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Report to the Ranking Minority Member, Committee on Finance, U.S. Senate

March 2003

HOSPITAL EMERGENCY DEPARTMENTS

Crowded Conditions Vary among Hospitals and Communities

GAO-03-460

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GAO Accountability • Integrity • Reliability

Highlights

Highlights of GAO-03-460, a report to the Ranking Minority Member, Committee on Finance, U.S. Senate

Why GAO Did This Study

Hospital emergency departments are a major part of the nation's health care safety net. Emergency departments report being under increasing pressure, with the number of visits nationwide increasing from an estimated 95 million in 1997 to an estimated 108 million in 2000. GAO was asked to provide information on emergency department crowding, including the extent hospitals located in metropolitan areas are experiencing crowding, the factors contributing to crowding, and the actions hospitals and communities have taken to address crowding.

To conduct this work, GAO surveyed over 2,000 hospitals and about 74 percent responded. The survey collected information on crowding, such as data on diversion—that is, the extent to which hospitals asked ambulances that would normally bring patients to their hospitals to go instead to other hospitals that were presumably less crowded.

www.gao.gov/cgi-bin/getrpt?GAO-03-460.

To view the full report, including the scope and methodology, click on the link above. For more information, contact Janet Heinrich on (202) 512-7119.

What GAO Found

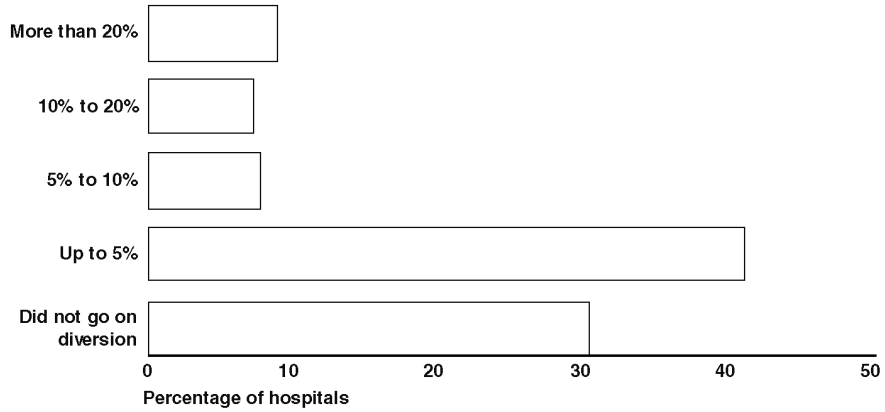
While many emergency departments across the country reported some degree of crowding, the problem is more pronounced in certain hospitals and communities. For example, while 2 of every 3 hospitals reported asking ambulances to be diverted to other hospitals at some point in fiscal year 2001, a smaller portion—about 1 of every 10—reported being on diversion status for more than 20 percent of the year. Hospitals in areas with larger populations, areas with high population growth in recent years, and areas with higher-than-average percentages of people without health insurance reported higher levels of crowding.

While no single factor stands out as the reason why crowding occurs, GAO found the factor most commonly associated with crowding was the inability to transfer emergency patients to inpatient beds once a decision had been made to admit them as hospital patients rather than to treat and release them. When patients "board" in the emergency department due to the inability to transfer them elsewhere, the space, staff, and other resources available to treat new emergency patients are diminished.

Hospitals and communities reported a variety of actions to address crowding, including expanding their emergency departments and developing ways to transfer emergency patients to inpatient beds more efficiently. For the most part, these actions have not been extensively evaluated, so their effect is unknown. However, the widely varying characteristics between hospitals mean that no one approach is likely to emerge as a way to address this ongoing concern.

Representatives from the American College of Emergency Physicians and the American Hospital Association and an independent reviewer provided comments on a draft of this report, which we incorporated as appropriate.

Hospitals by Percentage of Time on Diversion, Fiscal Year 2001



Source: GAO survey of hospitals, 2002.

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Abbreviations

AHRQ	Agency for Healthcare Research and Quality
CCU	critical care unit
CAT	computed axial tomography
CT	computed tomography
DRG	diagnosis related group
EMS	emergency medical services
HHS	Department of Health and Human Services
ICU	intensive care unit
MRI	magnetic resonance imaging
MSA	metropolitan statistical area
SCHIP	State Children's Health Insurance Program

GAO
Accountability * Integrity * Reliability

United States General Accounting Office
Washington, DC 20548

March 14, 2003

The Honorable Max Baucus
Ranking Minority Member
Committee on Finance
United States Senate

Dear Senator Baucus:

Open 24 hours a day, 7 days a week, hospital emergency departments are a major part of the nation's health care safety net. Emergency departments report being under increasing pressure, with the number of visits increasing about 14 percent from an estimated 95 million in 1997 to an estimated 108 million in 2000, and the number of hospitals with emergency departments decreasing by about 2 percent. This pressure has led to reports of crowding. For example, considerable attention has been given to reports that emergency departments request that ambulances that would normally bring patients to their hospitals go instead to other hospitals that are presumably less crowded—a practice known as diversion. Crowded conditions in emergency departments can also lead to long waits for care, which can prolong pain and suffering.

There are no standard measures of the extent to which emergency departments are experiencing crowded conditions—hospital officials say "they know it when they see it." However, there are several indicators that, according to experts, point to situations in which crowding is likely occurring. One indicator is the number of hours a hospital is on diversion status. A second indicator is the proportion of patients and the length of time patients "board" or remain in the emergency department—and therefore tie up space and staff resources—after a decision has been made to admit them as inpatients or transfer them to other facilities rather than releasing them. Finally, a third indicator is the proportion of patients who leave the emergency department before receiving a medical evaluation, generally because they tire of waiting.

While considerable attention has been focused on this topic, much of it has centered on anecdotal reports or on data from a limited number of communities or emergency departments. You asked us to determine if data could be assembled from a broader, more national scope in order to provide more perspective on the issue. We conducted a review that encompassed hospitals located in the nation's metropolitan statistical

areas (MSA).[1] We excluded nonmetropolitan areas because available information and contacts with rural health organizations indicated that emergency department crowding is not a major problem in these areas. Our work addressed the following questions:

- To what extent are hospitals in MSAs experiencing crowded conditions in their emergency departments, and is crowding more severe in some types of MSAs than in others?
- What factors contribute to emergency department crowding?
- What actions have hospitals and communities taken to address crowding?

To conduct this work, we sent a mail questionnaire to all community hospitals located in MSAs that reported having emergency departments in 2000—more than 2,000 hospitals in all,[2] of which about 74 percent responded. The survey collected information related to three indicators of crowding: (1) the number of hours on diversion, (2) the percentage of patients who were boarding in the emergency department for 2 hours or more and the average number of hours boarded, and (3) the proportion of patients who left before a medical evaluation.[3] In analyzing these responses, we weighted responses to adjust for a lower response rate from investor-owned (for-profit) hospitals to provide estimates for the universe of hospitals. To examine which factors contributed to crowding, we analyzed information provided by the surveyed hospitals and other data on hospital and MSA characteristics. To provide information on actions taken by hospitals and communities to address crowding, as well as emergency medical services (EMS) systems and diversion at the community level, we conducted site visits in six locations where problems had been reported regarding crowded emergency departments—Atlanta, Boston, Cleveland, Los Angeles, Miami, and Phoenix. We selected these sites because they varied in geographic location, proportion of people without health insurance, population, and recent population growth. In these locations, we interviewed EMS officials, professional associations, and hospital

[1]We focused on hospitals located in metropolitan areas designated as MSAs and primary metropolitan statistical areas by the U.S. Census Bureau. For purposes of this report, we will refer to both types of areas as MSAs. In 2000, MSAs accounted for about 80 percent of the nation's population.

[2]The hospitals that met our criteria were located in 321 MSAs. We also excluded federal hospitals, specialty hospitals, long-term care facilities, and hospitals located outside the 50 states or the District of Columbia.

[3]Many hospitals provided estimates for the three indicators. These estimates were used for our analyses.

officials, and we observed emergency departments in 24 hospitals. We supplemented this work with analysis of existing national data and reviews of relevant studies. We also interviewed persons knowledgeable about the issues, including health services researchers; representatives from hospital associations, provider associations, and emergency medical associations; and federal, state, and local health officials. Appendix I explains our methodology in more detail. We conducted our work from July 2001 through February 2003 in accordance with generally accepted government auditing standards.

Results in Brief

Although most emergency departments across the country experienced some degree of crowding, the problem is much more pronounced in some hospitals and areas than in others. For example, while our nationwide survey of hospitals found that about two of every three emergency departments reported going on diversion at some point in fiscal year 2001, a much smaller portion—nearly 1 of every 10 hospitals—was on diversion more than 20 percent of the time. In general, hospitals that reported the most problems with crowding were in the largest MSAs, MSAs with high population growth, and MSAs with higher percentages of people without health insurance. For example, hospitals in MSAs with populations of 2.5 million or more had a median of about 162 hours of diversion in 2001, compared with about 9 hours for hospitals in MSAs with populations of less than 1 million. Similarly, hospitals in MSAs with higher percentages of uninsured people had almost twice as high of a median percentage of patients leaving the emergency department prior to a medical evaluation as those in MSAs with fewer uninsured.

Crowding is a complex issue and no single factor tends to explain why crowding occurs. However, one key factor contributing to crowding at many hospitals involves the inability to move patients out of emergency departments and into inpatient beds when these patients must be admitted to the hospital rather than released after treatment. With no inpatient beds available for them, these patients then have to board in the emergency department, reducing the emergency department's ability to see additional patients. In particular, hospitals that we surveyed and that we visited cited the inability to move emergency patients into critical care or telemetry (instrument-monitored) beds as contributing to crowding. Our analysis of survey data found that indicators of emergency department crowding were higher at hospitals in MSAs with more demand for inpatient hospital beds and at hospitals with higher occupancy. Reasons given by hospital officials and researchers we interviewed for not always having enough inpatient beds to meet the demand from emergency patients included (1) economic

incentives to staff only the number of inpatient beds that will nearly always be full—a practice that limits a hospital's ability to meet periodic spikes in demand, and (2) competition for available beds with scheduled admissions such as surgery patients. Other factors cited by researchers and hospital officials as contributing to crowding included closures of nearby hospitals and inadequate availability of physicians and other providers in the community.

At the six sites we visited, hospitals and communities reported a variety of actions to address crowding. At hospitals, these actions generally fell into two categories—increasing capacity and increasing efficiency. For example, two-thirds of the hospitals we visited had expanded or planned to expand their emergency departments. Officials at some of the hospitals we visited also reported holding meetings of key hospital staff members to quickly identify and make available inpatient beds to minimize boarding in the emergency department. At the community level, actions included developing standard definitions and policies for when hospitals can go on diversion and improving communication among hospitals and EMS providers. However, the extent to which these actions address crowding is unknown. Hospital officials and others involved in these efforts said that their actions have helped better manage the problem of crowded emergency departments, but have not solved it. Some efforts are under way to better measure and track crowding at individual hospitals, which may facilitate future evaluation of efforts to address crowding.

Representatives from the American College of Emergency Physicians and the American Hospital Association and an independent reviewer provided comments on a draft of this report, which we incorporated as appropriate.

Background

In 2000, about 3,900 nonfederal, general medical hospitals nationwide reported providing emergency care in emergency departments. Of these, just over half were located in MSAs. From 1997 through 2000, while the number of emergency department visits increased about 14 percent, the number of hospitals with emergency departments decreased by about 2 percent. The result was that the average number of visits per emergency department increased by 16 percent.[4] Many hospitals expanded the

[4]L.F. McCaig and N. Ly, "National Hospital Ambulatory Medical Care Survey: 2000 Emergency Department Summary," *Advance Data from Vital and Health Statistics*, no. 326 (Hyattsville, Md.: National Center for Health Statistics, 2002).

physical space and number of treatment spaces in their emergency departments during that time.

Recent reports have raised concern that many of the nation's emergency departments are experiencing high demand and crowded conditions. An April 2002 report for the American Hospital Association, while limited in scope and the proportion of hospitals responding, found that officials at many hospitals in urban areas described their emergency departments as operating at or above capacity.[5] While there are no comprehensive studies on the consequences of crowded conditions, health care researchers and clinicians report that crowding has multiple effects, including prolonged pain and suffering for some patients, long patient waits, increased transport times for ambulance patients, inconvenience and dissatisfaction for the patients and their families, and increased frustration among medical staff.[6] In addition to delays in treatment, some emergency department directors have reported that patient care was compromised and patients experienced poor outcomes as a result of crowded conditions in emergency departments.[7]

Because the medical conditions of patients who come to the emergency department can range from mild injuries such as ankle sprains to serious traumas such as from automobile accidents—and can also include patients with chronic conditions such as asthma or diabetes—the space, equipment, and medical personnel resources required to treat patients vary. As a result, there are no specific criteria, such as a ratio of patients to staff, to define when an emergency department is too crowded and its providers are overloaded. Rather, emergency department administrators and physicians say "they know it when they see it." In the absence of specific criteria to define when an emergency department is crowded, health care researchers suggest using several available indicators to point to crowded conditions. Based on our review of studies and discussions with experts, we chose three indicators of emergency department

[5]The Lewin Group, *Emergency Department Overload: A Growing Crisis; The Results of the AHA Survey of Emergency Department (ED) and Hospital Capacity*, April 2002.

[6]EMS officials also report that in addition to longer ambulance transport times when hospitals are on diversion, crowded emergency departments also tie up ambulance providers while they wait to transfer their patients to the emergency department staff.

[7]R. Derlet and others, "Frequent Overcrowding in U.S. Emergency Departments," *Academic Emergency Medicine*, vol. 8, no. 2 (2001), and S.K. Epstein and D. Slate, "The Massachusetts College of Emergency Physicians Ambulance Diversion Survey" (abstract), *Academic Emergency Medicine*, vol. 8, no. 5 (2001).

crowding. As shown in table 1, all three are useful indicators but all three also have limitations.

Table 1: Indicators of Emergency Department Crowding

Indicator	Definition	Usefulness	Limitations	Our measure of this indicator
Diversion	Hospitals request that ambulances bypass their emergency departments and transport patients that would have been otherwise taken to those emergency departments to other medical facilities.	For hospitals that can go on diversion, it is an indicator of how often these emergency departments believe that they cannot safely handle additional ambulance patients.	The number of hours on diversion is a potentially imprecise measure of crowding because whether a hospital can go on diversion and the circumstances under which it can do so vary from location to location, according to both individual hospital policy and communitywide guidelines or rules.	Our survey asked if hospitals ever went on diversion in fiscal year 2001[a] and the total number of hours they were on diversion for any reason in fiscal year 2001. In the six sites we visited, we collected available data on diversion for 2000, 2001, and 2002.
Boarding	The decision to admit or transfer an emergency patient has been made, and the patient waits to leave the emergency department for a minimum period.	Patients boarding in the emergency department take space and resources that could be used to treat other emergency department patients. Boarding is an indicator that an emergency department's capacity to treat additional patients is diminished.	Boarding can be used to indicate a hospital's ability to move a patient out of the emergency department and into an inpatient bed; however, it is possible for an emergency department to be boarding several patients while also having available treatment spaces to see additional patients that come to the emergency department.	Our survey asked if hospitals ever boarded patients for 2 hours or more. For those that did, we asked for the percentage of patients boarded for 2 hours or more and the average number of hours patients boarded in the past 12 months.
Left before a medical evaluation	The number of patients who left after triage[b] but before a medical evaluation as a percentage of emergency department visits.	The most common reason for patients leaving the emergency department before being treated is excessive waiting time, which can occur when an emergency department is crowded and unable to treat the patients waiting to be seen in a reasonable amount of time.	Since emergency department staff triage patients, those with nonemergent conditions generally wait the longest and may be most likely to tire of waiting and leave before receiving a medical evaluation.	Based on survey data, we calculated the percentage of patients who left after triage but before a medical evaluation for fiscal year 2001.

Source: GAO.

[a]We asked hospitals to provide data for their fiscal year 2001.

[b]The process of sorting patients based on their need for immediate medical treatment.

Crowding Indicator 1: Diversion

One indicator of a crowded emergency department is the number of hours a hospital is on diversionary status. Under federal law, all hospitals that participate in Medicare are required to screen—and if an emergency medical condition is present, stabilize—any patient who comes to the emergency department, regardless of the individual's ability to pay.[8] Under certain circumstances where a hospital lacks staffing or facilities to accept additional emergency patients, the hospital may place itself on "diversionary status" and direct en route ambulances to divert to another hospital.[9] In general, hospitals ask EMS providers to divert ambulances to other medical facilities because their emergency department staff are occupied and unable to promptly care for new arrivals or specific services within the hospitals, such as the intensive care units, are filled and unable to accommodate the specialized needs of new ambulance arrivals.

While on diversion, hospitals must still treat any patients who arrive by ambulance, and in some cases, local community protocols allow ambulances to go to a hospital that is on diversion when the patient asks to go to that hospital or if the patient needs immediate medical treatment. In addition, even while on diversion, the emergency department is still required to screen and treat nonambulance patients—those patients who walk in or otherwise arrive at the hospital—and these patients make up the vast majority of visits to the emergency department. The Department of Health and Human Service's (HHS) National Center for Health Statistics estimates that in 2000 about 14 percent of emergency department visits were made by patients who arrived by ambulance, while 78 percent of visits were made by patients who arrived at the emergency department by "walking in." For the remaining visits, the patients were brought in by the police or social services (1.5 percent), or the mode of arrival was unknown (6.3 percent).[10]

[8]42 U.S.C. 1395dd(a) (2000). Under certain circumstances, a hospital may also transfer an emergency patient to another hospital. See U.S. General Accounting Office, *Emergency Care: EMTALA Implementation and Enforcement Issues*, GAO-01-747 (Washington, D.C.: June 22, 2001) for more information on this federal law.

[9]See 42 C.F.R. § 489.24(b) (2002). Under federal regulation, a hospital may only deny access to non-hospital-owned ambulances.

[10]McCaig and Ly.

As a measure of crowding, diversion has limitations in that some hospitals, even when crowded, do not have the option to divert ambulances due to state or local regulations, because there are no other medical facilities nearby, or because of individual hospital policies. Hospital practices may vary regarding the threshold at which a hospital goes on diversion. Local community or hospital policies may also differ regarding the length of time a hospital may remain on diversion. (See app. II for the local community policies for the six sites we visited). However, for those hospitals that can go on diversion, it is an indicator of how often these emergency departments believe they can no longer handle additional ambulance patients.

Crowding Indicator 2: Boarding

A second indicator suggested by health care researchers is the number of patients who are "boarding" in the emergency department. These patients remain in the emergency department after the decision has been made to admit them to the hospital or transfer them to another facility. Many factors can contribute to the length of time a patient is boarded in the emergency department, such as inpatient bed availability, staffing levels, and the complexity of a patient's condition. Regardless of the reason, while waiting for an inpatient bed or transfer, these patients still require care and take up treatment space, equipment, and staff time in the emergency department, shrinking the department's resources available to treat other emergency patients. A limitation of using boarding as an indicator is that many hospitals do not collect this information regularly and can only estimate how often and how long patients board in their emergency departments. In addition, it is possible that emergency departments board patients while also having available treatment spaces to see additional patients.

Crowding Indicator 3: Leaving before a Medical Evaluation

Finally, the proportion of patients who leave after triage but before receiving a medical evaluation is another indicator suggested by health care researchers that could indicate a crowded emergency department. Long waits in the emergency department can delay needed care and contribute to an increase in the number of people who choose to leave the emergency department before receiving a medical evaluation. A limitation to this indicator is that, because emergency department staff triage patients, those with nonemergent conditions generally wait the longest and may be most likely to tire of waiting and leave before a medical evaluation. However, relatively mild conditions could potentially become more serious if patients do not receive needed medical care because they leave the emergency department before being evaluated and treated. A

study of the consequences of leaving the emergency department prior to a medical evaluation at one public hospital found that 46 percent of those who left were judged to need immediate medical attention, and 11 percent who left were hospitalized within the next week.[11]

Emergency Department Crowding Is More Pronounced in Some Hospitals and Certain Types of Communities

Although most emergency departments across the country reported some degree of crowding on one or more of the three indicators, the problem is much more pronounced in some hospitals than in others. In addition, hospitals in the largest metropolitan areas (those with populations of 2.5 million or more), communities with high population growth, and communities with above average percentages of people without health insurance had higher levels of crowding.

Indicators Show Varying Degrees of Crowding Nationwide

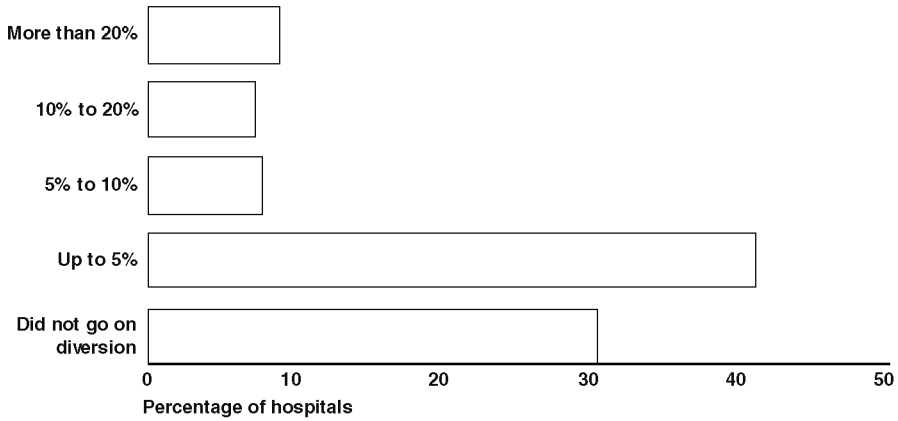
Analysis of responses to our nationwide survey showed substantial variation in the degree of crowding reported across all three indicators—diversion, boarding, and patients leaving before a medical evaluation. Hospitals ranged from little or no crowding to crowding that persisted for a substantial part of the time.

Diversion. In total, we estimate that about 2 of every 3 of the hospitals in our survey universe went on diversion at least once during fiscal year 2001. We estimate that about 2 in every 10 of these hospitals were on diversion for more than 10 percent of the time, and about 1 in every 10 was on diversion for more than 20 percent of the time—or about 5 hours per day.[12] Figure 1 shows the variation in the amount of diversion reported by hospitals in MSAs.

[11]S. Baker and others, "Patients Who Leave a Public Hospital Emergency Department Without Being Seen by a Physician," *Journal of the American Medical Association*, vol. 266, no. 8 (1991).

[12]If data were not available, we asked hospitals to provide their best estimates. We estimate that about 45 percent of hospitals that went on diversion in fiscal year 2001 provided estimates for the total number of hours that their emergency departments were on diversion.

Figure 1: Hospitals by Percentage of Time on Diversion, Fiscal Year 2001



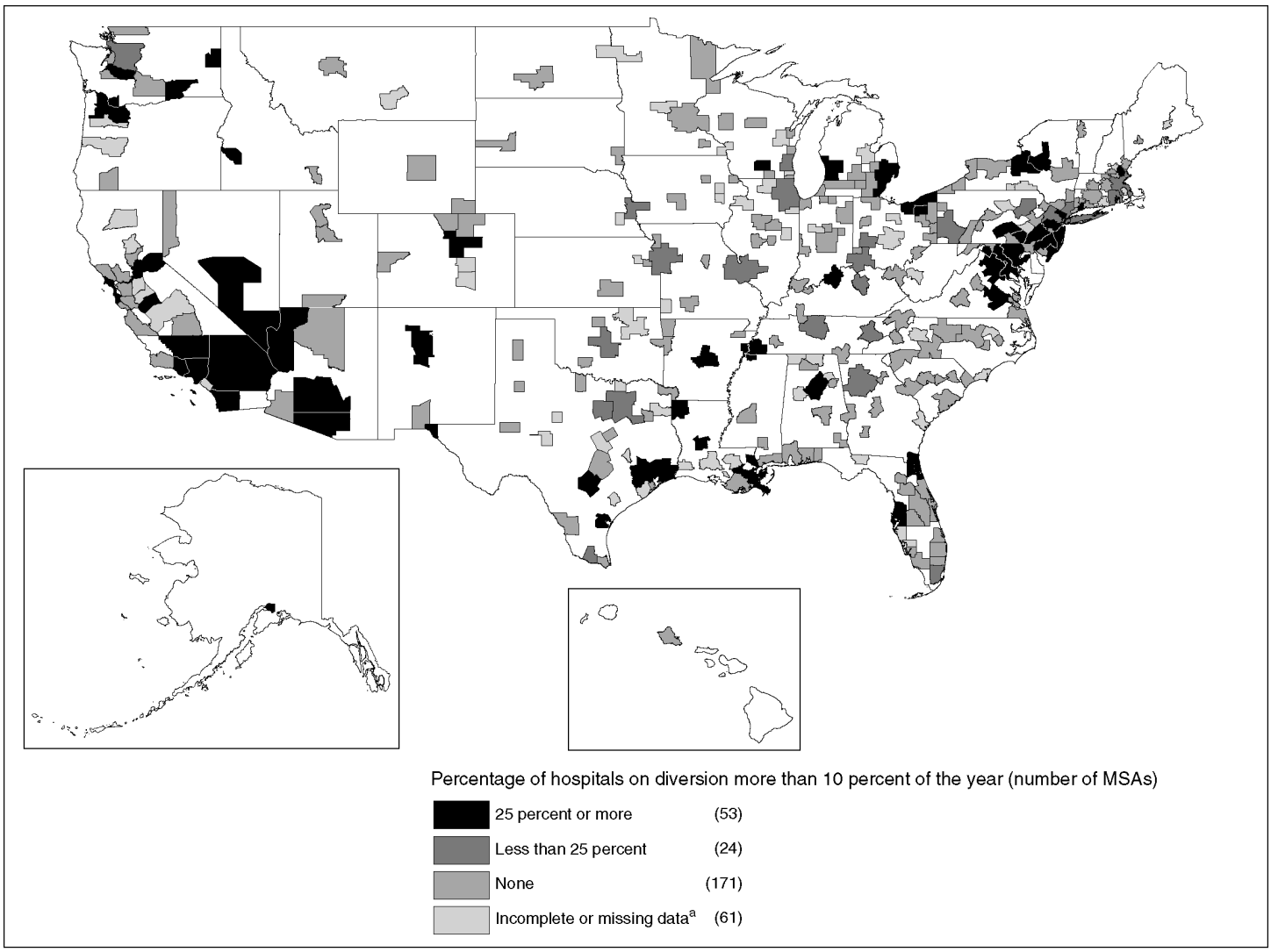
Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the entire universe of 2,021 hospitals. Data were missing for about 4 percent of hospitals.

Diversion varies greatly by MSA. Figure 2 shows each MSA and the share of hospitals within the MSA that reported being on diversion more than 10 percent of the time—or about 2.4 hours or more per day—in fiscal year 2001. Of the 248 MSAs for which data were available,[13] 171 (69 percent) had no hospitals reporting being on diversion more than 10 percent of the time. By contrast, 53 MSAs (21 percent) had at least one-quarter of responding hospitals on diversion for more than 10 percent of the time.

[13]The 248 MSAs include those MSAs for which (1) more than half of hospitals in the MSA returned surveys and (2) of those hospitals that returned surveys, more than half provided data on diversion hours.

Figure 2: Percentage of Hospitals on Diversion More than 10 Percent of the Time, by MSA, Fiscal Year 2001



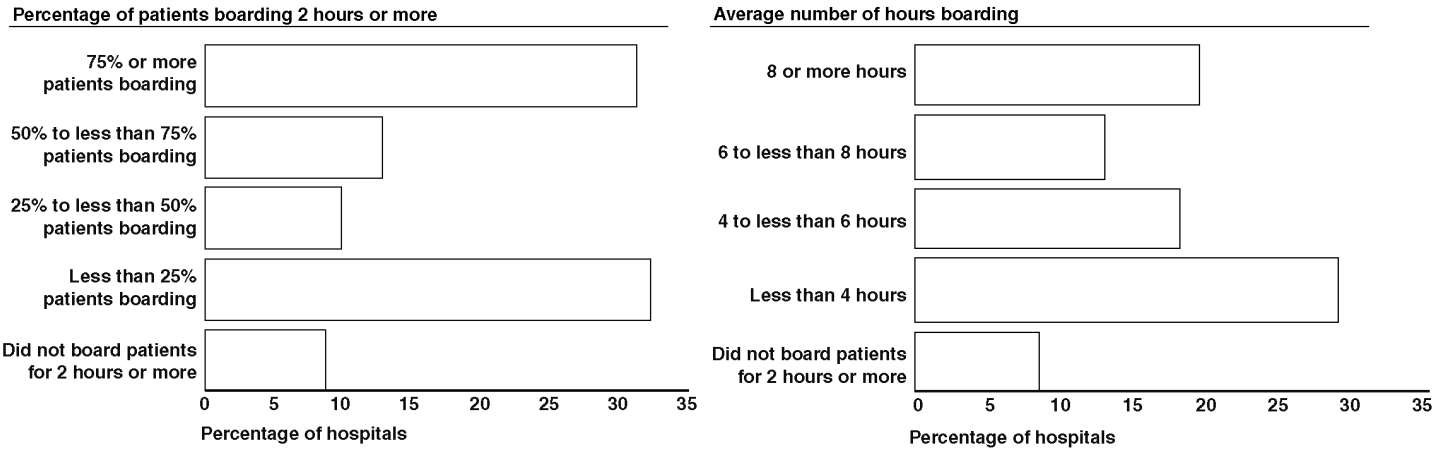
Source: GAO survey of hospitals, 2002.

Note: Percentage of hospitals reflects those hospitals that responded to the survey; responses were not weighted to represent all hospitals in the MSA.

[a]MSAs with a response rate of 50 percent or less or MSAs with 50 percent or more of data missing for responding hospitals. In 12 MSAs, no hospitals responded; these MSAs were excluded from the map.

Boarding. Boarding patients for 2 hours or more in the emergency department while waiting for an inpatient bed or transfer occurred to some extent at an estimated 9 of every 10 hospitals. As part of our survey, we examined what percentage of emergency patients who boarded spent 2 hours or more in boarding status and the average number of hours patients boarded.[14] As figure 3 shows, while many hospitals reported boarding less than 25 percent of boarded patients for 2 hours or more in the past 12 months, about one-third of them reported boarding 75 percent or more of their boarded patients for that long. About 1 in every 5 hospitals reported an average boarding time in their emergency departments of 8 hours or more.

Figure 3: Hospitals by Percentage of Patients Boarding 2 Hours or More and Average Number of Hours Boarding, Past 12 Months



Source: GAO survey of hospitals, 2002.

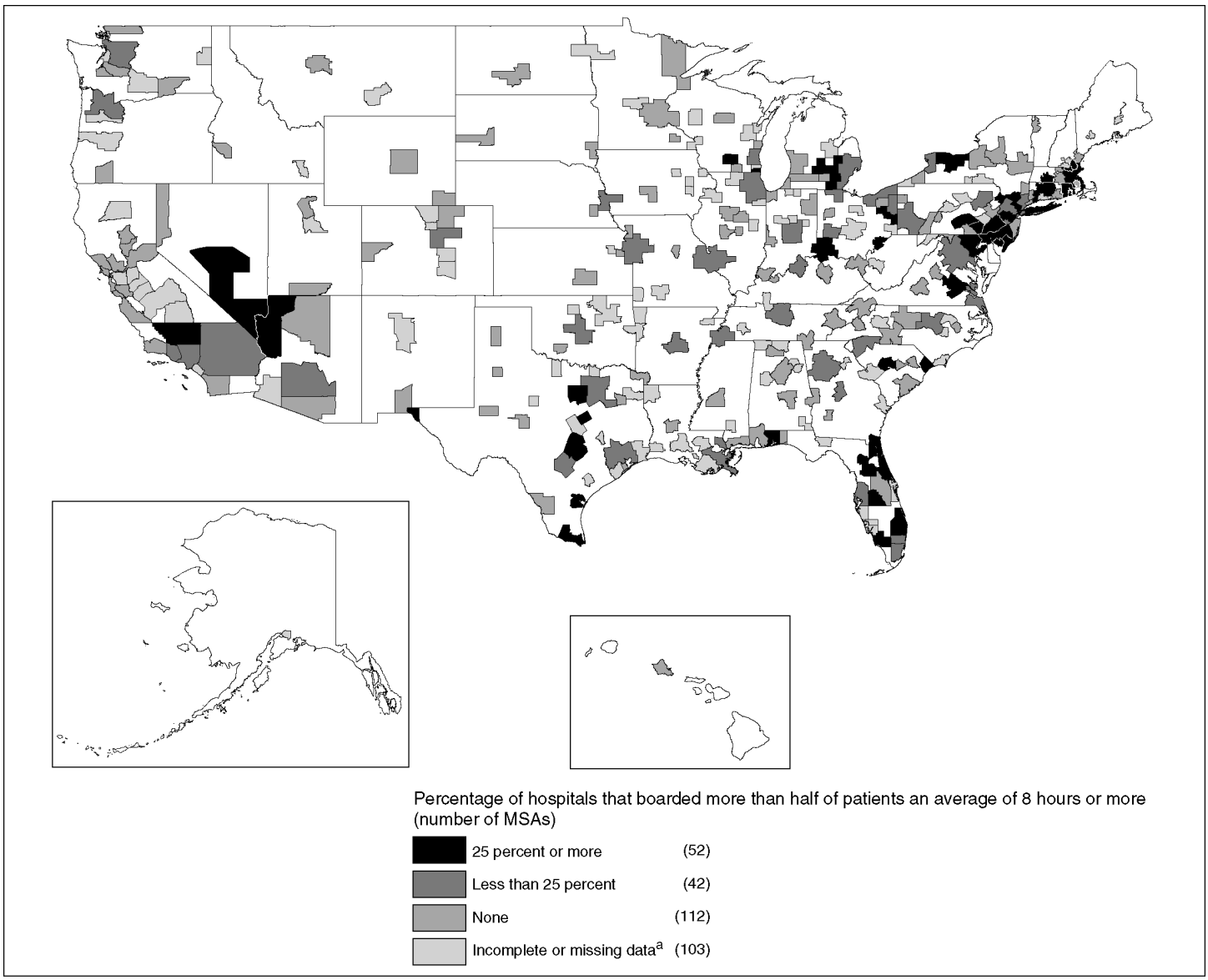
Note: Responses were weighted to provide estimates for the entire universe of 2,021 hospitals. Data were missing for about 5 percent of hospitals on the percentage of patients boarded 2 hours or more and for about 11 percent of hospitals on the average number of hours boarded.

[14]If data were not available, we asked hospitals to provide their best estimates. We estimate that about 74 percent of hospitals that boarded patients for 2 hours or more in the past 12 months estimated the percentage of patients boarding, and about 74 percent estimated the average number of hours patients boarded.

Boarding varies greatly by MSA. Figure 4 shows each MSA and the extent to which responding hospitals within the MSA reported that of those patients who boarded in the past 12 months, at least half spent 2 hours or more in boarding status, and the average boarding time was 8 hours or more. Of the 206 MSAs for which data were available on the percentage of patients boarded and the average number of hours boarded,[15] 112 MSAs (54 percent) had no hospitals reporting that they met these criteria. In contrast, 52 of the 206 MSAs (25 percent) had at least one-fourth of responding hospitals reporting that they boarded at least half of their patients for 2 hours or more and had an average boarding time of at least 8 hours.

[15]The 206 MSAs include those MSAs for which (1) more than half of hospitals in the MSA returned surveys and (2) of those hospitals that returned surveys, 50 percent or more provided data on the percentage of boarded patients boarding for 2 hours or more and the average number of hours boarded.

Figure 4: Percentage of Hospitals Boarding More than Half of Patients for an Average of 8 Hours or More, by MSA



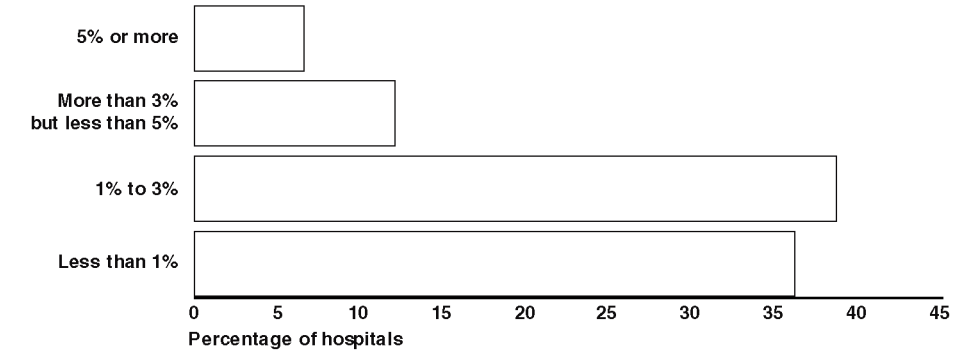
Source: GAO survey of hospitals, 2002.

Note: Percentage of hospitals reflects those hospitals that responded to the survey; responses were not weighted to represent all hospitals in the MSA. Boarding data were for the past 12 months.

[a]MSAs with a response rate of 50 percent or less or MSAs with 50 percent or more of data missing for responding hospitals. In 12 MSAs, no hospitals responded; these MSAs were excluded from the map.

Patients Leaving before a Medical Evaluation. From our nationwide survey of hospitals, we estimate that the median percentage of patients who left after triage but before a medical evaluation in fiscal year 2001 was 1.4 percent. We estimate that about 39 percent of hospitals had from 1 to 3 percent of patients who left before medical a evaluation in fiscal year 2001 while about 7 percent of hospitals reported that 5 percent or more of emergency department patients left before a medical evaluation (see fig. 5).[16]

Figure 5: Hospitals by Percentage of Patients Who Left Before a Medical Evaluation, Fiscal Year 2001



Source: GAO survey of hospitals, 2002.

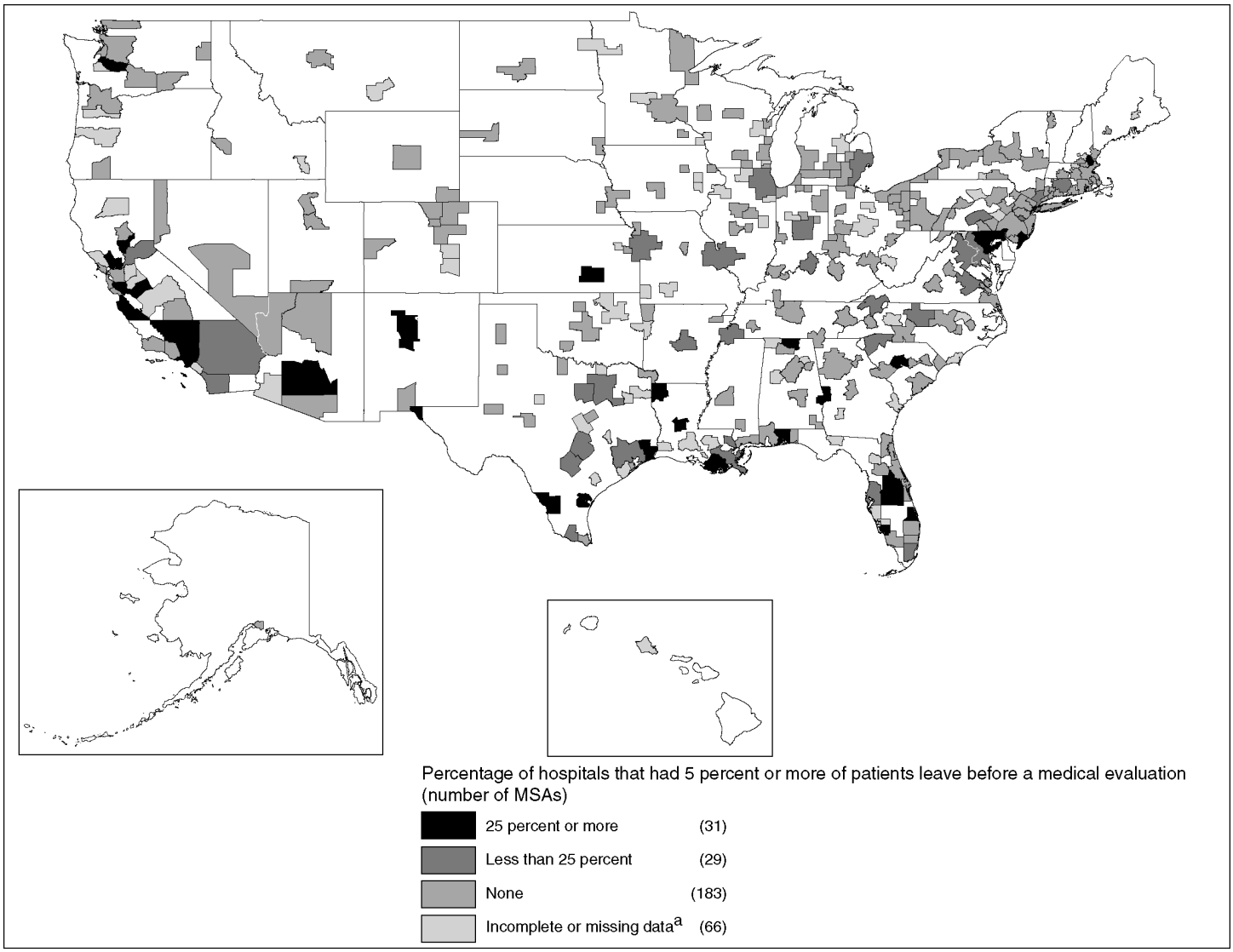
Note: Responses were weighted to provide estimates for the entire universe of 2,021 hospitals. Data were missing for about 7 percent of hospitals.

[16]If data were not available, we asked hospitals to provide their best estimates. We estimate that about 34 percent of hospitals provided estimates of the number of patients who completed triage in the emergency department but left before a medical evaluation during fiscal year 2001.

Figure 6 shows each MSA and the extent to which hospitals within the MSA reported at least 5 percent of patients leaving before a medical evaluation. Of the 243 MSAs for which data were available on the percentage of patients who left before a medical evaluation,[17] 183 MSAs (75 percent) had no hospitals reporting that they met these criteria. In contrast, 31 of the 243 MSAs (13 percent) had at least one-fourth of responding hospitals reporting that at least 5 percent of patients left before a medical evaluation in fiscal year 2001.

[17]The 243 MSAs include those MSAs for which (1) more than half of hospitals in the MSA returned surveys and (2) of those hospitals that returned surveys, 50 percent or more provided data on patients who left before a medical evaluation.

Figure 6: Percentage of Hospitals with at Least 5 Percent of Patients Leaving before a Medical Evaluation, by MSA, Fiscal Year 2001



Source: GAO survey of hospitals, 2002.

Note: Percentage of hospitals reflects those hospitals that responded to the survey; responses were not weighted to represent all hospitals in the MSA.

[a]MSAs with a response rate of 50 percent or less or MSAs with 50 percent or more of data missing for responding hospitals. In 12 MSAs, no hospitals responded; these MSAs were excluded from the map.

Crowding More Pronounced in Certain Types of Communities

We analyzed our three crowding indicators across different MSA characteristics, including population, population growth, and level of uninsurance. We found all three characteristics were associated with reported levels of crowding.[18]

MSAs with Larger Populations

Hospitals in MSAs of 2.5 million or more people reported higher levels of all three indicators—diversion, boarding, and patients leaving before a medical evaluation—than hospitals in MSAs of less than 1 million people (see table 2). In these larger areas, hospitals had a median of about 162 hours of diversion in 2001 compared with 9 hours for hospitals in areas with a population of less than 1 million. Similarly, the median percentage of patients boarding 2 hours or more was more than twice as high in large MSAs—48 percent versus 23 percent.[19] The median percentage of patients who left before a medical evaluation was also higher, though not as dramatically as for the two other indicators.

[18]These characteristics may be associated with other MSA or hospital characteristics. Our analysis was limited to examining the independent associations of MSA and hospital characteristics and our three indicators of crowding.

[19]In looking at those hospitals on diversion for more than 10 percent of the time, 41 percent of hospitals were located in MSAs with populations of 2.5 million or more people compared to 27 percent in MSAs of less than 1 million people.

Table 2: Indicators of Crowding, by Population of MSA

Crowding indicators	MSA population: 2.5 million or more	MSA population: 1 million or more but less than 2.5 million	MSA population: Less than 1 million
Median number of hours on diversion in fiscal year 2001	162 hours[a]	84 hours[a]	9 hours
Median percentage of patients boarded 2 hours or more in past 12 months	48%[a]	39%[a]	23%
Median percentage of patients who left before a medical evaluation	1.6%[a]	1.4%[a,b]	1.3%[b]

Source: GAO survey of hospitals, 2002, and U.S. Census Bureau.

Note: Responses were weighted to provide estimates for the universe of hospitals.

[a]No statistically significant difference between the medians for hospitals in MSAs of 1 million or more but less than 2.5 million and hospitals in MSAs with populations of 2.5 million or more.

[b]No statistically significant difference between the medians for hospitals in MSAs of less than 1 million and hospitals in MSAs of 1 million or more but less than 2.5 million.

Our site visits show that crowding indicators vary not only across MSAs but also between hospitals within MSAs. Four of the six locations we visited (Atlanta, Los Angeles, Boston, and Phoenix) were in MSAs with populations of over 2.5 million and we found variation among hospitals within these communities. For example, the 10 major Boston hospitals were on diversion for an average of 322 hours in 2001. However, 2 of the 10 hospitals accounted for nearly half of the diversion hours for the 10 hospitals, averaging nearly 800 hours of diversion each.

MSAs with High Population Growth

Hospitals in communities with high population growth from 1996 through 2000 reported higher levels of diversion and patients leaving before a medical evaluation compared to hospitals in communities with lower population growth (see table 3). The median number of hours of diversion in fiscal year 2001 for hospitals in MSAs with a high percentage population growth was about five times that for hospitals in MSAs with lower percentage population growth. Similarly, the median percentage of patients who left before a medical evaluation was significantly higher for hospitals in MSAs with high population growth—1.7 percent—than for those in MSAs with low population growth—1.0 percent. In addition, of hospitals that reported at least 5 percent of patients leaving before a medical evaluation in 2001, 31 percent were in communities with high

population growth compared to 15 percent in communities with low population growth.

Table 3: Indicators of Crowding, by Population Growth of MSAs

	MSA population growth, 1996-2000	
Crowding indicators	**Top 25 percent[a]**	**Bottom 25 percent[b]**
Median number of hours on diversion in fiscal year 2001	50 hours	10 hours
Median percentage of patients boarded 2 hours or more in past 12 months	33%[c]	22%[c]
Median percentage of patients who left before a medical evaluation	1.7%	1.0%

Source: GAO survey of hospitals, 2002, and U.S. Census Bureau.

Note: Responses were weighted to provide estimates for the universe of hospitals.

[a]Hospitals in the top 25 percent in terms of MSA population growth were located in MSAs with a population increase of about 8.4 percent or more.

[b]Hospitals in the bottom 25 percent in terms of MSA population growth were located in MSAs with a population increase of less than about 2.9 percent.

[c]No statistically significant difference between the medians for hospitals in the top and bottom quartiles.

Two of the six locations we visited, Atlanta and Phoenix, were in MSAs with high population growth from 1996 to 2000—16 percent and 18 percent growth, respectively. Diversion hours varied among hospitals in these communities. For example, in Phoenix, 5 of the 28 hospitals in the region made up about 42 percent of the region's diversion hours in 2001. Two of these 5 hospitals with high rates of diversion were in the city's central sector. Hospitals in this sector were on diversion an average of 10 percent of the time in 2001. By contrast, hospitals in the region's northeast sector, a more suburban area, had the lowest average rate of diversion—an average of 3 percent of the time.

MSAs with Higher Levels of Uninsurance

Hospitals in communities with a higher percentage of people without health insurance reported higher levels of diversion and patients leaving before a medical evaluation (see table 4). For example, hospitals in MSAs where the percentage of uninsured people was above average reported having almost twice as many patients leave the emergency department prior to a medical evaluation than those in MSAs where the percentage of uninsured was below average. Our analysis of other national data indicate that waiting times, which are reported to be the primary reason patients leave the emergency department before a medical evaluation, were longer

in communities with more uninsured people. For example, in 2000, waiting times for nonemergent visits averaged about 25 minutes longer in communities with high levels of uninsured people than in communities with low levels of uninsured people (90 minutes versus 65 minutes).[20]

Table 4: Indicators of Crowding, by Percentage of MSA Population without Health Insurance

	Level of uninsurance in the MSA	
Crowding indicators	**Significantly above the average level of uninsurance**	**Significantly below the average level of uninsurance**
Median number of hours on diversion in fiscal year 2001	228 hours	72 hours
Median percentage of patients boarded 2 hours or more in past 12 months	42%[a]	49%[a]
Median percentage of patients who left before a medical evaluation	2.2%	1.2%

Source: GAO survey of hospitals, 2002, and UCLA Center for Health Policy Research.

Notes: GAO analysis of survey data and UCLA Center for Health Policy Research analysis of uninsurance rates for 96 large MSAs (compared to the average for those MSAs) based on the 2000 and 2001 Current Population Survey. Analysis was limited to hospitals in these 96 large MSAs. Responses were weighted to provide estimates for the universe of hospitals.

[a]No statistically significant difference between the median percentages for areas with above and below average levels of uninsurance.

Of the six sites we visited, three (Los Angeles, Phoenix, and Miami) were MSAs with significantly higher percentages of people without health insurance. The crowding indicators varied among hospitals in these MSAs with high levels of uninsurance. For example, the number of hours on diversion in 2001 for hospitals in the Los Angeles MSA ranged from no diversion at four hospitals to 6,186 hours—about 71 percent of the time—at another hospital.[21]

[20]Our analysis was limited to 96 large MSAs for which data on the level of uninsurance were available and used data on waiting times from the National Hospital Ambulatory Medical Care Survey.

[21]In addition, the amount of time hospitals were on diversion varied between different parts of the Los Angeles MSA. Of nine areas designated by the Los Angeles County EMS agency, the percentage of time that hospitals were on diversion in 2001 ranged from 12 percent in one area to more than 46 percent of the time in another area.

Crowding More Pronounced in Certain Types of Hospitals

We also analyzed differences across a wide range of hospital characteristics, including the number of staffed beds; hospital ownership; teaching status; trauma center status; and the proportions of emergency department visits covered by Medicare, Medicaid or the State Children's Health Insurance Program (SCHIP), or self-pay as the payer source. All three indicators of crowding were significantly higher in hospitals with more staffed beds and at teaching hospitals, while the median numbers of hours on diversion were higher at hospitals designated as certified trauma centers and at hospitals with fewer patients covered by Medicare. In addition, we found that the median proportion of patients who left before a medical evaluation was significantly higher in public hospitals than private, not-for-profit hospitals, and in hospitals with more emergency department visits covered by Medicaid and SCHIP or more patients who were self-pay patients.[22] (See app. III for additional information on the indicators of crowding by select hospital characteristics).

Availability of Inpatient Beds for Emergency Patients Cited as a Key Factor Contributing to Crowding, but Other Factors Also Contribute

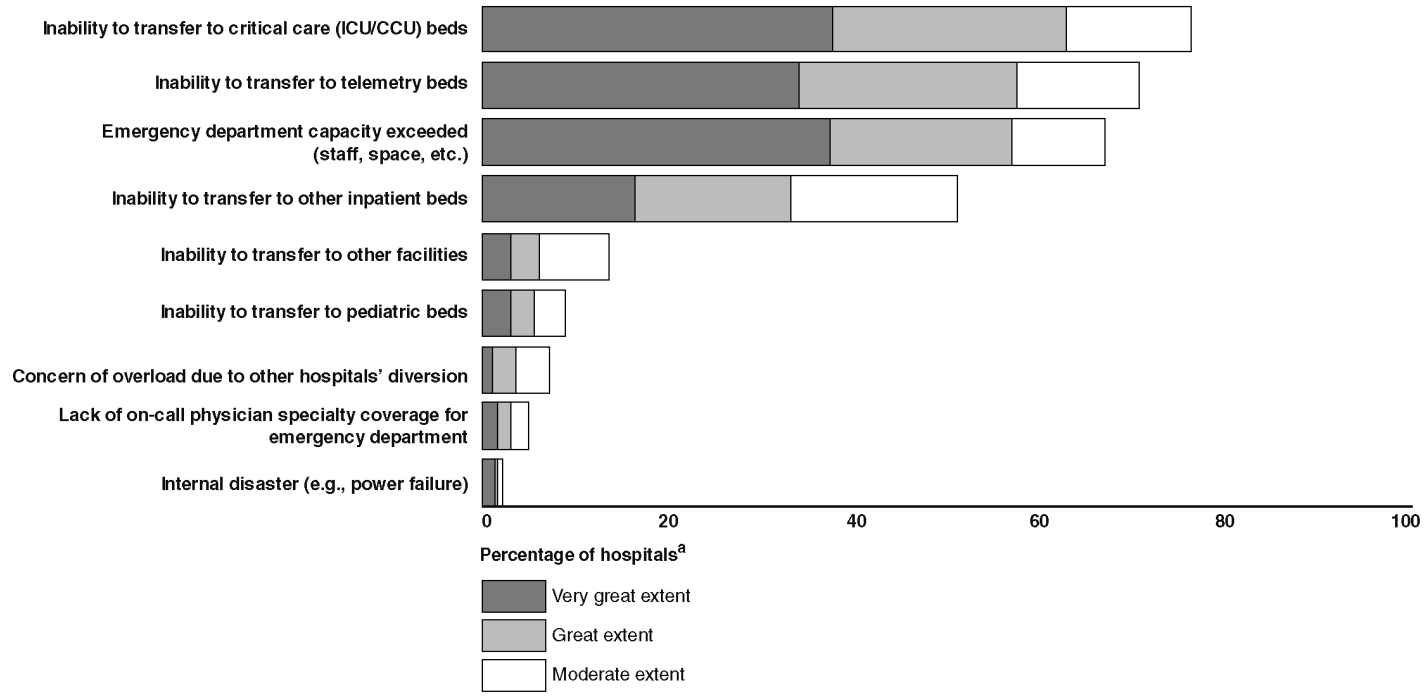
No single factor stands out as the reason why crowding occurs. Rather, a number of factors, including many outside the emergency department, are associated with crowding. In both the opinion of hospitals we surveyed and of hospital officials we interviewed, the factor most commonly associated with crowding was the inability to transfer emergency patients to inpatient beds once decisions had been made to admit them as hospital patients rather than to release them after treatment. In looking at why hospitals did not have the capacity to always meet the demand for inpatient beds from emergency patients, hospital officials, researchers, and others pointed to (1) financial pressures leading to limited hospital capacity to meet periodic spikes in demand for inpatient beds and (2) competition between admissions from the emergency department and scheduled admissions such as surgery patients, who are generally considered to be more profitable. Other factors cited as contributing to crowding include closures of nearby hospitals or availability of physicians and other providers in the community.

[22]These characteristics may be associated with other hospital or MSA characteristics. Our analysis was limited to examining the independent associations of hospital and MSA characteristics and our three indicators of crowding.

Lack of Available Inpatient Beds for Emergency Patients the Most Commonly Cited Factor

The inability to transfer emergency patients to inpatient beds was the condition that surveyed hospitals reported most often as contributing to going on diversion and boarding patients. Even when treatment spaces are available in the emergency department, hospitals may go on diversion for patients who will likely need instrument-monitored beds or critical care beds because these types of beds are full. As figure 7 shows, the most common types of beds that were unavailable were intensive care unit (ICU) or critical care unit (CCU) beds, followed by instrument-monitored (telemetry) beds. More than three-fourths of hospitals that went on diversion reported that the lack of ICU/CCU beds contributed to diversion to a moderate, great, or very great extent.

Figure 7: Conditions Hospitals Reported as Contributing to Diversion, Fiscal Year 2001

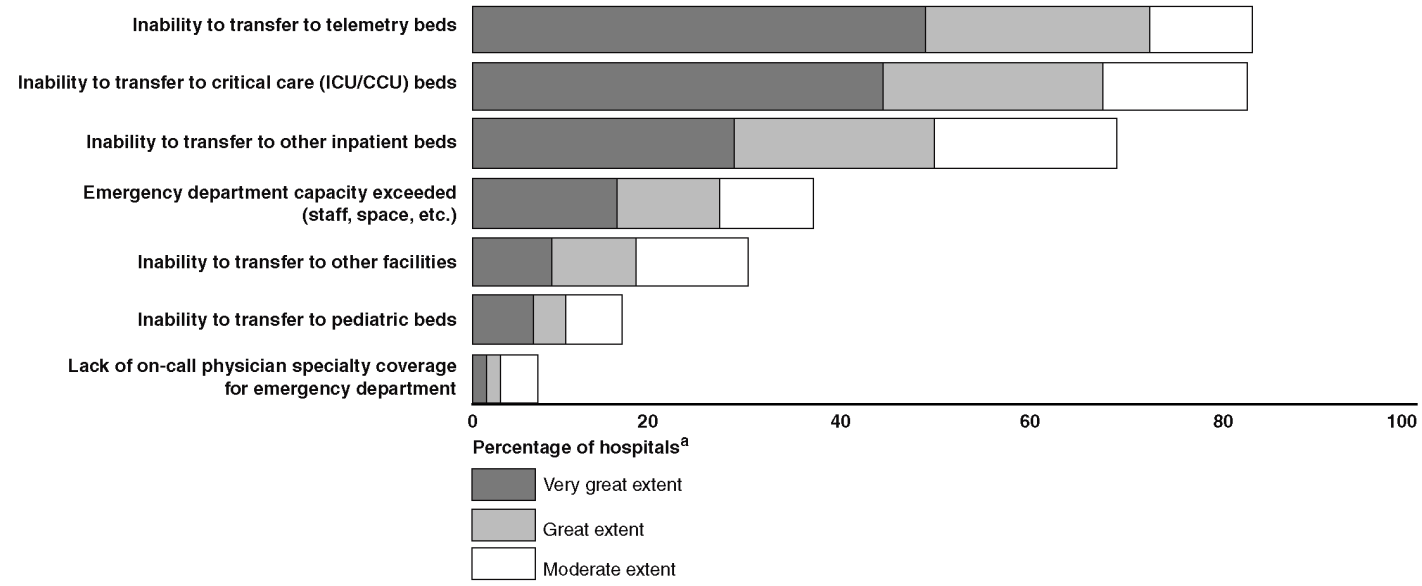


Source: GAO survey of hospitals, 2002.

[a]Responses were weighted to provide estimates for the entire universe of hospitals. Percentages are based on an estimated 1,389 hospitals going on diversion in fiscal year 2001.

Similarly, lack of inpatient beds was the dominant reason given for the need to board patients in the emergency room (see fig. 8). Of hospitals that boarded patients for 2 hours or more in the past 12 months, about 80 percent cited the lack of telemetry or critical care beds as contributing to boarding to a moderate, great, or very great extent.

Figure 8: Conditions Hospitals Reported as Contributing to Boarding Patients in the Past 12 Months



Source: GAO survey of hospitals, 2002.

[a]Responses were weighted to provide estimates for the entire universe of hospitals. Percentages are based on an estimated 1,822 hospitals boarding patients for 2 or more hours in the past 12 months.

Our analysis of data collected in our survey generally corroborates that a lack of inpatient beds plays a major role in contributing to emergency department crowding. We found that those hospitals in communities with higher demand for inpatient beds—as measured by admissions per inpatient bed—had higher indicators of crowding. As table 5 shows, hospitals that rank in the top 25 percent in terms of admissions per bed in the MSA had both significantly higher numbers of diversion hours and proportions of patients boarding 2 hours or more than hospitals in the bottom 25 percent of admissions per bed. For example, hospitals in the top 25 percent reported a median of 170 hours on diversion in fiscal year 2001, compared with a median of 12 hours for hospitals in the lowest 25 percent.

Table 5: Indicators of Crowding, by Admissions per Bed in the MSA

	Admissions per bed[a]	
Crowding indicators	**Top 25 percent[b]**	**Bottom 25 percent[c]**
Median number of hours on diversion in fiscal year 2001	170 hours	12 hours
Median percentage of patients boarded 2 hours or more in past 12 months	60%	19%
Median percentage of patients who left before a medical evaluation	1.5%[d]	1.2%[d]

Source: GAO survey of hospitals, 2002, and American Hospital Association Annual Survey Database, Fiscal Year 2000.

Note: Responses were weighted to provide estimates for the universe of hospitals.

[a]Admissions per bed in short-term general medical and surgical community hospitals with emergency departments in the MSA based on data from the American Hospital Association Annual Survey Database, Fiscal Year 2000.

[b]Hospitals in the top 25 percent in terms of admissions per bed in the MSA were located in MSAs with more than 48.9 admissions per bed.

[c]Hospitals in the bottom 25 percent in terms of admissions per bed in the MSA were located in MSAs with fewer than 40.3 admissions per bed.

[d]No statistically significant difference in the medians for hospitals in the top and bottom quartiles.

Similarly, hospitals with more demand for inpatient beds from the emergency department—that is, a higher proportion of emergency visits resulting in hospital admission—also had higher indicators of crowding. As table 6 shows, the quarter of hospitals with the highest percentages—more than 19.7 percent—of emergency visits resulting in inpatient hospital admission reported more diversion and boarding than the quarter of hospitals with the smallest percentages—less than 11.8 percent—of emergency visits resulting in admission.

Table 6: Indicators of Crowding, by Percentage of Emergency Visits Resulting in Hospital Inpatient Admissions, Fiscal Year 2001

	Percentage of emergency department patients admitted to the hospital	
Crowding indicators	**Top 25 percent[a]**	**Bottom 25 percent[b]**
Median number of hours on diversion in fiscal year 2001	144 hours	4 hours
Median percentage of patients boarded 2 hours or more in past 12 months	52%	9%
Median percentage of patients who left before a medical evaluation	1.6%[c]	1.3%[c]

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals.

[a]Hospitals in the top 25 percent admitted more than 19.7 percent of emergency visits.

[b]Hospitals in the bottom 25 percent admitted fewer than 11.8 percent of emergency visits.

[c]No statistically significant difference in the medians for hospitals in the top and bottom quartiles.

Finally, our analysis found that hospitals with more patients per bed—measured by the average occupancy in fiscal year 2001 as a percentage of the total number of staffed inpatient beds on the last day of the fiscal year—also had higher indicators of crowding in the emergency department (see table 7).[23]

[23]For the average occupancy in fiscal year 2001, our analysis used information that hospitals reported on their average daily census at midnight. While the census at midday may be higher than at midnight, only an estimated 13 percent of hospitals provided data on midday census.

Table 7: Indicators of Crowding, by Average Occupancy as a Percentage of Staffed Inpatient Beds, Fiscal Year 2001

	Average occupancy as a percentage of staffed inpatient beds[a]	
Crowding indicators	**Top 25 percent[b]**	**Bottom 25 percent[c]**
Median number of hours on diversion in fiscal year 2001	101 hours	6 hours
Median percentage of patients boarded 2 hours or more in past 12 months	55%	9%
Median percentage of patients who left before a medical evaluation	1.5%	1.0%

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals.

[a]Average daily census reported at midnight for fiscal year 2001 as a percentage of the total number of staffed beds reported as of the last day of fiscal year 2001. Excludes long-term care, labor and delivery, and postpartum beds.

[b]Hospitals in the top 25 percent had an average daily census of more than 80.8 percent of staffed inpatient beds.

[c]Hospitals in the bottom 25 percent had an average daily census of less than 57 percent of staffed inpatient beds.

The conclusion that the availability of inpatient beds contributes to crowding in emergency departments was reiterated at the hospitals we visited on our site visits. At 19 of the 24 hospitals we visited, hospital officials reported that the lack of inpatient beds and subsequent boarding of emergency patients was a key factor contributing to crowding. In addition, a 1-week survey conducted in Massachusetts found that hospitals' occupancy rates were higher when hospitals were on diversion.[24]

Several Reasons Cited for Hospitals Not Always Having Inpatient Capacity to Meet Demand for Beds from Emergency Patients

When we examined why hospitals did not always have the inpatient capacity to meet the demand for beds from emergency patients, hospital administrators, researchers, and clinicians cited several reasons, including (1) financial incentives to control costs and maximize revenue by staffing inpatient beds at a point where they will nearly always be full—a practice that limits a hospital's ability to meet periodic spikes in demand, and

[24]Massachusetts Department of Public Health, *The DPH Ambulance Diversion Survey: February 1-7, 2001*.

(2) competition between emergency department admissions and scheduled admissions for available beds.[25]

Economic Factors Influence Hospitals' Capability to Meet Periodic Spikes in Demand

One reason reported for the lack of inpatient beds was the financial pressures hospitals face to staff inpatient beds at a level where they will nearly always be full. This practice limits a hospital's ability to meet periodic spikes in demand. Hospital administrators, clinicians, and health care researchers report that changes in the hospital economic climate have contributed to this decline in "surge capacity." For example, in a report prepared for the Massachusetts Health Policy Forum, one health policy researcher noted that the lower occupancy rates of the 1970s and 1980s became unacceptable in the 1990s when hospitals were increasingly driven by market-based factors. In a market-based system, successful hospitals run full, attract both elective and emergency patients, and are staffed closer to average demand than to the peaks.[26]

Another factor sometimes cited that is related to insufficient bed capacity involves staffing. Officials at some hospitals we visited said that they did not staff more of the beds they already had or open new beds because they were concerned they would not be able to staff them or could not afford the cost of staffing them.[27] These hospitals cited the costs and difficulties recruiting nurses, particularly the cost of hiring nurses from agencies that contract out nursing services. For example, officials at a Miami hospital we visited that staffed only about two-thirds of the beds for which it was licensed in 2001 said that they would lose money if they staffed more beds because of the cost of contract nurses.

[25]A third reason cited by some hospital officials was that low profit margins make it difficult to access capital to expand. However, we did not find any significant difference in our three crowding indicators between those surveyed hospitals with the highest and lowest average hospital margins reported for fiscal years 1997 to 1999.

[26]M. McManus, "Emergency Department Overcrowding in Massachusetts: Making Room in our Hospitals," *The Massachusetts Health Policy Forum*, no. 12 (2001).

[27]While our survey asked hospital officials to provide data on (1) the hours of emergency department physician and other clinician patient care coverage in the emergency department on a typical day in fiscal year 2001 and (2) data on the hospital and agency (contract) nursing full-time equivalent staff in both the emergency department and the general hospital on the last day of fiscal year 2001, a large proportion of missing data prevented us from examining our three crowding indicators by hospital staffing levels.

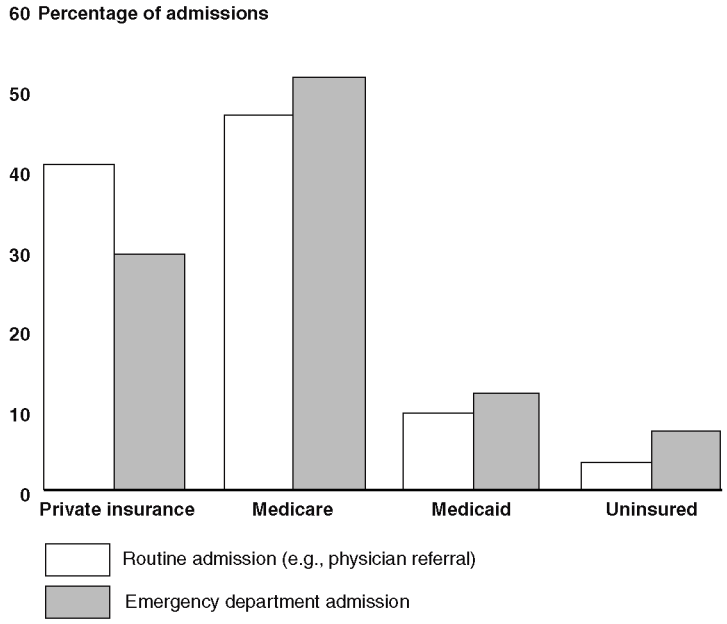
Emergency Department Admissions Compete with Other Admissions

For the inpatient beds that are available, many researchers and hospital officials we interviewed reported that hospitals often balance admissions from emergency departments with scheduled admissions for surgical procedures, which are generally considered more profitable. One reason that admissions from the emergency department are considered to be less profitable is because these admissions tend to be for medical conditions, such as pneumonia, rather than for those procedures that are considered more profitable. Available data from the Agency for Healthcare Research and Quality's (AHRQ) Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, show that of hospital admissions from the emergency department in 2000, most were for medical conditions (such as pneumonia and heart failure). Further, 19 of the 20 most prevalent diagnosis related groups (DRG) for these admissions were for medical conditions. In contrast, half of the 20 most common DRGs for admissions that were not from the emergency department were for surgical procedures (such as orthopedic surgery and cardiac pacemaker implantation).[28]

Many hospital officials and researchers also said that emergency department patients are less profitable because a larger proportion of emergency admissions are patients for whom the primary payer source is self-pay, which includes the uninsured, or Medicaid, which is generally considered to provide lower reimbursement. As shown in figure 9, available data from AHRQ's Healthcare Cost and Utilization Project show that the proportion of admissions for uninsured patients or patients with Medicaid as the primary payer source was higher for admissions from the emergency department than for routine admissions in 2000. At the same time, the proportion of admissions with private insurance as the primary payer source was higher for routine admissions than for patients admitted from the emergency department. Because self-pay patients and those covered by Medicaid are viewed as providing lower reimbursement, hospital officials and health care researchers said that hospitals have a financial incentive to fill the limited number of available beds with scheduled admissions rather than emergency department admissions.

[28]This analysis is based on national estimates of discharges from nonfederal, short-term, general medical and surgical hospitals with emergency departments and excluded neonatal and maternal discharges.

Figure 9: Primary Payer Source of Routine and Emergency Department Admissions, 2000



Source: AHRQ's Healthcare Cost and Utilization Project, Nationwide Inpatient Sample, 2000.

Note: This analysis is based on national estimates of discharges from nonfederal, short-term, general medical and surgical hospitals with emergency departments, and excludes neonatal and maternal discharges.

In addition, some hospital officials reported that surgeons bring in business that generates revenues for the hospital and that hospitals may not want to cancel or reschedule elective surgeries—and disrupt their surgeons and patients—in order to make beds available for emergency department patients. This point was supported by our survey results—less than one-third of hospitals that went on diversion in fiscal year 2001 (29 percent) reported that they had canceled any elective procedures to minimize going on diversion.

Additional Factors Cited as Contributing to Crowding

Hospital officials reported in both our survey and during our site visits that other factors contributed to crowding as well, including increased demand due to the closure of other hospitals and difficulties in accessing physicians and other medical providers in the community. For example, officials at one hospital we visited said that when two neighboring hospitals closed in 1999 and 2000, their hospital experienced a significant increase in emergency department visits and subsequent crowding. In addition, officials at some of the hospitals we visited said they thought that the availability of physicians and other services, such as psychiatric services, in their communities affected crowding in one or more instances. For example, in Cleveland, the county psychiatric mobile health unit recently stopped taking patients in the late evening and on weekends, increasing the amount of time the emergency department had to care for psychiatric patients during those times. One Cleveland hospital we visited reported that boarding times for patients awaiting assessment by this unit had increased for patients who arrived late at night.

Another factor that many hospital officials we interviewed and other experts reported as contributing to crowding was an increase in the amount of time clinicians need to spend with each emergency department patient or the amount of time the patient remains in the emergency department before a decision is made to admit, transfer, or release him or her. Emergency department physicians and researchers report that emergency patients are older, have more complex conditions, and have more treatment and tests provided in the emergency department than in prior years because the standard for admitting them to the hospital has been raised and medical practices have changed. For example, one emergency department administrator said that patients with asthma are now treated and monitored in the emergency department for several hours before a decision is made whether to admit them to inpatient beds. Similarly, with newer technology available, patients with chest pain may remain and be monitored in the emergency department for several hours before a decision is made whether to admit them. In addition, hospital officials reported that the time it takes to receive laboratory and radiology results creates delays in the emergency department. While available data from HHS's National Center for Health Statistics indicate significant increases from 1992 through 2000 in the proportion of emergency department visits that were for illnesses instead of injuries and the proportion of visits in which computed axial tomography (CAT) scans and magnetic resonance imaging (MRI) screenings were conducted, no

national data are available showing whether the length of time emergency patients remain in the emergency department has changed over time. [29, 30]

Wide Range of Activities Under Way to Manage Crowding at Hospitals and in Communities, but Problems Persist

At the six sites we visited, actions to address emergency department crowding had been taken at both the hospital and community levels. Steps taken by hospitals generally fell into two categories: (1) increasing capacity and (2) improving the efficiency with which patients are treated—and if necessary, moved to inpatient beds. At the community level, EMS agencies, health care associations, and public agencies were generally active to some degree in implementing communitywide policies and computerized diversion tracking systems to help direct the flow of ambulance traffic and keep hospital staff and EMS providers informed about which hospitals are on diversion. While hospital and community officials reported some positive results for their efforts, they generally described these efforts as attempts to manage crowding problems rather than to substantially reduce them. The effects of these efforts have not been widely studied, though several activities are now under way that may help facilitate future evaluations.

Hospitals Expand Capacity and Increase Efficiency

To accommodate increasing demand, a number of hospitals in all six of the locations we visited reported having expanded or planning to expand their emergency department or hospital inpatient capacity in terms of space, staffing, and laboratory capability. For example, 16 of the 24 hospitals we visited reported having expanded or planning to expand their emergency department treatment space. These expansion activities ranged from adding stretchers in the hallway to accommodate more emergency

[29]Data from the National Center for Health Statistics for 1992 to 2000 also showed that the percentage of emergency department visits admitted to the hospital had not changed significantly—about 12 percent of visits resulted in admissions in 2000. However, the same data found that the percentages of emergency department visits referred to another physician or clinic or with no follow-up planned had increased significantly to about 47 percent and 10 percent of visits, respectively, in 2000.

[30]Although officials at several hospitals we visited reported that difficulty getting specialty coverage for the emergency department may contribute to longer patient stays in the emergency department while waiting for specialists to evaluate their condition, most hospitals we surveyed did not believe that this problem contributed to crowding to a great extent. While our survey found that 59 percent of hospitals reported problems with on-call specialty coverage, only about 5 percent of hospitals that went on diversion reported that lack of on-call specialty coverage contributed to diversion to a moderate, great, or very great extent, and only 7 percent of hospitals that boarded patients reported that problems with on-call coverage contributed to boarding to a moderate, great, or very great extent.

department patients to building new, larger emergency departments.[31] Some hospitals added a unit—often referred to as a fast-track unit—to the emergency department that is staffed with appropriate personnel, such as nurse practitioners and physician assistants, to quickly treat nonurgent cases. In addition, officials at 11 of the 24 hospitals we visited told us that their hospitals had expanded or would be expanding inpatient capacity or building new hospital facilities, a step that could make it easier to transfer patients who need to be admitted as inpatients.[32] We found expansions or planned expansions at different types of hospitals, including not-for-profit, public, and for-profit hospitals. At some hospitals that had recently expanded their capacity, hospital officials reported that even though the expansion helped, they continue to experience very crowded conditions. Table 8 provides examples of the kinds of actions taken or planned at the hospitals we visited.

[31]Many hospitals we visited and surveyed reported using nonstandard treatment spaces such as stretchers in the hallway or chairs for treating emergency patients. Nineteen of the 24 hospitals we visited reported using nonstandard treatment spaces, and 78 percent of hospitals in our survey reported having hallway treatment spaces and other nonstandard treatment spaces at the end of fiscal year 2001.

[32]While 11 hospitals reported having expanded or planning to expand, 1 hospital in Los Angeles reported plans to build a new, but smaller hospital inpatient facility to replace the older, larger one. A hospital official cited financial pressures as the primary reason for smaller capacity. Of the hospitals we surveyed, about 296 (15 percent) reported having applied for an increased number of licensed beds since the beginning of fiscal year 2001. In 2002, 26 states and the District of Columbia required hospitals to apply for regulatory approval to increase the number of hospital inpatient beds, according to the American Health Planning Association.

Table 8: Examples of Expansions of Emergency Departments or Inpatient Capacity at Hospitals GAO Visited

Location	Actions taken by hospitals
Atlanta	One hospital has opened a new emergency department that increased the number of standard treatment spaces from 17 to 33, including a fast-track unit for treating nonurgent patients more quickly in the emergency department. The hospital also plans to staff 80 additional inpatient hospital beds.
Cleveland	One hospital increased the number of emergency department beds from 15 to 21 and added 12 ICU beds.
Miami	One hospital is expanding its emergency department to double the number of treatment spaces from 24 to 48 beds. In addition, the hospital recently added (1) a 40-bed temporary care unit to handle patients boarding in the emergency department and (2) adult and pediatric fast-track units in the emergency department to treat nonurgent patients.
Phoenix	One hospital added additional physician coverage during the busiest time of the day and added a fast-track unit to treat nonurgent patients more quickly.

Source: GAO data from site visits to 24 hospitals in selected MSAs, 2002.

While more than two-thirds of the hospitals we visited were expanding or reported having plans to expand their capacity, nearly all of the 24 hospitals we visited reported taking some type of action to increase the flow of patients through the emergency department and to reduce the time needed to place admitted emergency department patients into hospital beds. When patients cannot be moved efficiently through the emergency department and into inpatient hospital beds, they occupy emergency department space, staff, and services and reduce the capacity that might otherwise be available to treat other patients waiting to be seen in the emergency department. As shown in table 9, hospitals' approaches to increase efficiency varied. For example, some hospitals focused on increasing the speed of the registration and triage process, while others were dependent on actions taken outside of the emergency department and on inpatient floors of the hospital, such as having coordinating committees or multidisciplinary teams that are directed to increase availability of inpatient beds and reduce boarding.

Table 9: Examples of Hospitals' Increasing Efficiency

Location	Actions taken by hospitals
Atlanta	One hospital formed a "bed briefing group," which meets three times a day to discuss the types of emergency department patients waiting for inpatient beds and the types of inpatient beds expected to become available. Attendees include representatives from the hospital inpatient units (e.g., medical/surgical beds, critical care beds), the emergency department, nursing administration, and environmental services.
Boston	One hospital developed "Code Help ER," under which all available staff resources are called on to expedite admissions and discharges when the hospital's emergency department load is particularly high. Under this policy, priority is placed on transporting patients who have been boarding in the emergency department to inpatient beds, completing nursing reports, and cleaning beds before the hospital goes on diversion. After a "Code Help ER," hospital officials conduct a review to determine the causes leading to that situation. Hospital officials recently completed the first analysis of the reviews and will be making recommendations for internal policy changes later this year. "Code Help ER" has been adopted by the state of Massachusetts as a best practice and is being used at other hospitals.
Miami	One hospital implemented a program called, "Think Noon!" to encourage doctors and hospital staff to discharge patients from inpatient beds before noon of the discharge day. The objective of the program is to make room available for patients waiting for inpatient beds, including those boarding in the emergency department.
Phoenix	One hospital streamlined the registration process; changed the process for providing lab and radiology services; and implemented "Code Purple," which is similar to "Code Help ER" that is used in Boston.

Source: GAO data from site visits to 24 hospitals in selected MSAs, 2002.

Community Activities Focus on Systems to Manage Diversion

At the community level, efforts focused on ways to better manage crowding, particularly diversion, through task forces and development of diversion policies and tracking systems. At three of the six sites we visited, task forces had been formed to address these issues. The task forces generally addressed crowding and diversion in three ways: assembling stakeholders to examine causes, bringing attention to the issue, and developing methods to manage the problem (see table 10).

Table 10: Diversion Task Force Activity

Location	Action taken	Participants	Result
Boston	The Massachusetts Department of Public Health started a Diversion Task Force in 1998.	State health officials, health researchers, emergency department physicians, hospital administrators, and EMS officials	Major accomplishments include the development of uniform guidelines and definitions for types of diversion. The Massachusetts Department of Public Health conducted a survey for the task force to study the reasons for the contributing factors to emergency department crowding and ambulance diversion in Massachusetts.
Los Angeles	The Healthcare Association of Southern California convened a task force in 2001 that focused on diversion.	Hospital administrators and EMS officials	The task force developed a list of 12 possible contributing factors or underlying causes for diversion and drafted a list of potential solution steps.
Phoenix	The central Arizona regional EMS coordinating agency has a diversion task force that has been meeting since 1995.	Hospital representatives, emergency department clinicians, public and private EMS officials, and state and county health officials	This group facilitates EMS and hospital discussions regarding diversion, developed protocols for diversion, and agreed on the use of a diversion tracking system.

Source: GAO data from site visits in selected MSAs, 2002.

Five of the six sites we visited had developed standard policies or guidelines regarding diversion and operated or participated in electronic systems for tracking ambulance diversion. The sixth site we visited—Miami-Dade County—took a different approach. The largest EMS provider in the area, the Miami-Dade Fire Rescue Department EMS Division, no longer formally honors hospital requests for diversion.[33] On March 31, 1999, this EMS agency implemented a new policy directing ambulances to bring patients to the nearest appropriate hospital, citing concerns over the increased number of hospital emergency room closures and a compromised ability to deliver quality patient care.

For the five sites we visited that allowed diversion, each system improved communication among hospital and EMS providers by (1) allowing hospitals to request being put on diversion, (2) making hospitals aware of other hospitals' diversion status, and (3) making ambulance dispatchers and ambulance drivers aware of which hospitals are on diversion. In these locations, diversion systems are used to provide a structure to systematically try to spread the ambulance volume during times of peak demand by redirecting ambulances to hospitals that are presumably less

[33]The second largest EMS agency in Miami-Dade County, the City of Miami Fire-Rescue EMS, does have policies for diversion that govern its service area. See app. II for additional information on the diversion policies of each site visited.

crowded. At three of these sites, EMS agencies produce reports on the number of hours each hospital was on diversion each month.[34] EMS agencies, hospital associations, and government agencies use diversion reports to review policies and monitor hospitals' diversion hours.

Current Efforts Unable to Reverse Crowding Trends

While some sites we visited have experienced limited improvement, efforts under way have not made substantial reductions in the current extent of crowding. Some officials we interviewed described their efforts as attempts to manage the situation to keep it from getting worse rather than solving the problem. For example, in Boston, officials from the Massachusetts chapter of the American College of Emergency Physicians who participate in their state's diversion task force said they see diversion as a Band-Aid for addressing what they believe is a crisis. They said that while the task force has taken steps to better manage diversion, increased demand for emergency department services due to events such as a bad flu season or disaster could still tax the system beyond its capacity.

Community-level data tend to support the view that these efforts, while perhaps helping to mitigate crowding, are not reversing the recent trends in crowding. For example, from 2000 through 2001, the three sites we visited that produce regular reports on diversion all experienced increases in the percentage of time that their hospitals were on diversion. The increase in the hours of diversion in these three locations ranged from 39 percent in the Los Angeles region to 73 percent in the Boston region.

Studies Assessing Impact of Current Efforts Have Been Limited but Other Activities Are Under Way

Despite the number of steps that hospitals and communities have taken, few studies have been conducted on the effects of hospitals' and communities' efforts to address crowding. Only 1 of the 24 hospitals we visited reported having completed an evaluation of the impact of its activities. This hospital had implemented a program to increase efficiency by discharging patients by noon and reported that its efforts resulted in earlier placement of admitted emergency department patients in inpatient beds. At the community level, while several communities monitor the number of hours on diversion, they reported that no comprehensive

[34]These three sites included Boston's EMS region, Los Angeles County EMS, and Phoenix's EMS region. While Atlanta's EMS region has a system to notify hospitals and EMS providers when hospitals are on diversion, data reports that track diversions over time are not yet available. Cleveland has 55 local EMS agencies and does not report on communitywide diversion data regularly.

evaluations have been completed on the impact of communitywide efforts to address crowding.

Recent initiatives have been started by such organizations as the Joint Commission on Accreditation of Healthcare Organizations, AHRQ, and the Robert Wood Johnson Foundation that may help in future evaluations of crowding. These organizations have initiatives under way to further study crowding, develop hospital standards related to crowding, develop and test measures of crowding, provide technical assistance to hospitals, and evaluate potential steps to ease the problem. However, the results of these studies are not anticipated to be available until later in 2003 or 2004.

Concluding Observations

Emergency department crowding is not an issue that can be solved in the emergency department alone. Rather, it is a complex issue that reflects the broader health care market. It is clear that, as a key part of the health care safety net, emergency departments in many of the nation's largest communities are under strain.

Our work suggests that some aspects of the problem are hospital-specific, such as high numbers of emergency patients, lack of space, and delays in obtaining test results. In addition, crowding appears to reflect the inability of individual hospitals to meet the demand for inpatient beds, particularly critical care and telemetry beds, both from emergency patients who need to be admitted to the hospital and patients admitted for elective procedures. When hospitals cannot accommodate peaks in demand, either because they lack space or because they choose to operate at levels that allow little excess capacity, the result is that emergency departments will often board patients who are waiting for inpatient beds. When they do, the capacity of the emergency department to treat additional patients is diminished.

While such issues as concerns about staffing inpatient beds and availability of other providers in the community are similar across communities, the solutions may differ by community and local health care market. For example, one community may face crowding in the emergency department largely because people have problems accessing physicians and other providers in the community, and potential solutions could involve steps to improve access to these other providers or establishing fast-track systems to treat nonurgent conditions in the emergency department. Another community may face crowding primarily because facilities have closed or populations have increased and there are too few hospital beds staffed and operated in the area. In this situation, the

solution could involve reopening beds in existing facilities that were not set up and staffed. To address communitywide factors contributing to crowding, hospitals may need to work collaboratively with other facilities in their communities. Communitywide efforts such as task forces and standardized procedures and diversion policies have improved communications between hospitals and EMS providers and provided some degree of sharing the load when multiple hospitals are crowded. However, these efforts appear to only manage the problem of crowded conditions in emergency departments, rather than eliminate it.

Adding capacity, for both the emergency departments and for inpatient beds, has been suggested as a solution, but no one solution is likely to fit all circumstances. Crowding is clearly worse in some communities and hospitals than in others, and the specific reasons for crowding need to be better understood, particularly at the local level.

Comments from External Reviewers

Representatives from the American College of Emergency Physicians and American Hospital Association and an independent reviewer provided comments on a draft of this report. The American College of Emergency Physicians stated that our methodology was comprehensive and systematic and identified and documented the leading causes of emergency department crowding. It also stated that while the crowding problems may be more pervasive in large metropolitan areas, its members had provided recent anecdotal information that indicates that the crowding problem is now becoming a concern in rural areas. While it is possible that some rural areas are becoming concerned about crowding, our survey was limited to hospitals in MSAs because available information and contacts with rural health organizations indicated that emergency department crowding was not a major problem in these areas.

An independent reviewer who has conducted research on emergency department crowding issues stated that the report was well done and informative. This reviewer and the American Hospital Association provided technical comments that we incorporated as appropriate.

As we agreed with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution of it until 14 days from the date of this letter. We will then send copies to others who are interested and make copies available to others who request them. In addition, this report will be available at no charge on GAO's Web site at http://www.gao.gov.

If you or your staff have any questions, please contact me at (202) 512-7119. An additional GAO contact and the names of other staff members who made major contributions to this report are listed in app. IV.

Sincerely yours,

Janet Heinrich
Director, Health Care—Public Health Issues

Appendix I: Scope and Methodology

To accomplish our objectives, we surveyed over 2,000 short-term nonfederal, general medical and surgical hospitals with emergency departments located in metropolitan statistical areas (MSA). These hospitals are located in the 50 states and the District of Columbia. We obtained and analyzed data using three indicators of emergency department crowding: diversion, boarding, and patients who left before receiving a medical evaluation. We also used several hospital and community characteristics, including hospital ownership, admissions per bed, community population and growth, and the proportion of patients in the community without insurance. In addition, we visited six metropolitan areas—Atlanta, Boston, Cleveland, Los Angeles, Miami, and Phoenix. In these locations, we interviewed emergency medical services officials and officials at 4 hospitals in each area, for a total of 24 hospitals. We also interviewed (1) federal agency officials at the Department of Health and Human Services' (HHS) National Center for Health Statistics, Health Resources and Services Administration, and Agency for Healthcare Research and Quality (AHRQ), (2) health care researchers at organizations such as the Council on Health Care Economics and Policy, the Robert Wood Johnson Foundation, and the Joint Commission on Accreditation of Healthcare Organizations, (3) representatives of national and local professional associations such as the American Ambulance Association, American Hospital Association, American College of Emergency Physicians, Emergency Nurses Association, National Association of Emergency Medical Services Physicians, and American Medical Association, and (4) hospital administrators and clinicians. In addition, we reviewed relevant studies and policy documents and analyzed information from national databases, including HHS's National Center for Health Statistics' National Hospital Ambulatory Medical Care Survey and AHRQ's Healthcare Cost and Utilization Project, and the Health Resources and Services Administration's Area Resource File. We conducted our work from July 2001 through February 2003 in accordance with generally accepted government auditing standards.

Survey of Hospitals

Survey Universe and Development

To address questions about the extent of diversion, boarding, and patients leaving before a medical evaluation at hospitals in MSAs, we mailed a questionnaire to all 2,041 short-term, nonfederal, general medical and surgical care hospitals that reported they had emergency departments and were located in MSAs in the 50 states and the District of Columbia based on data from the American Hospital Association's Annual Survey

Database, Fiscal Year 2000. We mailed the questionnaires to the chief administrator of each hospital in May 2002. Each hospital was asked to report for the emergency department located at its main campus.

The survey included questions on the emergency department, such as (1) whether the hospital went on diversion and, if so, the number of hours on diversion in the hospital's fiscal year 2001, (2) whether the hospital boarded patients for 2 hours or more in the past 12 months and, if so, the percentage of boarded patients who boarded 2 hours or more and the average number of hours boarded, and (3) the number of emergency department visits and the number of patients who left after triage but before a medical evaluation in the hospital's fiscal year 2001. It also included questions on the general hospital, including the number of staffed beds (excluding long-term care, labor and delivery, and postpartum beds) as of the last day of the hospital's fiscal year 2001.[1] In developing these questions, we reviewed the literature and prior surveys related to crowding issues and conducted discussions with expert researchers. We also pretested our questionnaire in person with officials at 10 hospitals and refined the questionnaire as appropriate.

Response Rates

Of the initial universe of 2,041 hospitals, 18 had closed by 2002 and 2 did not have emergency departments in fiscal year 2001, resulting in a final universe of 2,021 hospitals. We conducted follow-up mailings and telephone follow-up calls to nonrespondents. We obtained responses from 1,489 hospitals, for an overall response rate of about 74 percent.[2]

Survey Analysis

We analyzed the response rates from various categories of hospitals and weighted responses to adjust for a lower response rate from investor-owned (for-profit) hospitals so that our results would reflect the nationwide mix of hospital types. We analyzed the information provided by hospitals for three indicators of emergency department crowding—diversion, boarding, and patients who left before a medical evaluation. In many cases, hospitals provided estimates for these indicators. Specifically,

[1]A third section included questions on emergency preparedness for mass casualty incidents, which will be reported separately.

[2]Questionnaires received after September 3, 2002, and those of hospitals that only returned the section on emergency preparedness were not included in calculating our response rate and were excluded from our analyses.

we estimate that (1) of hospitals that went on diversion, about 45 percent provided estimates for the number of hours on diversion in fiscal year 2001, (2) of hospitals that boarded patients for 2 hours or more in the past 12 months, about 74 percent provided estimates for the percentage of patients boarding 2 hours or more and about 74 percent provided estimates for the average number of hours patients boarded, and (3) about 34 percent of all hospitals provided estimates of the number of patients who left after triage but before a medical evaluation. For those hospitals that provided estimates, we used these estimates in our analyses.

We examined the extent of crowding in hospitals in MSAs, by different MSA and hospital characteristics. We grouped MSAs by characteristics such as U.S. Census Bureau population in 2000, population growth from 1996 to 2000, and the percentage of the population without health insurance.[3] We examined our indicators of crowding by hospital characteristics such as the number of staffed beds on the last day of fiscal year 2001; whether the hospital was public, private not-for-profit, or investor-owned (for-profit); the hospital's teaching status; whether it was a certified trauma center; and the proportion of emergency department visits covered by Medicare, Medicaid and the State Children's Health Insurance Program, and self-pay as the payer source. We compared the medians of our three indicators of crowding across these characteristics. In calculating the median number of hours on diversion and the median percentage of patients boarding 2 hours or more, we considered hospitals that did not go on diversion in fiscal year 2001 to have no hours of diversion and hospitals that did not board any patients 2 hours or more to have no percentage of patients boarding.

We also conducted analyses to determine key factors associated with these indicators of crowding. We analyzed hospitals' responses regarding which key factors contributed to our indicators of crowding and examined the medians for the crowding indicators grouped by admissions per bed in the MSA, percentage of emergency visits resulting in hospital inpatient admissions in fiscal year 2001, and the average daily census as a percentage of the number of staffed beds in the hospitals' fiscal year 2001. In addition, we analyzed data from AHRQ's Healthcare Cost and

[3]Our analysis of uninsurance rates in MSAs was limited to data from the UCLA Center for Health Policy Research for 96 large MSAs based on the 2000 and 2001 Current Population Survey.

Utilization Project, Nationwide Inpatient Sample, 2000, on the payer source of admissions.

Site Visits

We conducted site visits in six locations: Atlanta, Georgia; Boston, Massachusetts; Los Angeles, California; Cleveland, Ohio; Miami, Florida; and Phoenix, Arizona. We selected the six sites judgmentally to include locations that varied in geographic location, the proportion of people without health insurance, MSA population, and recent population growth (see table 11). In addition, media reports and other sources had indicated that all six sites had reported problems with crowded emergency departments.

Table 11: Characteristics of Locations Selected for Site Visits

Location	Geographic location (Census division)	U.S. Census population—2000 (for MSA)	Percentage change in MSA population 1996-2000	Level of uninsurance compared to MSA average, 2000-2001 (percentage)	Admissions per bed, 2000, by quartile (1=bottom 25 percent, 4=top 25 percent)
Atlanta	South Atlantic	4,112,198	16	Not significantly different (14)	43.7 (2)
Boston	New England	3,406,829	5	Below (10)	50.7 (4)
Cleveland	East North Central	2,250,871	1	Below (12)	40.8 (2)
Los Angeles	Pacific	9,519,338	5	Above (25)	46.0 (3)
Miami	South Atlantic	2,253,362	7	Above (27)	40.6 (2)
Phoenix	Mountain	3,251,876	18	Above (18)	53.4 (4)

Source: U.S. Census Bureau, UCLA Center for Health Policy Research, and the American Hospital Association Annual Survey Database, Fiscal Year 2000.

Note: UCLA Center for Health Policy Research provided analysis of uninsurance rates for 96 large MSAs based on the 2000 and 2001 Current Population Survey.

At the six locations, we visited four hospitals at each site (including public, for-profit, and not-for-profit hospitals), interviewed hospital administrators and emergency department clinicians, and observed operations in the emergency departments. We also interviewed officials from local EMS agencies, hospital associations, and other professional associations and experts knowledgeable about emergency department crowding.

Appendix II: Diversion Policies at the Six Locations GAO Visited

While all six locations we visited had local or regional regulations, policies, or guidelines on ambulance diversion, these policies varied among and within the locations.[1] For example, the largest emergency medical services (EMS) provider in the Miami area, the Miami-Dade Fire Rescue Department EMS Division, stopped allowing hospitals to go on ambulance diversion as of March 31,1999, though the smaller City of Miami Fire-Rescue EMS agency did have policies for diversion.[2] As shown in table 12, the locations we visited illustrate the differences between diversion policies of different communities and demonstrate how an episode of diversion in one place differs from an occurrence of diversion elsewhere.

- All six locations had defined types of diversion, including categories such as overall saturation in the emergency department, diversion for trauma cases only, diversion because a neurosurgeon was unavailable, diversion because a computed tomography (CT) scanner was unavailable, or diversion because of an internal disaster such as a power failure.
- Five of the locations had computer-based diversion systems in place at the time of our visit that allowed EMS dispatchers and hospital officials to check which hospitals, if any, in the EMS region were on diversion.
- All six locations had circumstances under which ambulances would take patients to the nearest appropriate hospital, regardless of whether the hospital was on diversion. For example, all six locations had policies to take patients with unstable or critical conditions to the nearest hospital, and four had policies that the patient's request to go to a specific hospital could override diversion in certain circumstances.
- Most of the locations had a specific period after which a hospital would need to either reconfirm its diversion status or be automatically reopened to ambulances. However, the policies regarding the time limits varied. For example, 10 major Boston hospitals were automatically taken off diversion after 2 hours, while hospitals in Atlanta could go on diversion for up to 8 hours before they would automatically be reopened to all ambulances. In addition, hospitals in Boston, Phoenix, and Cleveland could be taken off of diversion status if too many hospitals in their immediate area wanted to go on diversion. For example, when two-thirds of hospitals in a given sector in Phoenix are on diversion, all of the hospitals are required to reopen.

[1]We will refer to regulations, policies, and guidelines as policies in this appendix.

[2]For purposes of this appendix, we will refer to the policies of the City of Miami in discussing the diversion policies in the Miami area.

Table 12: Comparison of EMS Areas and Diversion Policies for Site Visit Locations

	Site visited					
	Los Angeles	**Phoenix**	**Miami**[a]	**Atlanta**	**Boston**	**Cleveland**
EMS areas	Los Angeles County	Maricopa County	City of Miami	Eight metro Atlanta counties	Suffolk County and parts of three other counties	Cuyahoga County
Types of diversion	-Emergency department saturation -Trauma care -Pediatric critical care -Neurosurgeon unavailable -CT scanner unavailable -Internal disaster	-Emergency department saturation -Trauma services saturation -Facility internal disaster	Each hospital should have its own diversion policies and procedures consistent with City of Miami Fire-Rescue EMS diversion guidelines	-Emergency room saturation -Trauma saturation -Medical/ surgical saturation -Intensive care unit/critical care unit saturation -Psychiatric saturation -No available beds -Neurosurgeon unavailable -CT services unavailable -Internal disaster[b]	-Emergency department saturation (advanced life support or full) -Internal disaster	-Full restriction -Critical restriction/ trauma -Critical restriction/ medical -Treat and release only -Full restriction except trauma
Computer-based diversion communication and tracking system (year began)?	Yes (1996)	Yes (1999)	No	Yes (2001)	Yes (2001)	Yes (2002)
Time limits for diversion—automatic reopen requirements	2 hours, unless the hospital reenters diversion status	3 hours before reevaluation is required	2 hours, unless the hospital requests an extension	Hospitals choose from 1 to 8 hours and are automatically taken off diversion status when that time expires unless they reactivate status	4 hours, unless hospitals update their diversion status; 2-hour limit for 10 major Boston hospitals	No time limits, but diversion status checked twice daily around 8:00 a.m. and 8:00 p.m.

	Site visited					
	Los Angeles	**Phoenix**	**Miami[a]**	**Atlanta**	**Boston**	**Cleveland**
Threshold for the number of hospitals on diversion at the same time	No threshold	All open when two-thirds of hospitals in one of four EMS sectors are on diversion	No threshold	No threshold	At the discretion of EMS officials, but the guiding principle is that multiple contiguous hospitals shall not be on diversion at the same time	When all but one hospital in one of the four county regions are diverting the same types of patients, hospitals are forced open in 4-hour rotating shifts
Impact of patient preference for a specific hospital	Patients who request specific hospitals may be taken to those hospitals regardless of diversion status, if they are sufficiently stable and the hospitals are within a reasonable distance	Patient preference is not specified in the diversion policy	Patients who request specific hospitals may be taken to those hospitals regardless of diversion status, if they are not in a life-threatening status	Patients who request specific hospitals that are within a reasonable distance may be taken to those hospitals regardless of diversion status[c]	Patients with complex medical histories related to the event or patients who have been recently discharged from particular hospitals may be taken to those hospitals regardless of diversion status	Patient preference is not specified in the diversion policy
Circumstances when ambulances do not divert	No diversion for -basic life support patients -advanced life support patients who exhibit an uncontrollable problem as defined by unmanageable airway or uncontrolled hemorrhage	No diversion for unstable, critical patients or unstable medical patients with airway or ventilation difficulties, etc.	No diversion for -basic life support patients -critical patients and stable advanced life support patients if transport exceeds 10 or 15 minutes, respectively	No diversion for -cardiac arrest/distress patients -patients with upper airway compromise -unstable patients as directed by medical personnel	No diversion for patients experiencing immediate life-threatening situations Level I and II trauma centers are expected to accept patients with multiple traumas at all times	No diversion for -patients felt to be in extreme circumstances -patients in cardiac arrest or whose airways cannot be controlled by EMS personnel

Source: GAO data from site visits in selected MSAs, 2002.

Note: Diversion policies as of December 31, 2002.

[a]Miami-Dade Fire Rescue Department EMS Division, the largest EMS provider in the area, stopped honoring diversion requests as of March 31, 1999. The second largest EMS agency, the City of Miami Fire-Rescue EMS, continues to honor diversion requests. Information provided is for the City of Miami Fire-Rescue EMS.

[b]In Atlanta, diversion categories are guidelines, not policy.

[c]In Georgia, patients are generally permitted to select the hospital to which they want to be transported. Ga. Comp. R. & Regs. r. 290-5-30-.05 (2002).

Appendix III: Select Results of GAO Survey of Hospitals Regarding Emergency Department Crowding

This appendix summarizes the results from questions we asked short-term nonfederal, general medical and surgical hospitals in metropolitan statistical areas (MSA) in the United States that had emergency departments in 2000. We sent the questionnaire to 2,041 hospitals that met these criteria—20 did not have emergency departments in fiscal year 2001 or were closed, for a total of 2,021 hospitals. We obtained responses from 1,489 hospitals, for an overall response rate of about 74 percent. We weighted responses to adjust for a lower response rate from investor-owned (for-profit) hospitals to provide estimates representative of the entire universe of 2,021 hospitals in MSAs.

The following tables show select survey information on characteristics of the survey universe (table 13), emergency department visits and treatment spaces (tables 14 and 15), specialty on-call coverage (tables 16 and 17), diversion (tables 18 through 27), boarding (tables 28 through 31), patients who left before a medical evaluation (table 32), indicators of crowding by hospital characteristics (tables 33 through 40), hospitals applying for regulatory approval to increase licensed beds (tables 41 and 42), and payer sources for emergency department visits (table 43).

Table 13: Characteristics of Hospitals in Survey Universe

Hospital characteristic	Number of hospitals	Percentage
All hospitals	2,021	100
Population of hospital's MSA		
2.5 million or more	565	28
1 million to less than 2.5 million	562	28
Less than 1 million	894	44
Level of uninsurance of hospital's MSA[a]		
Above average of 96 MSAs	354	18
Below average of 96 MSAs	633	31
Not significantly different from average of 96 MSAs	362	18
No data available	672	33
Certified trauma center?		
Yes	809	40
No	1,212	60
Ownership type		
Private, not-for-profit	1,466	73
Investor-owned (for-profit)	311	15
Public (nonfederal)	244	12
Teaching hospital?		
Yes	697	34
No	1,324	66

Source: GAO survey of hospitals, 2002; U.S. Census Bureau; UCLA Center for Health Policy Research; and American Hospital Association Annual Survey Database, Fiscal Year 2000.

[a]Level of uninsurance compared to the average for 96 large MSAs based on analysis by the UCLA Center for Health Policy Research using data from the 2000 and 2001 Current Population Survey.

Table 14: Hospitals by Volume of Emergency Department Patient Visits, Fiscal Years 1997 and 2001

	1997		2001	
Number of emergency department visits	Number of hospitals	Percentage	Number of hospitals	Percentage
Less than 25,000	840	42	696	34
25,000 to less than 50,000	783	39	924	46
50,000 to less than 75,000	178	9	276	14
75,000 or more	43	2	99	5
Data missing	177	9	26	1

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals. Percentages may not add to 100 due to rounding.

Table 15: Mean Number of Emergency Department Standard and Other Treatment Spaces and Increase in Treatment Spaces, Last Day of Fiscal Years 1997 and 2001

	1997		2001		1997 to 2001	
Type of treatment space	Mean	Number of hospitals	Mean	Number of hospitals	Mean percentage increase	Number of hospitals
Standard (e.g., beds or treatment spaces specifically designed for emergency patients to receive care)	17.7	1,927	20.8	1,991	21.9	1,919
Other (e.g., stretchers in hallway, chairs)	5.7	1,718	7.8	1,824	35.2	1,295

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals.

Table 16: Hospitals Reporting Problems with On-Call Physician Specialty Coverage during Fiscal Year 2001

Did emergency department encounter any problems with on-call coverage?	Number of hospitals	Percentage of hospitals
Yes	1,201	59
No	781	39
Data missing	39	2

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals.

Table 17: Specialty Areas for Which Hospitals Reported Having Problems with On-Call Physician Specialty Coverage in the Emergency Department during Fiscal Year 2001

Specialty area	Number of hospitals	Percentage
Anesthesiology	64	5
Cardiology	127	11
Cardio/thoracic surgery	106	9
Ear, nose, and throat	332	28
General surgery	164	14
Neurology	239	20
Neurosurgery	504	42
Orthopedics	401	33
Pediatrics	110	9
Plastic surgery	505	42
Psychiatry	381	32
Other (1)	340	28
Other (2)	52	4

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals. Percentages are based on an estimated 1,201 hospitals that reported problems with on-call coverage. Some hospitals reported multiple specialties.

Table 18: Hospitals on Diversion, Fiscal Year 2001

Hospital on diversion in fiscal year 2001?	Number of hospitals	Percentage
Yes	1,389	69
No	614	30
Data missing	18	1

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals.

Table 19: Hospitals by Percentage of Time on Diversion, Fiscal Year 2001

Percentage of time on diversion	Number of hospitals	Percentage of hospitals
Greater than 20 percent	179	9
More than 10 and up to 20 percent	146	7
More than 5 and up to 10 percent	157	8
Up to 5 percent	839	42
Did not go on diversion	614	30
Data missing	85	4

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals.

Table 20: Reasons Contributing to the Hospital Not Going on Diversion in Fiscal Year 2001

	Yes		No		Data missing	
Reason for not going on diversion	Number of hospitals	Percentage	Number of hospitals	Percentage	Number of hospitals	Percentage
Adequate hospital capacity made diversion unnecessary	358	58	177	29	80	13
Only hospital serving large geographic area	178	29	332	54	104	17
Other hospitals on diversion	104	17	383	62	127	21
Administrative decision by emergency department to accept all ambulances	346	56	170	28	99	16
Administrative decision by hospital to accept all ambulances	398	65	122	20	94	15
Diversion requires approval from outside the hospital and the request was denied	10	2	469	76	135	22
Diversion requires approval from outside the hospital and was not worth requesting—it would have been denied anyway	9	1	473	77	132	22
State or local law or regulation prohibits diversion	24	4	465	76	125	20

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals. Percentages are based on an estimated 614 hospitals that did not go on diversion in fiscal year 2001. Some hospitals reported multiple reasons.

Table 21: Trauma Center Status and Diversion, Fiscal Year 2001

Was hospital that went on diversion designated as a certified trauma center?	Number of hospitals	Percentage
Yes	426	31
No	929	67
Data missing	33	2

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals. Percentages are based on an estimated 1,389 hospitals that went on diversion in fiscal year 2001.

Table 22: Conditions Contributing to Hospitals Going on Diversion, Fiscal Year 2001

	Number of hospitals (Percentage)						
Condition	Very great extent	Great extent	Moderate extent	Some extent	Little or no extent	Not applicable	Missing data
Inability to transfer to intensive care unit/critical care unit (ICU/CCU beds)	527 (38)	353 (25)	189 (14)	134 (10)	73 (5)	77 (6)	38 (3)
Inability to transfer to telemetry beds	476 (34)	329 (24)	185 (13)	101 (7)	99 (7)	138 (10)	59 (4)
Emergency department capacity exceeded	523 (38)	276 (20)	141 (10)	130 (9)	164 (12)	104 (7)	52 (4)
Inability to transfer to other inpatient beds	229 (17)	235 (17)	253 (18)	187 (13)	202 (15)	193 (14)	89 (6)
Inability to transfer to other facilities	43 (3)	44 (3)	105 (8)	176 (13)	535 (39)	397 (29)	88 (6)
Inability to transfer to pediatric beds	45 (3)	33 (2)	49 (4)	86 (6)	499 (36)	531 (38)	146 (10)
Concern emergency department would be overloaded due to other hospitals' diversion	15 (1)	36 (3)	48 (3)	70 (5)	571 (41)	541 (39)	108 (8)
Lack of on-call physician specialty coverage for emergency department	24 (2)	18 (1)	26 (2)	58 (4)	614 (44)	551 (40)	99 (7)
Internal disaster (e.g., power failure)	21 (2)	4 (0.3)	5 (0.4)	27 (2)	615 (44)	604 (44)	111 (8)

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals. Percentages are based on an estimated 1,389 hospitals going on diversion in fiscal year 2001 and may not add to 100 due to rounding. Some hospitals reported multiple conditions.

Table 23: Methods Hospitals Used to Minimize Diversion, Hospitals That Diverted in Fiscal Year 2001

Methods used to minimize going on diversion	Number of hospitals using this method	Percentage
Staff worked overtime	1,142	82
Opened inpatient beds in other areas of emergency department or hospital	823	59
Canceled elective procedures	403	29
Used on-call system for additional staff	652	47
Moved patients to other facilities	358	26
Used hospital float pool for additional staff	732	53
Used overflow or holding areas for patients	905	65
Other	221	16
No particular method was used	80	6

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals. Percentages are based on an estimated 1,389 hospitals going on diversion in fiscal year 2001. Some hospitals reported multiple methods.

Table 24: Hospitals Reporting State or Local Laws or Rules That Restrict When Hospitals Can Go on Diversion

State or local laws or rules restricting when the emergency department/hospital can go on diversion?	Number of hospitals	Percentage
Yes	624	45
No	733	53
Data missing	32	2

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals. Percentages are based on an estimated 1,389 hospitals going on diversion in fiscal year 2001.

Table 25: Hospitals' Knowledge of When Other Hospitals Are on Diversion

Emergency department or hospital knows when other area hospitals are on diversion?	Number of hospitals	Percentage
Yes	1,328	96
No	48	3
Data missing	13	1

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals. Percentages are based on an estimated 1,389 hospitals going on diversion in fiscal year 2001.

Table 26: Methods for Learning about Other Hospitals' Diversion

How emergency department or hospital knows when other area hospitals are on diversion	Number of hospitals	Percentage
Internet site	415	31
Telephone or radio alert from other hospitals	570	43
Telephone or radio alert from emergency medical services	519	39
Word of mouth (e.g., ambulance drivers)	458	35
Other	195	15

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals. Percentages are based on an estimated 1,328 hospitals going on diversion in fiscal year 2001 that knew when other hospitals were on diversion. Some hospitals reported multiple methods.

Table 27: Type of Care the Hospital Was Unable to Receive or Accept for the Most Recent Episode of Diversion

Type of care unable to accept	Number of hospitals	Percentage
Acute care (medical/surgical)	626	45
Telemetry	719	52
Intermediate (step-down)	471	34
Critical (ICU/CCU)	914	66
Trauma	434	31
Pediatric	313	23
Psychiatric	313	23
Other	240	17

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals. Percentages are based on an estimated 1,389 hospitals going on diversion in fiscal year 2001. Some hospitals reported multiple types of care.

Table 28: Hospitals Boarding Patients 2 Hours or More, Past 12 Months

Boarded patients for 2 hours or more in the past 12 months?	Number of hospitals	Percentage
Yes	1,822	90
No	173	9
Data missing	26	1

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals.

Table 29: Hospitals by Percentage of Patients Boarded 2 Hours or More, Past 12 Months

Percentage of patients boarded 2 hours or more	Number of hospitals	Percentage of hospitals
75 percent or more	630	31
50 percent to less than 75 percent	260	13
25 percent to less than 50 percent	200	10
Less than 25 percent	651	32
Did not board any patients 2 hours or more	173	9
Data missing	107	5

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals. Hospitals were asked what percentage of all the patients boarded in the past 12 months boarded for 2 hours or more.

Table 30: Hospitals by Average Hours of Patients Boarding, Past 12 Months

Average number of hours patients boarded	Number of hospitals	Percentage of hospitals
8 hours or more	399	20
6 to less than 8 hours	266	13
4 to less than 6 hours	371	18
Less than 4 hours	593	29
Did not board any patients 2 hours or more	173	9
Data missing	219	11

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals. Hospitals that boarded patients 2 hours or more in the past 12 months were asked the average number of hours that a patient was boarded, including those patients boarded for less than 2 hours.

Table 31: Conditions Contributing to Boarding Patients 2 Hours or More in Past 12 Months

	Number of hospitals (percentage)						
Condition	Very great extent	Great extent	Moderate extent	Some extent	Little or no extent	Not applicable	Data missing
Inability to transfer to telemetry beds	855 (47)	427 (23)	193 (11)	103 (6)	64 (3)	98 (5)	82 (5)
Inability to transfer to critical care (ICU/CCU beds)	775 (43)	418 (23)	279 (15)	178 (10)	63 (3)	37 (2)	72 (4)
Inability to transfer to other inpatient beds	494 (27)	383 (21)	341 (19)	219 (12)	135 (7)	124 (7)	126 (7)
Emergency department capacity exceeded	276 (15)	189 (10)	179 (10)	207 (11)	490 (27)	277 (15)	204 (11)
Inability to transfer to other facilities	149 (8)	157 (9)	213 (12)	297 (16)	489 (27)	224 (12)	293 (16)
Inability to transfer to pediatric beds	114 (6)	61 (3)	108 (6)	188 (10)	643 (35)	510 (28)	198 (11)
Lack of on-call physician specialty coverage for emergency department	27 (2)	26 (1)	71 (4)	189 (10)	784 (43)	524 (29)	202 (11)

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals. Percentages are based on an estimated 1,822 hospitals boarding patients for 2 hours or more in the past 12 months and may not add to 100 due to rounding.

Table 32: Hospitals by Percentage of Patients Who Left after Triage but before a Medical Evaluation, Fiscal Year 2001

Percentage of patients who left after triage but before a medical evaluation	Number of hospitals	Percentage of hospitals
5 percent or more	133	7
More than 3 to less than 5 percent	244	12
1 to 3 percent	780	39
Less than 1 percent	730	36
Data missing	134	7

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals. Percentages may not add to 100 due to rounding.

Table 33: Indicators of Crowding, by Number of Staffed Inpatient Beds, Last Day of Fiscal Year 2001

	Number of staffed inpatient beds[a]	
Crowding indicators	**Top 25 percent[b]**	**Bottom 25 percent[c]**
Median number of hours on diversion in fiscal year 2001	196 hours	<7 hours
Median percentage of patients boarded 2 hours or more in past 12 months	66%	8%
Median percentage of patients who left before a medical evaluation	2.0%	1.0%

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals.

[a]Excludes long-term care, labor and delivery, and postpartum beds.

[b]Hospitals in the top 25 percent had more than 294 staffed inpatient beds.

[c]Hospitals in the bottom 25 percent had 107 or fewer staffed inpatient beds.

Table 34: Indicators of Crowding, by Number of Emergency Department Visits per Standard Treatment Space, Fiscal Year 2001

	Visits per standard treatment space[a]	
Crowding indicators	**Top 25 percent[b]**	**Bottom 25 percent[c]**
Median number of hours on diversion in fiscal year 2001	35 hours[d]	22 hours[d]
Median percentage of patients boarded 2 hours or more in past 12 months	25%[d]	24%[d]
Median percentage of patients who left before a medical evaluation	1.6%	1.2%

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals.

[a]Number of visits in fiscal year 2001 and number of standard treatment spaces as of the last day of fiscal year 2001.

[b]Hospitals in the top 25 percent had more than 1,993 visits per standard treatment space.

[c]Hospitals in the bottom 25 percent had 1,426 or fewer visits per standard treatment space.

[d]No statistically significant difference between the medians for hospitals in the top and bottom quartiles.

Table 35: Indicators of Crowding, by Number of Emergency Department Standard Treatment Spaces per Staffed Inpatient Hospital Bed, Last Day of Fiscal Year 2001

	Standard treatment space per staffed inpatient bed[a]	
Crowding indicators	**Top 25 percent[b]**	**Bottom 25 percent[c]**
Median number of hours on diversion in fiscal year 2001	19 hours	97 hours
Median percentage of patients boarded 2 hours or more in past 12 months	22%[d]	37%[d]
Median percentage of patients who left before a medical evaluation	1.2%[d]	1.6%[d]

Source: GAO survey of hospitals, 2002.

Note: Number of standard treatments spaces and staffed inpatient beds as of the last day of fiscal year 2001. Responses were weighted to provide estimates for the universe of hospitals.

[a]Excludes labor and delivery, postpartum, and long-term care beds.

[b]Hospitals in the top 25 percent had more than 0.15 standard treatment spaces in the emergency department per staffed inpatient bed.

[c]Hospitals in the bottom 25 percent had less than 0.07 standard treatment spaces in the emergency department per staffed inpatient bed.

[d]No statistically significant difference in the medians for hospitals in the top and bottom quartiles.

Table 36: Indicators of Crowding, by Emergency Department Admissions per Staffed Inpatient Bed, Fiscal Year 2001

	Emergency department admissions per staffed inpatient bed[a]	
Crowding indicators	**Top 25 percent[b]**	**Bottom 25 percent[c]**
Median number of hours on diversion in fiscal year 2001	86 hours[d]	22 hours[d]
Median percentage of patients boarded 2 hours or more in past 12 months	46%	19%
Median percentage of patients who left before a medical evaluation	1.5%[d]	1.2%[d]

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals.

[a]Number of staffed inpatient beds as of the last day of fiscal year 2001. Excludes long-term care, labor and delivery, and postpartum beds.

[b]Hospitals in the top 25 percent had more than 35 emergency department admissions per staffed inpatient bed.

[c]Hospitals in the bottom 25 percent had less than 21 emergency department admissions per staffed inpatient bed.

[d]No statistically significant difference in the medians for hospitals in the top and bottom quartiles.

Table 37: Indicators of Crowding, by Hospital Ownership

	Type of ownership		
Crowding indicators	Private, not-for-profit	Investor-owned (for-profit)	Public (nonfederal)
Median number of hours on diversion in fiscal year 2001	52 hours[a]	40 hours[a]	11 hours[a]
Median percentage of patients boarded 2 hours or more in past 12 months	40%	22%	23%[a]
Median percentage of patients who left before a medical evaluation	1.3%	1.6%[a]	1.7%

Source: GAO survey of hospitals, 2002, and American Hospital Association Annual Survey Database, Fiscal Year 2000.

Note: Responses were weighted to provide estimates for the universe of hospitals.

[a]No statistically significant difference between the medians for hospitals with this type of ownership compared with other types of ownership.

Table 38: Indicators of Crowding, by Trauma Center Status

Crowding indicators	Certified trauma center	Not a certified trauma center
Median number of hours on diversion in fiscal year 2001	75 hours	32 hours
Median percentage of patients boarded 2 hours or more in past 12 months	46%[a]	28%[a]
Median percentage of patients who left before a medical evaluation	1.5%[a]	1.3%[a]

Source: GAO survey of hospitals, 2002, and American Hospital Association Annual Survey Database, Fiscal Year 2000.

Note: Responses were weighted to provide estimates for the universe of hospitals.

[a]No statistically significant difference between the medians for hospitals that are certified trauma centers and those that are not.

Table 39: Indicators of Crowding, by Teaching Status

Crowding indicators	Teaching hospital	Not a teaching hospital
Median number of hours on diversion in fiscal year 2001	148 hours	19 hours
Median percentage of patients boarded 2 hours or more in past 12 months	59%	20%
Median percentage of patients who left before a medical evaluation	1.7%	1.2%

Source: GAO survey of hospitals, 2002, and American Hospital Association Annual Survey Database, Fiscal Year 2000.

Note: Responses were weighted to provide estimates for the universe of hospitals.

Table 40: Indicators of Crowding, by Select Payer Sources for Emergency Department Visits, Fiscal Year 2001

	Medicare		Medicaid and State Children's Health Insurance Program (SCHIP)		Self-pay	
Crowding indicators	Top 25 percent[a]	Bottom 25 percent[a]	Top 25 percent[b]	Bottom 25 percent[b]	Top 25 percent[c]	Bottom 25 percent[c]
Median number of hours on diversion in fiscal year 2001	25 hours	76 hours	32 hours[d]	100 hours[d]	41 hours[d]	50 hours[d]
Median percentage of patients boarded 2 hours or more in past 12 months	31%[d]	38%[d]	42%[d]	49%[d]	38%[d]	49%[d]
Median percentage of patients who left before a medical evaluation	1.1%	1.7%	1.8%	1.0%	2.3%	1.0%

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals.

[a]The top 25 percent of hospitals had more than 30 percent of visits covered by Medicare, while the bottom 25 percent had 14 percent or fewer visits covered by Medicare.

[b]The top 25 percent of hospitals had more than 21 percent of visits covered by Medicaid or SCHIP, while the bottom 25 percent had 8 percent or fewer visits covered by Medicaid or SCHIP.

[c]The top 25 percent had more than 20 percent of visits covered by self-pay patients, while the bottom 25 percent had 8 percent or fewer visits covered by self-pay patients.

[d]No statistically significant difference between the medians for hospitals in the top and bottom quartiles.

Table 41: Hospitals Applying for Regulatory Approval to Increase Licensed Beds, since Start of Fiscal Year 2001

Requested approval to increase licensed beds?[a]	Number of hospitals	Percentage
Yes	296	15
No	1,639	81
Data missing	86	4

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals and include responses from all hospitals, regardless of whether states had certificate of need processes.

[a]According to the American Health Planning Association, 26 states and the District of Columbia required hospitals to apply for regulatory approval to increase licensed inpatient beds in 2002, a process known as the certificate of need process, while 24 states had no such requirement.

Table 42: Types of Beds Requested since Start of Fiscal Year 2001

Type of bed	Number of hospitals	Percentage
Acute care (medical/surgical)	129	44
Telemetry	44	15
Intermediate	17	6
Critical care (ICU/CCU)	97	33
Pediatric	11	4
Psychiatric	36	12
Other	97	33

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals and include responses from all hospitals, regardless of whether states had certificate of need processes. Percentages are based on an estimated 296 hospitals that applied for regulatory approval to increase licensed beds since start of fiscal year 2001. Some hospitals reported multiple types of beds.

Table 43: Average Proportion of Emergency Visits Covered by Medicare, Medicaid and SCHIP, and Self-Pay, Fiscal Year 2001

Payer source	Mean percentage	Number of hospitals reporting
Medicare	24	1,892
Medicaid and SCHIP	16	1,884
Self-pay	15	1,860

Source: GAO survey of hospitals, 2002.

Note: Responses were weighted to provide estimates for the universe of hospitals.

Appendix IV: GAO Contact and Staff Acknowledgments

GAO Contact

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