



Los Angeles County

Lacking a Comprehensive Assessment of Its Trauma System, It Cannot Demonstrate That It Has Used Measure B Funds to Address the Most Pressing Trauma Needs

Report 2013-116

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February 20, 2014

2013-116

The Governor of California
President pro Tempore of the Senate
Speaker of the Assembly
State Capitol
Sacramento, California 95814

Dear Governor and Legislative Leaders:

As requested by the Joint Legislative Audit Committee, the California State Auditor presents this audit report concerning Los Angeles County's (Los Angeles) management of Measure B funds. Measure B was approved by voters in November 2002 to maintain and expand Los Angeles's trauma system, ensure the continued availability of emergency medical services, and respond effectively to biological terrorism. The Board of Supervisors for the County of Los Angeles (board) allocates these funds primarily to reimburse the 14 trauma centers—two county-operated and 12 non-county-operated trauma centers—within Los Angeles's trauma system for treatment of patients who are unable to pay for their care and who have no third-party insurance coverage.

This report concludes that without a comprehensive assessment of its trauma system, Los Angeles cannot demonstrate that it has used Measure B funds to address the most pressing trauma needs and has fulfilled the intent of the measure by expanding trauma services countywide. Since voters approved the measure in 2002, existing trauma centers remain far removed from some geographical areas of the county (underserved areas), requiring Los Angeles to use helicopters to transport some trauma patients from those areas, including East San Gabriel Valley. Although Los Angeles's Emergency Medical Services Agency (EMS)—the county entity responsible for overseeing the trauma system—conducts periodic performance evaluations of individual trauma centers, it has not conducted a comprehensive assessment that would allow it to demonstrate whether its trauma system is meeting the needs of all areas and populations in the county. Additionally, the board has not reassessed its approach to allocating Measure B funds in roughly a decade, hindering its ability to demonstrate that it has fulfilled the intent of the measure, which, according to board documents, includes assisting hospitals in underserved areas become trauma centers. After voters approved Measure B, the board established a Measure B Oversight Committee (oversight committee), which has since disbanded. We believe that reinstating the oversight committee could provide the board with a key advisory body to review its allocation approach.

Further, although the board initially funded helicopter transport of trauma patients from underserved areas as an interim solution to establishing trauma centers in these areas, it has apparently adopted this as a permanent solution. As a result, we expected EMS to have monitored, assessed, and reported consistently on the adequacy and effectiveness of these helicopter transport services; however, we found that it has not done so. Lastly, shortly after the passage of Measure B, Los Angeles undertook some formalized efforts to designate a hospital as a trauma center in East San Gabriel Valley. Since that time, Los Angeles has made only minimal attempts to do so and if it does not increase and formalize its efforts, it may miss the opportunity to designate a trauma center in this underserved area.

Respectfully submitted,



ELAINE M. HOWLE, CPA
State Auditor

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Contents

Summary	1
Introduction	5
Audit Results	
Since Measure B Passed in 2002, Los Angeles County Has Not Conducted a Comprehensive Assessment of Its Trauma System	13
Los Angeles Should Reassess Its Allocation Approach to Verify and Demonstrate That the County Is Fulfilling Measure B's Intent	21
Los Angeles Has Identified and Addressed Some Shortcomings in Its Emergency Medical Services	32
Recommendations	34
Appendix	
Reimbursements to Hospitals in Los Angeles County From the Measure B Special Tax Revenue Fund for Emergency Medical Services, Trauma Centers, and Bioterrorism Response for Uncompensated Care Costs, Fiscal Years 2008–09 Through 2011–12	37
Response to the Audit	
Los Angeles County	39
California State Auditor's Comments on the Response From Los Angeles County	53

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Summary

Results in Brief

Voters in Los Angeles County (Los Angeles) passed Measure B in 2002 to maintain and expand the trauma system countywide, to ensure the continued availability of emergency medical services, and to respond effectively to biological terrorism. The term *trauma* refers to a critical injury most often caused by a physical force that is frequently the consequence of a motor vehicle crash, a fall, a drowning, a gunshot, a burn, a stabbing, or a blunt assault. To better treat these injuries, in 1983 Los Angeles's trauma system became operational and within two years grew to include 22 county-operated and non-county-operated trauma centers. However, shortly after Los Angeles's trauma system reached this peak, trauma centers began to withdraw from the system, citing the costs of uncompensated care—for patients who are unable to pay for their care and have no third-party insurance coverage—as the reason for their withdrawal. This left some areas in Los Angeles without a trauma center. By 2002 Los Angeles's Department of Health Services was facing a significant budget deficit, which was threatening the already weakened trauma system. To, among other things, address the deficit and preserve and expand the trauma system, the Board of Supervisors for the County of Los Angeles (board) submitted a parcel tax measure to the voters in the November 2002 general election, referred to as Measure B, which voters ultimately approved. With the passage of the measure, the board implemented a parcel tax of 3 cents per square foot on generally all structural improvements, which it has increased over time. In fiscal year 2011–12, the measure generated more than \$256 million in revenue.

More than a decade after voters approved the measure, existing trauma centers remain far removed from certain areas within Los Angeles despite Measure B's stated intent, which is to provide funding to, in part, maintain and expand Los Angeles's trauma system countywide. The director of Los Angeles's Emergency Medical Services Agency (EMS)—the county entity responsible for overseeing the trauma system—maintains that Los Angeles's efforts to expand the trauma system have fulfilled the intent of Measure B. However, although Los Angeles is only required to implement the actual text of Measure B, certain information within the *Official Sample Ballot and Voter Information* booklet for the November 2002 general election may have led voters to believe that Measure B's passage would ensure a trauma center would be located within each of the county's areas that lack a trauma center in close proximity (underserved areas). Los Angeles's trauma system currently comprises two county-operated and

Audit Highlights . . .

Our audit of Los Angeles County (Los Angeles) Measure B funds highlighted the following:

- » *More than a decade after voters approved the measure, existing trauma centers remain far removed from certain areas within Los Angeles despite Measure B's stated intent.*
- » *Although the director of Los Angeles's Emergency Medical Services Agency maintains that the trauma system is adequate and meeting the needs of all areas of the county, it has not conducted a comprehensive assessment that would allow it to support such a claim.*
- » *The Board of Supervisors for the County of Los Angeles (board) has not revisited its approach to allocating Measure B funds in roughly a decade, hindering its ability to demonstrate to the public that it distributes Measure B funds to address the most pressing trauma needs.*
- » *The board initially funded helicopter services as an interim solution to locating trauma centers in underserved areas, however, it has not regularly monitored, assessed, and reported on the helicopter transport services used to transport trauma patients.*
- » *Although it acknowledges East San Gabriel Valley could support a trauma center, Los Angeles has made minimal efforts to persuade a hospital in that area to join the trauma system.*

12 non-county-operated trauma centers. Nevertheless, the areas of Malibu and East San Gabriel Valley, which includes the city of Pomona, lack a trauma center located within their geographic boundaries, and only one trauma center is located in the expansive Antelope Valley.

Although the director of EMS maintains that the trauma system is adequate and meeting the needs of all areas of the county, it has not conducted a comprehensive assessment that would allow it to support such a claim. Rather, EMS in conjunction with the American College of Surgeons (College of Surgeons)—a scientific and educational association of surgeons that operates a Trauma Systems Consultation Program—conducts periodic performance evaluations of individual trauma centers to ensure that they are complying with applicable requirements. We believe a comprehensive evaluation is needed to determine whether the trauma system Los Angeles developed is adequately meeting the needs of all geographic areas and populations in the county. The College of Surgeons is equipped to and has experience in conducting comprehensive on-site trauma system reviews that, if performed, could provide guidance on best practices in trauma center distribution and system design, as well as assist Los Angeles in identifying at-risk population groups. For example, according to Los Angeles's first *Emergency Medical Services System Report* from 2012, black males experienced more than double the number of traumas than did Hispanic males, who had the next highest incidence of trauma in the report's consideration of race and gender. A key step in the College of Surgeons' approach is a form of risk-factor assessment that analyzes the pattern of injury across different demographic groups. Such an evaluation could inform the public about the needs and challenges of Los Angeles's current trauma system. However, EMS has expressed reservations about engaging the College of Surgeons to conduct a comprehensive assessment of Los Angeles's trauma system. Nevertheless, we believe that a comprehensive assessment by the College of Surgeons would likely result in recommendations that could improve and enhance the county's trauma system or identify areas requiring more focused attention.

Additionally, the board has not revisited its approach to allocating Measure B funds in roughly a decade. Following the passage of Measure B, the board created the Measure B Oversight Committee (oversight committee) to, in part, help ensure proper use of the funds, but the committee disbanded shortly thereafter, leaving the board without a key advisory body. Before disbanding, the oversight committee recommended that the board distribute most of the funds to pay for uncompensated trauma and emergency care at county hospitals and for uncompensated trauma care at non-county-operated trauma centers. Since that time, the board

has not revisited its allocation approach because it believes that the current approach addresses a primary concern of trauma centers. However, it has not conducted a review of its allocation approach in roughly 10 years, hindering its ability to demonstrate to taxpayers that it distributes Measure B funds to address the most pressing trauma care needs.

The board initially funded helicopter services as an interim solution to locating trauma centers in underserved areas by allocating \$2.4 million in 2003 for this purpose. However, it has not regularly monitored, assessed, and reported on the helicopter transport services that Los Angeles uses to transport trauma patients from underserved areas. As a result, the board cannot demonstrate the adequacy and effectiveness of these services as a substitute for establishing trauma centers in those areas. By 2005 the board was allocating \$4.4 million to fund helicopter services 24 hours a day, seven days a week, in all underserved areas and appears to have permanently adopted this as a means of providing trauma care access to these areas. However, although EMS collects data related to helicopter transports, we have doubts about its quality and usefulness because it does not relate specifically to trauma transports, it does not capture which areas patients are transported from, and it is not consistently reviewed by EMS. In fact, we would expect EMS to collect and analyze helicopter transport data, including the number, cause, and patient outcome for cancelled transports, to gauge the effectiveness of these helicopter services in each underserved area. Such an analysis would allow it to better understand where trauma is occurring and verify whether helicopters are transporting trauma patients from underserved areas effectively.

Lastly, although it acknowledges that the underserved area of East San Gabriel Valley could support a trauma center, Los Angeles has made minimal efforts to persuade a hospital in that area to join the trauma system. Currently, residents that suffer a trauma injury in this area are transported to LAC+USC Medical Center or Huntington Memorial Hospital, both of which are more than 20 miles away from some areas of East San Gabriel Valley. EMS asserts that it has approached Pomona Valley Hospital Medical Center (Pomona) in the past year, which was a trauma center in the 1980s, about reentering the system, but could provide minimal documentation supporting its communications. Through our discussions with Pomona, we found that it is not opposed to having formal discussions about becoming a trauma center. By undertaking formalized efforts to understand Pomona's concerns, particularly as they relate to funding, the board could revisit its Measure B allocations and use that money, or funds in its reserve, to provide financial support that would enable a hospital to become designated as a trauma center in East San Gabriel Valley. Thus, to the extent

the board chooses not to revisit its allocations and potentially identify ways in which to entice a hospital to join the system, East San Gabriel Valley may remain without a trauma center.

Recommendations

To evaluate whether its trauma system is appropriately designed and serving the needs of residents in underserved areas and the needs of the most at-risk populations, the board should use Measure B funds to engage the College of Surgeons by July 2014 to perform a comprehensive assessment and make the results available to the public. If the assessment identifies weaknesses in the trauma system, the board should undertake strategies to address those weaknesses where feasible.

To ensure that it allocates Measure B funds to address the most significant needs of Los Angeles residents, the board should reinstate a Measure B oversight committee. As part of its responsibilities, the oversight committee should reevaluate the Measure B allocation approach, taking into consideration the results of Los Angeles's comprehensive assessment, and should issue a report on its findings no later than December 2015.

To determine the adequacy and effectiveness of the helicopter services it provides to residents of underserved areas who suffer a trauma injury, EMS should collect, assess, and report helicopter transport data for these trauma victims.

Los Angeles should undertake formal discussions with Pomona's management regarding the feasibility of the hospital becoming a trauma center. In doing so, Los Angeles should analyze its current Measure B revenues and allocations to determine whether financial opportunities exist that would meet the needs of Pomona and present the resulting analysis to Pomona. Further, it should document its efforts and the resulting outcome so that both voters and taxpayers are aware of the diligence Los Angeles has undertaken in fulfilling the intent of Measure B.

Agency Comments

Although Los Angeles agreed with some of our recommendations and indicated it would consider implementing others, it disagreed with the conclusion we reached related to its ability to demonstrate that it has used Measure B funds to meet the most pressing trauma needs.

Introduction

Background

A July 2002 motion to the Board of Supervisors for the County of Los Angeles (board) asserted that the Los Angeles County Department of Health Services (County Health Services) would face a budget deficit of \$710 million in fiscal year 2005–06. The motion further stated that the projected decline in health funding would hurt county residents in many ways, but none so widespread as the impact on trauma centers, emergency medical services, and the county’s bioterrorism response. Following that motion, the board adopted a resolution to hold a special tax election on November 5, 2002, that would include a special parcel tax measure (Measure B). This parcel tax was to provide funding to maintain all aspects of the countywide system of trauma centers and expand the system to cover all areas of the county. Some key terms related to this special tax measure appear in the text box.

Although the board’s resolution was not codified as an ordinance, the resolution remains the law governing the collection and expenditure of the funds that Measure B generates. In passing Measure B, voters approved, in particular, an annual special parcel tax of 3 cents per square foot on structural improvements, excluding square footage of improvements used for parking. The measure was approved by 1.18 million voters, or 73 percent of those who voted. The text box on the following page shows the specific language of Measure B as it appeared in the November 5, 2002, *Official Sample Ballot and Voter Information* booklet.

Key Terms Related to Los Angeles County’s 2002 Measure B

Trauma: A critical injury most often caused by a physical force and frequently the consequence of a motor vehicle crash, a fall, a drowning, gunshots, a fire, burns, a stabbing, or a blunt assault. Trauma is the leading cause of death during an individual’s first four decades of life.

Trauma Center: A hospital that maintains specialized equipment and a panel of physician specialists that includes a trauma surgeon who is available 24 hours a day, seven days a week, to treat trauma patients.

Countywide System of Trauma Centers: A trauma care system coordinated by the Los Angeles County Department of Health Services (County Health Services) and consisting of both public and privately operated resources. This system seeks to build and sustain a countywide system of prehospital and hospital trauma care, including care provided in, en route to, from, or between acute care hospitals, trauma centers, or other health care facilities.

Emergency Medical Services: Prehospital and hospital critical and urgent emergency care, including care provided in, en route to, from, or between acute care hospitals or other health care facilities.

Bioterrorism Response: Activities undertaken directly, managed through contracts, or coordinated by County Health Services to address the medical needs of persons exposed to a bioterrorist or chemical attack.

Sources: Resolution adopted by the Board of Supervisors for the County of Los Angeles on July 30, 2002, regarding Measure B and the November 5, 2002, general election.

Administration and Allowable Uses of Measure B Funds

The Measure B resolution establishes certain responsibilities for the entities involved in administering Measure B, and it sets forth the purposes for which the board may spend the funds. Specifically, for each fiscal year after 2003–04, the Measure B resolution requires the board by majority vote to set the tax rate, which may be from zero cents to no higher than 3 cents per square foot. However, according to the Measure B resolution, the tax rate may exceed 3 cents because the board may adjust the rate for any cumulative increases to the medical component of the Western Urban Consumer Price Index,

**Ballot Language for Los Angeles County's
Measure B of the November 5, 2002,
Consolidated Statewide General Election**

PRESERVATION OF TRAUMA CENTERS AND EMERGENCY MEDICAL SERVICES; BIOTERRORISM RESPONSE. To avoid the life-threatening shutdown of Los Angeles County's trauma network, maintain and expand the trauma network countywide, ensure more timely response to critical and urgent medical emergencies and respond effectively to biological or chemical terrorism, shall all property owners pay an annual tax of three cents per square foot of improvements (buildings) on developed property?

Source: County of Los Angeles Official Sample Ballot and Voter Information booklet for the November 5, 2002, general election.

as established by the United States Bureau of Labor Statistics. Since fiscal year 2003–04, when Measure B became effective, the board has voted to increase the tax rate three times: from 3 cents per square foot on structural improvements in 2003 to 3.72 cents in 2008; to 3.99 cents in 2010; and, most recently, to 4.24 cents in 2012. In its resolution, the board also defined the purposes, or allowable expenditure categories, for which Measure B funds must be spent, as Table 1 shows. In fiscal year 2011–12, the most recent fiscal year within our audit period, the measure generated more than \$256 million in revenue.

The board did not, however, indicate in the Measure B resolution an allocation methodology for distributing Measure B funds or explain its process for determining the proportions of the funds it would designate for the various allowable expenditure categories. The absence of such specifics allows the board broad discretion in allocating Measure B funds. Rather than specifying an allocation methodology in the board's resolution, it has allocated Measure B funds through Los Angeles County's (Los Angeles) overall budget process—an annual process consisting of review and revisions by various county entities, followed by a public hearing to review the county's budget before its final adoption. The board allocates Measure B funds to several county entities and others to provide trauma services, emergency medical services, and bioterrorism preparedness activities.

In its Measure B resolution, the board assigned County Health Services the operational responsibility of authorizing the disbursement of Measure B funds for the purposes identified in the resolution. County Health Services develops and submits to the board annually its recommended budget for Measure B, and this budget specifies financing uses, sources, and revenue information for the upcoming fiscal year. Once the board approves allocations, County Health Services disburses Measure B funds to authorized service providers. Measure B funds are accounted for using Los Angeles's countywide electronic accounting and purchasing system, in which board-approved allocations are established and expenditures are recorded. According to Los Angeles's fiscal manual, the system is used to ensure that the available balance of an allocation is not exceeded. Additionally, as the resolution requires, the Los Angeles County Department of Auditor Controller files annual reports with the board regarding the amount of Measure B funds collected and spent, as well as the status of required projects.

Table 1
Purposes for Which Los Angeles May Spend Measure B Funds

Trauma centers	<ul style="list-style-type: none"> • Maintain all aspects of countywide system of trauma centers. • Expand system of trauma centers to cover all areas of the county. • Provide financial incentives to keep existing trauma centers within the system. • Pay for the costs of trauma centers, including physician and other personnel costs.
Emergency medical services	<ul style="list-style-type: none"> • Coordinate and maintain a countywide system of emergency medical services. • Pay for the costs of emergency medical services, including physician and other personnel costs.
Bioterrorism response	<ul style="list-style-type: none"> • Enable stockpiling of safe and appropriate medicines to treat persons affected by a bioterrorist or chemical attack. • Train health care workers and other emergency personnel to deal with the medical needs of those exposed to a bioterrorist or chemical attack. • Provide medical screenings and treatment for exposure to biological or chemical agents in the event of a bioterrorist or chemical attack. • Ensure the availability of mental health services in the event of terrorist attacks.
Administration	<ul style="list-style-type: none"> • Defray administrative expenses, including the payment of salaries and benefits for personnel in the Los Angeles County Department of Health Services and other incidental expenses. • Recover the costs of the special election in 2002. • Recover the reasonable costs incurred by the county in spreading, billing, and collecting the special tax.

Source: Resolution adopted by the Board of Supervisors for the County of Los Angeles on July 30, 2002, regarding Measure B and the November 5, 2002, general election.

Voluntary Implementation of Trauma Systems in California

State law allows, but does not require, local agencies that provide emergency medical services (local agencies) to establish trauma systems. For those local agencies that elect to establish trauma systems, state law requires that the agencies submit their trauma system plans to the California Emergency Medical Services Authority (Authority)—the state entity charged with developing the planning and implementation guidelines for emergency medical services systems and with reviewing and approving trauma system plans. Although local agencies must describe in these plans the rationale used to arrive at the number and location of trauma centers, the State provides little guidance on the design of trauma systems. Specifically, the only requirement related to the design of trauma systems is in state regulations and specifies that no more than one trauma center shall be designated for each area comprising 350,000 residents. Essentially, the American College of Surgeons (College of Surgeons) has indicated that admitting a minimum number of injured patients helps ensure that trauma surgeons maintain adequate experience. Additionally, state law recognizes that it is essential for individuals

who need trauma care to receive that care within 60 minutes immediately following their injuries. According to state law, it is during this period, referred to as the “golden hour,” when the potential for survival is greatest, and the need for treatment for shock or injury is most critical. Nevertheless, state law does not require that trauma systems be designed in a certain manner to achieve this goal.

Additionally, local agencies may designate as trauma centers only those hospitals that meet minimum standards established in state

Summary of Selected Requirements for Trauma Centers in California

Personnel: Includes numerous personnel requirements, such as a trauma program medical director, a trauma nurse coordinator/manager, a multidisciplinary trauma team of surgical and nonsurgical specialists that are on call and promptly available, and an emergency department staffed with qualified specialists in emergency medicine who are immediately available.

Services or Programs: Includes intensive care service, a burn center, physical therapy, a rehabilitation center, respiratory care, and pediatric service.

Service Capabilities: Includes immediately available radiological service, clinical laboratory service, and surgical service.

Source: Title 22 of the California Code of Regulations.

regulations promulgated by the Authority. These state regulations place various requirements on hospitals designated as trauma centers to maintain personnel, services, and service capabilities necessary to provide around-the-clock trauma services. The text box summarizes some of these requirements for trauma centers. Although a trauma center designation may afford a hospital a certain level of visibility and prestige, as indicated in a report by the Authority, maintaining this level of readiness requires considerable investment by the hospital regardless of the number of trauma patients or the patients’ ability to pay for services received. As such, trauma centers that serve low-income populations of residents who may lack health insurance or other means to pay for their care likely endure a greater financial burden than trauma centers that serve a higher-income population that is more likely to have health insurance.

History of Los Angeles County’s Trauma System

According to County Health Services’ documents, Los Angeles’s trauma system began operating in 1983 after years of planning. The system became operational shortly after the State established the Authority and approximately three years before the Authority developed regulations governing trauma systems. Los Angeles’s 2001 trauma plan indicates that the implementation of its trauma system included specific criteria for hospital designation, such as the ability to maintain services at a required level, and a recommended maximum time within which patients would be transported to a trauma center. County Health Services initially designated eight hospitals as trauma centers. Around each trauma center, County Health Services delineated a geographical service area in which all residents could reach the trauma center within a maximum ground-transport time of 20 minutes. A letter from County Health Services to the board indicates that County Health

Services instituted the 20-minute transport time to limit the maximum time a mobile intensive care unit would be occupied transporting a trauma patient. Following the initial designation of eight hospitals, County Health Services repeated the process to designate additional hospitals as trauma centers to serve areas outside the 20-minute ground-transport service of existing trauma centers.

Los Angeles's trauma system included 22 trauma centers during the trauma system's peak in 1985. By 1990, however, 10 hospitals had withdrawn from the trauma system. Hospitals that withdrew cited unacceptable levels of uncompensated care for trauma patients. Further, as hospitals withdrew from the trauma system, remaining trauma centers treated growing numbers of uncompensated care patients, resulting in additional facilities withdrawing from the trauma system for financial reasons. Consequently, some areas within the county—East San Gabriel Valley, Antelope Valley, and Malibu—lacked a designated trauma center entirely. This situation resulted in Los Angeles's use of air transportation from these areas for patients who needed access to trauma centers. Effective August 1999 Los Angeles expanded trauma centers' service areas by increasing the maximum allowable time for patient transport from 20 minutes to 30 minutes. Additionally, in 2010 a trauma center was designated in Antelope Valley. Today, the 14 trauma centers' service areas include every geographical area of Los Angeles, yet some areas remain underserved because they lack a trauma center within close proximity.

Recent Developments in Approaches to Evaluating Trauma Systems

As the approach to providing trauma care has evolved in the United States, so have methods for evaluating trauma systems. The College of Surgeons—an association of surgeons that assesses and evaluates trauma systems—states that since 2002, both the federal Health Resources and Services Administration and the College of Surgeons have endorsed an approach to developing trauma systems that includes an evaluation of the frequency, rates, and pattern of injury in a population, an approach referred to as *injury epidemiology*. For instance, according to the College of Surgeons, knowledge of a region's injury epidemiology enables the identification of priorities for the allocation of resources, the nature and distribution of injury prevention activities, the financing of the system, and health policy initiatives. Essentially, according to the College of Surgeons, the approach focuses on analyzing data and assessing the burden of injury across specific population groups, such as children, elderly people, and various ethnic groups, to ensure that specific needs or risk factors are identified.

Scope and Methodology

The Joint Legislative Audit Committee (audit committee) directed the California State Auditor to conduct an audit of Los Angeles's management of Measure B funds for 2008 through 2012, which we defined as fiscal years 2008–09 through 2011–12. The audit committee specifically asked us to review and assess Los Angeles's policies and procedures regarding how it determines the allocation of Measure B funds and to review any plans that Los Angeles may have to mitigate the differences in Measure B funds spent in underserved areas without trauma centers and the rationale for those plans. Table 2 lists the audit committee's objectives and the methods we used to address those objectives.

Table 2
Audit Objectives and the Methods Used to Address Them

AUDIT OBJECTIVE	METHOD
1 Review and evaluate the laws, rules, and regulations significant to the audit objectives.	With the assistance of legal counsel, we reviewed relevant laws, regulations, and other background materials applicable to county trauma systems and Los Angeles County (Los Angeles) Measure B of the November 5, 2002, Consolidated Statewide General Election (Measure B).
2 Determine the roles, responsibilities, and organizational structure of the entities involved in managing and administering Measure B funds and ensure that they are consistent with applicable laws and policies and are effective.	<ul style="list-style-type: none"> • We reviewed the Los Angeles County Board of Supervisors' (board) Measure B resolution; relevant laws; and organization charts of the board, the Los Angeles County Department of Health Services (County Health Services), which includes the Emergency Medical Services Agency (EMS), and the Los Angeles County Department of Auditor Controller (auditor-controller) to determine the organizational structure of entities involved in managing and administering Measure B funds. • We interviewed key staff at County Health Services, EMS, and the auditor-controller to determine the roles and responsibilities of the entities involved in managing and administering Measure B funds. In doing so, we learned that the board had established a Measure B Oversight Committee (oversight committee) shortly after the measure passed, in part, to monitor the collection and expenditure of the tax revenues under Measure B. We describe this oversight committee, which no longer exists, and our concerns with its disbandment further in the Audit Results. • In evaluating the effectiveness of the roles, responsibilities, and organizational structure of the entities involved in managing and administering Measure B funds, we did not identify any reportable issues, other than our concerns with the absence of the oversight committee.
3 Review and assess Los Angeles's policies and procedures regarding how it determines the allocation of Measure B funds, how funds are spent, and how funds are accounted for. Determine how the county projects the special tax revenue and prepares its budget or spending plan.	<ul style="list-style-type: none"> • We interviewed key staff at County Health Services and the auditor-controller and reviewed documentary evidence provided by Los Angeles, including accounting information related to its budget procedures, budget documents, and the most current fiscal manual, to determine Los Angeles's process for allocating, spending, and accounting for Measure B funds. In doing so, we learned Los Angeles performs these functions through its regular county budget process. As we describe in the Audit Results, this process appears to be appropriate and efficient. • We reviewed documentary evidence related to the oversight committee, including board motions and letters, to determine the role of this committee in implementing the measure and determining Measure B allocations. • We reviewed the board's Measure B resolution to determine what types of expenditures are allowable. • We reviewed annual reports from the auditor-controller regarding Measure B to analyze the county's Measure B allocations each fiscal year from 2003–04 through 2011–12.

AUDIT OBJECTIVE	METHOD
	<ul style="list-style-type: none"> • We judgmentally selected 20 claims for reimbursement from two non-county-operated trauma centers from our audit period. We also obtained County Health Services' loss statements for the three county hospitals from our audit period. We reviewed the selected documents to verify whether Los Angeles followed its policies and procedures for spending Measure B funds. In reviewing contracts Los Angeles has with county-operated hospitals, we identified that Los Angeles needs to revise them to more accurately reflect how Los Angeles reimburses county-operated hospitals for uncompensated care costs. Following our fieldwork, we discussed this issue with County Health Services and recommended they revise their contracts. County Health Services agreed with our recommendation. • We interviewed key staff at County Health Services and the auditor-controller to determine how Los Angeles projects special tax revenue and prepares the county budget. We found the auditor-controller lacks formal policies and procedures regarding how it projects the Measure B revenue Los Angeles will collect each year. Although we did not believe this issue rose to the level of reporting in our Audit Results, following the end of our fieldwork we discussed this issue with Los Angeles and recommended to the auditor-controller that they formalize their procedures for projecting Measure B revenues. The auditor-controller agreed with our recommendation.
4 For the past four years, perform the following:	We defined our audit period as fiscal years 2008–09 through 2011–12.
a. Determine the total Measure B funds allocated to medical service providers by area or other relevant allocation factors, such as demographics, as needed. Determine, to the extent possible, how much of the allocations to underserved areas without trauma centers have been spent.	We reviewed Los Angeles's financial statements and transfer schedules for our audit period to determine how funds were allocated and spent. In the Appendix, we present the amounts of Measure B funds each of the county-operated hospitals received for uncompensated trauma and emergency care and the amounts the non-county-operated trauma centers received for uncompensated trauma care for fiscal years 2008–09 through 2011–12.
b. Review and assess any analyses or justification used by Los Angeles in making decisions on funding allocations. Determine what factors, such as serving underserved areas or expanding services, Los Angeles considers in making its decisions.	We completed this work as part of Objectives 3 and 6 and describe Los Angeles's approach to allocating Measure B funds in the Audit Results.
c. To the extent possible, determine why and how often helicopters and air paramedic services have been used and in what areas, such as in underserved areas without trauma services.	We reviewed helicopter transport data provided by EMS to determine the number of helicopter transports, the locations where they occurred, as well as the number of helicopter transports that were cancelled or aborted between 2009 and 2012. We describe our concerns with this data in the Audit Results.
d. Determine the total revenues, expenditures, and fund balances for each year and determine the reasons for any significant fluctuations from year-to-year or for significant amounts in fund balances.	<ul style="list-style-type: none"> • We reviewed the county's <i>Comprehensive Annual Financial Reports</i> to determine the total Measure B revenues, expenditures, and fund balances for our audit period. We present this information in Table 3 on page 25 of the Audit Results. • We interviewed key staff at County Health Services to determine the reasons for any fluctuations or large ending balances in the Measure B fund balance from year-to-year.
5 Review any plans Los Angeles may have to mitigate the differences in Measure B funds spent in underserved areas without trauma centers and the rationale for those plans. Determine if those plans include proposals to expand the services funded by Measure B.	<ul style="list-style-type: none"> • We interviewed key staff at EMS and reviewed documents provided by Los Angeles to determine the steps, if any, the county has taken to expand services funded by Measure B. • We reviewed the board's Measure B resolution and relevant materials provided to voters to determine what expectations voters may have had regarding the expansion of trauma services to underserved areas if Measure B passed. • To determine Los Angeles's efforts in designating a trauma center in the East San Gabriel Valley, we reviewed documentation related to board meetings and spoke to key staff at County Health Services, EMS, and the Pomona Valley Hospital Medical Center.

AUDIT OBJECTIVE	METHOD
	<ul style="list-style-type: none"> • We interviewed key staff at EMS to determine how Los Angeles has expanded helicopter services and how it monitors and reports on the adequacy of these services. • We interviewed key staff at EMS to determine whether the agency reviews and analyzes helicopter transport data. In the Audit Results we describe our concerns with the quality and usefulness of its data.
<p>6 Determine whether Los Angeles analyzes its spending and funding plans and reassesses its past and future decisions to ensure it is equitably allocating funds in the areas of greatest need and that decisions are consistent with the intent of Measure B.</p>	<ul style="list-style-type: none"> • We reviewed Los Angeles’s process for allocating and spending Measure B funds, as described in the <i>Method</i> column for Objective 3, and interviewed key staff at County Health Services and EMS to determine whether Los Angeles analyzes its spending plans. We found the county has generally allocated Measure B funds in the same proportions year after year, but does not analyze how Measure B expenditures address the population’s trauma care needs and fulfill the intent of Measure B, as described in the Audit Results. • We reviewed the board’s Measure B resolution and other relevant county documentary evidence to determine the intent of Measure B. • After determining through interviews with key County Health Services staff that Los Angeles does not analyze or reassess its spending decisions, including its allocation decisions, based on areas of greatest need, we interviewed key EMS staff and reviewed documentation provided by EMS to determine whether EMS evaluates the Los Angeles trauma system. • We reviewed measures passed by four other counties to fund emergency medical services to determine, among other things, how those counties allocate the funds and have communicated these allocation approaches to voters. • We interviewed key officials from the American College of Surgeons (College of Surgeons) Trauma Systems and Trauma Center Verification Programs and reviewed materials produced by the College of Surgeons to determine what a comprehensive trauma system evaluation conducted by the College of Surgeons entails. We also interviewed key staff from EMS to determine whether Los Angeles has considered such a review. We report this information in the Audit Results.
<p>7 Review and assess any other issues that are significant to Los Angeles’ management of Measure B funds.</p>	<p>Based on interviews with key staff at County Health Services, we describe in the Audit Results Los Angeles’s perspective on how changes in insurance coverage resulting from the Patient Protection and Affordable Care Act might affect funding for its trauma system.</p>

Sources: California State Auditor’s analysis of Joint Legislative Audit Committee’s audit request number 2013-116, planning documents, and analysis of information and documentation identified in the column titled *Method*.

Audit Results

Since Measure B Passed in 2002, Los Angeles County Has Not Conducted a Comprehensive Assessment of Its Trauma System

More than a decade after voters of Los Angeles County (Los Angeles) approved Measure B to, among other things, maintain and expand the trauma network countywide, certain geographical areas within Los Angeles remain far removed from existing trauma centers, thus requiring helicopter transport for some of those areas' trauma patients. Because of this situation, inequities may exist in Los Angeles's residents' access to trauma care. Specifically, a resident who lives in an area without a trauma center may have to travel a greater distance to access trauma services than would a person who lives near a trauma center. The absence of a nearby trauma center potentially lengthens the time before the trauma victim receives care and may therefore affect the patient's health outcome. The Los Angeles Emergency Medical Services Agency (EMS)—the county entity responsible for overseeing the trauma system—nonetheless asserts that the trauma system is adequate. However, EMS's current evaluation efforts focus on the performance of individual trauma centers rather than on the system as a whole and whether it is meeting the needs of at-risk population groups. A comprehensive evaluation of Los Angeles's trauma system may provide greater transparency regarding the system's needs and challenges, and it may allow the Board of Supervisors for the County of Los Angeles (board) to demonstrate to voters whether Los Angeles has fulfilled the intent of Measure B.

According to a resolution adopted by the board in July 2002, funds raised by the measure are to be used, in part, to maintain all aspects of Los Angeles's system of trauma centers and to expand the system to cover all areas of the county. That resolution remains the legal source document describing the specifics of Measure B (Measure B resolution). A board supervisor's motion urging the board to approve the Measure B resolution acknowledges that Los Angeles's system of trauma centers at that time did not cover every corner of the county and that an optimal trauma system would include three additional trauma centers in certain areas of the county that lacked such centers. The director of EMS, which is the agency responsible for designating trauma centers, maintains that Los Angeles's efforts to expand the trauma system have fulfilled the intent of Measure B by stabilizing the system and ensuring that adequate care is provided to all areas of the county. As support for this position, the director stated that since the measure passed more than 10 years ago, no trauma centers have left the trauma system because of financial problems and two additional trauma centers have joined.

However, although Los Angeles is only required to implement the actual text of Measure B, certain information within Los Angeles's *Official Sample Ballot and Voter Information* booklet (voter information booklet) for the November 2002 general election may have led voters to believe that the passage of the measure would ensure that certain areas of the county would have local trauma centers. In particular, included in the voter information booklet was a rebuttal to arguments against Measure B that stated, "Measure B will make it possible to provide trauma service in three areas where none currently exists: Pomona, East San Gabriel Valley and the Antelope Valley." It further stated, "Antelope Valley residents would have either a Trauma Hospital or a fully-equipped trauma helicopter that is dedicated full-time to that area."

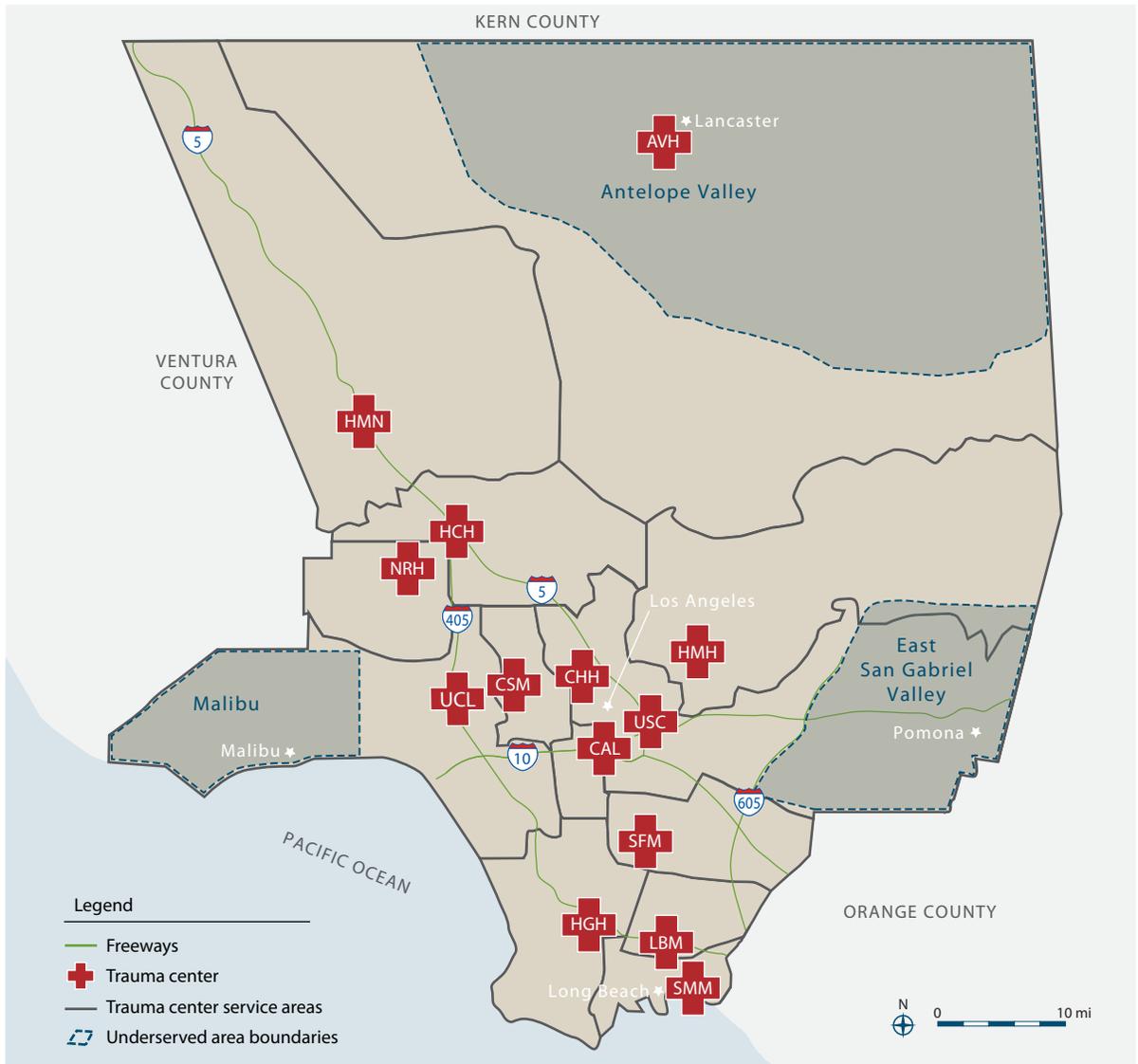
As of January 2014 the Los Angeles trauma system consisted of 14 trauma centers: two county-operated and 12 non-county-operated hospitals. As Figure 1 shows, the areas of Malibu and East San Gabriel Valley, which includes the city of Pomona, lack a trauma center located within their geographic boundaries. Although one trauma center is located in the expansive Antelope Valley, some patients must be transported more than 30 miles to reach a trauma center.

To better understand the county's current perspective about whether it believes these areas continue to be underserved, we interviewed the director of EMS. According to the director, Malibu is an area in which the population density, about 12,500, does not support a hospital that could be designated as a trauma center. Additionally, in 2010, Antelope Valley Hospital was designated a trauma center, a change that decreased the travel time to the nearest trauma center and the use of air transport in the Antelope Valley. Further, the director explained that East San Gabriel Valley is the only underserved area in Los Angeles with a population density that would support a trauma center. Nevertheless, for purposes of our report, we refer to all three areas as "underserved" because the distances to existing trauma centers from these areas may require that Los Angeles employ helicopters to transport patients from these areas to a trauma center. We believe that Los Angeles should better define the areas it considers underserved so that it can focus its efforts on those areas.

The director explained that East San Gabriel Valley is the only underserved area in Los Angeles with a population density that would support a trauma center.

Although Figure 1 shows that the service area of a trauma center encompasses each underserved area, for some residents of Malibu, Antelope Valley, and East San Gabriel Valley those trauma centers may be several miles away. For instance, residents in the city of Pomona are roughly 28 miles from their designated trauma center, LAC+USC Medical Center, while residents in Malibu are roughly 20 miles from their designated trauma center, Ronald Reagan UCLA Medical Center. To serve residents of these underserved areas, Los Angeles employs helicopters to transport trauma patients to these areas' designated trauma centers when the estimated ground transport times exceed 30 minutes.

Figure 1
Trauma Centers in Los Angeles County and Their Respective Service Areas
as of January 2014



Trauma Centers in Los Angeles County

- | | |
|--|--|
| AVH: Antelope Valley Hospital | HMN: Henry Mayo Newhall Memorial Hospital |
| CAL: California Hospital Medical Center | LBM: Long Beach Memorial Medical Center |
| CHH: Children's Hospital of Los Angeles | NRH: Northridge Hospital Medical Center |
| CSM: Cedars-Sinai Medical Center | SFM: St. Francis Medical Center |
| HCH: Providence Holy Cross Medical Center | SMM: St. Mary Medical Center |
| HGH: Harbor-UCLA Medical Center* | UCL: Ronald Reagan UCLA Medical Center |
| HMH: Huntington Memorial Hospital | USC: LAC+USC Medical Center* |

Sources: California State Auditor's adaptation of information provided by Los Angeles County's Emergency Medical Services Agency and information obtained from www.randmcnally.com regarding the approximate location of selected cities.

* Harbor-UCLA Medical Center and LAC+USC Medical Center are the two county-operated trauma centers.

Although the director of EMS maintains that the trauma system is adequate and that it is meeting the needs of all areas in Los Angeles, including those areas that are underserved, she acknowledged that Los Angeles has not conducted an evaluation of its trauma system to demonstrate that it has fulfilled the intent of Measure B. Rather, EMS's evaluation efforts include obtaining trauma data and monitoring individual trauma centers periodically. In conjunction with the American College of Surgeons (College of Surgeons)—a scientific and educational association of surgeons that has established a committee on trauma to, in part, assess and evaluate trauma systems—EMS conducts periodic performance evaluations of individual trauma centers to verify compliance with accepted College of Surgeons' standards of care for trauma patients and compliance with applicable state regulations. Additionally, the director explained that EMS monitors the trauma system by reviewing trauma data submitted quarterly by each individual trauma center, such as the number of trauma patients served and the severity of patient injuries, which EMS recently began summarizing in an annual report. These monitoring efforts, however, do not enable EMS or Los Angeles to examine whether the system as a whole serves Los Angeles's residents equitably or to identify any gaps in service by population group or geographic area.

Although EMS collects data for each trauma patient, current monitoring activities do not include analyzing this data to assess how the trauma system is serving those population groups most at risk of having a trauma injury.

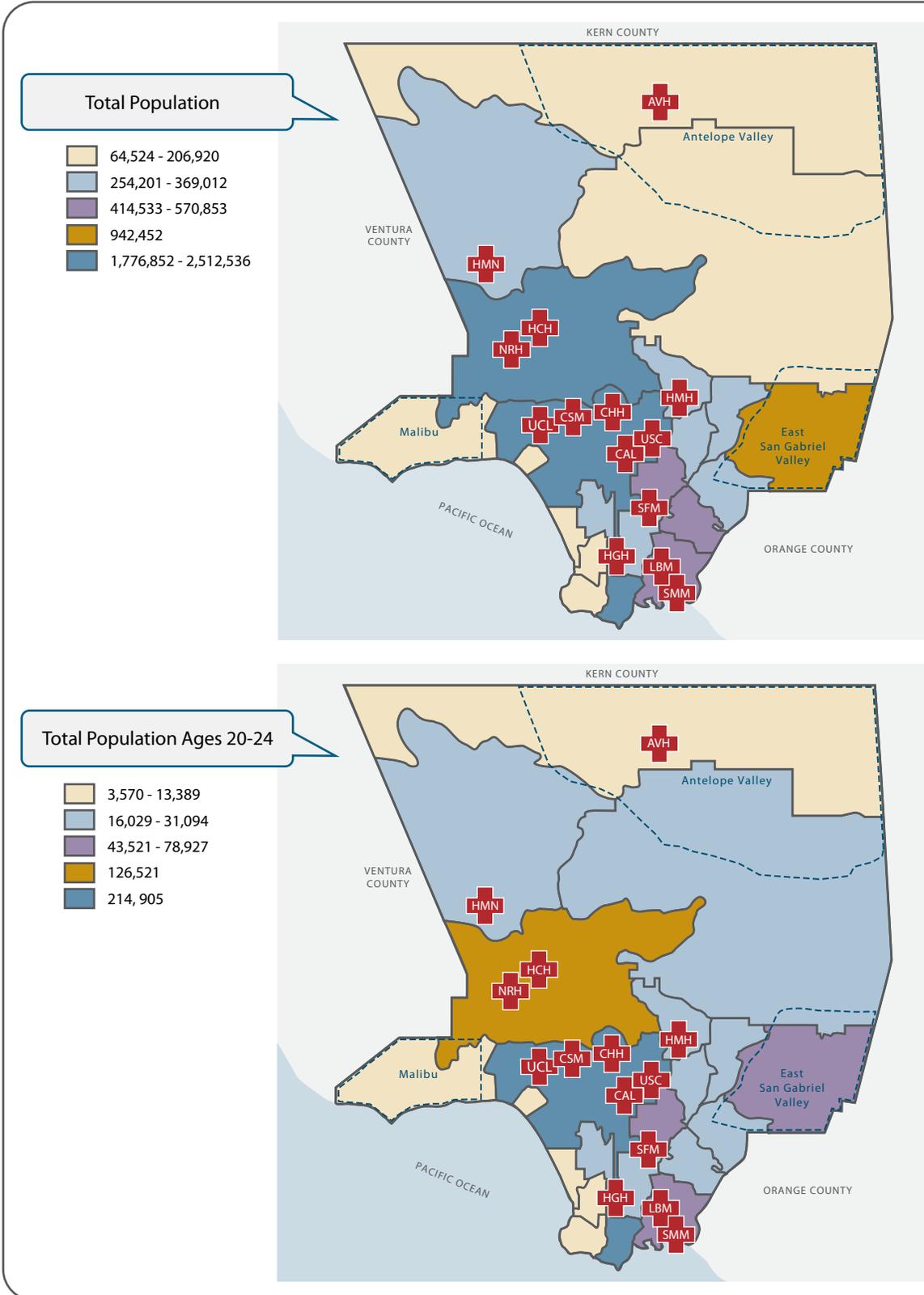
Although EMS collects data for each trauma patient—including information on each patient's gender, age, race or ethnicity, and place of residence—current monitoring activities do not include analyzing this data to assess how the trauma system is serving those population groups most at risk of having a trauma injury. Further, EMS's current data-monitoring activities also do not allow for the county to assess the burden of injury across specific demographic groups to ensure that specific needs or risk factors are identified—an approach explained in the Introduction and referred to by the College of Surgeons in its *Regional Trauma Systems: Optimal Elements, Integration, and Assessment Systems Consultation Guide* (consultation guide) as *injury epidemiology*. By understanding where injuries occur, what type of injuries occur most often, and to whom they occur, the College of Surgeons suggests that decision makers could be better informed when deciding where to spend trauma resources or in considering whether trauma policy should be revised. For example, according to EMS's first *Emergency Medical Services System Report*, which was published in July 2012 and based on Los Angeles's data, males between the ages of 20 and 24 experienced the highest incidence of trauma of any age group in Los Angeles, and they experienced nearly four times the incidence of trauma as did females in the same age group. Additionally, black males experienced more than double the trauma incidence of Hispanic males, who had the next highest reported incidence of trauma if one considers race and ethnicity.

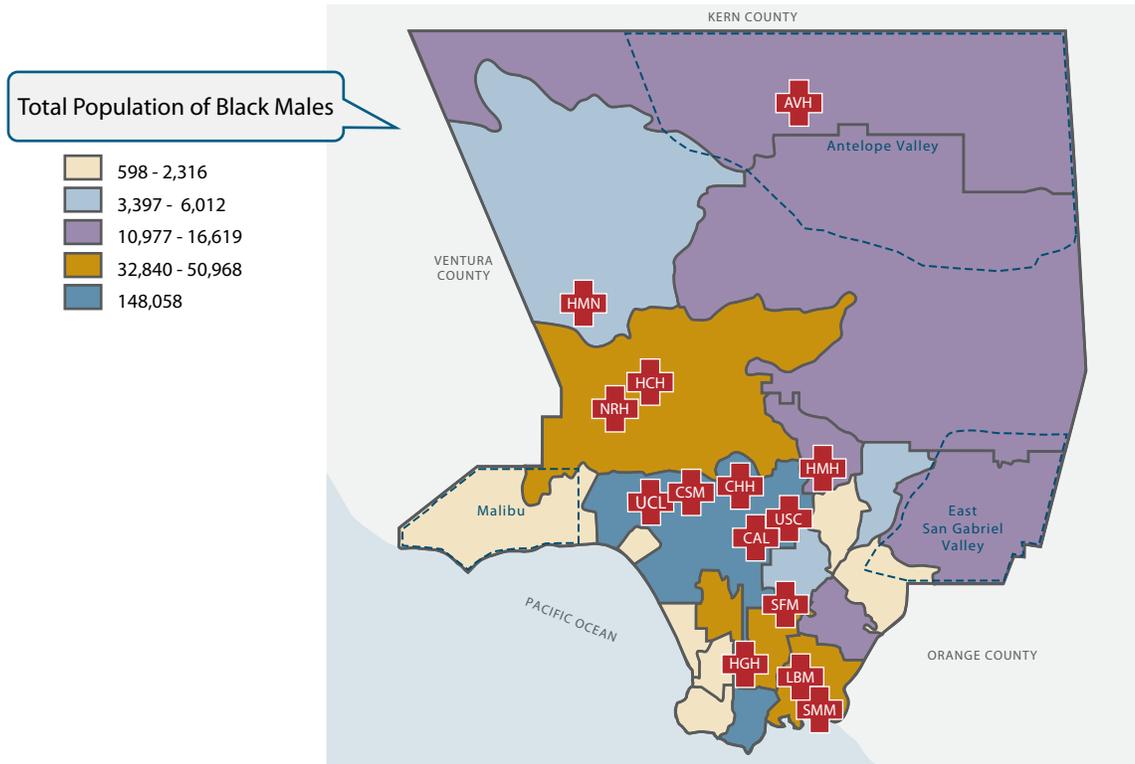
As Figure 2 on page 18 and 19 indicates, the majority of trauma centers appear to be generally located in Los Angeles's most populated areas—the areas containing a higher concentration of individuals ages 20 to 24 and the areas with a higher concentration of black males. However, EMS does not use demographic data to assess the trauma system in terms of how the number and location of trauma centers are meeting the needs of these at-risk populations. Although we believe that EMS's publishing of its annual *Emergency Medical Services System Report* is a good first step toward providing the public with greater information about the occurrence of trauma across specific population groups, EMS should take further steps to use the demographic data to ensure that it identifies specific needs within its trauma system. Without a comprehensive assessment of its trauma system as a whole, Los Angeles cannot demonstrate that its current system is meeting the needs of those in its population at the greatest risk of experiencing trauma.

A comprehensive assessment would provide greater transparency to the public regarding Los Angeles's existing trauma system's needs and challenges. In fact, according to the manager of the College of Surgeons' trauma systems and trauma center verification programs (trauma programs manager), the College of Surgeons is the only independent, nonprofit organization that conducts assessments of trauma systems. It operates a trauma systems consultation program that conducts a comprehensive on-site review of trauma systems at all levels of maturity, and the review can be tailored to address specific trauma system concerns. According to the College of Surgeons, a hand-chosen multidisciplinary team of national trauma system experts provides an independent, comprehensive assessment of the system. The review includes a critical analysis of the current system's status, including its challenges and opportunities. Additionally, the process allows trauma system participants to request that the College of Surgeons focus on questions specific to the system's critical issues. The College of Surgeons states that the report prepared following the consultation provides a current assessment of the trauma system and recommendations for future trauma system development.

The majority of trauma centers appear to be generally located in Los Angeles's most populated areas—the areas containing a higher concentration of individuals ages 20 to 24 and the areas with a higher concentration of black males.

Figure 2
Location of Trauma Centers in Los Angeles County and Selected Demographics





LEGEND

- Trauma center
- Census County Divisions*
- Underserved area boundaries

Sources: California State Auditor’s adaptation of information provided by Los Angeles County’s Emergency Medical Services Agency and information obtained from the United States Census Bureau (Census Bureau) Web site based on the 2008–2012 American Community Survey five-year estimates.

Note: The trauma centers’ full names appear in Figure 1 on page 15.

* A Census County Division is a subdivision of a county that is a relatively permanent statistical area established by the Census Bureau and state and local government authorities.

Selected Areas of Review Included in the American College of Surgeons' Trauma System Consultation Process

Injury Epidemiology—The frequency, rates, and pattern of injury events in a population. *Injury pattern* refers to the occurrence of injury-related events caused by various factors, including time, place, and such personal characteristics as age, race, and sex.

Trauma System Plan—A clearly articulated planning process resulting in a written trauma system plan. This process builds on a completed inventory of trauma system resources that identifies gaps in services or resources and the location of assets. In addition, the process relies on an assessment of demographics, topography, or other access enhancements or barriers to access by patients.

Financing—A sufficient amount of funding to plan, implement, and evaluate a statewide or regional system of trauma care.

Definitive Care Facilities—The acute-care facilities operating within an inclusive trauma system that provide definitive care to the entire spectrum of patients with traumatic injuries.

Systemwide Evaluation and Quality Assurance—The processes for evaluating the performance of all aspects of the trauma system, including the outcomes of population-based injury prevention initiatives and access to care.

Trauma Management Information Systems—The information systems designed to provide data from throughout the trauma care system that allow and facilitate evaluation of the structure, process, and outcomes of the entire trauma care system. Decision makers use these information systems to develop, implement, and influence public policy.

Source: American College of Surgeons' *Regional Trauma Systems: Optimal Elements, Integration, and Assessment Systems Consultation Guide*.

According to its client manual regarding a trauma consultative visit, the College of Surgeons assembles a team of five reviewers to conduct the consultation. The team typically includes a trauma surgeon; an emergency physician; a trauma nurse; a state, regional, or local EMS director; and a team leader, usually a surgeon. The review team, according to the trauma programs manager, meets on site with the lead agency and stakeholders to review various elements described within the College of Surgeons' consultation guide. The team is also supported on site by College of Surgeons staff. The text box describes examples of areas of review included in the consultation process and discussed in the consultation guide. A consultation, for instance, may include a needs assessment to review the optimal placement, level, and number of trauma centers within a system to help trauma system leaders determine whether the existing system's design is meeting population needs. According to the trauma programs manager, a trauma system consultative visit by the College of Surgeons typically requires less than a year to complete and costs \$65,000. In California the College of Surgeons has already conducted formal evaluations of regional trauma systems in three counties—Marin in 2002, Ventura in 2010, and Solano in 2013.

Although EMS employs the College of Surgeons to assess regularly the services provided by individual trauma centers, EMS has expressed reservations about requesting the College of Surgeons to conduct a trauma system consultation of Los Angeles's system. According to the director of EMS, the agency believes that such a review would not add value because Los Angeles's trauma system is well established, and it would likely not be feasible to implement any recommendations to add or remove trauma centers. For example, the director of EMS

suggested that such a review may find that some areas of the county have too many or too few trauma centers, and she believes the board would not direct a hospital to withdraw. Furthermore, state law does not authorize either the State or a local health department to require a hospital to join a trauma system.

On the other hand, we believe a comprehensive assessment by the College of Surgeons would likely result in recommendations that could improve and enhance the county's trauma system or identify areas requiring more focused attention. Specifically, using Measure B funds, Los Angeles could request that the College of Surgeons focus on questions related to assessing its allocation of Measure B funds and analyzing how EMS might better use the data it collects to continuously evaluate, improve, and report on its trauma system. Although Los Angeles does recognize that the geographic locations of existing trauma centers within its trauma system are not optimal, without a comprehensive assessment like one conducted by the College of Surgeons, Los Angeles is precluding itself from identifying weaknesses in its trauma system and from ensuring that it is adequately serving all areas and population groups of the county. Thus, county residents, particularly those residing in underserved areas or belonging to population groups at the greatest risk of experiencing trauma, may lack assurance that Los Angeles is using Measure B funds effectively and that it is being transparent in terms of the successes and challenges of its trauma system.

Los Angeles Should Reassess Its Allocation Approach to Verify and Demonstrate That the County Is Fulfilling Measure B's Intent

Not since 2003 has the board revisited its approach for allocating funds to maintain and expand the trauma system countywide, and the dissolution of its Measure B Oversight Committee (oversight committee) in 2004 left it without a key advisory body that could help ensure that the allocation approach is sound. Further, although the board originally intended to provide helicopter services as an interim solution for trauma patients residing in underserved areas, more than 10 years later the board has continued to fund helicopter services using Measure B revenue. Given the length of time Los Angeles has provided helicopter services to trauma patients in underserved areas, we expected EMS to monitor, assess, and report consistently on the effectiveness and adequacy of these services; however, we found that it has not done so. As a result, the board lacks the ability to demonstrate to the public that the funds it has provided for these purposes are fulfilling the intent of Measure B. Additionally, although EMS made some attempts several years ago to designate a trauma center in East San Gabriel Valley, it has made minimal attempts since that time. Interestingly, when we contacted one of the eligible hospitals in the area to gauge its interest in becoming a trauma center, we learned that an opportunity may exist to do so.

Although EMS made some attempts several years ago to designate a trauma center in East San Gabriel Valley, it has made minimal attempts since that time.

Its approach to allocating Measure B funds has resulted in significant fund balances over at least the four fiscal years within our audit period—fiscal years 2008–09 through 2011–12.

Los Angeles Cannot Demonstrate Adequately to Taxpayers That It Distributes Funds in a Manner That Fulfills Measure B’s Intent

The board has not revisited its allocation approach in nearly a decade and cannot provide assurance to residents of Los Angeles that it directs Measure B funds toward the areas and population groups with the greatest needs. In fact, its approach to allocating Measure B funds has resulted in significant fund balances over at least the four fiscal years within our audit period—fiscal years 2008–09 through 2011–12. Because the ballot language for Measure B did not specify the manner in which funds should be allocated or identify the proportion of funds that should be designated for each of the expenditure categories, such as trauma or emergency medical services, the board has broad discretion in determining how to allocate Measure B funds. With this discretion, almost immediately following the passage of Measure B, the board created an oversight committee to monitor and report back annually on the collection and expenditure of the tax revenues under Measure B to ensure proper use of these funds. The oversight committee was chaired by the County of Los Angeles Department of Auditor Controller (auditor-controller) and was made up of representatives from Los Angeles’s chief executive office, Los Angeles County Department of Health Services (County Health Services), county counsel, the assessor, the treasurer, and the tax collector. Based on a letter from the auditor-controller to the board, the oversight committee appears to have been formed in February 2003 and reported to the board on its actions in both 2003 and 2004.

In its June 2003 letter to the board, the oversight committee proposed that the board allocate Measure B funds in certain proportions among the various allowable expenditure categories. The oversight committee recommended distributing most of the projected revenues to pay for trauma and emergency care at county-operated hospitals and for trauma care at non-county-operated trauma centers. Specifically, Los Angeles reimburses the hospitals and trauma centers for treatment of patients who are unable to pay for their care and who have no third-party insurance coverage, which we refer to as *uncompensated care*.

According to available documentation, the oversight committee’s last report to the board appears to have been in May 2004, after which, according to the assistant auditor-controller, it effectively dissolved. The assistant auditor-controller explained that the oversight committee was not intended to provide permanent oversight of Measure B. Rather, he stated that the oversight committee’s purpose was to ensure that the major implementation and startup activities were well coordinated among the involved county departments and that processes and procedures

would be carefully planned and instituted. Once the processes and procedures were in place, the assistant auditor-controller indicated that the ongoing attention of a permanent oversight committee was no longer required. However, the board-approved motion to create the oversight committee specified the importance of having proper safeguards in place to ensure that Measure B funds were spent on their intended goals and having county departments with proper expertise involved in reviewing the use of these funds. In fact, according to a letter written by the Office of the Pasadena City Manager the day before the 2002 general election, one Los Angeles supervisor had expressed his opposition to Measure B and cited various concerns, including the potential for misappropriation of Measure B funds and the possibility that the funds would not provide for equal access to trauma services for residents of portions of the county. Not surprisingly, this same supervisor presented the motion to the board regarding the creation of the oversight committee, and in his motion he specifically stated that the committee was to ensure proper use of the funds and to report back annually to the board. Thus, the motion did not indicate that the oversight committee was to be temporary.

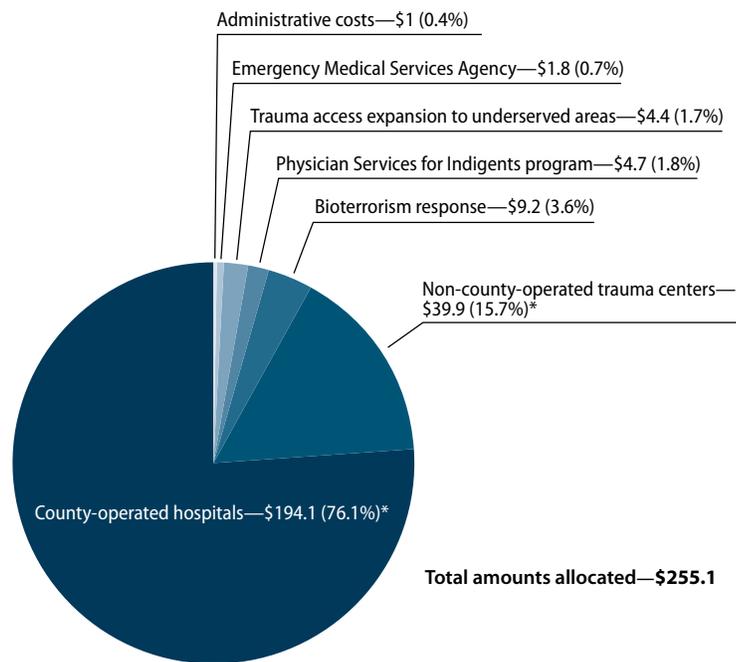
While we acknowledge that the board's initial intentions to establish the oversight committee were prudent and addressed interests of transparency, we question why it would abandon such an oversight mechanism. If re-established with representatives from county departments who have expertise in the county's trauma and EMS systems, as well as in bioterrorism preparedness programs, the oversight committee could provide assurance to voters that Measure B funds are used appropriately and that the board's allocation of Measure B funds is sound. For example, annual reports produced by the oversight committee, if made available on the county's Web site, could describe to the board, voters, community leaders, and others how Measure B expenditures are meeting the county's trauma needs. Further, such reports could increase transparency about how Measure B funds are spent by describing the ways in which Los Angeles has fulfilled the intent of Measure B, which, according to board documents, includes assisting hospitals in underserved areas to become trauma centers.

For more than nine years following the dissolution of the oversight committee, the board has remained without a key body to oversee and advise it on the allocation of Measure B funds. Since the passage of Measure B, the board has generally allocated Measure B funds in the same proportions year after year through the county budget process. The allocations for fiscal year 2011–12, shown in Figure 3 on the following page, demonstrate that the board continues to allocate Measure B funds primarily to reimburse non-county-operated trauma centers and county-operated hospitals for uncompensated care costs, as originally recommended by the

For more than nine years following the dissolution of the oversight committee, the board has remained without a key body to oversee and advise it on the allocation of Measure B funds.

oversight committee. In the Appendix, we present the amount of Measure B funds each non-county-operated trauma center and each county hospital received during fiscal years 2008–09 through 2011–12. Additionally, the board has generally allocated \$4.4 million annually to address the needs of trauma patients residing in underserved areas, an amount that the board has used to fund helicopter transport services.

Figure 3
Allocations of Los Angeles County’s Measure B Special Tax Revenue Fund for Emergency Medical Services, Trauma Centers, and Bioterrorism Response Fiscal Year 2011–12
(Dollars in Millions)



Source: Measure B Special Tax Revenue Fund for Emergency Medical Services, Trauma Centers, and Bioterrorism Response *Status of Measure B Projects*, an unaudited report prepared by the Los Angeles County Department of Health Services, for fiscal year ending June 30, 2012.

* The county-operated hospitals are reimbursed for uncompensated care costs associated with providing trauma and emergency medical services. Non-county-operated trauma centers are reimbursed for costs including uncompensated care associated with providing trauma services and for providing medical direction and destination to prehospital care personnel within the Los Angeles County emergency medical services system.

By using the initial allocation approach recommended by the oversight committee in 2003, and by making subsequent adjustments pertinent to the needs of the program, county officials believe that they have addressed a primary concern of trauma centers and helped stem their withdrawal from the trauma system. According to the director of EMS, by reimbursing a

significant portion—but not the total amount—of trauma centers’ uncompensated care costs, Measure B funds have helped to stabilize the county’s trauma system and expand the number of trauma centers it contains. Nevertheless, underserved areas of the county—such as East San Gabriel Valley—continue to lack trauma centers. Moreover, without ongoing input from an advisory body, such as an oversight committee, to review the allocation approach and advise the board on whether the current funding strategy is best fulfilling the intent of Measure B, the public may lack certainty that the county is investing its resources most effectively toward the allowable purposes set forth in Measure B.

Further, the board’s approach to allocating Measure B funds appears overly conservative because it has resulted in significant fund balances at year end. Specifically, as Table 3 shows, our review of Measure B allocations found that the current approach has left anywhere from roughly \$6 million to nearly \$11 million in unallocated funds at year end from fiscal years 2008–09 through 2011–12. County Health Services’ special funds manager stated that the Measure B fund balances result from surpluses from previous years, and he explained that these funds are not fully allocated in the immediate subsequent year and are accounted for as contingency in Los Angeles’s budgetary process until a new request is received. Nevertheless, an advisory body similar to the oversight committee could recommend whether and how the board should allocate significant fund balances, such as whether to help fund efforts to establish trauma centers in underserved areas, or to consider whether such balances are warranted.

Table 3
Ending Fund Balances for Los Angeles County’s Measure B
Special Tax Revenue Fund for Emergency Medical Services,
Trauma Centers, and Bioterrorism Response
Fiscal Years 2008–09 Through 2011–12
(In Thousands)

	FISCAL YEAR END			
	JUNE 30, 2009	JUNE 30, 2010	JUNE 30, 2011	JUNE 30, 2012
Beginning fund balance	\$37,437	\$9,891	\$6,018	\$5,935
Revenues	235,124	236,540	254,942	256,098
Expenditures*	262,670	240,413	255,025	251,037
Ending fund balance	\$9,891	\$6,018	\$5,935	\$10,996

Sources: County of Los Angeles (Los Angeles) *Comprehensive Annual Financial Reports* and annual statements of financial activity filed by the Los Angeles Department of Auditor Controller with the Los Angeles Board of Supervisors, fiscal years 2008–09 through 2011–12.

* Includes transfers to county-operated hospitals, Los Angeles County Department of Public Health, and the Los Angeles County Emergency Medical Services Agency.

Because it focuses on uncompensated care at existing trauma centers and does not consider the trauma care needs of Los Angeles's population, particularly those population groups at the greatest risk of trauma injury, the board cannot demonstrate that it is fulfilling the intent of Measure B.

Although administering Measure B funds through the county's budget process appears appropriate and efficient, Los Angeles cannot demonstrate to voters that it is directing funds to the most pressing needs of its trauma system because it lacks ongoing oversight and analysis of its approach to allocating Measure B funds. According to County Health Services' associate chief financial officer, the current allocation approach that is based on uncompensated care costs is an objective, verifiable method that is consistent with the Measure B resolution. However, we are concerned about this approach because it focuses on uncompensated care at existing trauma centers and does not consider the trauma care needs of Los Angeles's population, particularly those population groups at the greatest risk of trauma injury. The comprehensive assessment described previously would allow Los Angeles to identify at-risk populations and priority areas that may need more focused attention and services. For example, as we explain later in the report, the underserved area of East San Gabriel Valley has long lacked a trauma center. However, by not revisiting its allocation of Measure B funds, Los Angeles may have missed opportunities to assist existing hospitals in underserved areas become trauma centers and, therefore, may have fallen short of fulfilling the intent of Measure B. With the information gained from a comprehensive assessment, the oversight committee could revisit its approach to allocating Measure B funds to ensure that the board directs funds in a manner that addresses Los Angeles's most pressing trauma care needs and fulfills the intent of Measure B.

Additionally, the Patient Protection and Affordable Care Act (Act) may influence the manner in which Los Angeles allocates Measure B funds to support its trauma and emergency medical services systems in the future. County Health Services' officials explained that it is unclear how much reimbursement trauma centers will receive once the Act is fully implemented. To address the uncertainties raised by the Act, Los Angeles officials have begun to hold negotiation meetings with trauma center representatives. Specifically, representatives from County Health Services, EMS, and the Office of County Counsel are meeting with representatives of the Hospital Association of Southern California (hospital association)—which represents non-county-operated trauma centers—to discuss ways to address the effects of the Act on trauma centers in Los Angeles. Based on the information from its meetings with the hospital association, the associate chief financial officer at County Health Services stated that it would consider revising how Los Angeles reimburses trauma centers using Measure B funds. We believe the oversight committee, if reinstated, should review Los Angeles's negotiation efforts and inform the board of any concerns it identifies.

Although Los Angeles Has Used Measure B Funds to Provide for Helicopter Transport of Trauma Patients From Underserved Areas, It Does Not Monitor, Assess, or Report Consistently on the Adequacy of These Services

In 2003 County Health Services' director at that time (former director) proposed to the board that it allocate \$4.4 million of Measure B funding to provide trauma services for patients in underserved areas—East San Gabriel Valley, Antelope Valley, and Malibu. As explained in the proposal, the original intent of the expansion funds under Measure B was to assist hospitals in these areas to become trauma centers. However, as acknowledged by the former director, none of the hospitals in these areas were prepared to join the trauma system at that time. Further, although the former director stated that County Health Services intended to keep this funding earmarked for potential trauma centers in these areas, he proposed an interim solution to augment the current trauma system transport capability for Los Angeles residents. Specifically, based on his proposal, the board ultimately provided \$2 million of Measure B funds for 24-hour, seven-days-a-week helicopter services in the Antelope Valley and up to \$2.4 million to reimburse public entities for, among other things, providing helicopter services to trauma patients in underserved areas. In 2005 the board approved an annual allocation of \$450,000 in Measure B funds to designate a 24-hour, seven-days-a-week paramedic air squad helicopter for East San Gabriel Valley. Although the former director originally indicated that the helicopter services would be an interim solution for trauma patients residing in underserved areas, more than 10 years later the board has continued to use Measure B funds to provide helicopter services for access to trauma services for patients residing in these areas.

At the time the former director made his proposal to the board, he acknowledged that although helicopter transport is not the optimal method, as there are inherent safety and weather limitations, it is the best alternative when trauma centers are not available. Given this acknowledgement and the fact that Los Angeles has provided helicopter services to patients from underserved areas for roughly a decade, we expected EMS to monitor, assess, and report consistently on the effectiveness and adequacy of these services; however, we found that EMS has not done so. Specifically, we expected EMS to have a regular process for reviewing and analyzing helicopter service data specific to underserved areas in an effort to ensure that helicopters are adequately serving trauma patients transported from these areas. For example, for each underserved area, EMS could compile and analyze the number of trauma patients transported by helicopter, the location within the underserved area where the trauma incident occurred, the duration of each trauma patient's transport, the mortality rates of

Although originally an interim solution for trauma patients residing in underserved areas, more than 10 years later the board has continued to use Measure B funds to provide helicopter services for access to trauma services for patients residing in these areas.

these transported trauma patients, and any instance of cancelled transports. Such an analysis would allow EMS to gauge the demand for and effectiveness of helicopter services in each underserved area and the ability of helicopter service providers to meet that demand, to better understand where trauma is occurring, and to verify whether helicopters are transporting trauma patients from underserved areas in a manner comparable to trauma patients transported by ambulance from other areas of the county. We believe Los Angeles should ask the College of Surgeons, as part of its comprehensive assessment, to assess the adequacy of helicopter services that Los Angeles provides in underserved areas.

The chief of EMS's prehospital care operations and ambulance programs (operations chief) stated that he receives and reviews helicopter flight data submitted to him by each of the helicopter service providers on a quarterly basis. Helicopter service providers send the data directly to the operations chief in spreadsheets, and he uses the information to identify and further analyze individual flights that are outliers in terms of transport times. The data include helicopter transports throughout Los Angeles and are not limited to transports made in underserved areas. Nevertheless, the operations chief's review of the helicopter data does not include a compilation of the outliers by each underserved area or a documented trend analysis over time for each of the underserved areas. Such analyses could indicate, for example, whether lengthy transport times were an issue in any particular underserved area. Further, the operations chief explained that the data are not limited to trauma patient transports; rather, the data include a small number of flights flown by providers for medical emergencies, as well as search-and-rescue missions that resulted in patient transport.

EMS has not consistently collected data on the number of flights cancelled in each of the underserved areas, a situation that further hinders its ability to determine accurately the availability of helicopter services.

Although these data also include some information on cancelled flights, EMS has not consistently collected data on the number of flights cancelled in each of the underserved areas, a situation that further hinders its ability to determine accurately the availability of helicopter services. Specifically, only two of the three helicopter service providers track and report the number of cancelled flights. For example, only after we asked the operations chief for data regarding cancelled trauma helicopter transports did he apparently realize that the Los Angeles County Sheriff's Department did not maintain and report data regarding cancelled flights. Weather conditions and maintenance can affect a helicopter's ability to fly, which can cause the flight to be cancelled, aborted, or not accepted upon initial dispatch. The operations chief explained that in cases in which a helicopter cannot fly due to weather conditions, the emergency medical service providers use ground transportation as an alternative. He also stated that for cases in which a helicopter is under routine maintenance, the helicopter providers have adequate backup aircraft to conduct patient transports as needed.

However, for those data submitted by helicopter service providers to EMS regarding the number of cancelled flights, the data do not include information about how trauma patients were ultimately transported. As a result, EMS cannot assess the data to determine the overall effect of cancelled flights, such as the length of time it took to transport patients using alternate transportation methods and, of even greater concern, what the medical outcomes were for those patients. Without reviewing this type of information regularly and specifically for underserved areas, EMS cannot be certain or demonstrate to residents that helicopter services are effective in fulfilling the intent of Measure B to expand trauma services to underserved areas.

In our efforts to determine the total number of transports from each of the underserved areas, we obtained and reviewed helicopter service data submitted by the service providers, as described previously, and compiled by the operations chief. We found that the data the operations chief compiled and provided to us included transports from cities located outside of the respective underserved areas and excluded transports from cities that should have been included in the respective underserved areas. Because of these issues, we had overall concerns about the quality of the data and thus did not present it because it could mislead those attempting to draw conclusions based on the data.

Further, although EMS gave us additional data regarding the efficiency of helicopter services it receives separately from the spreadsheets, we also have concerns with this data. As part of its standard operations, EMS collects data submitted by emergency service providers in its trauma system database. The data it collects covers many components of patient care, including patient outcomes and transport times, which describes the number of minutes it takes an ambulance or a helicopter to transport a trauma patient from the scene of an emergency to the hospital. The director of EMS believes that transport times and mortality rates—the ratio of the total number of trauma patient deaths to the total number of trauma patients—for the underserved areas demonstrate the adequacy of the helicopter services. However, EMS could not provide us with evidence that it consistently monitors, assesses, or reports this information specific to underserved areas. Rather, it provided us with outdated reports it had compiled for another entity, and subsequently it provided updated data upon our request. However, we have doubts about the accuracy and usefulness of the data regarding transport times because we identified errors—which EMS acknowledged—including transports listed as lasting more than a thousand minutes. This indicates that EMS does not review these data for accuracy and perform the follow-up necessary to correct such errors, which further lessens the data's reliability and usefulness.

EMS could not provide us with evidence that it consistently monitors, assesses, or reports transport times and mortality rates, which could demonstrate the adequacy of the helicopter services in underserved areas.

The voter information booklet provided for the November 2002 general election may have led some to believe that the passage of Measure B would ensure a designated trauma center would be located in East San Gabriel Valley.

Los Angeles Needs to Better Gauge the Concerns of a Hospital in East San Gabriel Valley About Its Possible Participation in the County's Trauma System

Shortly after the passage of Measure B, Los Angeles undertook some formalized efforts to designate a hospital as a trauma center in East San Gabriel Valley; however, since that time, Los Angeles has made only minimal attempts to do so, and this area continues to be underserved. As mentioned previously, the voter information booklet provided for the November 2002 general election may have led some to believe that the passage of Measure B would ensure a designated trauma center would be located in East San Gabriel Valley. Trauma patients from East San Gabriel Valley are transported to LAC+USC Medical Center or Huntington Memorial Hospital, both of which are more than 20 miles away from some areas of East San Gabriel Valley.

Shortly after the election, in August 2003, board documents indicate that none of the hospitals located in underserved areas was prepared to join the trauma system at that time. Subsequently, minutes of a board meeting held in September 2005 reported that for more than a year, the board, in partnership with various local entities, reviewed efforts to have Pomona Valley Hospital Medical Center (Pomona), a private hospital in East San Gabriel Valley, reenter the system as a trauma center. Pomona originally joined Los Angeles's trauma system in the 1980s but reportedly decided to withdraw using financial viability as a principal determinant. The September 2005 board minutes explain that Pomona conducted a feasibility study to assist political leaders in East San Gabriel Valley to better understand the hospital's concerns about reentering the trauma system. Pomona reported that it was not feasible to reenter the county's trauma system for various reasons, including the lack of physicians necessary for trauma center designation, the hospital's insufficient capacity and infrastructure, and the high cost of reentering the system and sustaining a trauma center. Further, in its feasibility study, Pomona stated that despite the lack of a trauma center in the geographic region, area trauma victims were being acceptably managed by the existing county trauma system.

Given that this study was completed more than eight years ago, and Pomona's concerns about entering the trauma system could have changed or lessened over time, we interviewed EMS officials to determine whether the county has undertaken any subsequent efforts to discuss with the hospital its interests in reentering the trauma system. The director of EMS explained that the agency has continued to communicate with Pomona informally to engage hospital leadership in discussions about reentering the trauma system. The evidence the officials provided consisted of two brief, informal e-mail exchanges between EMS officials

and Pomona in April and June 2013. One e-mail was roughly a half-page response by Pomona's vice president of administration to a phone call made by the director of EMS, which, according to the director, was made to determine whether the hospital's intentions of entering the trauma system had changed. EMS could provide no documentation indicating that there was any further discussion as to how the county might potentially address the hospital's previous concerns. Not surprisingly, in the e-mail response to the director of EMS, Pomona's vice president of administration cited some of the same concerns as stated in Pomona's 2005 feasibility study. When we asked hospital officials from Pomona about Los Angeles's efforts to engage the hospital in discussions about becoming a trauma center, they confirmed that since 2005 EMS has not formally reached out to the hospital, with the exception of the informal exchanges regarding Pomona's interest in becoming a trauma center.

To better gauge Pomona's current position on entering Los Angeles's trauma system and to more fully understand its concerns, we interviewed hospital officials in December 2013. Although we learned that Pomona continues to have some of the same reservations as those reported in its 2005 feasibility study, we also found that it is not opposed to having formal discussions with Los Angeles leadership about becoming a trauma center. Pomona officials explained that the hospital is currently in the process of expanding its facilities by adding an outpatient center that will also allow for the expansion of the emergency department, and the concerns it cited in 2005 related to inadequate facilities or space will no longer be a concern given the hospital's current expansion. However, officials described that the most pressing concerns hospital leadership have with becoming a trauma center relate to the hospital's aging surgical workforce, the lack of available surgeons to replace those who will soon retire, and inadequate funding. More specifically, officials explained that its aging surgical workforce has little desire to be on call around the clock, as required by trauma center guidelines. However, officials from Pomona stated that if funding were available through Measure B, the hospital would be open to discussing and potentially considering whether becoming a trauma center is feasible and in Pomona's best interests.

Given that the board has discretion in its allocation of Measure B funds, it could use this money or funds in its reserve to provide financial support that would enable a hospital to become designated as a trauma center in East San Gabriel Valley. By formally discussing and better understanding Pomona's concerns, particularly as they relate to funding, the board could revisit its allocation of Measure B funding, identify potential funding options to address Pomona's concerns, and present its results to the hospital. However, to the extent that Los Angeles only continues its informal efforts to engage Pomona's leadership, it may miss the opportunity to designate

The board could use Measure B funds or its reserve to provide financial support that would enable a hospital to become designated as a trauma center in East San Gabriel Valley.

a trauma center within East San Gabriel Valley and forego its ability to demonstrate to taxpayers that it has attempted diligently to fulfill the intent of Measure B by expanding trauma services to East San Gabriel Valley.

Additionally, we inquired about the possibility of Los Angeles constructing a county-operated hospital to house a trauma center in East San Gabriel Valley. According to the controller of County Health Services (controller), doing so would have a significant financial impact on County Health Services because it would have to find a way to pay for the new hospital within its existing budget. Costs to build a hospital, which range widely depending on facility size, can reach hundreds of millions of dollars. The controller explained that for any portion of Measure B revenues that the board diverts to the construction of a hospital, it would have to either cut services at its existing trauma centers or other services it provides, or identify funding to replace the diverted revenues. Additionally, the director of EMS stated that building a new county hospital that would also serve as a trauma center in East San Gabriel Valley would likely be detrimental to the system as a whole. She explained that the cost of a hospital, staff, facility equipment, and management would be exorbitant. Further, she stated that funding for such a hospital would draw on County Health Services' budget and may have a negative impact on the other county hospitals and health clinics.

The director of EMS stated that building another hospital in East San Gabriel Valley would potentially negatively impact existing hospitals and that East San Gabriel Valley needs trauma services, not another hospital. Because Pomona is a local hospital in East San Gabriel Valley, we asked hospital officials for their perspective on the impact that building a county hospital to house a trauma center would have on the area. The officials explained that the funding would be better spent supporting existing hospitals, since trauma patients on average comprise only about 2 percent of patients that the hospital serves. Nevertheless, we believe the board should use the College of Surgeons' comprehensive assessment, described previously, to better inform its efforts and decision making surrounding the most feasible way to meet the trauma needs of residents in East San Gabriel Valley and fulfill the intent of Measure B.

The board should use the College of Surgeons' comprehensive assessment to better inform its efforts and decision making surrounding the most feasible way to meet trauma needs of residents in East San Gabriel Valley.

Los Angeles Has Identified and Addressed Some Shortcomings in Its Emergency Medical Services

Over roughly the past 10 years, EMS has made some changes to improve its emergency medical services. *Emergency medical services* refers to prehospital and hospital critical and urgent

emergency care, including care provided in, en route to, from, or between acute care hospitals or other health facilities. EMS improved its emergency medical services by updating its policies to reduce the amount of time a hospital could continuously divert certain patients from busy hospitals. EMS also designated hospitals equipped with necessary resources as centers for receiving patients suffering from a certain type of heart attack, and it used Measure B funds to purchase specialized equipment to allow emergency medical technicians and paramedics to determine the severity of a patient's heart attack prior to arrival at a hospital.

Although EMS and other entities began reviewing the problem of the growing use of ambulance diversion (diversion) in Los Angeles before the passage of Measure B, it took steps to address the issue that, according to EMS reports, have resulted in a decrease in diversion. Diversion is a request by a hospital to have certain patients bypass its facility for a limited period of time. This can occur for a couple of reasons, including when hospital emergency department resources, such as beds, are fully committed and are not immediately available for additional incoming patients. Before the passage of Measure B, EMS and other entities brought this problem to the Hospital Association of Southern California (hospital association) for review and resolution. Subsequently, the hospital association convened a special task force consisting of officials from various entities, including hospitals, medical centers, and EMS to study emergency department diversion, review current county policy addressing diversion, and recommend changes in diversion policy and practice to optimize emergency medical services' system performance.

In the task force's April 2003 report on its findings, it identified numerous underlying causes of hospitals diverting patients. These causes included a shortage of nurses and other technical and clinical staff; closure of hospitals and reduction of hospital inpatient capacity since 1995; and lack of adequate funding for health care, emergency, and trauma services in Los Angeles. Subsequently, EMS revised the diversion policy to mitigate the increasing diversion problem. Changes to the diversion policy included reducing the amount of time a hospital could continuously remain on diversion, from four hours to the current time of one hour. According to data reported by EMS, these changes resulted in a significant decrease in diversion rates. Specifically, EMS reported that in 2005, hospitals' requests for diversion reached a high of 6.5 hours per day; however, diversion over the last several years has stabilized and fallen to an average of 2.4 hours per day per hospital. After updating its policy, the director of EMS explained that it has continued monitoring diversion by compiling monthly reports, looking for outliers within those reports, and posting the reports on its Web site.

EMS and other entities began reviewing the problem of the growing use of ambulance diversion in Los Angeles before the passage of Measure B, and the steps it took to address the issue have resulted in decreased diversion.

Los Angeles has also improved the emergency medical services it provides to certain heart attack patients.

Los Angeles has also improved the emergency medical services it provides to certain heart attack patients. In 2006, citing national interest in developing a systematic approach to the prehospital care of ST elevation myocardial infarction (STEMI)—the deadliest form of heart attack—cardiac patients, County Health Services reported to the board that survival from a heart attack depends largely on prompt recognition and rapid intervention. As a result, County Health Services recommended that the board authorize EMS to approve and designate qualified private and public hospitals in the county as STEMI receiving centers to enable earlier definitive diagnosis and treatment, improving patient outcomes. STEMI receiving centers are facilities licensed by the California Department of Public Health and approved by EMS for cardiac catheterization laboratory and for cardiovascular surgery. According to the director of EMS, in the past, STEMI patients would be transported to the nearest hospital, unless the hospital was on diversion, and the time from electrocardiograph (EKG) to definitive care of heart catheterization and opening of the artery was greater than 90 minutes. These potential delays could be life threatening. The director of EMS explained that the STEMI system has ensured early identification of the patient's condition in the field and decreased time to definitive treatment, along with providing other benefits.

The board took a few important actions to address County Health Services' 2006 recommendations. For example, it authorized a \$4 million one-time expenditure of Measure B funds to reimburse 30 paramedic service provider agencies throughout Los Angeles for the initial purchase of EKG machines and initial training of personnel on the use of the machines. According to documentation provided by County Health Services, Los Angeles ultimately purchased 182 EKG machines using Measure B funds. The board also instructed EMS to designate private and public hospitals as STEMI receiving centers. According to documents provided by EMS, as of December 2013, 34 hospitals and medical centers throughout the county—three of which are located in East San Gabriel Valley—have received STEMI center designation. With this established care program, according to County Health Services' documentation and the director of EMS, emergency medical personnel are able to utilize the EKG machines on patients in the field and transport those experiencing a STEMI directly to a 24-hour facility equipped to treat them.

Recommendations

To determine whether its trauma system is appropriately designed and serving the needs of residents in underserved areas and the needs of the most at-risk populations, the board should use

Measure B funds to engage the College of Surgeons by July 2014 to perform a comprehensive assessment of the trauma system and then make the results available to the public. To the extent the assessment identifies weaknesses in the trauma system, the board should develop strategies to address those weaknesses where feasible. Specifically, the board should ask the College of Surgeons to do the following:

- Assist the board in better defining and identifying underserved areas in Los Angeles.
- Review Measure B allocations to ensure that they are addressing the most pressing needs of at-risk populations in Los Angeles.
- Assess the adequacy of helicopter services it provides in underserved areas.
- Analyze how EMS might better use the data it collects to evaluate, improve, and report continuously on its trauma system.

To ensure that it allocates Measure B funds to address the most significant needs of residents within its trauma system, the board should reinstate a Measure B oversight committee, with participation from departments with trauma, EMS, and bioterrorism preparedness expertise, as well as representatives of the public. The oversight committee should review trauma system and other county needs annually and advise the board on Measure B expenditures. As part of its responsibilities, the oversight committee should reevaluate the Measure B allocation approach, taking into consideration the results of Los Angeles's comprehensive assessment and the effects of the Act, and issue a report on its findings no later than December 2015.

To determine the adequacy and effectiveness of the helicopter services it provides to residents of underserved areas who suffer a trauma injury, EMS should collect, assess, and report accurate and complete data on the following:

- The number of flights flown by each provider to underserved areas.
- The time it takes to transport each trauma patient.
- The health outcomes, including mortality rates, of trauma patients transported by helicopter.
- The number of cancelled flights in each of these underserved areas, including the method of transportation used instead of helicopters and the transport times and trauma patient outcomes.

Los Angeles should undertake formal discussions with Pomona's management regarding the hospital becoming a trauma center. In doing so, Los Angeles should analyze its current Measure B revenues and allocations to determine whether financial opportunities exist that would meet the needs of Pomona and present the resulting analysis to Pomona. Further, it should document its efforts and the resulting outcome so that both voters and taxpayers are aware of the diligence Los Angeles has undertaken in fulfilling the spirit of Measure B.

We conducted this audit under the authority vested in the California State Auditor by Section 8543 et seq. of the California Government Code and according to generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives specified in the scope section of the report. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Respectfully submitted,



ELAINE M. HOWLE, CPA
State Auditor

Date: February 20, 2014

Staff: Laura Georgina Kearney, Project Manager
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Legal Counsel: Richard B. Weisberg, J.D., Senior Staff Counsel

For questions regarding the contents of this report, please contact Margarita Fernández, Chief of Public Affairs, at 916.445.0255.

Appendix

REIMBURSEMENTS TO HOSPITALS IN LOS ANGELES COUNTY FROM THE MEASURE B SPECIAL TAX REVENUE FUND FOR EMERGENCY MEDICAL SERVICES, TRAUMA CENTERS, AND BIOTERRORISM RESPONSE FOR UNCOMPENSATED CARE COSTS, FISCAL YEARS 2008–09 THROUGH 2011–12

The Joint Legislative Audit Committee directed the California State Auditor to determine the total Measure B funds allocated to medical service providers by area or other relevant allocation factors for the past four years. We defined the past four years as fiscal years 2008–09 through 2011–12. As explained in the Audit Results, the Board of Supervisors for the County of Los Angeles has allocated the majority of Measure B funds to county-operated hospitals for uncompensated trauma and emergency care and to non-county-operated trauma centers specifically for uncompensated trauma care. Table A presents the amounts of Measure B funds each of the hospitals received for fiscal years 2008–09 through 2011–12. As the table shows, county-operated hospitals receive the largest amount of Measure B funds.

Table A
Reimbursements to Hospitals in Los Angeles County From the Measure B Special Tax Revenue Fund for Emergency Medical Services, Trauma Centers, and Bioterrorism Response for Uncompensated Care Costs Fiscal Years 2008–09 Through 2011–12

NON-COUNTY-OPERATED TRAUMA CENTERS	FISCAL YEARS			
	2008–09	2009–10	2010–11	2011–12
Antelope Valley Hospital	\$0	\$369,636	\$1,295,594	\$1,221,633
California Hospital Medical Center	7,564,957	7,999,227	9,772,363	8,827,626
Cedars-Sinai Medical Center	1,703,800	1,868,057	1,423,104	1,225,372
Henry Mayo Newhall Memorial Hospital	1,154,849	1,061,981	1,421,298	908,812
Long Beach Memorial Medical Center	3,003,632	3,116,628	2,755,735	3,204,822
Northridge Hospital Medical Center	2,145,208	2,319,976	2,699,592	3,259,206
Huntington Memorial Hospital	1,794,256	1,661,835	1,992,658	1,605,940
Providence Holy Cross Medical Center	6,646,982	6,395,024	5,770,311	6,253,446
St. Francis Medical Center*	7,357,477	6,942,413	6,804,980	7,778,873
St. Mary Medical Center	1,447,584	1,166,462	1,475,866	1,854,837
Ronald Reagan UCLA Medical Center	1,743,580	2,129,314	1,863,539	1,997,971
Children’s Hospital Los Angeles	396,487	426,139	876,716	898,379
Totals for non-county-operated hospitals	\$34,958,812	\$35,456,692	\$38,151,756	\$39,036,917[†]

continued on next page . . .

COUNTY-OPERATED HOSPITALS	FISCAL YEARS			
	2008-09	2009-10	2010-11	2011-12
LAC+USC Medical Center	\$109,700,855	\$106,852,581	\$107,247,000	\$72,696,500
Harbor-UCLA Medical Center	59,259,822	50,942,275	52,690,000	63,363,500
Olive View-UCLA Medical Center [‡]	42,451,323	34,617,144	41,695,000	58,072,000
Totals for county-operated hospitals	\$211,412,000	\$192,412,000	\$201,632,000	\$194,132,000

Sources: Unaudited annual statements of financial activity filed by the Los Angeles County (Los Angeles) Department of Auditor Controller with the Los Angeles Board of Supervisors, fiscal years ending June 30, 2009, through June 30, 2012, as well as final installment schedules provided by the Los Angeles County Department of Health Services for fiscal years 2008-09 through 2011-12.

Note: Non-county-operated trauma centers are reimbursed for costs including uncompensated care associated with providing trauma services and for providing medical direction and destination to prehospital care personnel within the Los Angeles emergency medical services system. The county-operated hospitals are reimbursed for uncompensated care costs associated with providing trauma and emergency medical services.

* St. Francis Medical Center also receives payments to ensure that it has adequate capacity and capability to handle additional trauma and emergency room patients redirected due to the closure of another trauma center.

† This amount does not agree with the total shown in Figure 3 on page 24 because it represents the amounts reimbursed rather than those that were allocated. Los Angeles makes a final payment in the following fiscal year after the costs for uncompensated care have been finalized.

‡ Olive View-ULCA Medical Center is not a trauma center and receives Measure B funds for uncompensated care costs associated with providing emergency medical services, an allowable use of these funds.

February 2014



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February 5, 2014

Elaine Howle*
California State Auditor
621 Capital Mall, Ste. 1200
Sacramento, CA 95814

Dear Ms. Howle:

The County of Los Angeles (County) would like to thank the California State Auditor (Auditor) for its interest in the use of funds generated by Measure B, the County's Trauma, Emergency and Bioterrorism Response Tax, which was passed by County voters in 2002. We disagree with many of the assertions contained in the Auditor's Report. Indeed, even the Report's title suggests that Los Angeles County is unable to demonstrate that Measure B funds were used "to address the most pressing trauma needs".

①

In fact, Los Angeles County has addressed the region's most pressing trauma needs by doing the following:

①

Addition of two new private trauma hospitals.

After losing nine trauma centers from 1985, to 2002 (when Measure B was passed), Measure B funding was used to support existing trauma centers so that no other private trauma hospital has since closed. And importantly, with Measure B funding, the County has **added** two new private trauma hospitals: California Hospital Medical Center and Antelope Valley Medical Center.

Addition of "round the clock" air trauma transport.

Measure B funding has also been used to expand air medical transport (helicopter) services to be available "24/7" to the outer reaches of the County, including the areas of the San Gabriel Valley and Antelope Valley.

②

As a testament to these and other improvements made to the Los Angeles County trauma network paid for by Measure B funds, since 2002, the **overall mortality rates have steadily decreased in Los Angeles County**. And the import of this fact is even more significant because, during that time frame, the number of trauma incidents actually increased. In addition, this change is uniform throughout the County, In fact, based on an analysis prepared by Los Angeles County, **patients suffering trauma injuries in the San Gabriel Valley, had similar outcomes, as compared to the rest of the County**. Further detail is provided in Section VII below and in the reports in Exhibit E.

③

The Auditor's Report, as captured in its title and throughout the document, wrongly suggests there has been no comprehensive assessment of the

①

* California State Auditor's comments begin on page 53.

Note: Los Angeles County provided copies of several documents, including newspaper articles, pamphlets, and flyers relating to Measure B, to which Los Angeles refers in its response. We have not included them with Los Angeles's response, but they are available for inspection at the California State Auditor's Office during business hours upon request.

Elaine Howle, State Auditor
February 5, 2014
Page 2 of 14

- ④ County's Trauma System. In fact, the County has and continues to regularly assess and evaluate its trauma and emergency care system. These assessments have led to the development of a number of significant improvements to enhance trauma and emergency medical care, including a ST Elevation Myocardial Infarction (STEMI) center program to treat heart attacks, one of the leading causes of death nationwide, and the development of Stroke Centers to provide optimal care to victims of stroke.

I. Background: The Los Angeles County Trauma System

Los Angeles County has the largest organized trauma system in the country, including five Level I Trauma Centers, and nine Level II Trauma Centers. Our 14 designated Trauma Centers serve a population of approximately 10 million, cover 4,083 square miles, and treat over 23,000 major trauma patients annually.

The Los Angeles County trauma system is nationally recognized and responsible for numerous publications and presentations such as the following:

- The Effect of Trauma Center Designation and Trauma Volume on Outcome in Specific Severe Injuries, *Annals of Surgery*
- Trauma Deaths in a Mature Urban Trauma System: Is the "Trimodal" Distribution a Valid Concept?, *The Journal of Trauma@ Injury, Infection, and Critical Care (2005)*
- Pedestrian Injuries: The Association of Alcohol Consumption with the Type and Severity of Injuries and Outcomes, *The Journal of Trauma@ Injury, Infection, and Critical Care (2006)*
- Motor Vehicle Accidents: The Association of Alcohol Consumption with the Type and Severity of Injuries and Outcomes, *Journal of Emergency Medicine (2010)*
- Massive Blood Transfusion for Post-Traumatic Hemorrhage: Is there an upper limit? podium presentation at the *82nd Annual Meeting of the Pacific Coast Surgical Association (2011)*

II. Measure B: Why Was It Enacted and What Does it Say?

Due to an increase in trauma patient volumes, poor payor mix, and drastic cuts in Proposition 99 Tobacco Tax Funds, Los Angeles County's Trauma System was facing collapse in the early 2000s. Tobacco Tax Funds had dwindled from about \$10 million in the early '90s to just over \$750,000 in 2002. In addition, the County's entire Medical Delivery System was verging on collapse due to the imminent loss of Federal Medicaid "waiver" funding. Supervisor Yaroslavsky stated, "In less than 3 years, the County's Section 1115 Medicaid Waiver will expire. In Fiscal Year 2005-06, we anticipate that the County will face a deficit of \$710 million in the DHS budget. The projected decline in health funding will hurt County residents in many ways, but none so widespread as the impact on trauma centers, EMS, and bioterrorism response." As a result, the Los Angeles County Board of Supervisors voted to place "Measure B" on the ballot, a parcel tax of 3 cents per square foot on structural improvements, to raise approximately \$168 million annually.

As stated in the ballot initiative, the Measure B parcel funds allocated for trauma care were to be used to:

Elaine Howle, State Auditor
February 5, 2014
Page 3 of 14

1. To avoid the life-threatening shutdown of Los Angeles County's trauma network;
2. Maintain and expand the trauma network countywide; and
3. Ensure more timely response to critical and urgent medical emergencies¹

Public support, which included private hospitals, emergency responders, organized labor representing nurses and other health care providers on the front line, and the media, quickly coalesced in support. A public hearing was held on September 12, 2002. Echoing the language in the general ballot, medical experts, members of the public and local leaders testified that Measure B was needed to maintain and stabilize the trauma system. [See attached **Exhibit A – Public Hearing Agenda**]

Recognizing the intent of Measure B, pamphlets and flyers were distributed by groups in support of Measure B, stating:

"We cannot afford to have any more of our Trauma Centers and Emergency Rooms close putting every person in Los Angeles County at risk."

Vote YES on Measure B". [See attached **Exhibit B – Measure B Flyers**]

Similarly, the Los Angeles City Council voted unanimously to support Measure B "to maintain hospital emergency rooms and trauma centers". [See attached **Exhibit C – Press Clippings of Los Angeles Times Article, September 21, 2002**]

Even divergent groups such as the Los Angeles County Chamber of Commerce and the Los Angeles County Federation of Labor joined together to support Measure B to save the existing trauma care system [See attached **Exhibit C – Press Clippings of Los Angeles Times Article, October 3, 2002**]

Following the passage of Measure B in November 2002, Los Angeles County leaders earnestly began the planning and implementation process to allocate Measure B funds to meet the three goals set forth in Measure B as described above.

Over ten years after the measure's passage, Los Angeles County is proud of the positive impact of Measure B funds. Measure B funds were used to (a) avoid the life-threatening shutdown of Los Angeles County's trauma network, (b) maintain and expand the trauma network Countywide – including the addition of new trauma hospitals and air ambulance services – to all areas of the County, and (c) ensure more timely response to critical and urgent medical emergencies. As described in VI and VII below, respectively, the County has also maintained a high degree of public transparency with regard to expenditure of funds, and has engaged in a comprehensive and ongoing assessment of the County's trauma system. Taken together, these uses demonstrate the significant contributions that the Measure B funds have made to the residents of Los Angeles County.

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¹ Measure B funds allocated to trauma care were also to be used to defray other related costs, including physician, personnel and administrative costs, in coordinating and maintaining Los Angeles County's emergency medical services system.

Elaine Howle, State Auditor
February 5, 2014
Page 4 of 14

III. How Measure B Funds Saved the Los Angeles Trauma System.

Recognizing the critical importance of the trauma system, Los Angeles County leaders immediately started a dialogue with area hospitals about the risks facing the system through its trade group, the Hospital Association of Southern California. Of critical importance was to provide financial incentives to keep existing trauma hospitals from closing their doors. Together, a plan was developed to utilize Measure B funds to stem the financial bleeding and offset, at least in part, uncompensated trauma care, which is often the most intensive and, as a result, most expensive, medical care.²

Since the 2002 passage of Measure B and the inception of the Trauma Hospital Program, not a single private trauma center has closed its doors. As pointed out in the Auditor's Report, for Fiscal Year 2011-12, approximately \$175.9 million of Measure B funds was paid in support of public and private trauma hospitals to keep their doors open to all Los Angeles County residents. Through these payments, Los Angeles County has fulfilled the intent and met the stated goals of Measure B to save the trauma system and provide financial incentives to prevent any further trauma center closures.

- ⑤ The Auditor's Report suggests that the County's allocation of Measure B has not changed "in nearly a decade". That is simply not the case. From the inception of the Trauma Hospital Program, the County and the trauma hospitals have continuously assessed their methodology of providing Measure B funds to offset uncompensated care and the reimbursement rates have been revised to meet the needs of the trauma hospitals. Even reimbursement amounts to each hospital have varied based on the level of uncompensated care. Moreover, additional Measure B funding has been allocated to account for changes in the trauma network, such as the addition of California Hospital and Antelope Valley Medical Center as new trauma hospitals, and the extra burden of uncompensated care taken on by St. Francis Medical Center when the County's Martin Luther King, Jr. Medical Center lost its trauma center designation.

IV. How Measure B Funds Have Expanded the Trauma System.

One goal of Measure B funding for trauma care was "to maintain **and expand** the trauma network countywide." As defined by Measure B, there are two critical components to the trauma network/system: pre-hospital care provided by Emergency Medical Technicians (EMTs) and paramedics "on the scene", as well as transport to a hospital, and trauma care provided to an injured person once he or she arrives at a trauma hospital.

- ① ② Los Angeles County has fulfilled and continues to fulfill the goal of expanding the trauma system to all covered areas by allocating Measure B funds to both of these services so that all areas of the County have access to trauma services. Specific accomplishments in these realms are described below.

The New Designation of California Hospital Medical Center as a Level II Trauma Center Following the Closure of the MLK Hospital Trauma Services

In response to the anticipated downgrade of trauma services at the County's Martin Luther King, Jr. Medical Center, on March 1, 2005, California Hospital Medical Center was designated as a

Elaine Howle, State Auditor
February 5, 2014
Page 5 of 14

Level II Trauma Center and, on March 1, 2005, the Los Angeles County Board of Supervisors allocated Measure B funds in support of California Hospital under the County's Trauma Hospital Program. In addition, to ensure its viability, the Board also approved a Transitional Capacity Development Allowance, which is a one-time start-up allowance to ensure that California Hospital would have appropriate capacity for trauma patients.

The Addition of "24/7" Air Medical Transport and New Designation of Antelope Valley Hospital as a Level II Trauma Center to Serve North County Residents

As noted in the Auditor's Report, the voter information booklet indicated that "Antelope Valley residents would have either a Trauma Hospital or a fully-equipped trauma helicopter that is dedicated full-time to that area." That information is consistent with the language in Measure B stating that allocations toward trauma network could include expansion of the trauma system - that is, expansion of pre-hospital EMT/paramedic care on scene and medical transport, and medical care provided at a trauma hospital.

Through the allocation of Measure B funds, in 2004, the County expanded existing air medical transport services to put in place dedicated "round the clock" air medical transport for the North County area provided by the Los Angeles County Fire Department. Moreover, in 2010, additional Measure B funds were allocated to expand the trauma system with the new designation of Antelope Valley Hospital as a trauma hospital.

The Addition of "24/7" Air Medical Transport to Serve the San Gabriel Valley Area

In 2005, Los Angeles County allocated Measure B funds to expand air medical transport in all areas of the San Gabriel Valley to "round the clock" air medical transport. To ensure maximum coverage at any time of day, the Los Angeles County Fire Department and the Los Angeles County Sheriff's Department have committed to providing these services. Once again, by providing this critical pre-hospital service, the trauma system has been expanded in the San Gabriel Valley area consistent with the language and intent of Measure B. (2)

In addition to the above efforts to expand the trauma system in the San Gabriel Valley, Los Angeles County will continue in its previous efforts to add a trauma center in this area (as described in more detail below).³ However, the designation of a private hospital as a trauma center is a voluntary process: a hospital cannot be forced to become a trauma center. As a result, the outcome of discussions with private facilities cannot be determined in advance. Fortunately, success in expanding a region's trauma system is not properly gauged solely by the addition of new trauma hospitals. (6)

The New Designation of Northridge Hospital Medical Center as a Pediatric Trauma Center to Serve Pediatric Patients in the San Fernando Valley

While other funding was used, it should be noted that, on October 4, 2010, Northridge Hospital was newly designated as a Level II Pediatric Trauma Center. This designation ensures that pediatric patients in the San Fernando Valley with traumatic injuries are transported and treated

³ The Audit Report even suggests that Los Angeles County has not fulfilled the intent of Measure B because there is no trauma hospital in the Malibu area. However, this is not a fair criticism. It would not be feasible to designate a trauma hospital in the Malibu area since there are no hospitals in the region that could seek trauma designation. (6)

Elaine Howle, State Auditor
February 5, 2014
Page 6 of 14

locally. Measure B funds are used to support the cost to oversee and administer all trauma hospitals to ensure continued compliance with state requirements and optimal level of care.

Los Angeles County is proud of its efforts to date to expand the trauma system and will continue to seek value-added and innovative ways to allocate Measure B funds to continue to expand its trauma system services.

V. How Los Angeles County Has Enhanced Trauma and Emergency Care.

In addition to saving the trauma centers and expanding the trauma system of pre-hospital (medical transport) and trauma hospital providers, Los Angeles County has continuously assessed, identified and implemented various improvements to the trauma and emergency health care delivery system.

Development of STEMI Centers to Address Heart Attack Victims

According to the American Heart Association, heart attack remains a leading cause of death of adults in the United States. Survival from a heart attack is largely dependent on prompt recognition and rapid intervention.

Reflective of its vision in the field of trauma and emergency care, the Los Angeles County Department of Health Services EMS Agency (EMS Agency) performed an assessment and evaluation of Los Angeles County's trauma and emergency medical services system. This assessment included a four-year process of meetings involving the cardiology community, hospitals, Fire Departments, and the American Heart Association, and an analysis of countywide data for treatment of heart attack victims.

In September 2006, the Board of Supervisors approved the STEMI Receiving Center Standards and instructed the EMS Agency to approve and designate qualified private and public hospitals as STEMI Receiving Centers. This allowed for the transport of 9-1-1 patients experiencing a heart attack to a STEMI Receiving Center for early definitive diagnosis and treatment which improved patient outcome. To date, the EMS Agency has designated 34 STEMI Receiving Centers throughout the County.

Purchase and Distribution of 12-Lead ECGs to Allow Paramedics to Treat Heart Attacks in the Field

In conjunction with the STEMI Receiving Center Program, the Board of Supervisors approved Measure B funding to reimburse 30 paramedic service providers for the initial purchase of 12-Lead electrocardiogram (ECG) machines and the costs of initial training of over 1500 paramedics and EMT personnel for the entire County on the use of the 12-Lead ECG machines. This allowed for the rapid acquisition and interpretation of a 12-Lead ECG; thereby allowing the development of a systemic approach to the pre-hospital care of heart attack victims as recommended by the American College of Cardiology and the American Heart Association.

Development of Stroke Centers to Address Stroke Victims

In 2007, the American Stroke Association (ASA) issued a policy statement which recommended that patients experiencing acute stroke should be transported to the nearest stroke center for evaluation and care. Studies have shown that morbidity and mortality due to stroke can be reduced significantly if patients access the EMS system early, thereby, shortening the time to

Elaine Howie, State Auditor
February 5, 2014
Page 7 of 14

treatment. In October 2009, the Board of Supervisors authorized and instructed the EMS Agency to approve and designate qualified private and public hospitals as Approved Stroke Centers to provide optimal care to 9-1-1 stroke patients in Los Angeles County. To date, the EMS Agency has designated 32 Approved Stroke Centers.

Expansion of Pediatric Critical Care Services

On December 30, 2013 and January 30, 2014, respectively, Northridge Hospital Medical Center and Providence Tarzana Medical Center were approved as Medical Pediatric Critical Care Centers. Decreasing the transportation time of children to hospitals equipped to handle critically ill children and improving services at both medical centers.

The above critical enhancements have improved the timeliness of a response to, and transport of, a medical emergency, and ensured that injured persons get to the facility with the appropriate specialized staff and equipment to deliver the right kind of medical care.

VI. How Los Angeles County Demonstrates to Taxpayers That It Distributes Funds to Fulfill Measure B's Intent.

The Department of Health Services (DHS) has been the lead agency with operational responsibility for authorizing expenditure of the funds in accordance with Measure B provisions.⁴ In order to communicate to the public the expenditure of Measure B funds, and the allocations as described above, Measure B funds are presented and disclosed separately in the County Budget as a Special Revenue Fund. The Auditor-Controller (A-C) files a report annually with the Board of Supervisors and it is available to the public on the internet. The annual report discloses the amount of Measure B tax revenues and the amount, purpose and recipient of expended funds. The beginning and ending amounts of available Measure B funds are displayed and the report also describes various Measure B initiatives, along with annual progress and status of each.

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The County's annual budget is placed on the Board of Supervisors agenda in 3 distinct phases: 1) Recommended, 2) Final, and 3) Supplemental. Each phase provides the public with the opportunity to testify or provide written comments on the Measure B Fund or any other aspect of the County Budget. Increases to the Measure B tax rate must be submitted for Board approval and are also subject to public input and testimony. In the context of the County's current \$25 billion annual budget, Measure B represents approximately \$277 million and the County provides a level of disclosure, transparency and accountability which exceeds that of virtually any other County program or fund.

VII. The Comprehensive and Ongoing Assessment of Los Angeles County's Trauma Center Network.

The Auditor's Report presupposes that the only way to determine if the trauma system is meeting the needs of the County is to perform a "comprehensive evaluation". We disagree. Based on a multi-layered regulatory oversight and assessment and continuous quality

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⁴ The Auditor's Report asserts that the disbanding of the Measure B Oversight Committee in 2004 "left [the Board] with no key advisory body that could help ensure that the allocation approach is sound". We disagree with this statement as DHS assumed that responsibility.

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Elaine Howle, State Auditor
February 5, 2014
Page 8 of 14

improvement review of its trauma hospitals, Los Angeles County, with its true partnership of public and private providers, has developed a trauma system that delivers high quality care to all of its residents and visitors that is second to none.

Los Angeles County's Trauma Plan Approved by the State EMS Authority

- ⑨ At the statewide level, Los Angeles County is required to submit for approval on an annual basis a trauma plan detailing all aspects of the trauma care network, including the location of all trauma hospitals and identification of all pre-hospital medical transport service providers. This process allows for meaningful dialogue and recommendations by the State EMS Authority on the development of Los Angeles County's trauma system.

Continuous Evaluation of Every Individual Trauma Center by the American College of Surgeons

All designated Trauma Centers in Los Angeles County are routinely evaluated by the American College of Surgeons (ACS) to verify quality of trauma care and ensure that processes are in place to ensure timely provision of care. All Trauma Directors at the 14 Trauma Centers are Surgical Fellows of ACS. In addition, a representative from the ACS-Committee on Trauma serves as a member of the County's Trauma Hospital Advisory Committee. [See attached **Exhibit D – List of THAC Committee Members**]

- ⑨ It should be noted that, rather than performing a "comprehensive evaluation" of trauma services as the Auditor's Report states is needed, the EMS Agency has utilized this two-tiered approach to ensure that its Measure B funds are used to support a high quality trauma system. This two-tiered approach mirrors how hospitals generally can be assured of the delivery of high quality care, with state regulation and oversight as well as nationwide quality assurance organizations such as the The Joint Commission, a body that routinely surveys hospitals for accreditation.

Trauma Hospital Advisory Committee (THAC)

In addition to the two-tiered regulatory approach described above, Los Angeles County has established a THAC which provides a forum for the exchange of ideas regarding trauma system policy development and operational issues involving the care of trauma patients. This entity acts in an advisory capacity to the EMS Agency. All fifteen physician committee members are Surgical Fellows of the ACS (the same organization that the Auditor recommends to perform an evaluation of Los Angeles County's trauma system).

THAC has a Quality Improvement (QI) Subcommittee which meets quarterly to ensure that a systematic evaluation of a trauma center's compliance with optimum trauma care standards is in place. Additionally, each of the three Los Angeles Trauma Regions meet quarterly to discuss regional performance improvement issues as well as conduct peer review which includes individual patient case reviews to evaluate root causes of preventable deaths, extended pre-hospital scene times, misdiagnosis, prolonged surgical times, delay to operating room, etc.

Complaint-Based Reviews

The EMS Agency has also established a process for receiving complaints from providers, hospitals and the public. EMS Agency contracts and policy require that hospitals and providers bring issues to the EMS Agency's attention. In addition to regular mail, e-mail and telephone complaints, the EMS Agency has a formal complaint process that has long been in place and is available on the EMS Agency's website in the form of a Situation Report. The EMS Agency

Elaine Howle, State Auditor
February 5, 2014
Page 9 of 14

conducts fact-finding and investigations on all cases referred for resolution which includes: review of all documentation related to the complaint; examination of the complaint for possible violations in medical protocols, County, State and/or Federal Regulations; and generating a resolution summary once all available facts are gathered and analyzed.

Air Transport Data

The Auditor's Report states that EMS does not "monitor and assess and report consistently on the effectiveness and adequacy of these services". The Report is critical of the fact that air transport data for the "underserved areas", such as Malibu, Antelope Valley and the San Gabriel Valley area are not segregated from other areas of the County and is not limited to trauma patients but includes other transports such as search and rescue missions. ②

This criticism in the Auditor's Report highlights a crucial disagreement between the Auditor and the EMS Agency as to how to effectively run a monitoring program. Comprehensive quality assessment is performed and every transport is reviewed. In fact, helicopter and ground transport is reviewed under the same standards regardless of the location of the transport because the EMS Agency believes that all areas of the County deserve the same high quality treatment. Moreover, the data used is sound because trauma injuries account for in excess of 90% of the air transport data, with other transports such as medical and search and rescue missions comprising the rest. ②

Assessment of Overall Mortality Rates in LA County and of Trauma in the San Gabriel Valley

It should be noted that the findings of the Auditor's Report analyzing the quality of transport care in the East San Gabriel Valley and "underserved" areas of the County only reference air transport and no mention is made of the quality of ground transport and its continuous review by the EMS Agency. In fact, over 84% of transports in the East San Gabriel Valley are by ground. Again, the fact that the State audit neglects to make mention of ground transport as compared to the EMS Agency's review of all transports, both air and ground, highlights the fundamental difference of opinion in evaluating transport effectiveness. ⑩

As part of the EMS Agency uniform countywide system of monitoring, the EMS Agency runs reports on a routine bases and as requested by THAC or other stakeholders. Attached are two reports on mortality rates in the Trauma System. [See Exhibit E - Report (1) on the San Gabriel Valley Residents: Mortality Rate Comparison]. The three charts were ran by the EMS Agency on the mortality rate of patients from the East San Gabriel Valley that were treated, transported, and treated at trauma centers. Each is based on 1 year data periods. The report looks at the patient's Injury Severity Score (ISS), which is an established medical score to assess trauma severity. The ISS provides an overall score for patients with multiple injuries. It correlates with mortality, morbidity and hospitalization time after trauma. A major trauma (or polytrauma) is defined as an ISS being greater than 15. As the ISS increases, so does the mortality rate. For example, the mortality rate for someone with an ISS between 1-9 is quite low generally less than 1%, while the mortality rate for someone with an ISS greater than 24 is generally over 40% which is quite high. As evidenced by the information provided, the mortality rate for trauma patients from the San Gabriel Valley is comparable to the rest of Los Angeles County. ③

When looking at the data countywide, the overall mortality rate has decreased since the passage of Measure B and the allocation of Measure B funds to support the trauma network. [See Exhibit E – Report (2) on Overall Report of Incidence, Mortality Rates and Changes by

Elaine Howle, State Auditor
February 5, 2014
Page 10 of 14

Year] It is important to note that this decrease in the overall mortality rate has occurred while the actual rate of trauma incidents during this same time period has increased.

VIII. Conclusion.

① In sum, Los Angeles County believes that Measure B funds have been appropriately allocated for trauma services to fulfill the language and intent of Measure B to:

1. Avoid the life-threatening shutdown of Los Angeles County's trauma network;
2. Maintain and expand the trauma network Countywide; and
3. Ensure more timely response to critical and urgent medical emergencies.⁵

Indeed, we believe that Los Angeles County has continued to lead in the field of trauma and emergency services with innovative and creative ways to utilize Measure B funds to enhance and improve patient care. While the County is proud of its achievements to date, we remain committed to continually evaluating the trauma system and exploring new opportunities to more efficiently serve all residents throughout the county.

IX. Auditor Recommendations.

As stated earlier, we appreciate the interest of the State Auditor and the opportunity to showcase the Los Angeles County trauma and emergency system. The County has reviewed and appreciates the Auditor's recommendations, as we welcome any opportunity for a dialogue to discuss ways to improve the trauma system. The Auditor's specific recommendations and our responses are listed below:

Auditor Recommendation #1:

"To determine whether its trauma system is appropriately designed and serving the needs of residents in underserved areas and the needs of the most at-risk populations, the board should use Measure B funds to engage the College of Surgeons by July 2014 to perform a comprehensive assessment of the trauma system and then make the results available to the public. To the extent the assessment identifies weaknesses in the trauma system, the board should develop strategies to address those weaknesses where feasible. Specifically, the board should ask the College of Surgeons to do the following: assist the board in better defining and identifying underserved areas in Los Angeles, review Measure B allocations to ensure that they are addressing the most pressing needs of at-risk populations in Los Angeles, assess the adequacy of helicopter services it provides in underserved areas, analyze how EMS might better use the data it collects to evaluate, improve, and report continuously on its trauma system."

Response:

① We believe that the primary intent of Measure B has been fulfilled by preserving the trauma centers and emergency rooms in existence in 2003, by adding two new trauma centers and "24/7" air medical transport to reach every corner of Los Angeles County, and by improving and enhancing trauma and emergency care. However, DHS will

⁵ In Fiscal Year 2011-12, 1.1% of Measure B funds were also to be used to defray other related costs, including administrative costs in coordinating and maintaining the trauma system, as allowed under Measure B.

Elaine Howle, State Auditor
February 5, 2014
Page 11 of 14

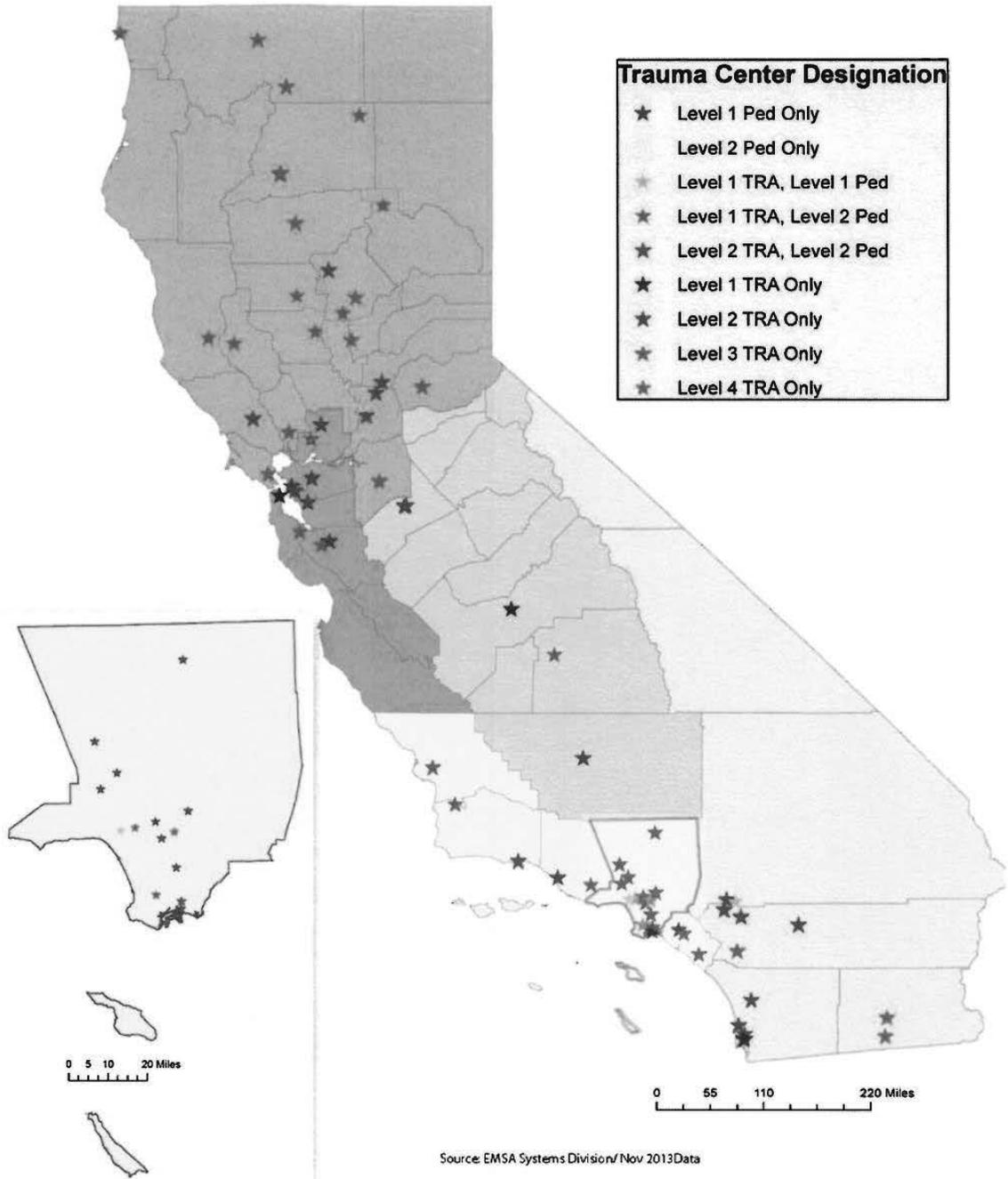
discuss and evaluate whether additional information could be gained from conducting a study with ACS. We would like to emphasize that Los Angeles County trauma system is relatively large in comparison with the rest of the State, and that many counties and vast regions of the State do not have trauma centers (see table 1).

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Elaine Howle, State Auditor
February 5, 2014
Page 12 of 14

TABLE 1

California Designated Trauma Centers



Source: EMSA Systems Division/Nov 2013 Data

Elaine Howle, State Auditor
February 5, 2014
Page 13 of 14

Auditor Recommendation #2:

"To ensure that it allocates Measure B funds to address the most significant needs of residents within its trauma system, the board should reinstate a Measure B oversight committee, with participation from departments with trauma, EMS, and bioterrorism preparedness expertise, as well as representatives of the public. The oversight committee should review trauma system and other county needs annually and advise the board on Measure B expenditures. As part of its responsibilities, the oversight committee should re-evaluate the Measure B allocation approach, taking into consideration the results of Los Angeles's comprehensive assessment and the effects of the Patient Protection and Affordable Care Act, and issue a report on its findings no later than December 2015."

Response:

Per instructions by the Board, the Measure B Oversight Committee (Committee) was established in 2003, with representatives from various Los Angeles County departments including the Chief Administrative Office (currently CEO), DHS, County Counsel, Assessor, Treasurer and Tax Collector, and Auditor-Controller. The original intent of the Committee, as stated in the Board motion, was to monitor the collection and expenditure of property tax revenues under Measure B, ensure proper utilization of these funds, and report back annually to the Board. DHS will work with the Board to consider establishment of an Advisory Committee to evaluate and advise Measure B allocation, assess the impact of the Patient Protection and Affordable Care Act on the trauma care system, and prepare reports as requested by the Board.

Auditor Recommendation #3:

"To determine the adequacy of the helicopter services it provides to residents of underserved areas who suffer a trauma injury, EMS should collect, assess, and report data on the following: the number of flights flown by each provider, the time it takes to transport each patient, the health outcomes, including mortality rates, of patients transported by helicopter, the number of cancelled flights in each of these areas, including the method of transportation used instead of helicopters and the transport times and patient outcomes."

Response:

The DHS Emergency Medical Services (EMS) Agency has established valid data collection, quality improvement, and survey activities for continuous monitoring of the trauma system from the field to hospital discharge. We agree to utilize this data to develop and publish annual reports on helicopter transport and care of trauma patients.

Auditor Recommendation #4:

"Los Angeles should undertake formal discussions with Pomona's management regarding the hospital becoming a trauma center. In doing so, Los Angeles should analyze its current Measure B revenues and allocations to determine whether financial opportunities exist that would meet the needs of Pomona and present the resulting analysis to Pomona. Further, it should document its efforts and the resulting outcome so that both voters and taxpayers are aware of the diligence Los Angeles has undertaken in fulfilling the spirit of Measure B."

Response:

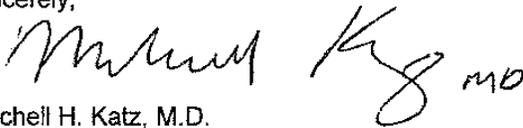
The Chief Executive Officer of Pomona Valley Hospital (PVH) has held his position since 1993. As a result, the EMS Agency has a long, established relationship with hospital leadership. This is evidenced by the regular communications and contracts between the

Elaine Howle, State Auditor
February 5, 2014
Page 14 of 14

parties, including by the Base Hospital Agreement and (Bioterrorism) Hospital Preparedness Program Agreement, both of which require annual audits, communication, meeting attendance, and renewal. In addition, on October 16, 2006, and January 20, 2011, PVH initiated contact with the EMS Agency because of its interest in designation as a STEMI Center and Stroke Center, respectively. [See **Exhibit F** – Pomona Valley Hospital STEMI Center Application and Stroke Center Application] In addition to the current communication that has occurred to date with PVH to become a trauma center, the EMS Agency will continue to pursue communications with PVH, as well as other suitable hospitals in the East San Gabriel Valley on a more "formal" basis via letters and meetings, with documentation of the progress and results, and posting of the information on the EMS Agency website.

Should you have any questions or comments, please feel free to contact Cathy Chidester, EMS Agency Director at (562) 347-1604 or Efrain Muñoz, Associate Chief Financial Officer, at (213) 240-7882.

Sincerely,



Mitchell H. Katz, M.D.
Director

Exhibits

c: Board of Supervisors
County Counsel
Senior Assistant, Chief Executive Officer
DHS Deputy Director, Strategic Planning
Assistant Auditor-Controller

Comments

CALIFORNIA STATE AUDITOR'S COMMENTS ON THE RESPONSE FROM LOS ANGELES COUNTY

To provide clarity and perspective, we are commenting on the response to our audit report from Los Angeles County (Los Angeles). The numbers below correspond to the numbers we placed in the margin of Los Angeles's response.

We believe Los Angeles is using its response to obfuscate our main point. We do not question the fact that Measure B funds have strengthened the trauma care network. We do, however, discuss Los Angeles's assertion that it has addressed the county's most pressing trauma needs in several places in our report. For example, as we indicate on page 16, Los Angeles's director of the Emergency Medical Services Agency (EMS) asserted that the county's trauma system is adequate and is meeting the needs of all areas in Los Angeles, including those areas that are underserved. However, she also acknowledged that Los Angeles has not conducted an evaluation of its trauma system to demonstrate it has fulfilled the intent of Measure B. Further, as we state on page 16, Los Angeles's current monitoring efforts do not enable it to examine whether its trauma system serves residents, such as those in underserved areas and at-risk population groups, equitably. Without this kind of assessment, Los Angeles cannot demonstrate that it is meeting its most pressing trauma needs. Thus, we stand by our report's title and our conclusion that Los Angeles is unable to demonstrate that Measure B funds were used "to address the most pressing trauma needs."

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Although we agree that Los Angeles has implemented helicopter transport in underserved areas, EMS was unable to demonstrate the effectiveness of these services. As we explain on page 28 of the report, EMS's efforts to review helicopter data are undocumented and not specific to underserved areas. Thus, EMS cannot demonstrate that underserved areas fare as well as other areas of the county in terms of transport times.

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During our fieldwork, EMS provided us its analysis of the county's mortality rates, however, we found that it was not useful for purposes of determining the effectiveness of the helicopter transport services Los Angeles uses in East San Gabriel Valley. Specifically, the analysis does not isolate the mortality rates of patients transported by helicopter from the rates of those transported by ambulance. Thus, the analysis does not provide any assurance that patients transported by helicopter experienced a similar mortality rate compared to those transported by ambulance.

③

Without this assurance, EMS and Los Angeles cannot demonstrate that the decision to use helicopter transport in East San Gabriel Valley is effective.

- ④ We do not dispute the fact that Los Angeles has performed a number of studies and has taken various steps to identify and address some of its shortcomings in its emergency medical services over the last 10 years, which we describe in more detail on pages 32 through 34 of our report. For example, we discuss Los Angeles's efforts to authorize, approve, and designate qualified private and public hospitals in the county as ST-elevation myocardial infarction receiving centers to enable earlier definitive diagnosis and treatment of cardiac patients. However, we disagree with Los Angeles, in that none of these efforts represent a comprehensive assessment of the county's trauma system as we describe on page 17 of the report.
- ⑤ We disagree with Los Angeles. As we state on page 23, the Board of Supervisors for the County of Los Angeles (board) has generally allocated Measure B funds in the same proportions year after year. Specifically, the board continues to allocate Measure B funds primarily to reimburse non-county-operated trauma centers and county-operated hospitals for uncompensated care costs, as originally recommended more than nine years earlier. Additionally, on page 25 we conclude that this approach appears overly conservative because it has resulted in significant fund balances at year end. Further, as we state on page 26, another concern we have with this approach is that it focuses on uncompensated care at existing trauma centers and does not consider the overall trauma care needs of Los Angeles's population, particularly those population groups at the greatest risk of trauma injury. Finally, as we state on page 26, by not revisiting its allocation of Measure B funds, Los Angeles may have missed opportunities to assist existing hospitals in underserved areas become trauma centers and, therefore, may have fallen short of fulfilling the intent of Measure B.
- ⑥ Again, Los Angeles is attempting to obfuscate our main points. We do not suggest in the report that "expanding a region's trauma system is not properly gauged solely by the addition of new trauma hospitals" nor do we suggest that the "county has not fulfilled the intent of Measure B because there is no trauma hospital in the Malibu area." Again, to reiterate our concerns: First, as we state on page 16, Los Angeles's current monitoring efforts do not enable it to examine whether its trauma system is effectively meeting the needs of its residents, such as those in underserved areas—which would include the Malibu area—and at-risk population groups. Second, as we indicate on page 27, Los Angeles has not regularly reviewed and analyzed helicopter service specific to underserved areas—including the Malibu area—in an effort to

ensure that helicopters are adequately serving trauma patients transported from these areas. Thus, it cannot demonstrate to the public as it believes, that it has addressed the most pressing trauma needs using Measure B funds.

Los Angeles appears to have misunderstood our point. As we state on page 26, we agree with Los Angeles that its administration of the Measure B funds through the county's budget process appears appropriate and efficient. However, although this may be true about its budget process, as we also point out, Los Angeles cannot demonstrate to voters that it is directing funds to the most pressing needs of its trauma system because it lacks ongoing oversight and analysis of its approach to allocating Measure B funds. As we indicate on page 23, for more than nine years, the board has generally allocated Measure B funds in the same proportions year after year through the county budget process. Thus, as we state on page 25, we believe that ongoing input from an advisory body, such as an oversight committee, to review the allocation approach and advise the board on whether the current funding strategy is best fulfilling the intent of Measure B, would provide the public with some certainty that the county is investing its resources most effectively toward the allowable purposes set forth in Measure B.

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Los Angeles's assertion that the county's Department of Health Services (County Health Services) assumed the responsibility of the original Measure B Oversight Committee (oversight committee) misses our point. While County Health Services could certainly be included, an advisory body, such as an oversight committee, would be made up of various other stakeholders and departments with expertise in Los Angeles's trauma and EMS systems as well as in bioterrorism preparedness activities, as we recommend on page 23 of the report. This composition would be consistent with the board-approved motion that created the oversight committee. As we explain on page 23, this motion specified the importance of having proper safeguards in place to ensure that Measure B funds were spent on their intended goals and having county departments with proper expertise involved in reviewing the use of these funds.

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We do not agree that the two-tiered approach described by Los Angeles is comparable to a comprehensive assessment. First, the State Emergency Medical Services Authority's approval of Los Angeles's trauma plan was never intended to be, nor did it constitute a comprehensive assessment of the trauma system. Further, on page 16 we discuss Los Angeles's evaluation efforts conducted in conjunction with the American College of Surgeons (College of Surgeons), and indicate that because those efforts are focused on the performance of individual trauma centers, they do not enable EMS or Los Angeles to examine whether the system as a whole serves Los Angeles's residents equitably or identifies any gaps

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in service by population group or geographic area. Thus, we stand by our conclusion that a comprehensive assessment conducted by the College of Surgeons would provide greater transparency to the public regarding Los Angeles's existing trauma system's needs and challenges, as well as recommendations for future trauma system development.

- ⑩ As we describe in the Scope and Methodology table item 4.c on page 11, we were specifically asked to determine why and how often helicopters and air paramedic services have been used and in what areas, such as in underserved areas without trauma services. Los Angeles did not provide us with an analysis supporting the proportion of transports from East San Gabriel Valley that are performed by helicopter services. Therefore, we are unable to comment on its accuracy. However, because helicopters are used to reach outlying areas and, as we report on page 27, the former director of County Health Services acknowledged helicopter transport is not the optimal method and there are inherent safety and weather limitations, we believe a focused review of helicopter transports is warranted.

cc: Members of the Legislature
Office of the Lieutenant Governor
Little Hoover Commission
Department of Finance
Attorney General
State Controller
State Treasurer
Legislative Analyst
Senate Office of Research
California Research Bureau
Capitol Press