Mobile Health Clinics:

Increasing Access to Care

in Central and Eastern Contra Costa County

Prepared for East and Central County Health Access Action Team

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Final Report

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Executive Summary

Central and Eastern Contra Costa County (C&ECC) face a critical need for improved access to health care and ways to transition individuals from costly urgent and Emergency Department care to ongoing primary care and a medical home. In 2011, the East and Central County Health Access Action Team (ECCAAT) and John Muir/Mt. Diablo Community Health Fund engaged La Piana Consulting to develop information to inform decision making about how health access and health care, especially for poor and uninsured adults, is improved through the deployment of mobile health clinics (MHCs).

The consultants convened a planning team comprised of representatives of ECCAAT member agencies and other key partners to provide local expertise and guidance for this research and planning process. Information was gathered through literature review, online research, and interviews with several planning team members and external informants. This research was used to develop a summary understanding of health needs and priorities in C&ECC, and the current and potential role of MHCs in meeting those needs, with a particular focus on connecting adult patients with a medical home.

Since 2009, C&ECC health care and human service providers have been faced with deepening budget cuts and increased stress on a fraying safety net. The area has a growing and increasingly diverse population and pockets of some of the most extreme poverty and low educational attainment in the County. In addition, cities in C&ECC demonstrate some of the poorest trends countywide for various types of cancer, heart disease, diabetes, and stroke. Language, lack of awareness, and poor walking and transit access pose significant barriers to care, and demographic trends suggest that health disparities will continue to be an increasing challenge.

The broader context of national health care reform poses a dual challenge: to provide care for many more patients than ever before, and to do so in a cost-effective manner. When newly insured consumers enter the market in 2014, the pressure on an already overtaxed provider system will increase. In the meantime, cuts to Medi-Cal, high unemployment, and other effects of the lingering economic crisis are leaving more residents uninsured or underinsured. Even when coverage is extended under health reform, tens of thousands of ineligible individuals[1] will remain uninsured in Contra Costa County, and those who can only afford plans with high out-of-pocket costs will be reluctant to use them. Although health care reform is designed to overcome some access issues, it will also leave many barriers to access and even create some new challenges.

Inadequate access to primary care is a key contributing factor to patients' use of emergency departments (EDs) to treat non-urgent medical conditions, contributing to overcrowding and long waits, ambulance diversions to other hospitals, and higher overall costs of care. Based on available data from C&ECC EDs, each sees tens of thousands of visits annually, and estimates

[1] This group primarily consists of residents who are undocumented. A specific estimate of population size is not available.

suggest that at least 20% were for minor or low/moderate acuity health issues. The patient-centered medical home model is being promoted nationwide as a way of reducing avoidable ED use and of improving primary health services through enhanced patient-physician relationships and coordination of care.

MHCs currently play a role in providing urgent and episodic care to poor and uninsured adults, and are treating increasing numbers of patients with chronic disease issues. However, the ability of MHCs to successfully transition patients to a medical home is frustrated by systemic barriers. In fact, MHCs in Contra Costa County and elsewhere report that between 40% and 80% of their patients treat the mobile clinic as their medical home. Thus, the question of the role of MHCs in helping adult patients find a medical home may need to be expanded from *How can MHCs play a more effective role in transitioning patients to a medical home?* to include *And how might MHCs themselves provide alternative medical homes?*

Planning team members met three times in December 2011 and January 2012 to shape, review, and discuss the implications of research findings. The following recommendations are informed by this participatory process, but are the sole responsibility of La Piana Consulting.

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Recommendations

Over the course of this planning process, it has become increasingly clear that the core question that needs to be answered is not: *How can MHCs more effectively transition adult patients to a medical home?* The fact is, sufficient capacity does not exist to provide a medical home to all who need or desire one. This is evident in the difficulties currently experienced in the referral process, which result in *de facto* rationing of care; the process for accessing free or low cost care is simply too complicated and many individuals in need stop looking before they reach the service they need. Health care reform will provide insurance to many more, but not access, having the unintended effect of further crowding an already full system. Relying on MHCs as "bridges to care" is a similar strategy of lowering some barriers but without addressing the shortage of primary care services that is the biggest barrier to access – in effect building a "bridge to nowhere."

The question then becomes: *What role* can *MHCs effectively play in improving adult health status in C&ECC?*

The greatest distinguishing advantage of MHCs is their mobility, which allows them to reach populations in areas where other health care options are not available and to be deployed flexibly to fill gaps as community needs and resources shift over time. Traditionally, this has made MHCs a good choice for delivering urgent care and/or preventive care to the underserved, but in a health care environment where appointments with other providers are either too difficult to get or too costly, MHCs are becoming a provider of choice. Because MHCs offer accessibility, convenience, and free or low-cost services, the MHCs that operate in C&ECC are becoming (whether intended or not) mainstream providers. And as the demand for affordable and accessible health care continues to grow, MHCs and other alternatives such as retail-based clinics are likely become an increasingly important part of the landscape.

The second distinctive characteristic of MHCs is their informality, relative to other more institutional health care facilities. For some patients, including immigrants, low income residents, and others, fixed-site clinics and medical centers can sometimes feel intimidating. MHCs offer greater ease of entry with a more intimate setting, less paperwork to fill out, and a corresponding degree of anonymity. Even the fact that the MHC comes to the patient's own neighborhood, or one with which they are comfortable and familiar, lowers not only a geographic barrier, but a psychological one. The MHC *symbolizes* access in a way that makes it easier for some people to enter.

Finally, we must emphasize again that this planning process focuses on the use of MHCs to provide health care services to the adult population. Although our research has been informed in part by Contra Costa Health Services' use of MHCs for school-based clinics serving children and youth, the robustness of that program served to underscore the planning group's belief that underserved adults have fewer options for entry into the health care system and represent a population that would benefit most by an expansion of MHC use.

All our recommendations stem from our conviction that the current MHC-based services are providing a valuable resource for individuals in need in C&ECC for the reasons described

above. However, it is critical to acknowledge that MHCs alone cannot address what is fundamentally an access issue that will continue to worsen unless bold changes are made to the broader health care system. For this reason, in addition to specific recommendations about the best and most effective use of MHCs, we have included "stretch" recommendations for planning group members to consider if they wish to greatly improve health outcomes in the region.

Recommendations for the Use of MHCs – Purpose and Deployment

1. **MHC use is changing, and intentional planning is needed to ensure that they meet emerging community health needs. Originally established as a source of episodic, urgent care for vulnerable populations, they are increasingly used as sources of ongoing care by patients with chronic conditions and/or those who do not have a medical home. This represents a paradigm shift and demands that MHCs adapt.**

   MHCs are a valuable and versatile option for delivering health care services in C&ECC. There are three types of service to which they are best suited: a) urgent care, b) initiating chronic disease management and education, c) and serving as an alternative medical home to those who would otherwise not have access to one (and in all likelihood, never will).[2] These are not mutually exclusive categories, but interrelated, as described below.

   a) MHCs have proven effective in providing urgent care services to uninsured, low-income, and geographically or socially isolated residents who would not otherwise have access to health care, let alone a medical home. However, MHCs services would be more effective with improved referral systems linking them to public and private medical, ancillary, and hospital services.

   b) MHCs are already treating a high number of patients with chronic diseases, a trend that is likely to continue. This has the potential to shift the patient profile, as residents who may in fact have access to other sources of care choose MHCs as a matter of convenience rather than necessity, which raises questions about how to either re-route patients to their appropriate medical home or effectively "share" them through coordinated care management.

   c) MHCs provide a kind of default medical home to underserved populations who, whether for lack of insurance or inability to pay, would not otherwise have one. MHCs are also being treated as a source for continuing care by patients with chronic conditions who may or may not have another medical home but find the MHC a more affordable and convenient alternative. Although MHCs are not designed to provide the consistency or comprehensive level of care required of a full-service medical home, this is essentially what is already being asked of them. By embracing this challenge, MHCs can move to define the elements of a medical home they can reasonably offer, develop consistent

[2] Although MHCs are also frequently used for health screening and education, this was not seen by ECCAAT participants to be a high-priority focus for MHCs in C&ECC at this time.

referral protocols to connect patients to services beyond what they can provide, articulate the unique value that they deliver, and position themselves to demand the resources needed to fulfill this role effectively.

Although these three areas are interrelated, they also represent competing demands, and MHCs need to make a conscious decision where to focus their services, rather than trying to be "all things to all people."

Even for MHCs focused on providing urgent care to the underserved, the prevalence of chronic disease has conflated uses "a" and "b" described above. Whether MHCs are designed to provide primarily urgent care or to focus on chronic disease treatment and management, it is imperative that they grow their capacity in area "c", which includes connecting patients with ancillary and follow-up services (such as labs, low-cost prescriptions, and specialties ranging from oncology to ophthalmology) and providing a level of continuity and case management similar to that of a medical home. (For more on what this limited medical home model might look like, see the box on the following page.)

Rather than continuing to react to these changes, MHC operators should proactively develop plans for the role they will play in this context, how they will coordinate with other parts of the health care system to be most effective, and how they will attain needed resources.

Defining a Medical Home Model for MHCs

Conceiving of a MHC as an alternative medical home challenges formal definitions of a medical home. However, patient choice has created its own informal definition of a medical home. The suggestion that MHCs adopt a medical home approach, to the degree possible within the unique constraints of a mobile model, asks that they acknowledge the reality of how they are already being used while also aspiring to some of the ideals of what a medical home offers.

We have defined three principles of a medical home that MHCs could seek to achieve:

1. Improving Access

MHCs are typically viewed as a transitional space, charged with serving as a conduit to other providers that can offer a more stable and robust source of care. However, not only does the demand for medical homes outstrip existing capacity, but the uninsured are less likely to gain access to a medical home than those with insurance. Even recognizing these limitations, some express concern that elevating MHCs to something akin to a medical home would foster a second-class system of care. We argue instead that it would create care for a portion of the population that the system already treats as second-class or worse. It is better to provide care in a mobile setting than not to provide care at all.

2. Strengthening the Provider-Patient Relationship

Consistency of care, enabled by an ongoing provider-patient relationship, is a hallmark of the medical home model. In order to provide this stability, MHCs need to adopt a staffing and service model that allows returning patients to be seen by the same personnel. Whether this means being treated by the same physician or receiving case management services by the same nurse practitioner or social worker, the most effective means of providing this continuity is by adopting a paid staffing model.

3. Coordinating Care

All medical homes must coordinate with other providers to ensure patients are linked to appropriate care and services. Because MHCs are even more limited than most other providers in the range of services they can offer, referral capacity is key to their ability to provide this coordination of care. Stable staffing and provider-patient relationships (as cited above), together with operating agreements guiding the referral process, can facilitate this coordination.

2. **Community need and asset mapping should be monitored and refreshed over time to continually inform decision making about MHC deployment, including ideal geographic locations and days and hours of service. Practical, on-the-ground experience regarding patient use patterns must also be considered.**
    - Preliminary mapping taking into account income, insurance status, poor health status, and other disparity indicators, suggests that high-value deployment locations include Antioch and Pittsburg, some portions of Concord, and Byron and the surrounding area.
    - Current MHC use includes limited evening and weekend hours, suggesting the potential to expand services during those times when other providers are closed.
    - Co-locating urgent care clinics adjacent to Emergency Departments (EDs) can be effective in reducing avoidable ED visits, which may be another opportunity for MHC deployment.

Recommendations for the Structure of MHCs – Staffing, Planning, and Investment

3. **Explore how paid staffing models might maximize the value of MHCs. On the whole, the volunteer staffing model has demonstrated variable success, with some strengths and some weaknesses. In addition, administrative and non-physician professional services must not be underestimated.**
    - Operating with a volunteer staff keeps costs low and leverages the skills of physicians and other health care personnel able to give of their time. However, it is not conducive to the continuity required of a model of care seeking to approximate a medical home, and does not easily provide the peer review infrastructure for ongoing quality assurance.
    - A paid staffing model would provide more consistent care, which is not only important to the medical home model, but critical for providing quality care for patients being treated for chronic illness.
    - Continuity need not be provided by physicians. Nurse practitioners or other qualified medical personnel, social workers, or other trained staff could be hired to fill that role, working alongside volunteer doctors. This hybrid model would offer greater consistency than a fully volunteer approach while being more affordable than a fully paid system.
    - Case management, referrals, and other care coordination activities take significant time and effort, and building capacity in this area (as well as in general administrative support) will be critical for MHCs to effectively provide and/or transition patients to a medical home.

4. **The use of multiple MHCs is most effective when operated as part of a coordinated health delivery system, as is currently the case with the MHCs used by Contra Costa Health Services in its school-based clinic program. This enables economies of scale in administration and scheduling, staffing, supplies, and maintenance, and builds in redundancies (e.g., more opportunities for backup staffing and replacement vehicles) that make for a more robust and reliable system.**

- Rather than multiple providers owning and operating separate MHCs, a centralized structure to maximize their effectiveness is preferable and should be explored. Although it demands effort to build trusting relationships among agencies and agree on shared goals and operating principles, the benefits of a coordinated approach are compelling.

5. **MHCs are a less costly investment than establishing a new fixed-site clinic. However, more information is needed about the expense of obtaining additional MHCs (including one-time costs as well as ongoing maintenance) to conduct a cost benefit analysis. These costs will vary depending on several factors, including the design, features, and purpose of the vehicle.**
   - Based on estimates obtained by local organizations having recently purchased an MHC or in the process of exploring such, the purchase price of a MHC can range from between $250,000 and $300,000. Total cost depends on variables such as the size of the vehicle and how it is designed and equipped.
   - Based on a limited national sample conducted by the Mobile Health Clinics Network, the average annual cost of operating an MHC runs upwards of $362,000.[3] However, actual costs can vary greatly. Assuming a five-day service schedule and a hybrid staffing model with volunteer physicians and paid support staff, annualized costs for the John Muir Health MHC would be approximately $386,000.
   - Because of the range of variables involved that impact one-time and ongoing expenses, additional cost-benefit analysis would need to be done on a case-by-case basis.

6. **It is critical to better understand the nature and extent of avoidable ED use in C&ECC in order for MHCs to effectively demonstrate their value in this area. However, this should not be considered the only measure of MHCs value and efficacy. Additional metrics should be identified that reflect the priority use of MHCs and track success in meeting those goals.**
   - On the whole, MHCs serve patients that no other providers want – i.e. those with no third-party payers. As such, they must rely on charitable funding and volunteer staffing. However, the role of MHCs in preventing avoidable ED visits is one nationally recognized way to articulate their economic value to the community and to other providers.[4] More robust and reliable data is required of C&ECC hospitals in order for MHCs to make this case to funders and supporters in these terms. This planning process has already inspired exploration in this direction; we recommend that ECCAAT member organizations develop common measures and share comparable data to better understand the scope of this issue and how to best make an impact.
   - In addition to reductions in ED use, possible metrics for consideration include process and outcome indicators such as: patient-reported improvement in access to care;

[3] Figure obtained in a telephone interview with Jennifer Bennett, Network member.
[4] Seeking a way to objectively demonstrate the value – or return on investment (ROI) – of HCs, the Mobile Health Clinics Network has developed a formula, one element of which is reducing ED use:
(ER Cost Avoided + Value of Quality-Adjusted Life Years Saved) / Cost of MHC = ROI

patients enrolled in public insurance programs and linked to appropriate care; patients diagnosed and started on treatment for chronic conditions; improved clinical outcomes specific to key chronic conditions; patients referred to and participating in educational programs; and changes in patient behavior.

- In deciding what to measure, consider how the information will be collected, when, by whom, and how it will be used. Focus on what will enhance the effectiveness of the MHC and avoid creating unnecessary burdens on clinic patients and/or staff which would undermine the benefits of the MHC system.
- In analyzing the data, look at whether outcomes differ for different MHCs based on staffing model or other variables that may yield lessons for best practices. Establishing a paid or hybrid system and comparing results between that and the volunteer model would be ideal.
- Additionally, consider leveraging the power of shared metrics, not only for MHCs but for fixed-site clinics. Working toward the same outcomes, providers may be able to demonstrate greater impact.

Recommendations for Effectiveness of MHCs – Referrals and Systems Change

Beyond, and perhaps before procuring and deploying additional MHCs, there are other investments that are needed to address the access issues identified in the research. MHCs need ready access to referral resources that can provide more advanced or specialized services to the urgent care and chronic disease populations. Referral options – particularly for the uninsured – are in very short supply, and significant systemic barriers frustrate access to those that do exist.

Some of these challenges include:

- Lack of a common base of knowledge among providers about existing services and programs, or shared referral procedures
- Lack of access among patients to detailed and up-to-date information about available services and how to access them
- Limited access to County programs (e.g., Basic Health Care program enrollment) and services (e.g., County clinics)
- Limited access to La Clinica (registration fees, wait lists, and responsiveness noted as potential barriers)
- Limited access to Certified Application Assistants or other personnel who can work with patients on site to identify and sign up for programs for which they are eligible
- Limited access to ancillary, diagnostic, and specialty services, including labs, low-cost prescriptions, and specialties such as gastroenterology, gynecology, breast health services, endocrinology, ophthalmology, podiatry, oncology, etc.

These challenges are not unique to MHCs, but compromise the effectiveness of the entire system of providers in responding to the needs of the poor and uninsured. In short, the system responds to being overburdened by maintaining barriers to access. To add new MHCs without attending to these broad access issues means the MHCs will not succeed in achieving their full potential. To address these issues, we recommend the following:

7. **On a regular basis, convene social workers, physicians assistants, and other health "navigators" from across multiple agencies to share information, build relationships, and identify assets and gaps in the referral system.**
   - Use information developed in these meetings to develop a set of common procedures, expectations, and/or mutual commitments to improve the referral process among providers throughout C&ECC. This should result in operating agreements that detail how a referral from one provider to another would be handled in a timely manner, including details on who to contact, numbers to call, required forms, eligibility criteria, hours, any co-payments, etc.

8. **Explore more aggressive use of Contra Costa 211 and/or other information outlets to inform the public about health care resources, particularly for the low-income and uninsured, including MHC locations and schedules.**
   - Contra Costa Crisis Center, the provider of Contra Costa 211, is reportedly in the process of developing a partnership with Contra Costa Health Services that would enable 211 operators to screen and electronically enroll callers into Medi-Cal. This presents an opportunity to build joint efforts. The strength of the 211 service as an information clearinghouse depends on service providers' commitment to keeping their information updated and accurate, which is a need already identified above, with respect to improved referrals.

9. **In order for each of the above efforts to be most effective, the C&ECC provider community must engage in planning focused on how to effectively share the responsibility for meeting the needs of poor and uninsured residents that are currently being excluded from the system of care. Deployment of additional MHCs, especially through a volunteer staffing model, will only provide minimal relief compared to the scope of the access challenge. Solutions will require bold and systemic action, not small fixes. Although public and private providers, physicians, and hospitals are working under tremendous resource limitations, solutions to overcome access limitations will only be found by looking beyond the walls of individual organizations and seeking collaborative solutions and new ways of mobilizing collective assets and capacities.**

Background Research: Health Care Needs and Priorities

The purpose of this part of the report is to capture, at a high level, key health issues facing Contra Costa County, to provide context for discussions and decisions about the role of MHCs in addressing them. This material was drawn from a range of existing data sources, and covers overall community demographics, performance on key health indicators, barriers to care, insurance status, and emergency department use. It also includes general background information on the patient-centered medical home model.

Community Snapshot

The geographic focus of this analysis is on C&ECC, an area that is not uniformly defined, but generally inclusive of Martinez, Pleasant Hill, Walnut Creek, Concord, Bay Point, Pittsburg, Antioch, Brentwood, and Oakley.

Contra Costa County is the ninth most populous county in California—and growing. The eastern part of the County has seen much of this growth in recent years, with Pittsburg, Antioch, Brentwood, and Oakley together home to nearly two-thirds of the total new residents added between 2000 and 2008.[5] The area was the focus of rapid residential development during the 1990s, and is expected to continue to grow, with the likely build out of southern Pittsburg and southern Antioch, and the urbanization of Brentwood and Oakley.[6]

Mt. Diablo (Source: Wikipedia Commons)

The face of the population in C&ECC is changing, as well. Every city is trending upward in the proportion of non-white residents, reflecting a national shift toward a minority-majority population. Some communities are already there, with Bay Point reporting a 65.6% non-white population in 2010 and Pittsburg at 72.6%.[7]

Contra Costa County is also "graying" along with the rest of the nation. The largest population growth countywide between 2000 and 2008 was among residents age 50 to 64, and the 65 and older population is projected to increase by more than 17% within the next five years.[8] That said, according to the 2010 Census, Antioch, Bay Point, Brentwood, Oakley, and Pittsburg all have higher proportions of children under 18 years of age than the County at large, and lower percentages of adults age 65 and over (see Table 1, next page).

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[5] *Community Health Indicators for Contra Costa County (2010 Edition)* (http://www.cchealth.org/health_data/hospital_council/2010/pdf/04_demographics.pdf)
[6] *East Contra Costa County Habitat Conservation Plan – Natural Community Conservation Plan* (http://www.co.contra-costa.ca.us/depart/cd/water/hcp/archive/final-hcp/pdfs/ch02land.pdf)
[7] *Community Health Indicators for Contra Costa County (2010 Edition)*
[8] *Contra Costa County Demographic Summary* (3/22/11), John Muir Health

Table 1. Population by Age[9]

	Antioch	Bay Point	Brentwood	Oakley	Pittsburg	Contra Costa County
Under 5 years	7.1%	9.1%	7.0%	7.5%	7.9%	6.4%
Under 18 years	28.1%	30.5%	31.2%	30.5%	27.5%	24.8%
Over 65 years	8.8%	6.5%	11.4%	6.7%	8.6%	12.4%

Together, these race/ethnicity and age trends suggest that C&ECC is both more diverse than much of the rest of the County and home to more young families.

Economic and educational attainment indicators in C&ECC are poor. Census tracts in areas of Concord, Bay Point, Pittsburg, and Brentwood indicate 30% of the population living at below twice the federal poverty level, and 25% or more lacking a high school diploma. Contra Costa County's 11% unemployment rate, while lower than California as a whole, is still higher than much of the Bay Area,[10] and in August 2011 (the most recent month for which confirmed figures are available at the city level), three C&ECC communities had unemployment rates higher than the County overall: Antioch (11.9%), Concord (11.4%), and Pittsburg (16.6%).[11]

In all, demographic and socioeconomic characteristics for C&ECC describe an area with a growing and increasingly diverse population, a significant proportion of aging adults, and pockets of some of the most extreme poverty and low educational attainment in the County. In the meantime, 2011–12 marks Contra Costa County's fifth consecutive year of budget cuts, putting further pressure on the health and human services safety net at a time when the demand for services continues to intensify.

Appendix A includes a mapping of community need based on Catholic Healthcare West's Community Need Index. This graphic report indicates areas of greatest need by zip code, based on indicators for income, culture/language, education, insurance, and housing. The map indicates that C&ECC locations like Antioch, Pittsburg, and Concord are communities facing significant barriers to health.

[9] 2010 Census
[10] KGO-TV online (8/19/11) http://abclocal.go.com/kgo/story?section=news/local/east_bay&id=8317181
[11] U.S. Bureau of Labor Statistics http://data.bls.gov

Health Status

Health disparities (or inequities) have been a growing concern throughout the Bay Area. Despite ongoing efforts such as Contra Costa Health Services' Reducing Health Disparities initiative, significant differences remain in health outcomes associated with race/ethnicity and with socioeconomic status (SES) indicators such as income and educational level. As such, the more ethnically diverse and economically challenged areas of C&ECC are more vulnerable to health disparities than many other parts of the County.

Antioch, Concord, and Pittsburg demonstrate poorer outcomes than the rest of the County on several key indicators, including: teen pregnancy; breast, colon, and lung cancer deaths; diabetes, heart disease, and stroke deaths; unintentional injury deaths, and non-fatal assault hospitalizations. Antioch shows negative trends (i.e., the problem worsened between 2007 and 2010) in six of the indicators mentioned, Pittsburg in four, and Concord in three (see Table 2).

Table 2. 2010 Performance on Key Health Indicators[12]

	Antioch	Concord	Pittsburg	Countywide	HP 2010 Target
Births to Teens (rate per 1,000)	↑ 39.0	↑ 28.8	47.2	↑ 23.5	n/a
Breast Cancer Deaths (per 100,000)	↑ 29.8	23.9	24.8	23.0	21.3
Colon Cancer Deaths (per 100,000)	↑ 25.5	18.0	↑ 21.1	↑ 16.5	13.7
Lung Cancer Deaths (per 100,000)	57.1	44.5	49.1	38.8	43.3
Diabetes Deaths (per 100,000)	↑ 35.1	22.2	↑ 37.0	18.9	46.0
Heart Disease Deaths (per 100,000)	211.1	153.8	181.5	147.5	162.0
Stroke Deaths (per 100,000)	56.1	51.9	71.9	46.7	50.0
Unintentional Injury Deaths (per 100,000)	↑ 31.5	↑ 29.2	↑ 33.0	↑ 26.7	17.1
Non-fatal Assault Hospitalizations (per 100,000)	↑ 54.8	↑ 64.4	↑ 61.6	↑ 37.0	n/a

Notes: Arrows indicate increase between 2007 and 2010. Healthy People 2010 goals provided where available.

Asthma is also a concern as rates reach epidemic levels nationwide, especially among children. In Contra Costa County, childhood asthma hospitalizations reveal major disparities, with the average rate among African American children more than four times that of Latino children, and almost five times that of white children.[13]

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[12] *Contra Costa County Demographic Summary* (3/22/11), John Muir Health
[13] *Blueprint for Asthma Action: Executive Summary for Contra Costa County* (http://cchealth.org/topics/asthma/pdf/blueprint_for_asthma_executive_summary.pdf)

Barriers to Care

Socioeconomic factors contribute to health disparities: low-income and ethnic populations often do not access care until their conditions are advanced, resulting in more acute cases and poorer outcomes.

For suburban areas like those in C&ECC, barriers to health include:

Language

In 2008, nearly one third of Contra Costa County residents reported speaking a language other than English at home.[14] Of these, more than half were Spanish-speakers, and over one quarter spoke an Asian or Pacific Island language (Tagalog, Chinese, Korean, Vietnamese, Persian, and Japanese).[15]

Contra Costa Health Service's adoption of remote video/voice medical interpreting (VVMI) has helped improve access to care for non-English speakers,[16] and other telecommunications-based services can also assist in this regard. But neither is a match for having bilingual/bicultural providers on staff. Hiring health professionals with fluency in Spanish or Asian languages can be a challenge for some providers, particularly in the easternmost parts of the County furthest from the Bay Area's urban centers.

Awareness

Low-income suburban residents can be unaware of the health care options available in their communities. Some working poor may view community health centers and other safety net providers as only for the medically indigent. Likewise, the uninsured may have little knowledge of where they can go for care.

211 Contra Costa is one effort to reduce this barrier. This toll-free phone number helps callers identify appropriate and affordable local services, from food and housing to employment and health care. With access to translators for 150 languages, 211 can be especially helpful to residents with language barriers.

Transportation

In a 2002 study of walking and transit access to health facilities in three Bay Area counties, Contra Costa County fared the worst, with only 33% of residents reporting convenient access (compared to 70%-90% of residents in Alameda and Santa Clara Counties).[17] A 2006 follow-up

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[14] *Community Health Indicators for Contra Costa County (2010 Edition*)
[15] "Environmental Health Tackles Linguistic Barriers," CCHS Reducing Health Disparities Initiative (accessed 11/22/11 at http://cchealth.org/groups/rhdi/eh_linguistic.php).
[16] "CCHS Receives Language Access Award for Remote Video/Voice Equipment," CCHS Reducing Health Disparities Initiative (accessed 11/22/11 at http://cchealth.org/groups/rhdi/leap.php). VVMI is also used by Kaiser.
[17] *Roadblocks to Health: Transportation Barriers to Healthy Communities*, co-authored by Transportation and Land Use Coalition (downloaded 10/10/11 at http://transformca.org/resource/roadblocks-health).

report identifies “the spread-out central and eastern portions of the county” as having the worst transit access.[18]

Transportation affects the ability of low-income families to make and keep medical appointments, whether or not they have insurance. Beyond access to care, there is also a link between inadequate transportation and access to healthy food (markets) and safe places for physical activity (parks and playgrounds).[19]

Insurance Status

Contra Costa County is home to approximately 120,000 uninsured individuals.[20] In addition, the number of underinsured—those whose medical expenses exceed what their incomes enable them to pay—is rising nationwide,[21] though County-specific data are not available. Although health care reform legislation is aimed at reducing the number of uninsured, and may also help the underinsured with its provisions to subsidize costs and increase affordability, much is still uncertain, as the Affordable Care Act continues to be assailed by federal budget cuts and political and legal challenges.

Even if the expansion of coverage is fully implemented under health care reform, Contra Costa County is home to many uninsurable people, including approximately 79,000 undocumented immigrants.[22] It is also important to note that immigration status is likely not a factor for as much as one-third of the uninsured population in the County. The numbers cited above suggest that there are currently as many as 40,000 people who lack coverage for other reasons. Indeed, adults age 50-64 are particularly vulnerable due to a combination of lost employer coverage, preexisting conditions or high risk status, and ineligibility for Medicare. According to 2009 CHIS data, some 44,000 of Contra Costa County’s uninsured were part of this age group.

As new coverage under health care reform begins to be implemented in 2014, providers of all kinds will be competing for newly insured patients. At the same time, the uninsurable will continue to be the least economically viable patient population to serve. In the meantime, many area providers are already at or exceeding current capacity, and their ability to absorb more patients— insured or uninsured—is uncertain, at best.

Meanwhile, although the number of undocumented immigrants entering the U.S. has declined since 2007 and remained level for the past two years, Contra Costa County saw a significant increase between 2001 and 2008.

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[18] *Priorities for Access to Health*, Transportation and Land Use Coalition (downloaded 10/10/11 at http://transformca.org/resource/priorities-access-health).
[19] *Roadblocks to Health: Transportation Barriers to Healthy Communities*
[20] Data requested online via “ask CHIS” from 2009 California Health Interview Survey, search criteria: “Contra Costa” and “Currently Insured.” (www.chis.ucla.edu/)
[21] The Commonwealth Fund (http://www.commonwealthfund.org/News/News-Releases/2011/Sep/Insured-and-Still-at-Risk.aspx)
[22] *Unauthorized Immigrants in California*, July 2011, Public Policy Institute of California (http://www.ppic.org/content/pubs/report/R_711LHR.pdf)

Table 3. Estimated Unauthorized Immigrant Populations[23]

	2001	% of population*	2008	% of population	% change 2001 to 2008
Contra Costa County	63,000	6.5%	79,000	7.7%	25.4%
All California	2,711,000	7.9%	2,876,000	7.8%	6.1%

* 2001 percentages not in original source. Estimates based on California Department of Finance population data.

In 2009, Contra Costa Health Services stopped providing non-emergency health care to undocumented residents through its Basic Health Care program. Since then, other providers across the county have struggled to fill the need for general care to this population. All providers are concerned about their ability to keep pace with the growing need and want to be sure that others are taking on their fair share.

Enrollment Assistance and Referrals

For patients who are eligible for, but not yet enrolled in, health coverage programs like Healthy Families, Medi-Cal, or Contra Costa County's Basic Health Plan, enrollment assistance can be the first step toward a more consistent source of medical care. However, existing resources and staffing are not sufficient to keep up with the need for enrollment assistance, especially with the growing number of newly uninsured.

Likewise, referrals between and among MHCs and other health care providers pose a challenge, with different requirements for different providers and in some cases too few resources and little formal process in place to facilitate or track referrals.

Currently, many of the social workers, nurses, care coordinators, and other personnel responsible for making referrals and helping patients to navigate the health system rely on personal relationships and informal networks to get patients what they need. Among these "navigators" are individuals with the time and initiative to reach out, both by phone and in person, to forge relationships, make needs understood, ask questions, and drive for patient solutions. Their diligence and unwillingness to take "no" for an answer is often what is needed to send the patient home with an appointment instead of just a phone number or other "cold" referral.

The fact that unspoken agreements, "back door" referrals, and other informal systems are needed to make referrals work is cause for concern. It means that provider personnel are not all working with the same set of procedures for making successful referrals, which stands in the way of greater efficiency. It also further complicates a system that many patients are already poorly equipped to navigate on their own due to cultural, linguistic, educational, economic, or other barriers that may inhibit their ability to advocate for themselves.

[23] Chart based on data from Public Policy Institute of California report cited in previous note.

Emergency Department Use

In 1993, the federal General Accounting Office (renamed the Government Accountability Office in 2004) issued a report asserting that 43% of ED patients had non-urgent conditions, fueling a nationwide dialogue about "inappropriate" ED use. This same report attributed much of the recent growth in ED use to the uninsured, elderly, and seriously ill patients.[24]

Since that time, further research has demonstrated that most ED visits are by patients with Medi-Cal (in California) and Medicare, and some researchers have challenged the allegations of widespread inappropriate use. Research has also begun to explore the impact of "frequent users," a portion – though not all – of which are identified as those who have acute and/or multiple diagnoses. At the same time, ED use has climbed, registering a 20% increase over the past decade at the national level, and overcrowding remains a significant concern.[25]

Although California has a lower overall rate of ED use than the rest of the nation, the use of emergency departments to treat non-urgent medical conditions still contributes to overcrowding and long waits, ambulance diversions, and higher overall costs of care.

Based on 2005 datasets, Contra Costa County had a slightly higher rate of ED use (28.6 per 100 population, age adjusted) than the state average (27.5 per 100 population, age adjusted), with some 46% of these (13.1 per 100 population, age adjusted) deemed avoidable visits.[26]

According to California Health Interview Survey (CHIS) data for Contra Costa County (2009), a similar proportion of insured patients (81.9%, or 760,000) and uninsured patients (84.0 %, or 101,000) reported *not* visiting an emergency room in the past 12 months.[27] However, the small sample size of uninsured patients made the percentage of those reporting that they did visit an emergency room in the past year (estimated at 16.0%, or 19,000, compared to 18.1%, or 168,000 insured patients) statistically unstable.[28] Although data was not available at the city or zip code level, anecdotal reports suggest that C&ECC EDs see a higher proportion of uninsured patients than are suggested by national averages or the CHIS survey findings. However, data from individual EDs to verify this information is not available.

Based on data from C&ECC hospitals, each sees tens of thousands of ED visits each year. In 2010, the Contra Costa Medical Center reported 71,434 visits, the John Muir Hospital system saw a combined 85,987 visits at its two locations, Kaiser Foundation EDs had a combined 87,732 visits at its two locations, and Sutter Delta Medical Center reported 53,436 visits. Accurate detail on the acuity of these visits or other patient characteristics is not available,

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[24] "Frequent Emergency Department Visitors: The End of Inappropriateness," by Steven L. Bernstein, MD. *Annals of Emergency Medicine*, Volume 48, No. 1, July 2006.
[25] "Emergency Department Care in California: Who Uses it and Why?" by Shannon McConville and Helen Lee. *California Counts*, Volume 10, No. 1, August 2008. Public Policy Institute of California.
[26] *ibid*
[27] Data requested online via AskCHIS from 2009 California Health Interview Survey, search criteria: "Contra Costa" and "visited emergency room in the last 12 months" (all ages). (www.chis.ucla.edu/)
[28] The AskCHIS website states that "unstable" figures (indicated in reports with a red asterisk) has either failed to meet the criteria for a minimum number of respondents needed and/or has exceeded an acceptable value for coefficient of variance.

although estimates indicate that at least 20% were for minor or low/moderate level health issues.[29]

Patients choose the ED over other health care settings for a variety of reasons, whether because of its more accessible hours, real or perceived differences in quality of care, or other factors. Interviews with local hospitals indicate that transportation issues, insurance status, drug-seeking or medication-seeking, and the "one stop shop" (patients' knowledge that they can get all their health issues addressed at one place) are also factors contributing to ED use, but that the overall driver is lack of availability of or access to other sources of primary care.[30]

Primary care providers may also inadvertently contribute to ED crowding by referring non-urgent patients to the ED for easier access to diagnostics or because they cannot offer a timely appointment during their own office hours.[31] Interviewees representing local hospitals acknowledge that while it is difficult to prevent the first avoidable visit, ED staff can play a pivotal role in providing education and other supports to reduce repeat visits. Advice nurses, discharge planners, social workers, and other personnel can be part of this solution. That said, interviewees agree that such interventions are more useful for the non-acute repeat patient than for the multi-diagnosis "frequent user," as the latter is less responsive to efforts to change their behavior.

Avoidable ED use, frequent use (whether by non-acute patients or multi-diagnosis frequent users), and ED overcrowding cannot be addressed in isolation. Rather, these are symptoms of a health care system that is broken. That said, at the statewide level, patients with chronic conditions such as diabetes, hypertension, heart disease, and lung problems are disproportionately represented among ED users,[32] suggesting that focusing on this population may be one approach to reducing excessive ED use. Another strategy mentioned by local interviewees is to co-locate a primary care clinic near the ED.

The patient-centered medical home model of care described below is also viewed as one way in which patients—especially those with chronic conditions—may be provided with greater continuity and access to care that will result in less reliance on emergency rooms.

Patient-Centered Medical Home

The patient-centered medical home model has gained traction among policy-makers and providers across the nation as a way of improving access to and quality of health care services. This approach, based on strengthening patient-physician relationships and coordination of care, is also looked to as a way to help reduce avoidable ED visits.

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[29] Summary of ED Visits by Level of Acuity, data provided by ECCAAT.
[30] Summary of Major Observations and Themes re: Avoidable ER Visits, September 2011, data provided by ECCAAT.
[31] "Emergency Department Utilization in California," by Harris Interactive for California HealthCare Foundation, 2006. http://www.chcf.org/~/media/MEDIA%20LIBRARY%20Files/PDF/E/PDF%20EDOveruseSurveyFindings.pdf
[32] *ibid*

The Principles of the Patient-Centered Medical Home,[33] as described by multiple physicians associations, include:

- Each patient has an ongoing relationship with a personal physician trained to provide first contact, continuous, and comprehensive care
- The personal physician leads a team of individuals at the practice level who collectively take responsibility for the ongoing care of patients
- The personal physician is responsible for providing for all the patient's health care needs or for appropriately arranging care with other qualified professionals
- Care is coordinated across all elements of the health care system (e.g., subspecialty care, hospitals, etc.) and the patient's community (e.g., family, community services)—this is facilitated by health information technology and culturally and linguistically appropriate services
- Quality and safety are hallmarks of the medical home—this includes evidence-based care, continuous quality improvement, and focus on a robust partnership among health care professionals, patients, and the patient's family
- Enhanced access to care is available through systems such as open scheduling, expanded hours, and new options for communication among patients, their physician, and practice staff
- Payment reflects the added value provided to patients who have a patient-centered medical home, and supports provision of this enhanced coordination and service[34]

The patient-centered medical home model continues to evolve, with demonstration projects and initiatives around the nation. Although further testing and evaluation of the model is still needed, it is regarded as holding particular promise for helping patients manage chronic conditions, such as diabetes or hypertension.

In reviewing the above definition, planning team members identified improving access, strengthening the physician-patient relationship, and coordination of care as the top three attributes of a medical home to work toward.

[33] Patient-Centered Primary Care Collaborative (http://www.pcpcc.net/content/joint-principles-patient-centered-medical-home)

[34] The focus of this principle is on payment incentives and reform, examples of which may include: payments for services not typically covered by fee-for-service, such as email and phone consultations; a monthly fee to support care coordination; and or performance-based payments.

Background Research: Role of Mobile Health Clinics

The purpose of this part of the report is to briefly summarize current MHC use in Contra Costa County and what has been learned about the advantages, limitations, and unmet potential of MHCs. It also features profiles of MHC use in other communities to offer perspective on other models, strategies, and lessons learned. This material was gathered from existing data sources, supplemented by in-person or phone interviews where possible.

MHCs in Contra Costa County

There are six MHCs currently serving Contra Costa County. John Muir Health owns one. In addition to operating a Saturday clinic in Brentwood, it partners with Contra Costa Health Services (CCHS) and RotaCare Concord to extend services to other areas of the County on weekdays and evenings. CCHS owns four MHCs and is in the process of acquiring two more. It uses these primarily for school-based services for adolescent youth, but also deploys them in providing clinics for the homeless twice a week. There is also a mobile dental clinic led by John Muir Health and jointly operated with partners including CCHS and La Clinica.

Current MHC Deployment in Central and East Contra Costa County

Map adapted from Contra Costa County (Source: 2010 Community Health Indicators report)

= JMH = JMH/CCHS = RotaCare (JMH) = CCHS School-Based = CCHS Homeless = Dental

2011 Combined Schedule of MHC Based Services in Central and East County[35]

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Daytime	Bay Point Homeless 1:00pm-3:30pm Concord High School 8:30am-1:30pm Pittsburg High School 8:30am-1:30pm	Concord Homeless 10:30am-noon 1:30am-3:30pm Concord High School 1:30pm-4pm Pittsburg Elementary 8:30am-11:00am 12:30-3:00pm	Bay Point Homeless 1:00pm-3:30pm Bay Point Homeless 8:30am-10:30am 2xs/mo Antioch Homeless 1:00pm-3:30pm 9:30am-3:30pm 1x/mo Concord High School 8:30am-1:30pm Concord Elementary 8:30am-2:30pm Pittsburg High School 8:30am-1:30pm	Concord Homeless 8:30am-noon Walnut Creek Homeless 1:30am-3:30pm Concord High School 8:30am-noon 1:30am-4:00pm Concord Elementary 8:30am-2:30pm Pittsburg High School 8:30am-11:00am Pittsburg Elementary 12:30pm-3:00pm Pittsburg Dental 9:00am-2:00pm	Concord High School 8:30am-1:30pm Pittsburg Dental 9:00am-2:00pm	Brentwood 9:00am-noon Acute Care First-come, first served
Evening		Concord 5:00pm-7:00pm 1x/mo Women's Clinic		Concord 5:00pm-9:00pm Urgent Care By appt.		

[35] Based on information available, edited to include only Central and East County locations.

MHC Use by JMH and Partners

In 2011, nearly 4,000 patients received care from the MHC shared by the John Muir Community Health Alliance (CHA), RotaCare Concord, and CCHS. Just over half this patient population accessed services through the County's Health Care for the Homeless program, which used the MHC three times a week, working in Concord, and Bay Point. Another third attended the general and urgent care clinic operated by RotaCare Concord one evening a week. The remaining patient population was served by the CHA's Saturday clinic in Brentwood. Virtually all of these patients were reportedly uninsured.[36]

Table 4. 2011 Utilization of MHC Owned by JMH[37]

	Antioch	Brentwood	Bay Point	Concord	Concord	Total
John Muir Health		1 day/wk				
CCHS	1 day/wk		1 day/wk	2 days/wk		
RotaCare Concord					1 eve/wk + 1 eve/mo	
Number of Patients		694	2,228		1,012	3,934

John Muir Health

JMH focuses on using the MHC to provide preventive and urgent care, and chronic disease management. Based on 2011 data for the Brentwood clinic, the top six diagnoses were related to women's health, allergies, hypertension, cold/flu, respiratory problems, and diabetes. Patients requiring advanced urgent care, specialty services, or ongoing chronic disease management were referred to other providers—primarily La Clinica (66%) and Brentwood Health Center (20%). In 2011, 154 such referrals were made.

Most patients were Spanish-speaking and without insurance due to immigration status, though the patient mix has reportedly become increasingly diverse with the prolonged economic downturn. Patient surveys revealed that nearly half—48%—went to the MHC because they did not know where else to go to seek care, and 24% would not have sought care had the MHC not been available. Another 14% would have gone to the ED.

Contra Costa Health Services

CCHS partners with JMH to serve the homeless population in C&ECC. JMH provides the driver and supplies, but all services are provided by CCHS clinical and support staff. This clinic

[36] In efforts to lower barriers to care, MHCs ask few questions and rely on patients' own reporting of their insurance status – if they say they are uninsured, they are treated as eligible to receive care.
[37] Adapted from *Strategic Plan: John Muir Health, Making the Case for Mobile Health*, by Jessica Erin Lynch, School of Public Health Policy and Management, University of California, Berkeley, 2011. (Data corrected from original to reflect RotaCare Concord's presence in Concord, not Antioch.)

operates one day a week in Antioch, two days a week in Concord, and one day in Bay Point. It provided approximately 1,795 patient visits in 2010.

CCHS also has its own MHCs, which it uses to serve other locations and other populations, as described further below.

RotaCare Concord

RotaCare Concord uses the MHC to provide urgent care and women's health services. It has operated an urgent care clinic at Cambridge Elementary in Concord for two years, one night a week. It also runs a women's clinic once a month.

These clinics take place in the evenings, both to meet the needs of working families and to gain access to volunteer time. All care is provided by volunteer physicians, nurse practitioners, registered nurses, pharmacists, and social workers. Lay volunteers assist with clinic set-up and administration. Use of the MHC is maximized by using building space at the host site for patient intake and registration, which facilitates the flow of patients, while also providing a safe and comfortable waiting area.

RotaCare Concord sees more than 1,200 patients annually.

MHC Use by CCHS

As noted above, CCHS is a partner using the JMH MHC—but it also owns and operates four MHCs of its own. CCHS' use of MHCs to provide school-based services is in response to a demonstrated—and growing—need for adolescent care. Health services in greatest demand among the high school population are related to reproductive health. By serving as a gateway to enrollment in the Medi-Cal Minor Consent Program, CCHS can provide these confidential services, regardless of citizenship, immigration status, or parental consent. In the elementary schools, regular pediatric care is provided with parental consent, as long as the child does not have other coverage. Existing clinics are operating at maximum capacity, providing 8,000 visits in 2010.[38] CCHS is in the process of obtaining two additional MHCs for use with this population. Partner schools are targeted using free and reduced lunch program data. CCHS also provides mobile health services to the homeless, both as a partner with JMH and using its own mobile units.

Ronald McDonald Care Mobile®

Launched in 2004, the Ronald McDonald Care Mobile®/Mobile Dental Clinic provides free restorative and preventive dental services for children and youth through age 19. Services are provided through the Dental Collaborative of Contra Costa, a partnership between Ronald McDonald House Charities (RMHC) of the Bay Area, CCHS, La Clinica, Brookside Community Health Center (Richmond/San Pablo), and John Muir Hospital's Community Health Alliance.

[38] These are not unduplicated visits. CCHS estimates that approximately 5,000 individual students were served.

- RMHC provides the mobile clinic
- CCHS provides screening and education in schools and other community based health settings
- La Clinica and Brookside provide the dental care, patient registration, and enrollment assistance
- JMH/Community Health Alliance provides the driver and program coordination

Since its inception, the program has served nearly 3,000 children, many of whom had no prior history of dental care.

Appendix B includes a mapping of community need based on Catholic Healthcare West's Community Need Index, overlaid with the location of community providers to show health care resources in C&ECC, including hospitals/emergency departments, urgent care clinics, primary clinics, and MHCs.

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Some Advantages and Limitations of MHCs—Based on Current Conditions

Advantages	Limitations
Mobility ▪ The ability to reach underserved patients in their own neighborhoods (or youth at school) mitigates physical barriers to care, such as inadequate transportation. Hours ▪ Weekend and evening hours can help to lower access barriers, particularly among the working poor for whom taking time off work to seek health care would pose a significant hardship. Patient Cost ▪ Patients can obtain services for free or at very low cost, depending on the model used. Approachability ▪ Because they are less "institutional" than most traditional health care facilities, MHCs may be able to more quickly establish a rapport with – and gain the trust of – socially or economically disenfranchised populations. Anonymity ▪ Patients can obtain care with fewer questions asked than in some other facilities. Low Overhead ▪ For providers, MHCs make it possible to provide services without the costs of leasing, renovating, or maintaining a bricks-and-mortar facility	Parking ▪ During clinic time, MHCs require a space that is level, safe, accessible, legal, etc. This entails physical considerations as well as permits and permissions of property owners. ▪ When not in use, MHCs must be parked in a secure location. Space ▪ With limited space, the layout and design of the vehicle can either help or hinder the services provided within. Some services simply cannot be provided in the space available. (Currently this may include procedures requiring specialized equipment.) ▪ Storage space is minimal, requiring frequent re-supply of pharmacological goods and other consumables. Connectivity ▪ Internet access can be a challenge. (This is important to have in order to access online health resources so that they need not be kept on board in hard copy format.) Maintenance ▪ The costs of acquiring – and more importantly, maintaining – an MHC are significant. It also takes time to coordinate. (Consider routine mechanical checks, CHP safety inspections, driver drug-testing, cost of gasoline, etc.) ▪ Vehicle breakdowns mean that the clinic cannot operate that day.

MHCs Nationwide and in Other Communities

In 2005, there were over 2,000 MHCs operating in the U.S., and more are being put into use each year.[39] Their primary focus has been on providing health screenings and primary care services for the uninsured and underinsured, as well as reaching geographically (e.g., farmworkers) or socially (e.g., homeless) isolated populations. However, what began as an effort to provide episodic care to the most vulnerable has, in some cases, evolved to MHCs serving as the primary medical provider for many, akin to being a "medical home."

Following are brief profiles of three MHCs outside of Contra Costa County, illustrating different uses of the mobile model of care.

The Family Van—Boston, MA

Since 1992, the Family Van—a nonprofit affiliated with Harvard Medical School—has provided medical care to more than 50,000 underserved residents in the greater Boston area, focusing its services in Roxbury, Dorchester, Hyde Park, and Mattapan—all neighborhoods characterized by ethnically diverse and immigrant populations, high concentrations of poverty and crime, large proportions of young people under 17 years of age, and significant health disparities. The article referenced in the text box below suggests questions for further exploration about the Family Van's purpose, use, and financial model.

In 2010, a *Newsweek/Daily Beast* article observed that the Family Van (and other MHCs like it) don't just help the uninsured and medically disenfranchised, "they also help a lot of people who can get traditional health care by other means, and they do so in an astonishingly cost-effective and efficient way."

Relating the story of a 72 year-old patient who visits the Family Van once a month to keep his hypertension in check, even though he has private health insurance and a regular physician, the article highlights common obstacles to care and how mobile health clinics can mitigate or remove them: "To get such service from his regular doc he'd have to schedule each appointment six months in advance. Also, he would have a $10 copay. The people in the van don't charge him anything, and they let him drop in whenever he wants."

The authors note that most of the Family Van's patients—82%—do have health insurance, as required of all citizens under Massachusetts' health care reform law. And although well over half have regular primary care providers, the reliability, convenience, and low cost offered by the mobile health clinic have made it a provider of choice.

The article suggests that the Family Van maintains low costs by focusing on health counseling, education, and preventive screening. It also uses low-tech tools such as health questionnaires, rather than more costly tests, to screen for health conditions. And while it has a paid staff, it does not employ physicians, but instead works with medical students and other trained, certified service providers.

[39] Mobile Health Clinics Network (http://www.mobilehealthclinicsnetwork.org/MHCN_Map.html)

History and Purpose

The Family Van was co-founded 20 years ago by a Harvard faculty member and a medical student who worked with the community to determine how to help reduce egregious health disparities among inner-city Boston's African-American population. Today, the program continues to focus on the underserved in urban neighborhoods – those who often feel most alienated from the traditional health care system. The Family Van has a teaching mission, as well, with a commitment to providing practical, community-based training for students at all levels of the medical profession (residents, CNAs, medical billers, etc.), with a focus on those from the communities being served. One or two students usually shadow paid staff during each shift.

Services and Staffing

Services provided by the Family Van focus on screening and prevention, including counseling and health education. Because of this, the Family Van does not typically keep physicians or nurses on staff, relying instead on community health workers. It currently has seven paid staff (three part-time and four full-time). The Family Van travels to seven regular sites each week (i.e. each site is visited weekly). It served 2,322 individuals in 2010, approximately 40% of which were regular or returning patients. Around 30% speak English as their second language, which is used as the closest proxy for estimating the number of undocumented uninsured the Family Van sees. No appointments are required, services are open to everyone, and all services are free and confidential, though staff track patients with a proprietary unique identifier system. Ensuring a patient-centered experience is a hallmark of the Family Van approach.

When not using the vehicle, the program makes the van available to other partners, such as hospitals, HIV/AIDS testing programs, etc. These partnerships are formalized by annual contracts and use can usually be scheduled with one or two months' notice.

Broader Healthcare Context

Massachusetts has operated a state-sponsored health insurance program since 2006. But as Jennifer Bennet, Executive Director of the Family Van notes, "insurance coverage isn't access." Providers are unable to meet demand, and the Family Van is seeing more repeat patients now than before the legislation was enacted. In addition, having originally viewed the Family Van as a "bridge into care," its organizers are now recognizing that patient use patterns are more difficult to predict or influence. The Family Van remains committed to coordinating with other providers, serving as a complement to primary care providers and specialists, although no formal system for information sharing exists. Due to HIPPA regulations governing patient privacy, much of the onus is on patients to take their screening result with them when they go see their primary providers, etc.

In the past, Family Van staff were able to facilitate most patient referrals with a "warm handoff" (making the appointment for the patient, etc.), resulting in an estimated 85% rate of successful follow through. But with the advent of health care reform and the subsequent pressure on community health clinics, referrals for primary or specialized health care services are now more difficult to make because providers are extended beyond capacity. Bennet cited this as one of

the Family Van's greatest challenges currently, and one that has relevance to other communities as health care reform goes into effect nationwide.

Malta House of Care—Hartford, CT

Since 2006, the Malta House of Care Mobile Medical Clinic has provided nearly 16,000 free patient visits to low-income and underserved populations in the greater Hartford area. Staffed primarily by a volunteer corps of over 80 physicians, nurses, and laypersons, the mobile van serves patients at four locations, four days of the week, in the afternoon and evening hours.

Established as a way to reduce the burden of charity care on the local hospital and community health facilities, the MHC provides free visits, serving as a safety net to the uninsured and others who would otherwise not have access to care. However, in the course of its five-year history, Malta House of Care Mobile Medical Clinic has shifted from an urgent care model to that of establishing and maintaining a real patient-centered medical home. As stated on their website, "What began as a project to address episodic unmet health care needs has now, by necessity, become a community resource."

This primary care approach is further described in the organization's 2010 application for the Ashoka Changemakers® Award,[40] summarized in the text box below.

Malta House of Care patients—many of whom have been diagnosed with chronic conditions such as hypertension, diabetes, and asthma—are provided with ongoing treatment plans, facilitated by the implementation of an Electronic Medical Record system. The mobile health clinic provides lab work, radiological imaging, and pharmacy services, and partners with other organizations that can provide patients supplemental specialty services while Malta House of Care remains their medical home. Returning patients account for 80% of all of the mobile health clinic's patients.

The organization is strengthening its capacity to pursue this medical home model through continued implementation of Electronic Medical Records, training staff and volunteers as certified medical interpreters to assist non-English language speakers, and building relationships with regional medical schools to provide training opportunities for the next generation of primary care physicians.

Malta House of Care Mobile Medical Clinic intends to serve as a demonstration project for how to provide more equitable access to integrated primary care, and as a model for the development of how mobile health clinics can be used to create additional medical homes in similarly challenged communities.

[40] Malta House of Care has received local and state recognition, as well as selection as an Ashoka Changemakers® winner for the state of Connecticut, representing "the best example of social responsibility and achievement."

Providence Mobile Clinic—Burbank, CA

In 2009, with funding from Providence Health and Services Southern California and Health Net, Dr. Glenn Lopez started the Providence Mobile Chronic Disease Management Clinic. Operating out of a 34-foot trailer, Dr. Lopez visits at least a dozen locations in low-income neighborhoods of the San Fernando Valley, providing low-cost medical visits and discounted prescriptions to the chronically ill who have little or no insurance. Most patients suffer from diabetes or heart disease and would otherwise not be able to afford the follow-up visits that are necessary to manage their conditions.

In the clinic's first year it provided 2,773 patient visits, serving approximately 1,000 individuals. Of these, 232 visits could be considered as having been diverted from the ED.[41] The clinic employs electronic health records to track patients, but is otherwise very low-tech. Dr. Lopez was quoted by the *Daily News Los Angeles* as saying, "You'd be surprised what we can do with a weight scale, a blood pressure machine, a urine test stick, a glucometer, and good will."[42] That said, the all-important lab work and diagnostics are provided at a low cost by partner Providence Health and Services, and Dr. Lopez negotiates with pharmacies for low-cost medications for patients.

Dr. Glenn Lopez (Source: Business WIre)

This approach also leverages the power of community. The trailer has one small exam room and a large waiting area that can accommodate up to 15 people. By scheduling appointments on the hour, he creates a space where neighbors meet and talk with one another, sharing tips on healthier lifestyle choices and disease management, and offering mutual support. He has also encouraged the start-up of neighborhood walking groups that build on this ability for patients to take ownership of their health and help one another in doing so.

Part of the success of this model seems to be Dr. Lopez's own ownership of the project. An assistant professor at UCLA's Department of Family Medicine, Dr. Lopez fills all roles on the Providence Mobile Clinic trailer, "I'm the truck driver, I scrub the floors, and I can check your liver," he told the *Daily News*.

History and Purpose

In 2009, Providence Health and Services had measures in place to identify individuals with undiagnosed and/or untreated chronic medical conditions through various community-based screening and outreach efforts, but little capacity to provide the follow-up care needed to those identified. The community's nonprofit health clinics were also unprepared to take on this challenge, as they were all operating at or near capacity. Recognizing an unmet need, Lopez

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[41] "In Los Angeles, a mobile clinic emphasizes compassion over technology," by Eric Wicklund. *The Mobility Blog*. MobileHealthWatch.com (July 15, 2011) http://www.mobilehealthwatch.com/blog/los-angeles-a-mobile-clinic-emphasizes-compassion-over-technology

[42] "Mobile clinic aims to help with chronic illnesses," by Susan Abram. *Daily News Los Angeles* (May 9, 2010) http://www.dailynews.com/ci_15051556

came to Providence with an offer to provide mobile disease management services in the surrounding communities. He owns the trailer, holds a contract with Providence to provide mobile services, and operates the clinic as a private practice (not a nonprofit program).

Services and Staffing

The mobile clinic currently serves 12 neighborhoods and provided 2,773 patient visits in 2010. Most patients are undocumented and uninsured, with diabetes, hypertension, and/or thyroid issues. A few patients are insured, but attend the mobile clinic because of the convenience or because fees are lower than their co-pays.

Patients are asked to pay a $15 fee per visit to help cover the cost of the medical consultation and to pay lab fees and prescription costs. Lab services are obtained at a discounted price from Providence Hospital laboratories, and low-cost prescriptions and supplies are obtained through major retail pharmacies' discount programs. A typical new (untreated) patient may initially be expected to pay $40 in labs and $20 for a three-month supply of medications in addition to the $15 visit fee. Although this makes the model affordable only to patients with some income (a point acknowledged in the clinic's own 2010 report), it is considerably more affordable than the alternative – paying $150-$400 for the same services at a private clinic.

Dr. Lopez is the only physician providing services through the mobile clinic. He has two employees who assist with education programs, patient registration and follow-up, etc. There is currently no succession plan in place, which is a vulnerability to this model; if he were suddenly unable to provide services, the clinic would not be operational.

Broader Healthcare Context

Although it is difficult to demonstrate that a given person did *not* visit an ED due to a given intervention, Providence Mobile Clinic estimates that 232 ED visits were averted in 2010 because of its services.[43] It also suggests that this number is conservative, both because it is based on the clinic working at partial capacity and because it does not take into account the likelihood that a number of these patients would have made not only one but multiple visits to the ED over the course of the year.

Providence Mobile Clinic also recognizes that health care reform may be more likely to exacerbate some problems than to solve them. Although more people will have coverage, many of the insurance options will be high-deductible plans, discouraging individuals from seeking care until they have to. Additionally, the shortage of primary care capacity will become more pronounced as more insured consumers enter the marketplace, underlining the sentiment expressed by the Family Van's Jennifer Bennet that "insurance is not access."

[43] This number was arrived at by counting the following: 1) the number of patients identified at screening events as meeting the "usual criteria" for referral to the ED but were instead able to obtain timely care on the mobile clinic, 2) the number of individuals identified by ED-based personnel as frequent users who were successfully referred to the mobile clinic (none of which returned to the ED for care during that same year), and 3) the number of patients who were "self-referred" to the clinic and presented with symptoms for which they would have otherwise had to seek ED care within the next 0-6 months.

Greater New Orleans Mobile Medical Unit Consortium and Tulane Community Health *On the Road*—Louisiana

Following the devastation of Hurricane Katrina in 2005, mobile units played an essential role in delivering health care services to remote and isolated rural populations that had never had reliable access to primary care as well as to urban communities that had lost their bricks-and-mortar health care infrastructure to the disaster. Many of the MHCs were supported by disaster funds. In this environment in which numerous mobile units were being deployed, operators began meeting to coordinate services, avoid duplication, and share best practices.

The Greater New Orleans Mobile Medical Unit Consortium formalized this collaboration. Its membership is comprised of twelve mobile health units providing a range of services, including prenatal care, dental care, primary care, behavioral health, fitness, and immunizations. One example of the coordination made possible by the Consortium was the collective decision to co-locate as a small group of multi-specialty clinics where families could easily access a range of services all in one place. Consortium partners also share knowledge about the best places to park, what local businesses are supportive, and how to deal with challenges unique to the mobile environment.

In most cases, mobile unit personnel are paid staff who only work in the mobile environment. (Only one of the twelve relies on a volunteer staff.) Consortium members found that life on a mobile unit can be an isolating experience, which manifested itself in high turnover rates. One of the group's early priorities was to link the drivers, social workers, and medical staff with one another to share their experiences and to learn from one another.

Tulane Community Health *On the Road* is one of the Consortium members. Operated by Tulane University School of Medicine, it is linked to two fixed-site clinics and operates Monday through Thursday, reserving Fridays for vehicle maintenance. It provides comprehensive primary care, women's health, health education and screenings, blood pressure and diabetes management, and Medicaid enrollment and case management. Medicaid, Medicare, and most private insurance are accepted, but services are provided irrespective of ability to pay.

On the Road has been recognized as a National Committee for Quality Assurance (NCQA) Patient-Centered Medical Home – one of the first mobile clinics to have done so. Developed around six standards (Enhance Access and Continuity; Identify and Manage Patient Populations; Plan and Manage Care; Provide Self-Care Support and Community Resources; Track and Coordinate Care; and Measure and Improve Performance), NCQA PCMH recognition is organized into three tiers, or levels, at which its requirements are met. However, having been unable to meet the top tier standard, Tulane Community Health's co-Executive Director has said the clinic would not pursue recertification, explaining that when it was originally recognized, it was the best and most consistent source of care in the community, but now that fixed-site clinics are back up and running – and offering evening and weekend hours – the mobile unit no longer provides a level of service that can be regarded as a medical home. As a result, *On the Road* will continue providing clinic services, but shift its emphasis to outreach, referring patients to the fixed-site clinics for their ongoing care.

Approximately 20% of the Consortium's members are mobile-only providers, but most mobile clinics are operated by organizations that also have fixed sites. Those linked with fixed sites can more seamlessly connect patients with a medical home. Being tied to a fixed site also provides administrative infrastructure that makes it easier for those mobile clinics that do billing for Medicare/Medicaid.

As rebuilding continues in the Gulf Coast region, the demand and funding for these mobile clinics has begun to drop off. The economic downturn has also meant that for the majority that are affiliated with a fixed site, the mobile clinic is often seen as the first program to be cut or downsized. Additionally, as more patients return to their regular providers at fixed site facilities, the primary users of mobile units are those who have no choice – including the uninsured for which there is no third-party payer. As a result of these economic pressures, some mobile units are shifting their use, adding fee-based services, entering into contractual relationships with other partners for use of the vehicle, or otherwise considering how to restructure themselves to be sustainable.

The Mobile Health Clinic Network

Until the Mobile Health Clinic Network was formed some six years ago, there was no trade organization bringing MHCs together and little data being gathered on their effectiveness beyond the anecdotal or output data such as demographic data and utilization numbers. The health care field is now paying closer attention to opportunities to demonstrate the impact of this type of access. The development of an ROI algorithm was a key first step in this direction, an effort which itself took four years to develop and take hold. The Mobile Health Clinic Network continues to work with partners to explore strategic questions like: *How can mobile interface with existing health care environment and advance Healthy People 2020 goals?* And *What is the highest and best use of MHCs?*

When the consultants interviewed Jennifer Bennet, Executive Director of the Family Van, she told us about her involvement not only with the Boston-based MHC, but also with the Mobile Health Clinics Network (www.mobilehealthclinicsnetwork.org) and their joint project, the Mobile Health Map (www.mobilehealthmap.org). She indicated her commitment to sharing information about MHCs and how to promote their highest and best use, and also expressed interest in the findings of this project to add to that base of growing knowledge in this field of work.

Financial Investment

The Mobile Health Clinic Network has analyzed 12 different programs across the country, and discovered that although there is variance from program to program, the average annual cost of running a mobile health clinic is $362,923. The type of service provided, number of days in service per week or month, and other factors contribute to differences in the cost of operation.

The cost of the Family Van in 2011 was approximately $550,000. Each year, aggressive fundraising is conducted to cover these expenses. The Family Van is supported primarily by private foundations. Harvard Medical School covers between 20-30% of its costs as part of its community benefit commitment. This year, over $30,000 can be attributed to operating

expenses related to gas, medical supplies, etc. (Financial information for Malta House of Care and Providence Mobile Clinic is not currently available.)

In 2011, annualized expenses for the John Muir Health Community Health Alliance mobile clinic, based on a five-day service schedule and hybrid staffing model were:

Personnel	
RN/Management Support	$187,800
MD staffing	volunteer
Driver/Clerk	$144,000
Administrative Support	$28,000
Vehicle	
Maintenance	$6,600
Fuel (diesel)	$8,700
Supplies (paper, cleaning, etc.)	$11,000
Total	**$386,100**

Appendix A: Community Need Mapping – Overall

The Community Need Index (CNI) was developed in 2005 by Catholic Healthcare West, in partnership with Thomson Reuters. The purpose of this index is to identify health disparities by zip code so as to inform the work of public health advocates and care providers.

CNI scores are based on five barriers selected to quantify health care access: income, culture/language, education, insurance, and housing. Socioeconomic data is used to quantify these barriers, and a five-point score is assigned, with 1 representing less community need and 5 representing more community need.[44]

As seen on the following pages, four C&ECC communities have scores of 3.4 or greater: Antioch (4), Pittsburg/Bay Point (4.2), Concord's Monument Corridor (4.4), and Byron (4.4).

[44] For more information, see http://www.chwhealth.org/Who_We_Are/Community_Health/STGSS044508.

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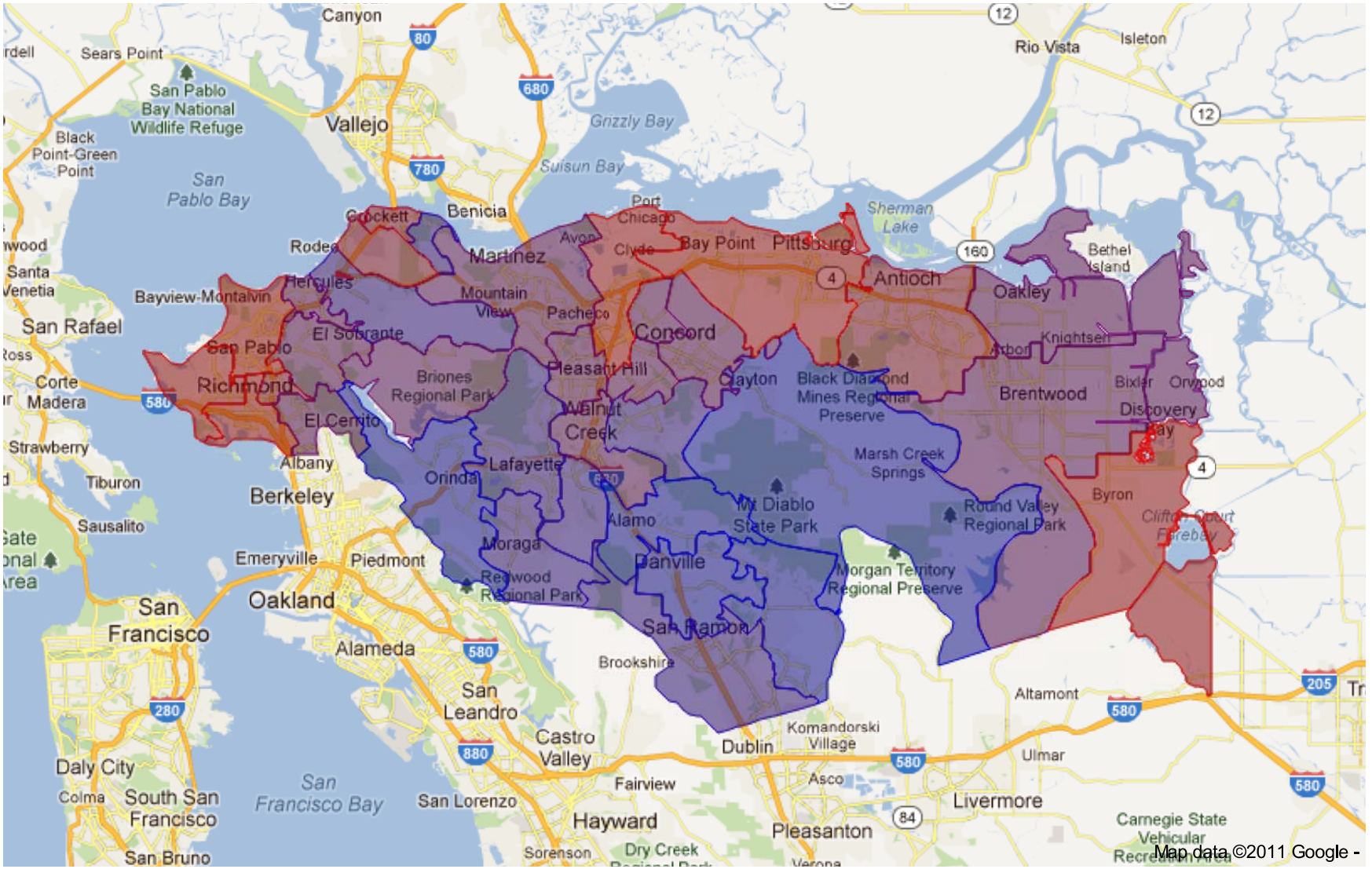
Lowest Need — Highest Need

1 - 1.7 Lowest | 1.8 - 2.5 2nd Lowest | 2.6 - 3.3 Mid | 3.4 - 4.1 2nd Highest | 4.2 - 5 Highest



Mean(zipcode): 2.9 / Mean(person): 3.1 CNI Score Median: 2.8 CNI Score Mode: 1.6

Zip Code	CNI Score	Population	City	County	State
94595	1.8	16425	Walnut Creek	Contra Costa	California
94596	2.6	20045	Walnut Creek	Contra Costa	California
94598	2	25335	Walnut Creek	Contra Costa	California
94801	5	30377	Richmond	Contra Costa	California
94803	3.2	25827	El Sobrante	Contra Costa	California
94804	4.6	40416	Richmond	Contra Costa	California
94805	3.6	13666	Richmond	Contra Costa	California
94806	4.4	58786	Richmond	Contra Costa	California
94506	1.6	24925	Danville	Contra Costa	California
94507	1.6	15033	Alamo	Contra Costa	California
94509	4	61986	Antioch	Contra Costa	California
94513	3	61460	Contra Costa County	Contra Costa	California
94514	4.4	1113	Alameda County	Contra Costa	California
94517	1.6	12583	Clayton	Contra Costa	California
94518	2.8	26017	Concord	Contra Costa	California
94519	2.8	17592	Concord	Contra Costa	California
94520	4.4	37585	Concord	Contra Costa	California
94521	2.6	42072	Contra Costa County	Contra Costa	California
94523	2.6	33153	Pleasant Hill	Contra Costa	California
94525	3.8	3263	Crockett	Contra Costa	California
94526	1.6	28163	Danville	Contra Costa	California
94530	3	22412	El Cerrito	Contra Costa	California
94547	2	25626	Contra Costa County	Contra Costa	California
94549	2	28604	Lafayette	Contra Costa	California
94553	2.6	46904	Martinez	Contra Costa	California
94556	1.8	16737	Moraga	Contra Costa	California
94561	2.8	36076	Oakley	Contra Costa	California
94563	1.6	18226	Orinda	Contra Costa	California
94564	3	18788	Pinole	Contra Costa	California
94565	4.2	87842	Pittsburg	Contra Costa	California
94569	2	234	Crockett	Contra Costa	California
94572	3.4	8416	Hercules	Contra Costa	California
94583	2.2	33662	San Ramon	Contra Costa	California

Appendix B: Community Need Mapping – Access Detail

Here the Community Need Index (CNI) map for Contra Costa County was used to view areas of greatest need overlaid with the locations of health care resources, including MHCs, hospitals, urgent care clinics, primary care clinics, and sexual health and reproductive clinics. This is a rudimentary representation, but suggests the kind of community asset mapping that has been discussed by the planning group and included in the preliminary recommendations. Following is a key to icons/labels used on this draft map. (All information should be checked, updated, and verified by listed providers periodically to ensure accuracy.)

Hospitals

Organization	Location	Hours
Contra Costa Regional Medical Center	Martinez	ED – 24/7
John Muir Health	Concord	ED – 24/7
John Muir Health	Walnut Creek	ED – 24/7
Kaiser Foundation	Antioch	ED – 24/7
Kaiser Foundation	Walnut Creek	ED – 24/7
Sutter Delta Medical Center	Antioch	ED – 24/7

Urgent Care Centers

Organization	Location	Hours
John Muir Health	Brentwood	Closed 9pm weekdays, 5pm weekends
John Muir Health	Concord	Closed 9pm weekdays, 5pm weekends
John Muir Health	Walnut Creek	Closed 9pm weekdays, 5pm weekends
Kaiser Foundation	Antioch/Delta Fair	n/a
Kaiser Foundation	Martinez	Closed 5pm weekdays, no weekends
Kaiser Foundation	Walnut Creek	Closed 5pm weekdays, no weekends
Sutter Delta Urgent Care	Antioch	Evenings 5-9pm M-F, Sat am, Sun pm

Primary Non-Urgent Care

Organization	Location	Hours
CCHS	Antioch	Closed 5pm M/W/F, 8:30pm T/TH
CCHS	Bay Point	Closed 5pm weekdays, no weekends
CCHS	Brentwood	Closed 5pm T/TH/F, 8:30pm M/W
CCHS	Concord	Weekdays
CCHS – Public Health Clinic	Concord	Friday pm only (drop-in immunizations)
CCHS	Martinez	Closed 9pm weekdays, 5pm Saturdays
CCHS	Pittsburg	Closed 5pm T/TH/F/Sat, 8:30pm M/W
La Clinica	Concord/Monument	Closed 8:30pm M-TH, 5:30pm F, 4:30 Sa
La Clinica	Oakely	n/a
La Clinica	Pittsburg	Closed 5:30pm M-F, eves by appt only

Sexual & Reproductive Health Services

Organization	Location	Hours
Planned Parenthood	Antioch	Closed 7pm M/T, 5pm W-F, noon Sat
Planned Parenthood	Concord	Closed 5pm M/W/F, 8pm T/TH, noon Sat
Planned Parenthood	Pittsburg	Closed 4pm M, 5pm T-F
Planned Parenthood	Walnut Creek	Closed 8pm M/W, 5pm T/TH/F, noon Sat

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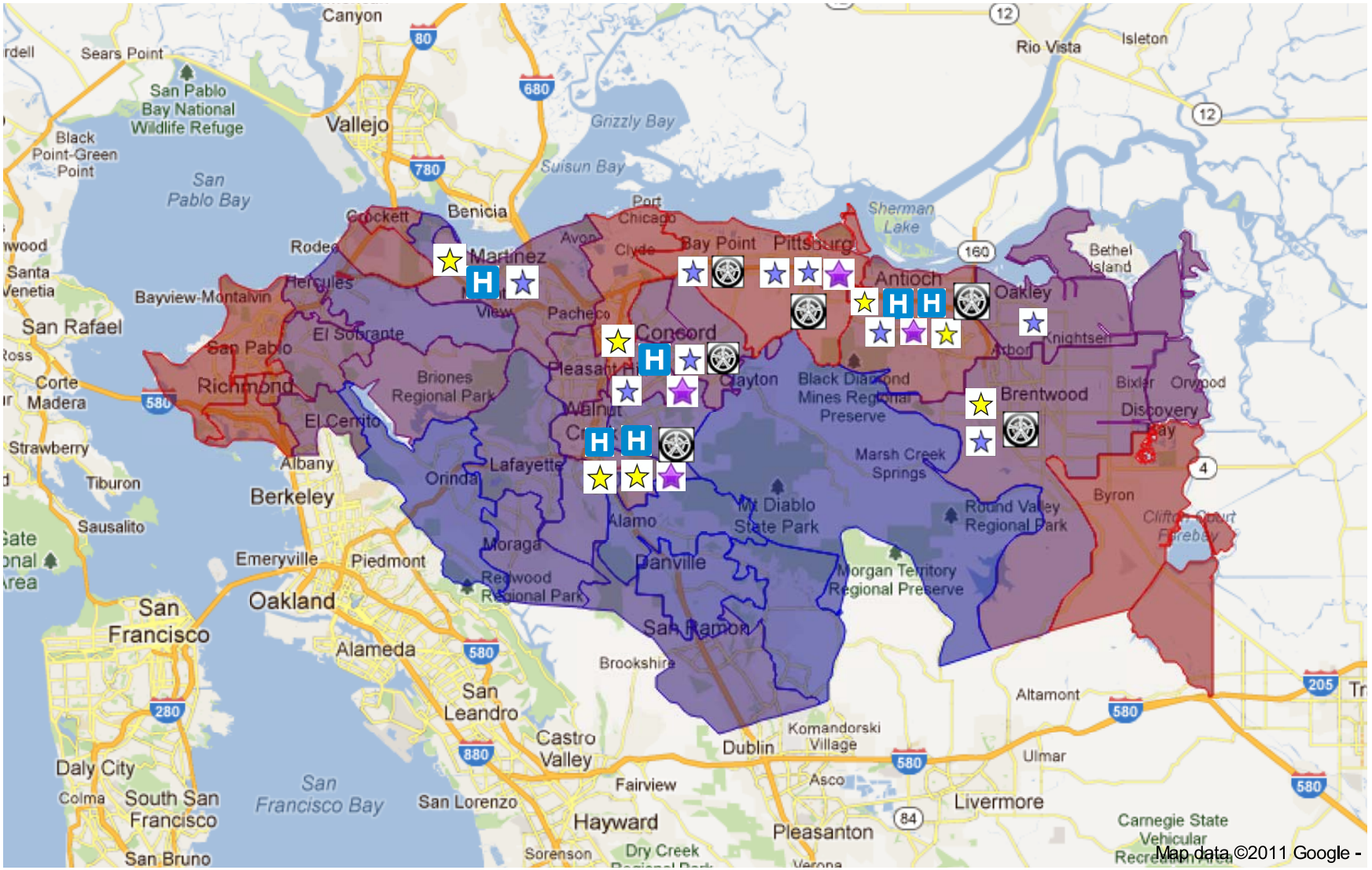

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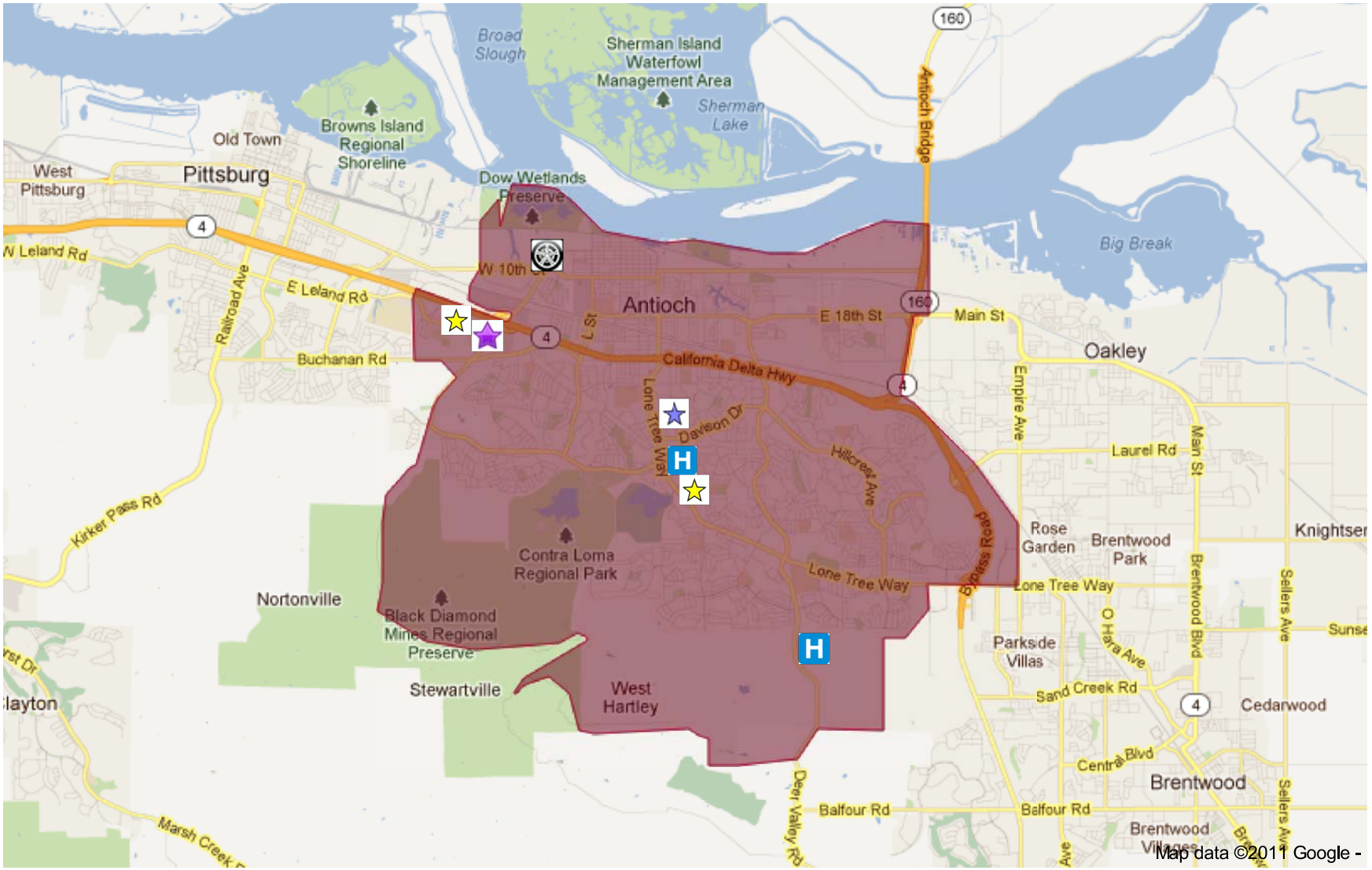

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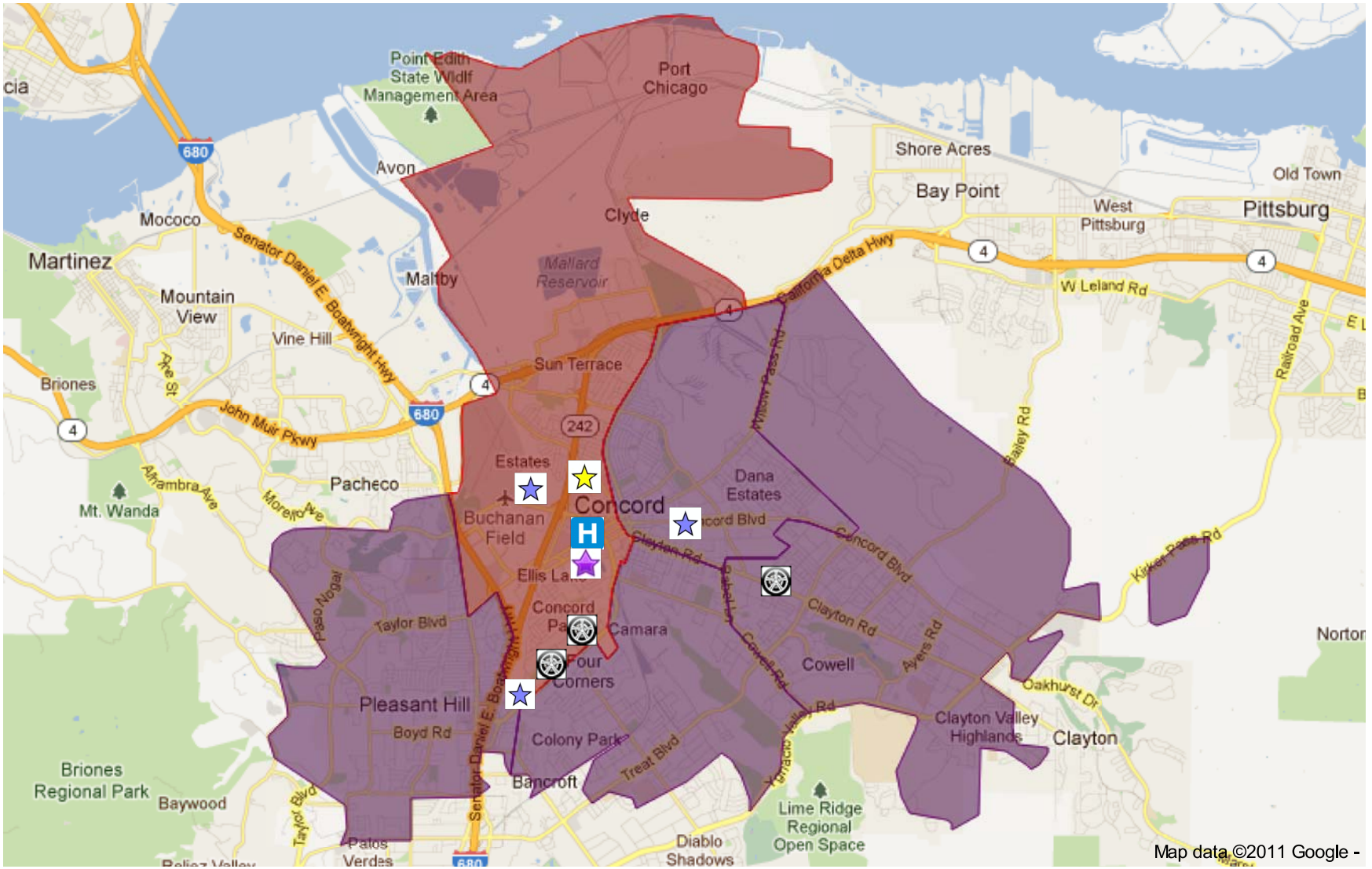

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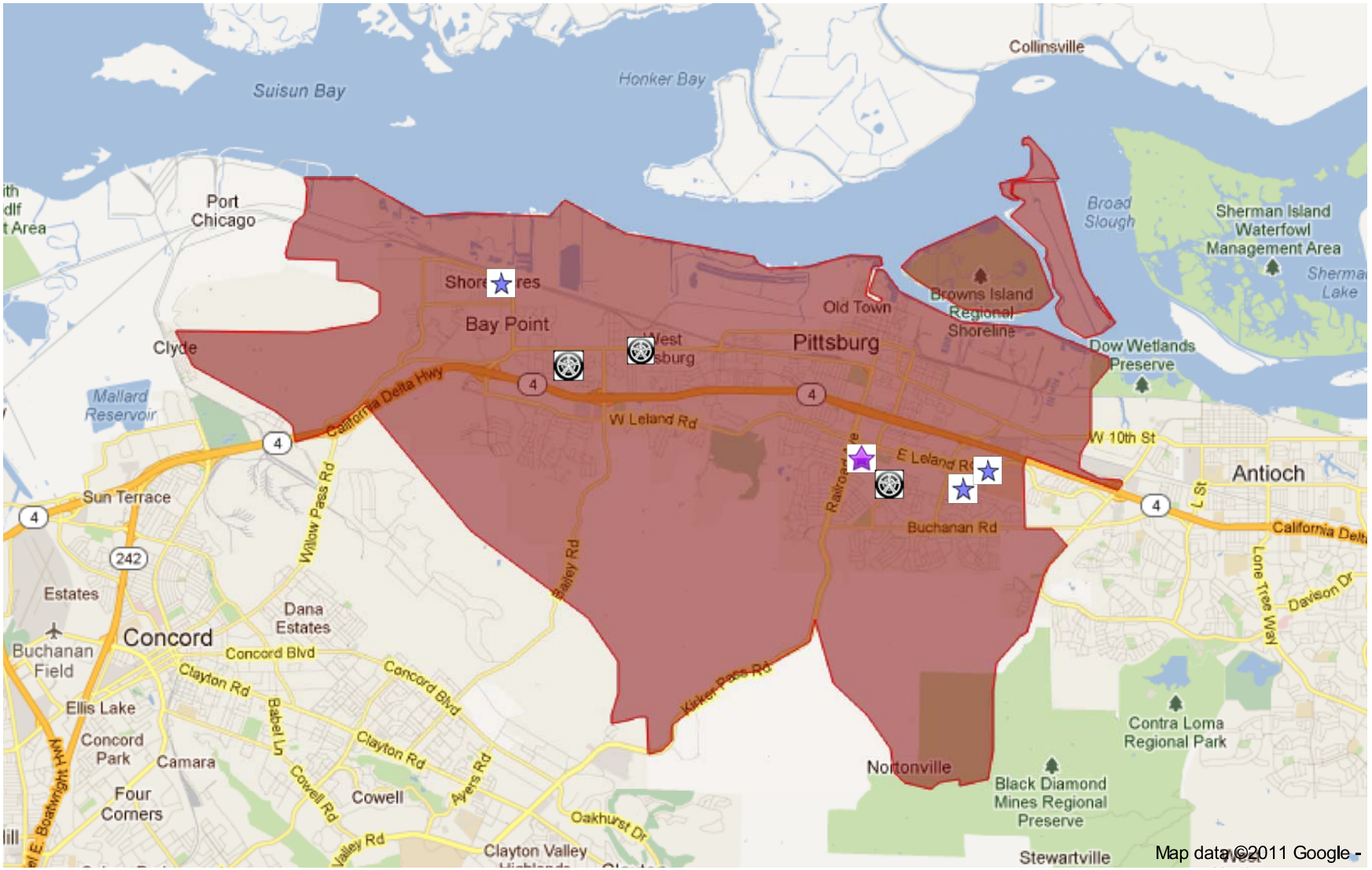

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