulatory language that will be in 7.27.11 NMAC. It will read as follows:

    F. *Community emergency medical services programs. Community EMS programs shall be provided by EMS caregivers who, after completing a bureau approved community EMS caregiver course, are functioning as part of a community emergency medical services program that has been reviewed and approved by the EMS bureau. The providers must be authorized by their medical director to perform the skills listed in their application as part of the community EMS program. These programs may include referrals that involve transport to non-hospital locations, and for non-transport decisions. Skills and interventions may include any of the approved skills and interventions for the appropriate level; any skill that exceeds the scope of practice must be approved through the special skill process. Skills may include, but are not limited to:*

    (1) *education of patients in self-medication administration, and assessment of compliance with physician recommendations for health conditions;*

    (2) *assessments for preventing falls and other sources of injury by identifying risks in patient homes;*

    (3) *provide education on disease prevention;*

> ***(4)*** *administering immunizations;*
>
> ***(5)*** *in collaboration with a healthcare team, assist in developing a care plan, and educate the patient in following the care plan;*
>
> ***(6)*** *perform in home patient assessments commensurate with level of education and licensure in order to provide information to a care team as to the progress or condition of patient receiving therapies for medical conditions;*
>
> ***(7)*** *provide assistance in locating and contacting appropriate providers of needed social services;*
>
> ***(8)*** *treat discovered acute healthcare issues, transporting to emergency department if necessary.*
>
> ***(9)*** *for chronic and non-acute issues, confirmed with online medical direction and agreed to by the patient, options other than EMS transport may be considered, including:*
>
> > *(a) arrange for non-emergent and/or non-EMS transportation to and care at an appropriate facility, such as a physician's office or urgent care center;*
> >
> > *(b) provide referral information and arrange for follow up by appropriate care team members and/or social service personnel.*
>
> ***(10)*** *assist with ongoing prescribed wound care.*

4. *Does Community Paramedicine fall under paramedic special skills or does it have its own "job classification" entirely?*

    a. First, I don't think the term Community Paramedicine should be the term we utilize. The EMS Bureau prefers Community EMS, as these programs must have the opportunity to develop and thrive in environments where there are no paramedics. Also, nationally, the term Mobile Integrated Health has rather usurped the term Community Paramedic.

    There is currently no licensure level for Community EMS, nor is one planned. Most of the community EMS initiatives involve nothing that current scopes allow, and if there is something that should come up, the special skills process is available. There has been some thought to working with our colleagues in the public health division; they have developed a "Community Health Worker" program that is a certification program. It is not impossible to foresee a community EMS program that utilizes EMS caregivers who obtain the CHS certification.

    Should an "Advanced Practice Paramedic" be developed, which theoretically has more of a mid-level/physician assistant type scope of practice, then we would visit the idea of a separate licensure level.

Appendix E

Questionnaire Questions for Green Bay Metro Fire Department Chief of EMS Melissa Spielman

July 11, 2014

1. *What type(s) of Community Paramedicine Programs does your fire department provide?*

    a. Our dept. piloted a program from March 2013 – September 2013 that included partnering with an area hospital to provide home visits for patients who had been recently discharged from the hospital.

2. *What laws regulate your Community Paramedicine Program?*

    a. The State of Wisconsin (DHS) has been embracing the "Community Paramedic" design. There are no "laws" per se, but the State EMS Section has asked that services keep in constant communication with them as their programs develop. Along with the program development, services must communicate with their medical director and act within their scope of practice.

3. *How do you fund your Community Paramedicine Program?*

    a. Our pilot was funded through a donation to the hospital that we partnered with.

4. *What are your benefits for providing Community Paramedicine?*

    a. Providing an additional service increased added value to our department. The pilot created great PR and was an invaluable fire prevention component.

    b. Our department created strong partnerships within our local healthcare community which will help in other areas of EMS (STEMI, Stroke, trauma, etc.).

    c. We found that providing this service could increase revenues for the department and the City, if structured to do so.

5. *Is the program still running at all (not as a pilot)? If not, why (funding problems, etc.)?*
    a. We only performed the pilot from March thru Sept and then had to be "put on hold" because a grievance was filed by the union. It is my hope that we will be able to continue the pilot and show enough support for a regular program. Until then, we are waiting for a decision from the State's arbitrator.

6. *How many total patients did you see during the pilot program?*
    a. During that time, we had 20 requests for home visits and 17 completed home visits. All home visits resulted in a zero readmission rate.

Appendix F

Community Paramedicine Survey (CPS) Email, Questions, and Answers

Albuquerque Fire Department
EMS Division

David Downey, Fire Chief

June 12, 2014

Dear Participant:

My name is Frank Soto Jr. and I am the Albuquerque Fire Department EMS Division Commander. I am currently writing my second-year Applied Research Project (ARP) as a student in the Executive Fire Officer Program at the National Fire Academy. I have selected your organization to participate in a Community Paramedicine Survey. If I have sent this survey to the wrong person within your city/village/town/county, then please forward it to the correct fire/EMS person. Thank You!

The data from this survey will be used in my ARP: *Fire-Based Community Paramedicine: Is it a Cost Effective Program for the City of Albuquerque?* Your reported data will be in my report as well as your organization's name; however, no data linking them together will be revealed.

There are 25 check box style questions in this survey—most with comment areas if needed. I appreciate and thank you for taking a few minutes of your time to complete the following survey.

Your information will greatly assist me in this research project. All responses will need to be completed by August 12, 2014. Once again, thank you for your assistance!

Sincerely,

Frank Soto Jr.

Frank Soto Jr., MPA
EMS Division Commander
Albuquerque Fire Department

Community Paramedicine Survey - 2014		
Q-1: What is the name of your organization?		
Answer Options	Response Percent	Response Count
225 CP surveys were sent out Nationwide	46.2%	104
	answered question	101
	skipped question	3

Q-2: What type of organization do you work for?		
Answer Options	Response Percent	Response Count
Public/Municipal FD	80.6%	83
Private FD	0.0%	0
Volunteer FD	3.9%	4
Private Ambulance Company	2.9%	3
Hospital-Based Ambulance	2.9%	3
Third Party Ambulance (city owned and operated)	1.0%	1
Other (please specify)	8.7%	9
	answered question	103
	skipped question	1

Q-3: How is your organization staffed?		
Answer Options	Response Percent	Response Count
All Career	65.4%	68
Combination (career and volunteer)	23.1%	24
Volunteers	6.7%	7
Other (please specify)	4.8%	5
	answered question	104
	skipped question	0

Q-4: What is the population size of your community?		
Answer Options	Response Percent	Response Count
Less than 50,000	42.7%	44
50,001 - 100,000	19.4%	20
100,001 - 200,000	17.5%	18
200,001 - 300,000	3.9%	4
300,001 - 400,000	1.0%	1
400,001 - 500,000	2.9%	3
More than 500,000	12.6%	12
	answered question	102
	skipped question	2

Q-5: Does your organization provide Community Paramedicine?		
Answer Options	Response Percent	Response Count
Yes (it is named Community Paramedicine, Fire-Based Community Paramedicine, Community Paramedicine, Mobile Integrated Healthcare, EMS Primary Care, Community EMS, EMS Community Healthcare, or Community-Based Healthcare)	2.9%	3
Yes (but not by exact name/definition - we call it something else entirely)	11.7%	12
No	79.6%	82
Other	5.8%	6
Comment for Yes or No, Comment for Other, or just a General Comment		32
	answered question	103
	skipped question	1

Q-6: Why is your organization participating in Community Paramedicine?		
Answer Options	Response Percent	Response Count
Repeat 911 callers	4.0%	4
Non-emergent customer callers	5.0%	5
Affordable Care Act	2.0%	2
We do not provide Community Paramedicine	79.0%	79
Other	10.0%	10
Comment for Other or just a General Comment		20
	answered question	100
	skipped question	4

Q-7: What type(s) of Community Paramedicine (or other name entirely) does your organization provide or participate in?		
Answer Options	Response Percent	Response Count
Public Inebriate Program	2.9%	3
Blood Pressure, Heart Rate, & Blood Glucose Checks in the community (not at fire stations)	14.7%	15
Home Follow-up Visits (for discharged hospital patients, may include vital checks, prescriptions, etc.)	4.9%	5
Home Visits (for non-transported EMS 911 Repeat Callers), may include vital checks, prescriptions, etc.)	7.8%	8
Patient Navigation (scheduling customers for healthcare visits - Urgent Cares, Mental Health Facilities, Social Programs, etc.)	4.9%	5
None	71.6%	73
Other	8.8%	9
Comment for None, Comment for Other, or just a General Comment		13
	answered question	102
	skipped question	2

Q-8: While providing Community Paramedicine, do you also:		
Answer Options	Response Percent	Response Count
Provide information on the program	9.9%	10
Provide transports to non-emergency facilities	4.0%	4
Check for and mitigate home hazards (slips, trips, falls)	15.8%	16
Check smoke detectors	17.8%	18
None	74.3%	75
Other	5.0%	5
Comment for Other or just a General Comment		6
	answered question	101
	skipped question	3

Q-9: Does your Community Paramedicine Program have a partnership with:		
Answer Options	Response Percent	Response Count
Local Hospitals	9.0%	9
Private Ambulance Service	3.0%	3
Third Party Ambulance	0.0%	0
Area Fire Departments	2.0%	2
None	82.0%	82
Other	11.0%	11
Comment for Other or just a General Comment		17
	answered question	100
	skipped question	4

Q-10: What does your Community Paramedicine Partner(s) provide to the program?		
Answer Options	Response Percent	Response Count
Personnel	5.1%	5
Funding	3.0%	3
Equipment	3.0%	3
Vehicle(s)	2.0%	2
Oversight	1.0%	1
Social Services	7.1%	7
Patient Care	9.1%	9
None	83.8%	83
Other	6.1%	6
Comment for Other or just a General Comment		6
answered question		99
skipped question		5

Q-11: How long has your organization been providing Community Paramedicine?		
Answer Options	Response Percent	Response Count
Less than 1 year	8.1%	8
1 - 3 years	1.0%	1
4 - 6 years	2.0%	2
7 - 9 years	1.0%	1
10 or more years	4.0%	4
None	83.8%	83
Comment for Other or just a General Comment		2
answered question		99
skipped question		5

Q-12: What requirements does your organization require to be a Community Paramedic?		
Answer Options	Response Percent	Response Count
Paramedic (only)	11.0%	10
EMT - Intermediate (only)	2.2%	2
EMT - Basic (only)	3.3%	3
Advanced Paramedic	0.0%	0
Associate Degree	2.2%	2
Bachelor Degree	0.0%	0
Graduate Degree	0.0%	0
Nothing	70.3%	64
Other	12.1%	11
Comment for Other or just a General Comment		14
answered question		91
skipped question		13

Q-13: Who Regulates (by Law) your Community Paramedicine program(s)?		
Answer Options	Response Percent	Response Count
State	18.2%	18
County	4.0%	4
City	1.9%	2
Township	0.0%	0
Federal	0.0%	0
Organization	1.9%	2
None	71.7%	71
Other	1.9%	2
Comment for None, Comment for Other, or just a General Comment		13
answered question		98
skipped question		6

Q-14: Who is in charge of the Community Paramedicine Program?		
Answer Options	Response Percent	Response Count
Medical Director	19.7%	13
EMS Chief/Organization	22.7%	15
State	4.5%	3
Hospital	0.0%	0
EMS Coalition	1.5%	1
County	1.5%	1
City	0.0%	0
Other	50.0%	33
Comment for Other or just a General Comment		27
	answered question	66
	skipped question	38

Q-15: Whose EMS Protocols does your Community Paramedicine Program follow?		
Answer Options	Response Percent	Response Count
State Protocols	12.8%	12
County Protocols	9.6%	9
City Protocols	3.2%	3
Hospital Protocols	1.1%	1
Organization Protocols	7.4%	7
None	63.8%	60
Other	5.3%	5
Comment for Other or just a General Comment		12
	answered question	94
	skipped question	10

Q-16: What type(s) of response unit(s) does your organization use for Community Paramedicine calls?		
Answer Options	Response Percent	Response Count
Engine	5.3%	5
Rescue (fire-based ambulance)	3.2%	3
Ambulance (purely EMS)	9.6%	9
Alpha Truck (Pick-up Style Truck)	0.0%	0
Car	1.1%	1
SUV	6.4%	6
POV	1.1%	1
Van	3.2%	3
Police Unit	1.1%	1
None	74.5%	70
Other	3.2%	3
Comment for None, Comment for Other, or just a General Comment		11
	answered question	94
	skipped question	10

Q-17: How many total dedicated response units does your organization use for Community Paramedicine?		
Answer Options	Response Percent	Response Count
1	6.3%	6
2	3.2%	3
3	1.1%	1
4	3.2%	3
5	1.1%	1
6 and up	1.1%	1
None	83.2%	79
Other	1.1%	1
Comment for None, Comment for Other, or just a General Comment		9
	answered question	95
	skipped question	9

Q-18: How many personnel (yours and/or others) staff each Community Paramedicine unit?

Answer Options	Response Percent	Response Count
1	1.1%	1
2	13.8%	13
3	1.1%	1
4	1.1%	1
5	0.0%	0
None	79.8%	75
Other	3.2%	3
Comment for None, Comment for Other, or just a General Comment		10
	answered question	94
	skipped question	10

Q-19: What type(s) of personnel staff the Community Paramedicine unit(s)?

Answer Options	Response Percent	Response Count
First Responder	2.2%	2
EMT - Basic	12.9%	12
EMT - Intermediate	10.8%	10
Advanced Paramedic	1.1%	1
Paramedic	16.1%	15
Physician	1.1%	1
Physician Assistant	0.0%	0
Nurse Practitioner	0.0%	0
Registered Nurse	3.2%	3
Social Worker	2.2%	2
Police Officer	1.1%	1
None	76.3%	71
Other	0.0%	0
Comment for None, Comment for Other, or just a General Comment		8
	answered question	93
	skipped question	11

Q-20: How many Community Paramedicine calls does your organization respond to, on average, per year?

Answer Options	Response Percent	Response Count
1- 500	11.0%	10
501 - 1,000	1.1%	1
1,001 - 5,000	3.3%	3
5,001 - 10,000	1.1%	1
10,001 and up	0.0%	0
None	79.1%	72
Other	4.4%	4
Comment for None, Comment for Other, or just a General Comment		11
	answered question	91
	skipped question	13

Q-21: What type of shift does your Community Paramedic(s) work?

Answer Options	Response Percent	Response Count
40 hour work-week (4 Tens)	2.2%	2
40 hour work-week (5 Eights)	5.4%	5
56 hour work-week (24/7/365)	7.5%	7
None	78.5%	73
Other	6.5%	6
Comment for Other or just a General Comment		9
	answered question	93
	skipped question	11

Q-22: How is your Community Paramedicine Program funded?		
Answer Options	Response Percent	Response Count
Government Grant (EMS Based)	1.1%	1
Government Grant (Fire-Based)	0.0%	0
Non-Government Grant (EMS Based)	1.1%	1
Non-Government Grant (Fire-Based)	1.1%	1
Self-Funded	13.5%	12
None	80.9%	72
Other	2.2%	2
Comment for Other or just a General Comment		10
	answered question	89
	skipped question	15

Q-23: What was the initial start-up cost for your Community Paramedicine program?		
Answer Options	Response Percent	Response Count
$1 - $100,000	5.6%	5
$100,001 - $250,000	3.4%	3
$250,001 - $500,000	0.0%	0
$500,001 - $750, 000	2.2%	2
$750,001 - $1,000,000	0.0%	0
$1,000,001 - $2,000,000	0.0%	0
$2,000,001 - $5,000,000	0.0%	0
$5,000,001 and up	0.0%	0
None	85.4%	76
Other	3.4%	3
Comment for None, Comment for Other, or just a General Comment		11
	answered question	89
	skipped question	15

Q-24: What is the yearly cost of your Community Paramedicine program?		
Answer Options	Response Percent	Response Count
$1 - $25,000	3.4%	3
$25,001 - $50,000	1.1%	1
$50,001 - $100,000	1.1%	1
$100,001 - $250,000	1.1%	1
$250,001 - $500,000	3.4%	3
$500,001 - $1,000,000	0.0%	0
$1,000,001 and up	1.1%	1
None	83.1%	74
Other	5.6%	5
Comment for None, Comment for Other, or just a General Comment		10
	answered question	89
	skipped question	15

Q-25: What is the yearly savings/revenue of your Community Paramedicine Program? (e.g., not sending an EMS 911 response to a Community Paramedic call saves our Organization $...)		
Answer Options	Response Percent	Response Count
$1 - $25,000	1.1%	1
$25,001 - $50,000	0.0%	0
$50,001 - $100,000	1.1%	1
$100,001 - $250,000	0.0%	0
$250,001 - $500,000	0.0%	0
$500,001 - $1,000,000	0.0%	0
$1,000,001 and up	1.1%	1
None	86.7%	78
Other	10.0%	9
Comment for None, Comment for Other, or just a General Comment		14
	answered question	90
	skipped question	14

Appendix G

Participating Organizations in the Community Paramedicine Survey (CPS)

1-345th Engineer Battalion U.S. Army
Albuquerque Fire Department
American Medical Response
Anchorage Fire Department
Angel Fire Department of Fire
Antigo Fire Department
Artesia Fire Department
Ashland Fire & Rescue
Brentwood Fire Rescue
Brooksville Fire Rescue
Catron County Ambulance Service
Cedar Hill Fire Department
Cedar Park Fire Department
Charlton County Fire Rescue
Chiloquin Ambulance Service
Cibola County Office of E.M.
City of Celina Fire Department
City of Madison Fire Department
City of Merced Fire Department
City of Tyler Fire Department
Clark County Fire District 6
Clayton Fire Department
Clovis Fire Department
Columbus Fire Department
Countyside Fire Department
Dallas Fire-Rescue Department
Datil Volunteer EMS
DC Fire and EMS Department
Delta Township Fire Department
Des Moines Fire Department (IA)
DeSoto Fire Rescue Department
Durham Fire Department
East Fork Fire and Paramedic District
East Pierce Fire and Rescue
Edmond Fire Department
El Paso Fire Department
Elgin Fire Department
Estancia Fire/Rescue Department
Farmington Fire Department
Garland Fire Department
Grand Rapids Fire Department
Greeley Fire Department (CO)
Guam Fire Department
Havre de Grace Ambulance Corp
Heartland Fire & Rescue
Howard County Depart. of Fire & Rescue
Irondequoit Ambulance Serv. Inc.
Jacksonville Fire and Rescue (AR)
Jemez Pueblo Emergency Medical Service
Johns Creek Fire Department
Kansas City Fire Department (MO)
Kauai Fire Department
Klamath County Fire District No. 1
Lane Fire Authority
Las Cruces Fire Department
Las Vegas Fire and Rescue
Lebanon Fire District
Luna Fire and Ambulance
Maui County Department of Fire & P.S.
Medford Fire - Rescue
Miami Beach Fire Department
Mountainair Fire Department
Nashville Fire Department
Omaha Fire Department
Orange County Fire Authority
Orlando Fire Department
Overland Park Fire Department
Philadelphia Fire Department
Picture Rocks Fire District
Pleasant Hill Fire Protection District
Polk County Fire District No.1
Portales Fire Department
Portland Fire and Rescue
Presbyterian Espanola Hospital EMS
Pueblo of Laguna Fire Protection Program
Red River Fire Department
Rio Rancho Fire Rescue
Rochester Fire Department

Roseburg Fire Department
Salem NH Fire Department
San Diego City EMS
San Juan Regional Medical Center EMS
Sandia National Labs Medics
Santa Fe County Fire Department
Sherman County Emergency Services
Sierra Vista Hospital Ambulance
South Elgin Fire Department
South Padre Island Fire Department
Springfield Fire Department (MO)
Springfield Fire Department (OR)
St. Tammany Parish Fire Protection District #4
Strathcona County Emergency Services
Tempe Fire Medical Rescue
Tooele Army Depot Fire Department
Town of Brookfield Fire Department
Tucson Fire Department
University Fire Department, Fairbanks AK
Ventura City Fire Department
Virginia Beach Fire Department
Westerville Division of Fire
Westminster Fire Department

Appendix H

City of Albuquerque (COA) Frequent Customer Encounter Tables

Table H1

AFD Six or More Frequent Customer Encounters (2008 – 2014)

Year	Total EMS Calls	*6 or more 911 calls*	Number of Calls for Group	Groups % of EMS Calls
2008	63,690	408	4,219	6.62%
2009	59,890	416	4,043	6.75%
2010	59,429	353	3,651	6.14%
2011	60,917	381	3,918	6.43%
2012	63,272	410	4,046	6.39%
2013	65,058	242	2,232	3.43%
2014	33,318	152	1,394	4.18%

Table H2

AFD Twelve or More Frequent Customer Encounters (2008 – 2014)

Year	Total EMS Calls	*12 or more 911 calls*	Number of Calls for Group	Groups % of EMS Calls
2008	63,690	68	1,254	1.97%
2009	59,890	71	1,304	2.18%
2010	59,429	61	1,252	2.11%
2011	60,917	71	1,330	2.18%
2012	63,272	68	1,300	2.05%
2013	65,058	35	625	0.96%
2014	33,318	17	273	0.82%

Appendix I

Projected City of Albuquerque (COA) Reduced Call Volume Cost Savings

Total AFD EMS 911 Calls for 2013 = 65,058

Total EMS responses for 22 AFD **Engines** = 41,008 = *1,864 per unit (2013)*

Total EMS responses for 19 AFD **Rescues** = 46,822 = *2,464 per unit (2013)*

(Chief's Reports - 2013 Year End, 2014, p. 16, 21-22)

One percent (1%) of the total EMS 911 calls = *650* (65,058 x .01 = 650.58)

A drop in 1% of total EMS calls will save 1 year on one AFD Engine or Rescue

650 drop in calls per year / *1,864* calls per Engine for 2013 = 35%

650 drop in calls per year / *2,464* calls per Rescue for 2013 = 26.5%

The cost of one **AFD Engine** = $500,000

$500,000/10 years = *$50,000 per year x 35% =* ***$17,500 per year savings***

The cost of one **AFD Rescue** = $186,000

$186,000/5 years = *$37,200 per year x 26.5% =* ***$9,858 per year savings***

Short-Term & Long-Term Savings:

Year	Rescue	Engine
1	$9,858.00	$17,500.00
5	$49,290.00	$87,500.00
10	$98,580.00	$175,000.00

(Soto, 2014)

Appendix J

Projected City of Albuquerque (COA) Costs and Savings Tables

Table J3

Projected AFD Costs for One, Two, & Three Staffed CP Units

Resources	Type	Amount	Cost per 1		Amount	Cost per 2		Amount	Cost per 3	Explanation
Equipment	Disposables	1	$2,187.00		2	$4,374.00		3	$6,561.00	Recurring Cost
	Non-Disposables	1	$35,000.00		2	$70,000.00		3	$105,000.00	One time purchase
Personnel	Paramedic Driver	1	$77,246.00		2	$154,492.00		3	$231,738.00	Includes fringe
	FF/EMT-Basic	1	$64,530.00		2	$129,060.00		3	$193,590.00	Includes fringe
Vehicle	Chevy Impala	1	$18,530.00		2	$37,060.00		3	$55,590.00	One time purchase
TOTAL Start-Up Cost		1	$197,493.00		2	$394,986.00		3	$592,479.00	Staffed CP Units
Total Yearly Recurring Cost		1	$143,963.00		2	$287,926.00		3	$431,889.00	Staffed CP Units

Table J4

Projected AFD Costs for Twelve or More Frequent Customer Encounters (2008 – 2014)

Year	*12 or more 911 calls*	Number of Calls for Group	PIIP	COA/AFD Cost - Rescue	COA/AFD Cost - Engine
2008	68	1,254		$152,135.28	$309,738.00
2009	71	1,304		$158,201.28	$322,088.00
2010	61	1,252		$151,892.64	$309,244.00
2011	71	1,330		$161,355.60	$328,510.00
2012	68	1,300		$157,716.00	$321,100.00
2013	35	625	*	$75,825.00	$154,375.00
2014	17	273	*	$33,120.36	$67,431.00
2013-14	35 callers (average)	898 (2013-14 Total)	*	$108,945.36	$221,806.00
	Callers removed due to PIIP in 2013	Calls removed due to PIIP in 2013		2013 Rescue Savings from PIIP	2013 Engine Savings from PIIP
	33	675		$81,891.00	$166,725.00

Table J5

Projected Total COA and PIIP Partner Costs and Savings (2013 – 2014)

Company	Explanation	Expense	Total Contacts	MATS Transports	EMS Transports	Refusals	Costs	Savings	Total Cost Savings
AFD	1 PIIP FF						$47,000.00	$0.00	$47,000.00
APD	1 Officer (OT)						$80,000.00	$0.00	$80,000.00
UNMH			1935						
	Current ETOH -	$1,423.00		1465				$2,084,695.00	
	UNMH ER Admit	$1,423.00			209		$297,407.00		$2,058,691.00
		$1,423.00				261		$371,403.00	
	Grant for MATS						$100,000.00		
AAS			1935						
	AAS Tariff for -	$566.40		1465				$829,776.00	
	BLS Emergency -	$566.40			209		$118,377.60		$859,228.80
	Transport	$566.40				261		$147,830.40	
Total COA (AFD & APD) cost savings									$0.00
Total COA (AFD & APD) costs									$127,000.00
Total cost savings (direct and indirect) by the other three companies from COAs PIIP Actions									$2,917,919.80

Table J6

Projected COA CP Cost Savings for 35 Customers (1% EMS call volume [650 calls])

Service Usage for 35 Frequent Customer Encounters or 1% EMS call volume (650 calls)	Projected CP Costs	Projected CP Savings
AFD Engine (wear & tear savings from a drop in 650 EMS calls)	$0.00	$17,500.00
AFD Rescue (wear & tear savings from a drop in 650 EMS calls)	$0.00	$9,858.00
AFD Engine (response savings for 35 frequent customers) Table 4 - 2013	$0.00	$154,375.00
AFD Rescue (response savings for 35 frequent customers) Table 4 - 2013	$0.00	$75,825.00
Hospital ED (usage based off of ED cost savings for 650 calls)	$0.00	$889,375.00
Medicaid (35 frequent customers x $7,475.34 = usage savings)	$0.00	$261,636.90
Medicare (35 frequent customers x $8,120 = usage savings) *Can be Penalized per PPACA/CMS	$0.00	$284,200.00
Contracted Ambulance Service (usage based off of BLS transport cost savings for 650 calls)	$0.00	$354,000.00
Start-up costs for 3 AFD CP Units	$592,479.00	$0.00
Totals	$592,479.00	$2,046,769.90
TOTAL PROJECTED SAVINGS - Using 3 COA/AFD Fire-Based Community Paramedicine Units		$1,454,290.90

Appendix K

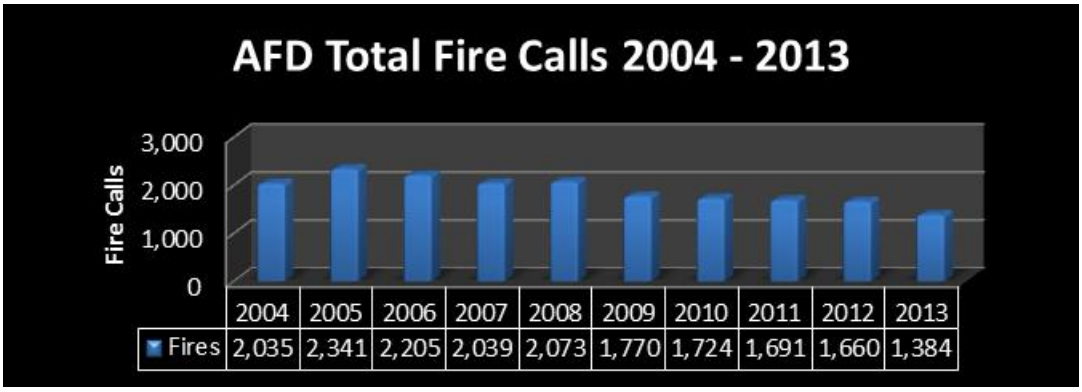
CPS Survey Organizations with Populations of 500,000

Organization serving over 500,000 people	Offer CP	Start-Up Cost	Yearly Cost
Albuquerque Fire Department	No		
Columbus Fire Department	No		
El Paso Fire Department	No		
Las Vegas Fire and Rescue	No		
Nashville Fire Department	No		
Orange County Fire Authority	No		
Philadelphia Fire Department	No		
Dallas Fire-Rescue Department	Yes	$750,000.00	$1,000,000.00
DC Fire and EMS Department	Yes	Unknown	$500,000.00
Portland Fire and Rescue	Yes	Unknown	Unknown
San Diego City EMS	Yes	$250,000.00	$500,000.00
Tucson Fire Department	Yes	Unknown	Unknown

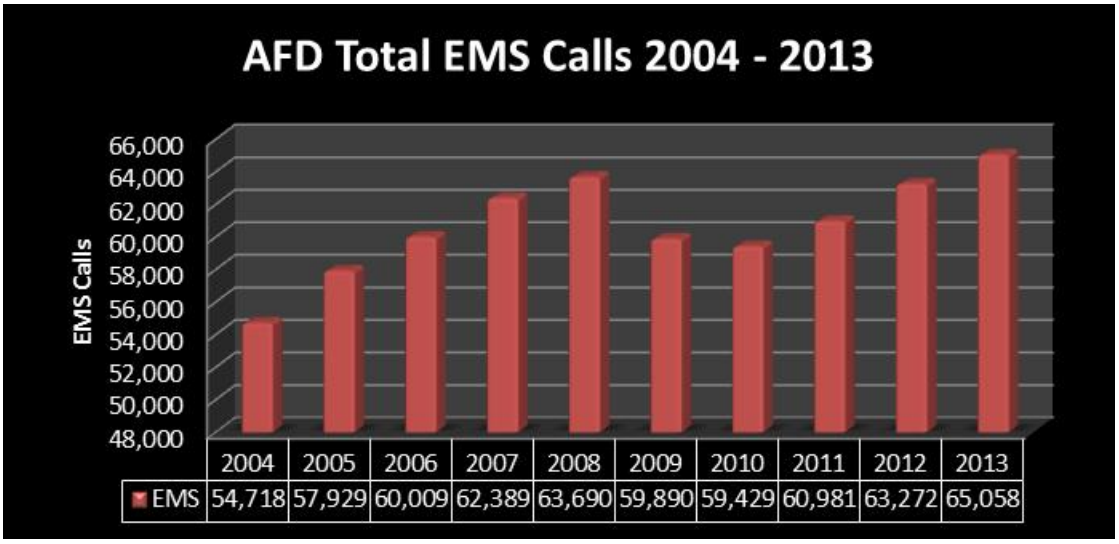
(S.M., 2014; Soto, 2014)

Appendix L

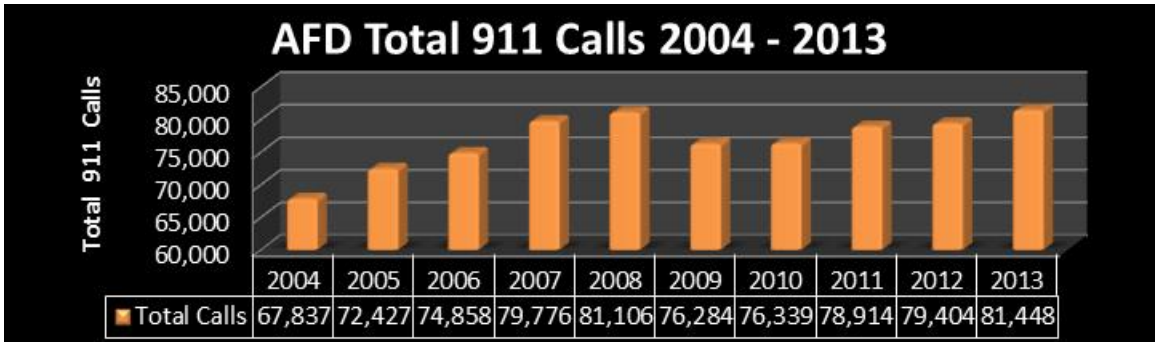
AFD Emergency Response Numbers for 2004 – 2013



(Albuquerque Fire Department [AFD Emergency Response], 2014; Soto, 2014)



(AFD Emergency Response, 2014; Soto, 2014)



(AFD Emergency Response, 2014; Soto, 2014)