

# Mobile Health Clinics in the Era of Reform

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**T**he Affordable Care Act (ACA) has expanded insurance coverage to millions, but other barriers to access remain. Mobile clinics are customized vehicles that travel to the heart of communities, both urban and rural, and provide prevention and healthcare services where people work, live, and play. They overcome barriers of time, money, and trust, and provide community-tailored care to vulnerable populations.

Despite their scope and importance in delivering care to the full spectrum of at-risk populations, the collective impact of mobile clinics has never been assessed. Mobile clinics have historically lacked resources for evaluation, advocacy, and dissemination of best practices, which has reduced their visibility in the healthcare landscape. Recent collaborations and data sharing initiatives within the mobile clinic community provide the first opportunity to gather data and characterize the mobile clinic sector in the United States.

The Mobile Health Map project was launched to enable the first opportunity for the mobile clinic community to gather data about itself. Mobile Health Map is an online platform where the community of mobile clinics aggregates its data for the purpose of documenting the scope, geographic reach, and value of the services provided. In this article, we use data collected through this project as well as the small body of published research to provide the first comprehensive description of the mobile clinic sector and its role in the evolving care delivery environment. Specifically, we provide a description of the demographics of the mobile clinic sector and document its impact on access, quality, and costs. In the discussion, we use these results to explore the role of mobile clinics in the era of delivery form and expanded access.

## METHODS

Analysis in the study is based on data retrieved from the Mobile Health Map project as of March 11, 2013. As of this date, 644 clinics were registered on Mobile Health Map. The number of mobile clinics providing data as well as the type of data provided was as follows: 528 on service type, 282 on average annual number of visitors, 65 on visitor insurance status, 69 on visitor gender, 38 on visitor race, 72 on Hispanic status, 69 on visitor age, and 104 on rural/urban status. The data from the Mobile Health Map project were supplemented by a comprehensive

literature review on mobile health clinics and their impact on access, quality, and costs.

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**Objectives:** Despite the role of mobile clinics in delivering care to the full spectrum of at-risk populations, the collective impact of mobile clinics has never been assessed. This study characterizes the scope of the mobile clinic sector and its impact on access, costs, and quality. It explores the role of mobile clinics in the era of delivery reform and expanded insurance coverage.

**Study Design:** A synthesis of observational data collected through Mobile Health Map and published literature related to mobile clinics.

**Methods:** Analysis of data from the Mobile Health Map Project, an online platform that aggregates data on mobile health clinics in the United States, supplemented by a comprehensive literature review.

**Results:** Mobile clinics represent an integral component of the healthcare system that serves vulnerable populations and promotes high-quality care at low cost. There are an estimated 1500 mobile clinics receiving 5 million visits nationwide per year. Mobile clinics improve access for vulnerable populations, bolster prevention and chronic disease management, and reduce costs. Expanded coverage and delivery reform increase opportunities for mobile clinics to partner with hospitals, health systems, and insurers to improve care and lower costs.

**Conclusions:** Mobile clinics have a critical role to play in providing high-quality, low-cost care to vulnerable populations. The postreform environment, with increasing accountability for population health management and expanded access among historically underserved populations, should strengthen the ability for mobile clinics to partner with hospitals, health systems, and payers to improve care and lower costs.

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**Take-Away Points**

Mobile clinics are an integral component of the healthcare system, serving vulnerable populations and promoting high-quality care at low cost.

- There are an estimated 1500 mobile clinics, receiving 5 million or more annual visits nationwide.
- Mobile clinics improve access for vulnerable populations, bolster prevention and chronic disease management, and reduce costs.
- Expanded coverage and delivery reform increase opportunities for mobile clinics to partner with hospitals, health systems, and insurers to improve care and lower costs.

hensive patient-centered medical homes, while others focus on specific diseases, such as pediatric asthma. Overall, 44% of mobile clinics provide primary care, 42% provide prevention services, and 31% provide dental care. Many also provide mammography, mental health, and a variety of specialty services.

**Organization and funding.**

Mobile clinics have a diverse spectrum of organizational and funding arrangements. They can exist as independent entities (45%) or be operated by hospitals (25%), community health centers (16%), or academic medical centers (15%). Funding sources are similarly varied. Mobile clinics are primarily funded through philanthropy (38%), but state and federal programs (17%) as well as independent companies and private insurance providers (10%) are common sources of financial support.<sup>2</sup>

**Impact of Mobile Clinics on Access, Quality, and Costs**

**Expanding access for vulnerable populations.** Mobile clinics are particularly successful in reaching vulnerable populations that have poorer health and less-than-optimal access to healthcare (Table). By traveling to these communities and offering affordable, or, oftentimes, free services, mobile clinics remove logistical constraints such as transportation issues, difficulties making appointments, long wait times, complex administrative processes, and financial barriers such as health insurance requirements and copayments.<sup>3-6</sup> Mobile clinics also overcome subtler barrier challenges in maintaining trusting relationships between healthcare providers and community members. Qualitative research has found that the mobile clinic staff's marriage of professional and personal discourses fosters trusting relationships, allowing them to stay engaged with clients and to support them through behavior changes and navigation of the healthcare system.<sup>5,7-11</sup>

**Promoting prevention.** There has been considerable national focus on the need for safety-net programs to provide community-based prevention, screening, and chronic disease management, particularly for low-income, minority, and rural communities. Several studies have found that mobile clinics are successful at improving screening and identifying high rates of chronic and infectious disease among underserved populations.<sup>3,7,8,12-16</sup> Improved screening allows mobile clinics to deploy interventions that improve treatment and prognosis. For example, studies found that underserved women utilizing the van services for prenatal care initiated care earlier than women using other services.<sup>12,14</sup>

**Improving chronic disease management.** Many mobile clinics provide ongoing support for chronic disease management to vulnerable populations. Patients who presented at

RESULTS

**Scale and Scope of the Mobile Clinic Sector**

**Scale.** Mobile clinics operate in every state across the country, and in Washington, DC, and Puerto Rico (Figure). Epidemiological modeling estimates that 1500 to 2000 mobile clinics exist nationwide, based on the 644 mobile clinics currently registered on the Mobile Health Map project.<sup>1</sup> Each mobile clinic serves an average of 3100 visitors per year, totaling approximately 5 to 6 million visits annually for the sector as a whole.

**Populations served.** Mobile clinics serve communities that have the poorest access to health services in the United States. Target populations include those of racial and ethnic minority backgrounds, the homeless, displaced populations, recent immigrants, migrant workers, people lacking insurance, and children. The clinics typically serve uninsured and lower-income individuals: 57% of visits are made by uninsured persons, and 35% by publicly insured persons. Men utilize mobile clinics almost as much as women (46% of visits are made by men, 54% by women). People from racial and ethnic minority backgrounds are a key demographic for mobile clinics: 37% of visits are made by individuals that identify as non-white, while 43% are made by individuals identifying as Hispanic or Latino. Mobile clinics reach individuals of all ages: 42% of visits are by those younger than age 18, 50% by those aged 18 to 65, and 8% by those older than age 65. Mobile clinics serve both rural and urban populations: 14% of clinics serve rural areas, 41% serve urban areas, and 44% serve both.

**Services provided.** Mobile clinics provide a wide range of services tailored to community needs. Some function as compre-

■ **Figure.** Locations of Mobile Clinics



■ **Table.** Common Barriers to Health Services in Low-Income, Minority Communities and Methods Mobile Clinics Use to Overcome These Barriers

	Common Barriers	Typical Mobile Clinics
<b>Logistical</b>	Transport/distance	Travel to the community
	Difficulty getting an appointment	No appointments needed
		Navigator support provided
<b>Financial</b>	Insurance required	Serve individuals without insurance
	Copayments necessary	No copayments
<b>Trust</b>	Poor patient-provider communication	In community space
	Low linguistic and cultural competence	Often run by people from community and community health workers
		Culturally and linguistically appropriate services

the Family Van clinic in Boston with high blood pressure experienced reductions in their systolic and diastolic blood pressure of 10.7 and 6.2 mm Hg, respectively, during follow-up visits. This correlated with a 32% reduction in the relative risk for heart attack and a 45% reduction in the relative risk for stroke.<sup>17</sup> Similarly, a school-based mobile asthma-care clinic for urban underprivileged children was associated with increased daily anti-inflammatory medication usage, decreased emergency department (ED) visits, hospitalizations, and school absenteeism compared with before enrollment.<sup>18</sup>

**Controlling costs.** Mobile clinics can produce significant cost savings as a result of their ability to provide community-tailored care in high-risk areas. The principal source of savings is a reduction in avoidable hospital and ED visits. An asthma-oriented mobile clinic generated savings of \$3500 per child due to reduced ED visits and hospitalizations resulting from improved asthma control.<sup>19</sup> A study that aggregated data from 10 larger, more comprehensive mobile clinics estimated cost savings of \$6.8 million from avoidable ED visits over a 1-year period.<sup>1</sup> Significant cost savings are also possible from improved disease management and increased use of preventive services. The improved hypertension control in the Family Van mobile clinic was associated with a lower-bound return on investment estimate of 1.3 when combined with avoided ED visits.<sup>17</sup> When the long-term benefit of prevention is considered, the return on investment is more substantial. A study of the Family Van in Boston used estimates of the value of quality life-years saved from preventive services and the cost of avoidable ED visits to estimate a staggering return on investment of \$30 for every \$1 invested in the program.<sup>20</sup>

## DISCUSSION

Mobile clinics represent an integral component of the healthcare system that delivers care to populations that are hard to reach by the traditional system, improving access and supporting prevention and chronic disease management. Mobile clinics are able to leverage their ability to overcome

barriers to access and build trusting relationships to reduce disparities, improve health, and reduce costs.

Despite this potential, many mobile clinics often struggle to forge financially sustainable arrangements with care delivery organizations and payers. Recent reforms to the delivery system and health insurance coverage have the potential to improve the integration of mobile clinics into existing care delivery structures.

Since the passage of the ACA in 2010, federal and private payers are increasingly negotiating at-risk accountable care contracts with hospitals and health systems. The expectation of these arrangements is that not only will they improve the health and experience of care for individuals, but also that they will improve the health of populations while reducing the rate of cost growth. But hospitals and health systems often lack access to, or expertise in, the levers necessary to control health at the community level. Instead of struggling to develop these capacities, care delivery organizations can partner with mobile clinics that have experience in addressing the health needs of communities. Mobile clinics are uniquely qualified to provide high-quality care to underserved populations, and they can do so with considerable cost savings. St. Joseph Health, a \$4.4-billion nonprofit Catholic health system with 14 hospitals serving California, Texas, and New Mexico, is a prime example. St. Joseph Health invests \$5 million annually in mobile health clinics, 11% of which is offset by reimbursements. These mobile clinics provide care through their more than 32,000 patient encounters annually, and offer services such as primary care and dental and vision care to people in need.

Historically, one of the major challenges for mobile clinics has been demonstrating return to investors. Delivery reform focused on population health management has the potential to help mobile clinics secure stable funding streams. There is evidence that mobile clinics can generate cost savings and substantial return on investment. Traditionally, however, these savings did not accrue to the delivery organization. The expansion of contracts that tie hospital compensation to performance on quality and costs will bolster the business case for investments in mobile clinics; savings generated by mobile clinics will accrue directly to the hospital.

A closely related recent development is the expansion of health insurance coverage. Mobile clinics serve mainly the publicly insured and uninsured. This mix will shift as previously uninsured individuals enroll in Medicaid programs during the implementation of ACA coverage reforms. It is notable that the Family Van clinic in Massachusetts did not see a decline in visitors after healthcare reform took effect in 2006—92% of individuals visiting the Van have health insurance.<sup>17</sup> Even with expanded coverage, there are still barriers to primary care services, such as waiting times, copayments, complexities of navigating the system, and feelings of intimidation.<sup>21-23</sup>

A growing Medicaid population should facilitate partnerships with care-delivery organizations and strengthen funding streams. State Medicaid programs are turning to contracting mechanisms that place providers at financial risk for population health management and cost control. These reforms should promote partnerships between mobile clinics and health centers that care for large Medicaid populations under accountable care contracts. Similarly, as Medicaid programs look to improve value amid increasingly tight state budgets, policy makers should consider increasing funding to mobile clinics. Sick, disadvantaged patients with complicated social circumstances account for a majority of Medicaid spending. The ability of mobile clinics to reach vulnerable populations and promote improved disease management suggests that they will be effective in addressing the needs of this population.

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REFERENCES

1. US Department of Health and Human Services, Office of Minority Health. Mobile health clinics in the United States: reducing disparities: improving care, improving health, controlling costs. [http://www.mobilehealthmap.org/documents/Mobile\\_Health\\_Clinics\\_in\\_the\\_United\\_States\\_March\\_2013.pdf](http://www.mobilehealthmap.org/documents/Mobile_Health_Clinics_in_the_United_States_March_2013.pdf). Published March 2013. Accessed April 11, 2013.
2. Fleurant M, Hill C, Bennett J, Simon SR, Oriol NE, Hicks L. The use of health information technology among mobile health clinics in the United States in 2010. Mobile Health Clinics Network Conference 2011. <http://www.mobilehealthmap.org/roi.php>. Accessed April 11, 2013.
3. Harris DE, Hamel L, Aboueissa AM, Johnson D. A cardiovascular disease risk factor screening program designed to reach rural residents of Maine, USA. *Rural Remote Health*. 2011;11(3):1-15.
4. Campos M, Olmstead-Rose L. Mobile health clinics: increasing access to care in central and eastern Contra Costa County: final report. [http://www.johnmuirhealth.com/content/dam/jmh/Documents/Community/Mobile\\_Health\\_Clinics-Increasing\\_Access\\_to\\_Care.pdf](http://www.johnmuirhealth.com/content/dam/jmh/Documents/Community/Mobile_Health_Clinics-Increasing_Access_to_Care.pdf). Published April 2012, Accessed June 10, 2013.
5. Hill C, Zurakowski D, Bennet J, et al. Knowledgeable Neighbors: a mobile clinics model for disease prevention and screening in underserved communities. *Am J Public Health*. 2012;102(3):406-410.
6. US Department of Health and Human Services, Agency for Healthcare Research and Quality 2011. National healthcare disparities report. <http://www.ahrq.gov/research/findings/nhqrdr/nhdr11/>. Published April 2012. Accessed April 23, 2013.
7. Altice FL, Bruce RD, Walton MR, Buitrago MI. Adherence to hepatitis B virus vaccination at syringe exchange sites. *J Urban Health*. 2005;82(1):151-161.
8. Kahn RH, Moseley KE, Thilges JN, Johnson G, Farley TA. Community-based screening and treatment for STDs: results from a mobile clinics initiative. *Sex Transm Dis*. 2003;30(8):654-658.
9. Carmack HJ. "What happens on the van, stays on the van": the (re) structuring of privacy and disclosure scripts on an Appalachian mobile health clinic. *Qual Health Res*. 2010;20(10):1393-1405.
10. Rodriguez KL, Appelt CJ, Young AJ, Fox AR. African American veterans' experiences with mobile geriatric care. *J Health Care Poor Underserved*. 2007;18(1):44-53.
11. Guruge S, Hunter J, Barker K, McNally MJ, Magalhães L. Immigrant women's experiences of receiving care in a mobile health clinic. *J Adv Nurs*. 2010;66(2):350-359.
12. Edgerley LP, El-Sayed YY, Druzin ML, Kiernan M, Daniels KI. Use of a community mobile health van to increase early access to prenatal care. *Matern Child Health J*. 2007;11(3):235-239.
13. Ellen JM, Bonu S, Arruda JS, Ward MA, Vogel R. Comparison of clients of a mobile health van and a traditional STD clinic. *J Acquir Immune Defic Syndr*. 2003;32(4):388-393.
14. O'Connell E, Zhang G, Leguen F, Prince J. Impact of a mobile van on prenatal care utilization and birth outcomes in Miami-Dade County. *Matern Child Health J*. 2010;14(4):528-534.
15. Nuttbrock L, McQuiston H, Rosenblum A, Magura S. Broadening perspectives on mobile medical outreach to homeless people. *J Health Care Poor Underserved*. 2003;14(1):5-16.
16. Diaz-Perez Mde J, Farley T, Cabanis CM. A program to improve access to health care among Mexican immigrants in rural Colorado. *J Rural Health*. 2004;20(3):258-264.
17. Song Z, Hill C, Bennet J, Vavasis A, Oriol NE. Mobile clinics in Massachusetts associated with cost savings from lowering blood pressure and emergency department use. *Health Aff (Millwood)* 2013;32(1):36-44.
18. Liao O, Morphey T, Amaro S, Galant SP. The Breathmobile: a novel comprehensive school-based mobile asthma care clinic for urban underprivileged children. *J Sch Health*. 2006;76(6):313-319.
19. Bollinger ME, Morphey T, Mullins CD. The Breathmobile program: a good investment for underserved children with asthma [published correction appears in: *Ann Allergy Asthma Immunol*. 2011;106(2):178]. *Ann Allergy Asthma Immunol*. 2010;105(4):274-281.
20. Oriol NE, Cote PJ, Vavasis AP, et al. Calculating the return on investment of mobile healthcare. *BMC Medicine*. 2009;7:27.
21. Maxwell J, Cortes DE, Schneider KL, Graves A, Rosman B. Massachusetts' health care reform increased access to care for Hispanics, but disparities remain. *Health Aff (Millwood)*. 2011;30(8):1451-1460.
22. Long SK, Masi PB. Access and affordability: an update on health reform in Massachusetts, fall 2008. *Health Aff (Millwood)*. 2009;28(4):w578-w587.
23. Clark CR, Soukup J, Govindarajulu U, Riden HE, Tovar DA, Johnson PA. Lack of access due to costs remains a problem for some in Massachusetts despite the state's health reforms. *Health Aff (Millwood)*. 2011; 30:247-255. ■