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SECTION 1  Executive Summary

As the U.S. healthcare system transforms its care delivery model to increase healthcare accessibility and improve health outcomes, it is undergoing changes in the context of ever-increasing chronic disease burdens and healthcare costs. Many illnesses disproportionately affect some populations more than others, due to disparities in healthcare accessibility and social determinants of health. These health disparities represent a key area to target in order to improve the nation’s health outcomes and overall healthcare expenditures. It is thus imperative for policymakers and health workers to develop innovative interventions that promote preventative health, manage chronic diseases, and encourage healthy behaviors among communities disenfranchised from traditional healthcare.

Mobile Health Clinics (MHCs) have been proven to be effective in reaching vulnerable populations who do not otherwise have a reliable source of healthcare, because mobile clinics reduce traditional barriers to access such as geographic isolation, transportation issues, time constraints, financial costs, complex administrative paperwork, and distrust of the healthcare system.

Evidence shows that MHCs not only increase access to care, but also promote better health outcomes. By delivering care right to the doorsteps of those who need it, mobile clinics operate in the hearts of neighborhoods and can flexibly adapt their services based on the changing needs of their target clients. These clinics represent the link between community and clinical settings, and are hence effective in addressing both medical and social determinants of health, improving health on a community-wide level.

Because of their community-specific approaches and ability to penetrate high-risk areas, MHCs produce significant cost savings by reducing emergency department visits and length of hospital admissions, and by increasing the numbers of Quality-Adjusted Life Years and symptom-free days. Mobile clinics thus represent a cost-effective care delivery model to improve health outcomes in vulnerable groups.

In the shadow of the Affordable Care Act, MHCs are able to fill many roles to fulfill many goals and mandates set out by the new healthcare legislatures. As a review of the available literature shows, mobile clinics have the potential to act as an integral pillar for the stability of our nation’s evolving healthcare structure.
The scope of Mobile Health Clinics

Healthcare climate in the United States is characterized by increasing costs and chronic disease prevalence, despite continued efforts made to improve access and quality of healthcare. Moreover, the burden of certain diseases and disabilities fall disproportionately on minority groups, contributing to the health disparities seen among our society.¹ Without exploring and implementing new models for meeting the population's health needs, the existing healthcare system will continue to face challenges in delivering adequate and equitable health services.²

Mobile Health Clinics (MHCs - sometimes referred to as Mobile Medical Units) serve as an innovative and flexible model of healthcare delivery, particularly for vulnerable populations and individuals with chronic diseases. Studies show that MHCs are particularly impactful in the following contexts: providing preventative health screenings, initiating chronic disease managements, and offering urgent care.² By opening their doors in the hearts of communities and leveraging existing community assets, MHCs offer tailored, high-impact and affordable medical care that responds dynamically to the community's evolving needs.

Mobile Health Map is the result of a longstanding collaboration between leaders within the Mobile Health Clinic industry, Harvard Medical School and the Mobile Health Clinics Association. This project provides a means to monitor the characteristics and health trends of the medically disenfranchised populations who visit MHCs. Mobile Health Map serves as a powerful networking tool for mobile health care providers to improve services through increased communications and information exchange. Data collected through this project also allows us to perform imperative assessments of the impact of mobile healthcare within the larger healthcare continuum.

Epidemiological modeling done by Mobile Health Map estimates the existence of 2,000 mobile clinics nationwide. To date, approximately 36% of these clinics have registered on Mobile Health Map's publically available online database. Mobile Health Map encourages clinics to anonymously share information about the clients they serve and the services they provide, and the compiled data indicates that each MHC serves an average of 2,592 visitors per year, totaling more than 5 million MHC visits annually in the United States.³
MHCs around the nation provide a range of services targeted to community needs. According to data from the Mobile Health Map, 42% of mobile clinics surveyed provide primary care, 45% provide prevention screenings, and 30% provide dental services. Many clinics also provide specialty care such as mammography, mental health monitoring, and ophthalmology checks. The flexibility of MHCs allows the offered services to be dictated and modified based on the needs of the target communities.

Although some consider MHCs as "alternatives" to other healthcare models, the data presented here challenges that notion. Patients have reported that MHCs serve as a platform to help them navigate the more convoluted systems of the wider healthcare structure and to connect them to the medical and social resources in their community. In many contexts, MHCs can and do play an integral part of the healthcare system, and provide accessible and sustainable care with quality that matches traditional healthcare settings.

Literature review goals

This literature review examines the following areas: 1) The ability of Mobile Health Clinics to increase access to healthcare services, 2) The impact of Mobile Health Clinics on improving patient health outcomes, 3) The capacity of Mobile Health Clinics to address social determinants of health, 4) The ways in which Mobile Health Clinics can advance population health, 5) The potential for Mobile Health Clinics to decrease healthcare costs, and 6) The role Mobile Health Clinics play in the restructured healthcare system under the Affordable Care Act. Ultimately, this report aims to serve as a guide and as a reference for Mobile Health Clinics and stakeholders in policy, academia, and healthcare.
SECTION 3  Increasing HealthCare Access

Barriers to healthcare access

Many studies show that Mobile Health Clinics are effective in facilitating access to health care, particularly for minority groups.\(^6\),\(^10\),\(^11\),\(^12\),\(^13\),\(^14\),\(^15\),\(^16\),\(^17\) Compared to the general population, minorities often have poorer health and face a higher number of barriers in accessing health services, indicating a need for healthcare agencies to reach out to these communities. According to data collected through Mobile Health Map, 52.2% of clients seen by MHCs nation-wide identify as non-White and 40% identify as Hispanic.\(^3\) Other target populations of MHCs include vulnerable communities such as people experiencing homelessness or displacement, immigrants, migrant workers, the under-insured, and children; historically, these groups are very often disconnected from traditional healthcare settings and require support in accessing healthcare. Even though men have been found to demonstrate poorer healthcare-seeking behaviors, Mobile Health Map data indicates the ability of MHCs to attract male patients, who make up 50% of MHCs’ clients.\(^10\),\(^18\)

Cited barriers to health care services among the general and vulnerable populations include\(^2\),\(^19\),\(^20\),\(^21\),\(^22\),\(^23\):

- Transportation/geographic barriers
- Insurance status
- Legal status
- Financial costs
- Linguistic and cultural barriers
- Psychological barriers
- Perceived absence of patient-centered care
- Intimidation by healthcare settings
- Lack of healthcare providers
- Hours of operation
- Anonymity concerns

As outlined in the section below, the structure, operation and staff of MHC can overcome both obvious and subtle elements of these healthcare barriers.

Strategies of Mobile Health Clinics
Broadly, many mobile clinics incorporate several recommendations from the Institute of Medicine’s Committee on Understanding and Eliminating Racial and Ethnic Disparities in Health Care, including 1. community health workers, 2. patient-centered care focusing on patient education and empowerment, 3. cultural competence training for staff, 4. stability and consistency of service provisions within communities, and 5. staff diversity. All of these elements have been shown to overcome barriers resulting from poor patient-provider communication, mistrust, and the sense of disempowerment among minority communities.

It is interesting to note that the Family Van clinic in Massachusetts did not see a decline in visitors in the years after the 2006 Massachusetts Healthcare Reform, and that most of Family Van’s clients (approximately 90%) are insured. This is consistent with evidence that there are continued barriers to primary care services apart from insurance concerns, including copayments, waiting times, complexities of navigating the system and feelings of intimidation. These barriers to healthcare can be overcome by MHCs’ model, as demonstrated below.

Geographical and logistical convenience

By delivering the necessary services right to clients’ doorsteps, often without fees and complex paperwork, MHCs can serve individuals who may not have the time, resources and motivation to travel to traditional clinics. Qualitative studies have shown that clients appreciate the convenient neighborhood locations that only mobile clinics can occupy. MHCs embody a sense of visibility and accessibility that eliminate many logistical barriers to traditional forms of healthcare, such as transportation issues, difficulties making appointments, long waiting times, and complex administrative processes.

Trusting provider-client relationships

Many successful Mobile Health Clinics cite their ability to foster trusting relationships. Qualitative research has found that patients value MHCs’ informal, familiar environment in a convenient location, with staff who “are easy to talk to.” Because MHCs make the effort to physically drive into communities, community members feel that the clinics are reaching out to care about them, inspiring them to take more charge of their own health. A communications academic argued that MHCs’ unique use of space is important in facilitating trusting relationships. MHCs’ location in
familiar neighborhood areas, such as parks and shopping centers, makes the space aboard the vans an ideal blend of social and health care space, making the intimate van setting more welcoming and less intimidating.\textsuperscript{40} Oftentimes, individuals become disenfranchised from their healthcare sources due to lack of trust in a system seemingly not designed for the clients' best interest – MHCs are poised to regain the trust of these individuals for health providers, and reconnect these individuals to regular care.

Emergency coverage

Because MHCs can be flexibly tailored to meet the needs of target communities, they can be effectively used in emergency situations when care is disrupted.

\textit{Case Highlight: Caring for children of the Flint water crisis}

In January 2016, the city of Flint, Michigan was declared to be in a state of emergency, and later a federal state of emergency, due to lead contamination in the city's drinking water supply. Between 6,000 and 12,000 children were estimated to be exposed to the contamination since 2014.\textsuperscript{43} A study found the blood lead levels of children younger than 5 in Flint significantly increased from 2.4\% in 2013 to 4.9\% in 2015, with children in disadvantaged neighborhoods experiencing the greatest elevation in blood lead levels.\textsuperscript{44} Excessive lead accumulates in and adversely affects multiple body systems, and lead poisoning is particularly harmful to young children, leading to intellectual disabilities and death.\textsuperscript{45} In response to the vastly increased health needs and the low healthcare accessibility of the children affected by the water crisis, the Children's Health Fund partnered with Hurley's Children Clinic to bring a mobile health clinic to the area.\textsuperscript{46} The clinic is equipped to offer multiple levels of services, from basic screenings for lead poisoning and developmental issues, to comprehensive primary care, and will provide a source of medical care for children living in underserved communities of the affected area.\textsuperscript{47} The flexibility, mobility and cost-effectiveness of mobile units make MHCs an ideal healthcare delivery model to provide medical care in emergency situations.
SECTION 4 Improving Health Outcomes

Screenings

There has been considerable national focus on safety net programs that provide community based prevention and screening, particularly for low-income and rural communities.\textsuperscript{48,49,50} MHCs are very effective in reaching high-risk or stigmatized populations, such as individuals experiencing homelessness and individuals with multiple risk factors for diseases, and are able to attract different sectors of society to engage in screenings for various illnesses.\textsuperscript{16,51,52,53,54,55} For example, a study comparing a MHC in Baltimore with a comparable traditional clinic found that the percentage of clients who agreed to undergo HIV screening was higher at the MHC (54.4% in MHC vs. 7.1% in traditional clinic), and that the percentage of HIV tests that turned out positive was also higher at the MHC (5.4% in MHC vs. 2.0% in traditional clinic), indicating that MHCs facilitate more HIV screenings and are more efficient at attracting high-risk populations.\textsuperscript{56} Because of their ability to connect with vulnerable individuals, MHCs can help identify additional cases of infectious and chronic diseases in a nontraditional setting.\textsuperscript{11,12,13,57,58,59}

Initiating preventative care

Because of their ability to successfully reduce barriers in access to healthcare, MHCs provide more opportunities for underserved populations to screen for various conditions and learn to properly manage their health.\textsuperscript{6,51,56,60} Researchers found that among expectant mothers living in a Miami-based minority community, clients of MHCs were significantly more likely to start receiving prenatal care services earlier compared to the other mothers accessing traditional clinics. Moreover, mothers accessing the MHCs reported significantly lower rates of pre-term and low-birth-weight infant births (4.4% vs. 8.8%), indicating the ability of MHCs to provide vital prenatal services to mothers of the minority community.\textsuperscript{61} Mobile clinics represent a resource to those who would not otherwise approach a health center for necessary services and check-ups— without these services, diagnoses and treatments would be delayed, and subsequent disease management would be further complicated.\textsuperscript{41,62}
Managing chronic diseases

Data from the Family Van suggests that Mobile Health Clinics represent an effective setting for chronic disease management. For example, hypertension management is notoriously difficult for patients to adhere to – nationally, only 50% of individuals diagnosed with hypertension have the condition under control, even though 80% of patients with uncontrolled blood pressure are insured. In a cohort of 5,900 patients who visited the Family Van between 2010 and 2012, patients who initially presented with high blood pressure exhibited average reductions of 10.7 mmHg and 6.2 mmHg, in systolic and diastolic blood pressures respectively, during their follow-up visits. These reductions are associated with a 32.2% and a 44.6% lower relative risk of myocardial infarction and stroke respectively.

The challenge of hypertension management is sustaining adherence to the necessary medications and lifestyle changes, and evidence from the Family Van suggests that MH Cs are effective in helping patients address these challenges.

As with hypertension, other chronic diseases such as diabetes and hypercholesterolemia also require adherence to medication and lifestyle changes for proper control. Therefore, to the extent that MHCs support treatment compliance and educate patients on chronic disease management, the effects that the Family Van’s services exerted on their patients’ blood pressure control suggest benefits in other chronic disease domains as well.

Case Highlight: The Health Hut in Northern Louisiana

In response to the needs of medically underserved populations of Lincoln Parish (Louisiana), Dr. and Mrs. Leonel Lacayo started mobile clinic The Health Hut through the Lincoln Health Foundation. Between 2011 and 2013, over 1500 patients have visited the clinic, which offers screening and management services for chronic diseases to the general population as well as follow-up care for uninsured patients with chronic conditions discharged and referred from local hospitals. Data from The Health Hut showed that 30% of its patients initially presenting with high blood pressure saw decreased readings over three-month periods, and a number of diabetic patients saw a decrease of 20% in their HbA1c levels. The clinic has also succeeded in decreasing no-show rates by more than 30% by modifying their electronic medical record system to track no-show patients. The Health Hut’s promising data shows that MHCs are a viable healthcare delivery method to improve screening rates, provide preventative care, and properly manage chronic conditions.
Enabling self-efficacy

Evidence indicates that MHC patients report an increased sense of self-confidence and ability to manage their chronic conditions and navigate the healthcare system.4,14,16,60 One MHC in Pittsburg revealed that the trusting relationships clients fostered on the mobile clinic motivated patients to adopt healthier behaviors.11 Furthermore, New Mexico’s HABITS for Life mobile screening program noted that 78% of its screening participants engaged in healthier behavior changes as a result of having participated in the screening.65 By bringing healthcare to community spaces familiar to patients, MHCs place patients in the center of the healthcare communicative process, enabling them to feel a sense of ownership, involvement and self-efficacy in the management of their conditions.66
Disparities in social determinants of health

Despite improvements in general health outcomes and care accessibility, disparities continue to plague the US healthcare system. Eliminating inequality in healthcare is a matter of much research and debate, and is one of the goals of the national health promotion campaign *Healthy People.* Apart from the importance of reducing health inequities to champion social justice, there are also strong economic reasons for addressing health disparities. The 2013 CDC Healthcare Disparities and Inequalities Report estimated that eliminating health disparities in 2009 would have resulted in approximately 500,000 fewer hospitalizations and saved $3.6 billion in hospitalization costs.

Health and access to quality healthcare are closely correlated with social factors known as determinants of health, such as an individual’s race, socioeconomic status, living conditions, and educational level. According to the World Health Organization, disparities in health are mostly due to differences in social determinants of health, which affect the ability of an individual to develop a healthy lifestyle, access medical care, and ultimately control his or her health status. Often socially and economically disadvantaged, minority groups and those who live on the fringe of society are among the most vulnerable to having poor determinants of health, causing them to be adversely affected by health inequities. Hence, development of innovative strategies to address not only the medical but also the social determinants of health among minority groups is imperative to improve health outcomes and reduce healthcare costs.

The role of MHCs

MHCs are equipped to assess and respond to unmet healthcare and social needs, connecting clients to wider community resources, and successfully building capacity into healthcare systems. The merging of personal and professional discourses allow MHC staff to better understand the nonmedical factors influencing their clients’ wellbeing and devise strategies to combat negative social determinants of health. MHCs’ straddle between community-based and clinical settings allow them to develop the essential networks to address both the social and medical determinants of clients’ health. Collaborating with local agencies such as churches, community health centers, and other hospitals and clinics, MHCs and their wide network of resources help connect community members with both medical and social
services.⁴

**Case Highlight: Outreach Van Project, Boston University School of Medicine⁵**

The goals of the Outreach Van Project are crafted with the understanding that both medical and non-medical factors must be addressed in order to improve the wellbeing of underserved populations in the greater Boston area. Noticing the specific needs of homeless individuals in East Boston and the lack of outreach from other agencies to this target group, organizers of this project have successfully reached out to the homeless population through their catered services and the visual presence of their van in the community. On top of offering basic medical care pertinent to their target clients, such as blood pressure screenings and mental health services, the Outreach Van Project also seeks to improve other aspects of their clients’ lives that are pertinent to their health, by providing warm clothes, nutritious foods, and connections to homeless shelters and other resources in the area. Delivering both medical and social services directly to the feet of their target population, the Outreach Van Project’s multidisciplinary approach provides a more comprehensive and sustainable solution to their communities’ health disparities, and serves as a prime example of the strength of MHCs in reaching out to and adequately supporting all the needs of their intended clients.

Some MHCs have also implemented program websites to facilitate communication among target populations and healthcare workers. Such websites help clients broaden their network of social and medical resources, and provide opportunities to educate healthcare professionals on different ways to address social determinants of health to improve health outcomes.⁶
SECTION 6 Advancing Population Health

As the focus of our healthcare system shifts gears towards population health and management, MHCs are gaining increasing traction as an efficient form of healthcare delivery that improves health outcomes not only on an individual level, but also on a population one. Operating in environments familiar and convenient to clients, MHCs serve as a linkage between community-based and clinical settings, and are in a unique position to reconnect vulnerable populations with healthcare and community resources.

CDC’s “3 Buckets of Prevention”

The Center for Disease Control and Prevention has recently developed a framework to improve population health, consisting of three areas, or “buckets”, of disease prevention:

1) Traditional clinical preventive interventions
2) Innovative preventive interventions that extend care outside the clinical setting
3) Total population or community-wide interventions

MHCs fill a niche in preventative medicine as a healthcare delivery model that seamlessly integrates services from all 3 buckets. Many of MHCs’ services, such as blood pressure monitoring, are deeply rooted in traditional preventive interventions outlined in bucket 1, providing one-on-one care and consultations that have been proven to be efficacious and cost effective.

As agencies offering community-specific care in a non-traditional healthcare setting, MHCs also fit into bucket 2 as a proven method to effectively connect communities with medical services for their specific needs, and provide health education extended outside of the clinic. MHCs’ visibility and entrenchment in their communities make medical and social services more accessible to their clients, offering preventative interventions outside of the traditional clinical settings.

MHCs also advance population health as an example of the strategy outlined in bucket 3. Driving into the hearts of neighborhoods to target entire populations and subpopulations of a geographic region, MHCs are able to provide target-specific interventions that extend beyond the doctor’s office. By acting as the intermediary between the population and the clinic, MHCs are in a unique position to affect health outcomes on a community-wide level.
Clinical-community linkage

Preventative screenings and disease management done by MHCs improve the detection of chronic illness and infectious diseases among communities, especially for vulnerable populations unable to access care elsewhere. By entering communities to connect individuals to healthcare, MHCs serve as a stepping-stone between their target community and the larger healthcare system. For example, in a VA-affiliated MHC, 56% of the clinic’s clients reported the MHC visit to be their first encounter and connection with the VA healthcare system.\(^5\) Because of MHCs’ ability to segue their clients from the community to a reliable source of healthcare, the Massachusetts Partnership for Health Promotion and Chronic Disease Prevention named mobile clinics as a best practice in helping control chronic diseases and connecting community resources to clinical settings.\(^72\)
SECTION 7 Reducing Healthcare Costs

Avoidable Emergency Department visits

Mobile Health Clinics have the potential to offer a number of cost-savings benefits to the healthcare system, by prompting earlier patient care initiation, avoiding hospital and emergency room visits, and improving patients’ ability to self-manage their conditions. In analyzing the cost-savings as a result of MHCs, there are a number of potential metrics to consider. One such metric involves looking at reducing avoidable Emergency Department (ED) visits.

There is a clear opportunity to demonstrate cost-savings by reducing unnecessary ED visits in Massachusetts as well as nationally.73,74 The 2015 Cost Trends Report done by the Massachusetts Health Policy Commission estimated that more than 40% of ED visits between the Financial Year of 2010 (FY2010) and FY2014 were either non-emergency or could have been managed in primary care.75 In FY2010, the average cost per preventable/avoidable visit was $474, and the more than 1.1 million avoidable ED visits that year cost more than USD558 million.74 Moreover, residents from communities with the lowest average incomes had more than three times the avoidable ED rate than those from communities with the highest average incomes, and rates of avoidable ED visits were higher amongst minorities compared to the general population, signifying a need for more accessible primary care to combat glaring health disparities.16,75

EDs represent the only source of readily available care for those who face ongoing barriers to primary care services, such as long waiting times, copayments, complexities of navigating the system and feelings of intimidation.25,32,33,76,77,78,79,80,81 Avoidable ED visit rates signify the greater health needs of the surrounding communities, and MHCs can help fill those needs by providing tailored and easily-accessible care at costs much lower than ED visits, freeing up ED resources for those who actually require emergency care and reducing total healthcare expenditure. Data from the Family Van in Massachusetts estimated that visits to their MHC avoided 2851 ED visits and thus about $1.4 million from January 2010 to June 2012.30 In another analysis using aggregate data from 16 national MHCs, Mobile Health Map calculated that an approximate $561,220 is saved on avoidable ED visits per MHC per year, suggesting total savings of over $1.1 billion per year by MHCs across the nation.3
Cost of hospitalizations

Care provided by MHCs is associated with a reduction in their clients’ hospitalizations costs, which is brought about by the shorter lengths of hospitalization periods. In a study comparing traditional acute care services (ACE) to mobile acute care (MACE) for the elderly, Farber and colleagues demonstrated that those who utilized ACE averaged a hospital stay of 7.9 days, while those who utilized MACE averaged a shorter hospital stay of 5.8 days. The lengths of hospitalization translated into costs of $13,187 and $10,315 for ACE and MACE respectively. These results suggest that MACE is a more cost-effective method for elderly healthcare delivery.

Hospital re-admission rates

Reductions in seven-day and thirty-day readmission rates are potential areas to explore for additional cost-savings. In 2010, nearly 20% of Medicare patients returned to the hospital within a month after being discharged, resulting in governmental costs of $17.5 billion. As part of the Affordable Care Act, Medicare and other governmental efforts have imposed penalties for readmitted hospital visits, in an attempt to decrease the associated costs. At the very least, mobile health utilization does not result in higher rates of readmission compared to traditional clinic utilization. It is possible that MHCs may contribute to reductions in hospital readmissions; however, more robust indicators are needed to demonstrate the extent to which these reductions are seen.

Quality-Adjusted Life Years (QALYs) saved

Tolley and colleagues estimated the economic value of a statistical life year, also known as a Quality-Adjusted Life Year (QALY), is $70,000. Data from the Mobile Health Map approximates that $71,714,286 in QALYs is saved per year through the collective efforts of 16 MHCs included in an analysis. The MHC HABITS for Life in New Mexico estimated that $10 million worth of QALYs were saved based on their screening efforts in the 2011 fiscal year. Using QALYs as a metric, MHCs’ economic impact based on the total value of their healthcare cost-savings has been shown.

Case Highlight: ROI of the Breathmobile Program

Breathmobile Programs offer medical care and monitoring on mobile clinics for children living with asthma in underserved populations. A retrospective study was done on 88,865 visits by 15,986 pediatric patients in four Southern Californian Breathmobiles from November 1995 to December 2010. Using the Return-On-
Investment (ROI) calculator on the Mobile Health Map website, researchers found that the ROI across the 4 clinics was $6.73 per dollar invested. The annual ED cost reduction over the 4 regions was approximated at $2,541,639, and the value of total QALYs saved was approximated at $24,381,000. This analysis highlights the cost-effectiveness of mobile clinic outreaches to bring necessary medical care to underserved communities.

Cost of Symptom-Free Days

Monetary savings of MHCs can also be measured by the cost of symptom-free days (SFD), which incorporates costs associated with both emergency room visits and hospitalizations. The MHC Breathmobile demonstrated an overall improvement in symptom-free days among their pediatric asthma patients (from an average of 199 SFDs at baseline to an average improvement of 44 SFDs post-intervention), resulting in cost-savings of $79.43/day for children between 5 and 11 years old. 87 The total amount of medical costs saved outweighed the clinic’s operational costs, demonstrating another potential arena in which MHCs can contribute to lowering the nation’s overall healthcare expenditure.
After the passing of the Affordable Care Act (ACA) in 2010, different players in the healthcare system have incentives to develop new goals and emphases to adapt to the new healthcare structure. The MHC model has the potential to fit seamlessly into this restructuring of the health system brought about by the ACA.10

**Private insurers**

Private insurers are now responsible for the coverage of more, often sicker, individuals, and thus have an incentive to look for more innovative methods to address population health and offer preventative care in attempts to lower their overall spending. Some private insurers, such as the health insurer Highmark, have already taken advantage of the proven effectiveness of mobile clinics to reach at-risk populations who would otherwise forgo medical care until the development of full-blown diseases, at which point the cost of care would be much higher than preventative services or earlier management. MHCs emphasize preventative screenings and disease monitoring in order to maintain a higher level of general health in their clients, hence decreasing the total healthcare costs for patients, insurers, and society.88

**Accountable Care Organizations**

Accountable care organizations (ACOs), a healthcare management model described under the Affordable Care Act, are agencies financially and clinically responsible for populations of patients, and hence have motivations to both improve healthcare quality and save costs. MHCs have been shown to be a cost-saving model of care delivery that reaches multiple vulnerable populations, and would allow ACOs to flexibly identify and adapt to the changing needs of communities without having to invest in permanent infrastructure in target areas. Therefore, the mobile clinic model helps ACOs achieve their dual goal of improving health outcomes and providing cost-effective care.4

**Non-profit hospitals**

Non-profit hospitals are now mandated by ACA to perform adequate needs assessments and develop appropriate strategies to address community health needs.89 By operating directly inside the communities they serve, MHCs are well situated to fully understand the medical and social needs of community members, and have the
advantage of being able to identify and provide tailored services for different populations.\textsuperscript{10} The mobile clinic model has been shown to be able to reach out to and care for vulnerable populations, indicating that mobile clinics can play an important role for non-profit hospitals in at-risk communities.
SECTION 9 Future Research Priorities

As MHCs strive to demonstrate their value to the healthcare system, a number of challenges lie ahead. With the evolving role of MHCs in the context of an ever-demanding healthcare services landscape, MHCs will need to continue developing protocols to appropriately assess and respond to the health needs of target communities. Models for improving capacity and cost-effectiveness (for example altering the service provider make-up and services offered, lowering recruitment costs, etc.) should be prioritized. In achieving economies of scale, different MHCs may consider sharing resources and should consider sharing experiences as appropriate and applicable.2

Continued advocacy and research are needed to demonstrate clinics’ efficacy, both from a service quality and from a cost-effectiveness standpoint. Additional metrics, using both qualitative and quantitative domains, to evaluate health outcomes and cost savings will need to be explored in order to maximize the benefit that MHCs can bring to various target populations and to our healthcare system on the whole. Some other potential metrics include the following:2

- Percent effectiveness in linking underserved patients to the appropriate care
- Percent and number of patients diagnosed who subsequently started on treatment for chronic conditions
- Improved clinical outcomes by specific chronic disease
- Changes in clients’ health behaviors and ability to self-manage their conditions
- Percentage of community members who utilize MHCs’ service
- Change in prevalence of un-managed chronic illnesses in target communities
- Clients’ perspectives on the strengths of MHCs versus traditional doctors’ clinics

Furthermore, it is imperative to pool data from different MHCs to bolster the assessment of MHCs’ impact, improve MHCs’ credibility, effectively champion the advantages of the MHC healthcare delivery model, and promote the needed widespread integration of MHCs into our healthcare system.2 To date, many MHCs unfortunately lack the capacity to implement the necessary research. Therefore, measures to improve the evaluative capacities of MHCs and demonstrate the value of mobile clinics remain a critical priority.
SECTION 10 Conclusions

Mobile Health Clinics (MHCs) have been proven as a successful and cost-effective model of healthcare delivery that is uniquely positioned to assess and fulfill the needs of underserved populations nationwide. By driving directly into the hearts of communities and opening their doors on the steps of their target population, mobile clinics are able to reach out to and gain the trust of vulnerable individuals who would otherwise be disenfranchised from medical care. Because MHCs breakdown many healthcare barriers, services provided by the MHCs have been shown to improve individual health outcomes, advance population health, and reduce healthcare costs compared to traditional clinical settings. Serving as a stepping-stone between the clinic and the community, MHCs are able to address both medical and social determinants of health, and have the potential to play a big role in our restructured healthcare system under the Affordable Care Act. Continuous research must be carried out to improve the capacity of MHCs, increase the cost-effectiveness of MHCs’ services, and mine both qualitative and quantitative data to champion a more widespread integration of MHCs into different communities and health structures.
SECTION 11 References


65 Connolly NEB, Concha JB. (2012). New Mexico HABITS for Life Mobile Screening Program: Outcomes and Benefits. *Final report from HABITS for Life program*.


89 Patient Protection and Affordable Care Act, Section 9007, Provision 501(r).