



Emergency Department Care in California

Who Uses It and Why?

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Summary

Hospital emergency departments are a critical part of the U.S. health care system, providing the only guaranteed source of health care for the uninsured and offering around-the-clock health care access to everyone. In 2006, more than ten million visits were made to California hospital emergency departments. Heavy use of emergency departments, including use by patients seeking treatment for nonurgent conditions, coupled with hospital and emergency department closures, have contributed to overcrowded conditions in many emergency departments. Longer waiting times for patients and more ambulance diversions to surrounding hospitals have been the result, leading state health officials and local planners to become concerned about the sustainability of the current system.

In this issue of *California Counts*, to provide a basis for assessing the current stability of the system, we describe trends in emergency department capacity and use and create detailed profiles of emergency department visits. We look in particular at overcrowding and the use of emergency departments for nonurgent conditions.

Although the number of operating emergency departments in the state declined over the past decade, we find that in aggregate, emergency departments appeared to keep pace with patient visits by expanding the number of treatment stations or beds. However, many still struggle with overcrowded conditions, particularly public hospitals and those in poor areas with large numbers of Medi-Cal beneficiaries. We find that Los Angeles County and the

Medi-Cal patients are more likely than the uninsured or the privately insured to use an emergency department for nonurgent or avoidable conditions.

Central Valley are home to some of the most crowded emergency departments in the state.

In addition, we describe patterns of use among different groups by examining all emergency department visits in California hospitals in 2005. We find that Medi-Cal and Medicare patients have the highest visit rates in the state and that the high volume of emergency department visits is not driven by uninsured Californians. Medi-Cal patients are more likely than the uninsured or the privately insured to use an emergency department for nonurgent or avoidable conditions. So are parents of infants younger than one year old, who seek treatment for common childhood illnesses that likely could be treated in other outpatient settings. We also find high emergency department use and subsequent hospital admission among older Medicare patients—not surprising given the frailer health status of the elderly. Furthermore, we find that immigrant Hispanics and Asians use emergency departments less than U.S.-born whites, and that noncitizen immigrants in particular are among the least likely to report a recent emergency department visit.

Our findings bring up some important issues for further research and policy debate. These should be addressed within the broader issues of all outpatient provider capacity and services. Reducing excess use of emergency department care and overcrowding will require a critical reassessment of patients' ability to access primary care providers and urgent care centers in a timely fashion and to receive appropriate care in those settings. Such strategies as extending business hours in primary care settings and expanding weekend access service might be fruitful ways both to decrease the use of emergency departments for nonurgent conditions and to improve continuity of patient-to-provider care. Some Californians feel that they get better and more thorough care at their local emergency department. This may be true, but policymakers may want to consider ways to improve the quality of preventive care and disease management services in the health care system as a whole.

Introduction

Emergency departments operate as frontline providers of the health care safety net in the United States, providing 24-hour health care access, serving as the only guaranteed source of health care for the uninsured, and playing a critical role in disaster response.¹ Over the past decade, emergency department use has increased nationally by 20 percent whereas the number of operating emergency departments has declined by nearly 10 percent (Nawar, Niska, and Xu, 2007). In a national survey of hospital administrators, about nine in ten indicated that emergency department overcrowding was a problem at their facility (Derlet, Richards, and Kravitz, 2001). Emergency departments in densely populated areas, with high population growth and high percentages of uninsured residents, appear to face the biggest problem, so much so that nearly two-thirds of emergency departments in metropolitan areas nationwide are confronting overcrowding issues (Government Accountability Office, 2003; Burt and McCaig, 2006).

A similar pattern affects California: During the 1990s, the number of emergency departments decreased by 11 percent whereas total emergency department visits climbed by 10 percent (Melnick et al., 2004). Although existing hospitals appeared to respond to increased patient volume by

adding more treatment stations in the remaining emergency departments, it remains unclear whether this has alleviated the problem. One study found that more than 40 percent of patients seeking emergency department care in California waited longer than a recommended threshold of one hour (Lambe et al., 2003). In addition, studies of public hospitals in Los Angeles and San Francisco have found that about 10 percent of patients left without receiving treatment after waiting on average more than six hours for care. Moreover, those who left with no treatment were no different from patients who stayed and were treated, in terms of the severity of their conditions (Baker, Stevens, and Brook, 1991; Grumbach, Keane, and Bindman, 1993).

Such patterns have raised concerns about the short- and long-term sustainability of the current emergency department system and whether capacity can keep pace with patient demand (Institute of Medicine, 2006). In 2007, federal legislation was introduced to address the financial and capacity issues facing the nation's emergency departments and in California, the Assembly Health Committee has held informational hearings focused on overcrowding and emergency department closures in the state and specifically in Los Angeles County. The news media have published and broadcast many stories related to

Over the past decade, emergency department use has increased nationally by 20 percent whereas the number of operating emergency departments has declined by nearly 10 percent, as a result of hospital closings.

overburdened emergency departments, including accounts of long wait times, lack of on-call specialists, and patients leaving without being seen—with tragic consequences. Other consequences of overcrowding include poor quality of care in emergency departments, ambulances being diverted to other emergency facilities and thus lengthening the time required for treatment, and widespread frustration and dissatisfaction among both patients and providers (Hoot and Aronsky, 2008).

Although emergency departments represent an essential point of access for everyone, there are concerns about whether they are being overused for primary care treatment and, if so, by whom. Treating nonurgent conditions in

From 2001–2006, total visits to California emergency departments stayed relatively stable, around ten million annually, and so per capita visits declined as the California population increased by about 7 percent.

an emergency department setting is costly, both because emergency department physicians often run many diagnostic procedures and because expanding treatment stations in an emergency department is more expensive than expanding capacity in a primary care setting. Moreover, it is reasonable to assume that people's use of their local emergency department to treat nonurgent conditions puts undue strains on existing emergency departments' already limited resources.

In this issue of *California Counts*, we present a comprehensive portrait of emergency department care in the state and examine the dual questions of overcrowding and the use of emergency departments for nonurgent conditions. We also look at emergency department users by age, insurance cov-

erage, and health status. Besides bringing a closer focus on problems in emergency departments, patterns of use and overcrowding may also serve as indicators to health planners and policymakers that other parts of the health care system need attention.

Emergency Department Capacity and Use

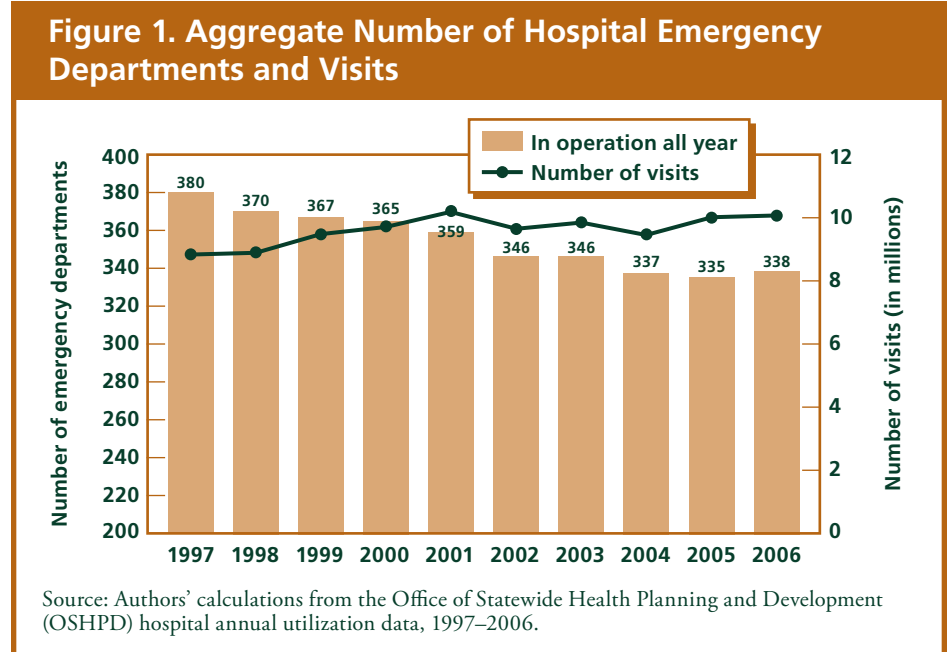
In aggregate, it appears that emergency department capacity has kept pace with patient demand, when measured by the number of emergency department visits. Throughout the 1990s, visits both in aggregate and per capita fluctuated, although per capita visits appeared to climb in the last few years of the decade (Melnick et al., 2004). In these later years, there was a 13 percent increase in emergency department visits from 1998 to 2001, nearly double the percentage increase in the population over the same time period. Concurrently, the number of operating departments in the state declined by 11 percent during the 1990s, but existing emergency departments appeared to respond both to the closures of others and to increasing patient use by expanding the number of treatment stations, or beds, in their own emergency departments by 20 percent² (Melnick et al., 2004).

Figure 1 displays the number of emergency departments in operation in California and the aggregate number of visits. Our findings suggest that the upward trend in aggregate and per capita visits (not shown) at the end of the decade did not continue through the first half of this decade. From 2001–2006, total visits to California emergency departments stayed relatively stable, around ten million annually, and so per capita visits declined as the California population increased by about 7 percent. In 2006, there were about 27 emergency department visits per 100 population compared to 29 visits per 100 population in 2001. The capacity of emergency departments continued to expand over the ten-year time period, rising from about 4,900 to more than 6,000 beds—an increase of more than 20 percent. Nonetheless, some large hospital emergency departments closed in the early to mid-2000s, most notably in Los Angeles County. Since 2003, Los Angeles County has lost ten emergency departments including Martin Luther King–Harbor hospital, one of the five county-operated hospitals.

However, these aggregate numbers do not fully portray how California hospital emergency departments still in operation have been dealing with increased numbers of patients. Although per capita visit rates and the number of

visits per bed are declining statewide and in most large counties, these hospitals are treating many more patients. The average number of visits to each emergency department increased from about 23,300 to nearly 30,000 between 1997 and 2006.

Moreover, emergency departments do not operate as discrete, stand-alone facilities. They are part of the larger hospital environment, and so important institutional and economic factors, such as required nurse-patient staffing ratios, high inpatient occupancy rates, and the lack of available critical care beds, can add to the stresses on an emergency department, even one that has increased its capacity. More emergency department beds in a fewer number of operating emergency departments, combined with higher numbers of visits, may mean that more acutely ill patients who need to be admitted to the hospital are in fact being “boarded” in emergency departments; that is, patients in need of further treatment are housed in emergency beds until an inpatient hospital bed opens up or a transfer is available. Emergency departments then become bottlenecked. Finally, closure of an emergency department in one location can mean that ambulances have a longer distance to travel to reach the nearest still-operating emergency department, which, in turn, can compromise the immediacy and



responsiveness of care (Buchmueler, Jacobson, and Wold, 2006).

Emergency departments also operate within different kinds of financial and ownership environments. In California, almost all hospitals fall into four ownership categories—public, nonprofit, for-profit, and hospital districts.

Dimensions of Emergency Department Overcrowding

An emergency department may have multiple causes for overcrowding, including unbalanced nurse-patient ratios, the

lack of specialty physicians willing to take calls in the emergency department, and patient boarding (O'Malley and Draper, 2007; Rudkin et al., 2004). Other contributing factors may include closures of nearby hospitals, lack of available outpatient alternatives in the community, and use of emergency departments for nonurgent medical problems (Baker, Stevens, and Brook, 1991; Government Accountability Office, 2003).

Health professionals have a variety of ways to describe overcrowding. We do so with two commonly accepted measures: the percentage of patients who register in an emergency department but leave without receiving treatment and the percentage of time during a year that an emergency depart-

Publicly owned hospitals, although they constitute less than 10 percent of all hospital types, appear to be more overcrowded than other hospitals.

ment reports being on ambulance diversion status. Ambulance diversion refers to periods of time, measured in hours, when hospital emergency departments request that incoming ambulances transport patients to other hospitals because they themselves cannot receive new patients. Both of these measures were ranked among the top three standardized markers to assess emergency department capacity as it relates to overcrowding by a national working group of experts (Solberg et al., 2003). Furthermore, higher percentages of patients leaving without treatment were found to be strongly associated with higher overcrowding scores of hospitals, based on a national scale (Weiss et al., 2005). The Government Accountability Office (GAO) also used these

measures in a comprehensive, two-year study to assess the extent of overcrowding nationwide.

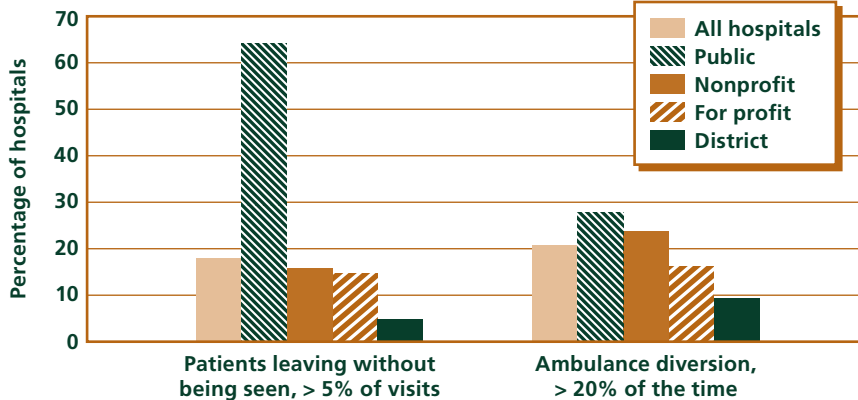
All hospitals are required to report these data to the state, which allows for uniform measures across hospitals. However, ambulance diversions may be a more limited measure. Diversion policies and criteria for when or if hospitals can request that ambulances be rerouted to other hospitals differ across regions in California.³ This means that some emergency departments in one region may be more (or less) likely than similarly crowded emergency departments elsewhere to go on diversion status. Additionally, a hospital going on diversion status does not necessarily mean that it is operating over capacity. Rather, hospitals can go on diversion because a specialty area is not covered and there are no on-call specialists, there are breaks and shifts in required nurse-staffing ratios, or they are trying to prevent being hit hard when other surrounding facilities themselves go on diversion.

Figure 2 displays the percentage of hospitals in the state's large counties reporting overcrowded conditions. We restrict our overcrowding analysis to hospitals in urban counties—the 16 counties in California with at least a half-million total population. In accordance with the GAO criteria for identifying overcrowded emergency departments, we use a cutoff of 20 percent to indicate

overcrowding for ambulance diversion and 5 percent for the percentage of patients leaving without being seen.⁴

There are notable differences for both overcrowding measures by hospital ownership. Publicly owned hospitals, although they constitute less than 10 percent of all hospital ownership types, appear to be more overcrowded than other hospitals. This is not surprising, given that these are predominantly county-operated and are tasked with fulfilling the county obligation to provide health care to the medically indigent.⁵ More than 60 percent of all publicly owned hospitals reported that more than 5 percent of patients left the emergency department without being seen by a physician. Public hospitals also appear to go on diversion status slightly more often than other hospitals do. By comparison, nonprofit hospitals, which constitute the majority in the state, and for-profit hospitals, which make up about 20 percent, experience less overcrowding as measured by the percentage of patients leaving without receiving care. District hospitals,⁶ which are smaller and typically in less densely populated areas, appear to have lower percentages of patients leaving without being seen than other hospital ownership types, and fewer than 5 percent of district hospitals report being on diversion status more than 20 percent of the time.

Figure 2. Overcrowding Measures in Large Urban Counties, by Hospital Ownership Type



Source: Authors' calculations from OSHPD hospital annual utilization data, 2003–2006. Note: Measures of overcrowding are calculated for each hospital by year and then averaged over the four-year period (2003–2006).

Hospitals with higher occupancy rates of inpatient beds also appear to be more overcrowded, supporting the contention that an inability to transfer patients from the emergency department who need to be admitted contributes to crowded conditions.

In addition, we also examined differences in overcrowding by whether the hospital received funds from the Disproportionate Share Hospital (DSH) program. In 2006, 117 California hospitals received money through the federal-state DSH program, a group that includes hospitals treating a high percentage of uninsured or publicly insured patients. These include all public hospitals and some from the other three ownership groups. Whereas only 10 percent of non-DSH hospitals in urban counties reported that more than 5 percent of patients left without being seen, about one-third of DSH hospitals did so. There were no significant differences in ambulance diversions.

Emergency departments in certain regions of the state with

specific hospital characteristics seem to suffer from overcrowding more than others. Table 1 shows how overcrowding varies across different regions, hospitals, and neighborhood characteristics (defined at the zip code level). It contrasts hospital emergency departments with the highest percentages of patients leaving without being seen to those departments with the lowest percentages. Although hospitals that fall within the second and third quartile (not shown) also face overcrowded conditions, we restrict our analysis to the top and bottom 25 percent to better isolate and compare.

Among the 62 hospitals that report the highest percentages of patients leaving the emergency department without being seen, 39 percent were in Los Angeles.

Nearly a third of the most crowded hospitals were in the Central Valley; the Bay Area and Southern California, excluding Los Angeles, were home to fewer.

Larger hospitals with greater numbers of visits and emergency treatment stations seem to face greater overcrowding problems than smaller hospitals do. Hospitals with higher occupancy rates of inpatient beds also appear to be more overcrowded, supporting the contention that an inability to transfer patients from the emergency department who need to be admitted contributes to crowded conditions. Neighborhood characteristics, which might determine patient mix, appear to be correlated with the level of emergency department overcrowding, with the most crowded in neighbor-

Table 1. Characteristics of Hospitals and Neighborhoods, by the Overcrowding Status of Emergency Departments

	Most Crowded	Least Crowded	Significant Differences
Region			
Bay Area	14%	32%	
Central Valley	29%	5%	
Los Angeles	39%	22%	
Other Southern California	18%	41%	
	100%	100%	
Hospital characteristics			
Hospital size (number of beds)	351	210	***
Number of emergency department visits	40,685	22,639	***
Number of emergency department beds	24	14	***
Occupancy rate	63.4%	56.8%	**
Occupancy rate—medical/surgical beds	62.0%	51.0%	***
Emergency department admission rate	16.4%	14.1%	*
Ratio of emergency department beds to medical/surgical beds	0.13	0.18	
Neighborhood characteristics			
Total population	39,132	36,125	
Poverty rate	19.4%	11.6%	***
Percentage foreign-born	27.5%	25.0%	
Percentage foreign-born living in the United States > 5 years	18.9%	17.9%	
Percentage age 65 and older	10.9%	11.7%	
Medi-Cal beneficiaries	9,405	5,219	***
Number of hospitals			
	62	63	
Sources: Authors' calculations from the OSHPD hospital annual utilization data, 2003–2006; Census 2000 (SF3 data); California Department of Health Services, Medi-Cal Beneficiary by Zip Code, July 2005.			
Notes: Significant differences are based on p-values derived from an independent group t-test of means using pooled variance estimators. See the technical appendix at http://www.ppic.org/content/other/808SMCC_technical_appendix.pdf for more details.			
* p < 0.1, ** p < 0.05, *** p < 0.01.			

hoods with higher poverty rates and more Medi-Cal beneficiaries. However, more and less crowded emergency departments appear in neighborhoods with similar population size and proportions of foreign-born residents.

To better assess the independent effects of hospital and neighborhood characteristics, we also performed an analysis of all urban hospitals using a regression framework, in which we examined the relative roles of these characteristics simultaneously on the outcome of the percentage of patients who leave the emergency department. (The technical appendix at http://www.ppic.org/content/other/808SMCC_technical_appendix.pdf provides more details.) The same patterns were observed: Larger hospitals, public ownership, higher occupancy rates of hospital inpatient beds, and higher neighborhood poverty rates were all significant predictors of more overcrowding in emergency departments, whereas larger neighborhood population and higher proportions of foreign-born and elderly populations were not. Notably, hospitals in the Central Valley were significantly more likely than those in any other region to face crowded conditions, after controlling for all of the above-noted hospital and neighborhood characteristics. By comparison, the high rate of overcrowding in Los Angeles County hospitals seems to be explained by the hospital

and neighborhood characteristics included in the model.

Who Uses the Emergency Department and Why

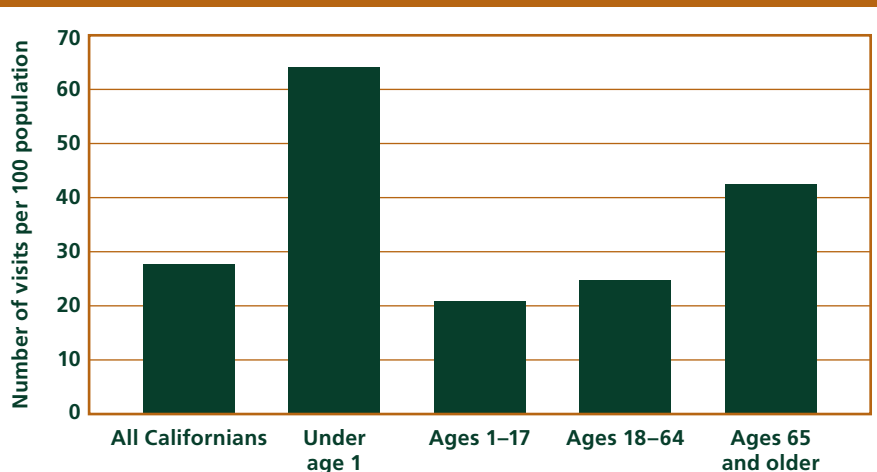
Our analysis indicates that Californians' use of emergency departments is about one-third lower than national rates, which is consistent with other sources (The Kaiser Family Foundation, statehealthfacts.org, 2005). California and other western states seem to use fewer emergency department services than the nation as a whole. Possible reasons include higher levels of health maintenance organization penetration, different population demographics (including higher percentages of foreign-born residents and younger age distributions), and lower rates of employment-based insurance. At the same time, with higher percentages of visits resulting in hospital admission than are seen nationally, it appears that California emergency department users tend to be sicker (California HealthCare Foundation, 2002).

In 2005, nearly a quarter of all visits to emergency departments in California were by children under age 18. Nonelderly adults, ages 18–64, constituted about 60

percent of visits. Older adults, ages 65 and older, made 17 percent of all visits although they make up about 10 percent of the total California population. Figure 3 displays emergency department visit rates (per 100 population), by age category, and shows that infants (younger than one year old) have the highest visit rates of any age group—64 visits per 100 persons. This suggests that parents of very young infants are more apt to use emergency departments, which is not surprising given the vulnerable health status of children during the first year of life. Visit rates are also higher for elderly adults than they are for nonelderly adults—also not unexpected given the relationship between older age and declining health. Visit rates for

Infants . . . have the highest visit rates of any age group—64 visits per 100 persons.

Figure 3. Emergency Department Visit Rates, by Age Group



Sources: Authors' calculations from OSHPD emergency department encounter data, 2005, and California Department of Finance (DOF) demographic data, 2005.

We find that visit rates for the uninsured, although nearly double those of the privately insured, are considerably lower than the visit rates for Medi-Cal and Medicare populations.

children ages 1–17 are the lowest, suggesting less problematic health conditions and emergencies among children and teenagers—or else higher thresholds among parents to use an emergency department for children and adolescents.

Insurance Coverage of Emergency Department Visits

Because the percentage of the California population without health insurance has increased in recent years, climbing from 17.6 percent in 1987 to 21.4 percent in 2005 (California HealthCare Foundation, 2006a), and because federal law requires that emergency departments provide necessary care to all patients regardless of insurance status, there is concern that

increases in emergency department use are driven by the uninsured. However, our results indicate that the uninsured are not using emergency departments at higher rates than insured Californians. The high out-of-pocket cost of a visit to an emergency department may create a significant barrier to treatment.⁷ Although the uninsured do have higher visit rates than privately insured individuals, other studies have found that much of the growth in emergency department visits nationwide is driven by insured patients (Cunningham and May, 2003).

For those with health insurance, the patterns in emergency department visit rates for California are consistent with national estimates (Nawar, Niska, and Xu, 2007) but are also lower for most groups, with the exception of Medicare patients. Among nonelderly adults (ages 18–64), most visits were covered under some form of health insurance—40 percent private insurance, 22 percent Medi-Cal, 7 percent Medicare (which provides care to disabled nonelderly adults), and 11 percent other insurance sources, including workers' compensation. Twenty percent of nonelderly adult emergency department visits were by the uninsured. Among children younger than age 18, only 10 percent made uninsured visits, whereas about 40 percent were covered by Medi-Cal, 40 percent by private insurance, with

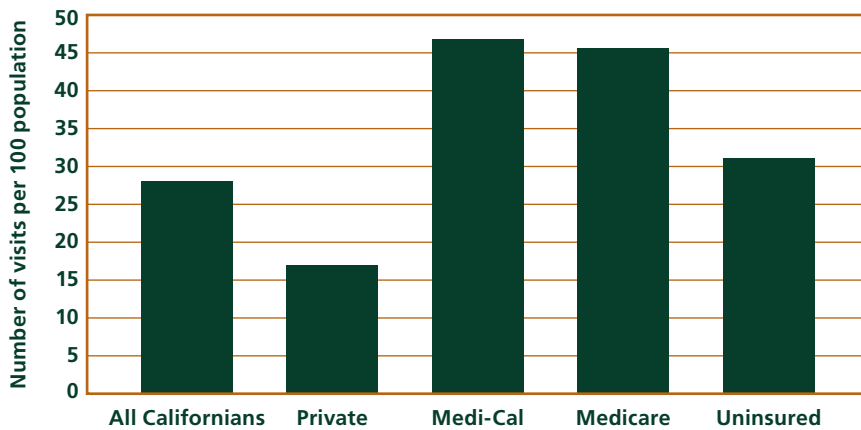
the remaining visits paid for by other insurance sources.

Figure 4 presents visit rates (per 100 population) by the source of insurance coverage expected to pay for the visit. We find that visit rates for the uninsured, although nearly double those of the privately insured, are considerably lower than the visit rates for Medi-Cal and Medicare populations. Part of this pattern likely reflects the different age structures of the insurance coverage groups. For instance, the higher visit rate for Medicare patients compared to the uninsured likely reflects the older age concentration and frailer health status of the elderly, as noted above. The emergency department visit rate for Medi-Cal patients is 47 per 100 population compared to 31 per 100 population for the uninsured. The uninsured population tends to have higher concentrations of young and middle-aged adults, whereas more infants (a high emergency department use group as shown in Figure 3) and children are covered under Medi-Cal. This may contribute to the higher emergency department visit rates among the Medi-Cal population. A more detailed analysis of Medi-Cal use can be found below.

Emergency Department Diagnoses

The most common conditions diagnosed among emergency department users in the state are

Figure 4. Emergency Department Visit Rates, by Insurance Coverage



Sources: Authors' calculations from OSHPD emergency department encounter data, 2005, and California Health Interview Survey (CHIS) data, 2005.

Among nonelderly adults, in addition to injury-related visits, stomach and chest pains are common reasons for emergency department visits.

shown in Table 2, disaggregated by age groups.⁸ We also looked at the most prevalent diagnoses by age category and insurance status but found very few differences across insurance groups. Infants tend to present with common childhood illnesses, including ear infections and fevers, with almost a quarter of emergency department visits diagnosed as acute upper respiratory infections. Among infants, fairly low percentages of visits across the most common conditions result in admission, with the exception of pneumonia, in which 27 percent of visits to the emergency department result in hospital admissions. Although we noted above that emergency department visit rates for infants are the highest across

various age groups, they make up only 4 percent of all emergency department visits.

Among children ages 1–17, acute upper respiratory infections and ear infections remain leading conditions diagnosed in emergency department visits, along with conditions related to possible accidents and injuries, such as open head wounds, contusions, and fractures. Most of these conditions among children and adolescents result in only very small percentages of hospital admissions.

Among nonelderly adults, in addition to injury-related visits, stomach and chest pains are common reasons for emergency department visits. Only a small percentage result in hospital admission for younger adults, ages 18–34, across

the most common conditions. However, among middle-aged adults, ages 35–64, who present with chest pain, about one in five is admitted to the hospital for further treatment and evaluation. And for elderly adults ages 65 and older, the most common reasons for emergency department visits are for conditions related to heart disease, chest pain, pneumonia, contusions (likely due to falls), and stomach pain. For elderly adults who visit emergency departments because of pneumonia or complications of heart disease, the majority (70% or more) end up being admitted to the hospital, and about one-third of elderly patients who go to an emergency department for chest pain are ultimately admitted.

Table 2. Top Five Diagnoses for Emergency Department Visits, by Age Group

	% of All Emergency Department Visits	% of Emergency Department Visits Resulting in Hospital Admission
Children < age 1, total visits = 347,192 (4%)		
Acute upper respiratory infection	23.1	8.2
Pyrexia of unknown origin (fever)	8.1	2.8
Otitis media and eustachian tube disorders (ear infection)	8.0	0.2
Unspecified viral and chlamydial infections	4.4	4.3
Pneumonia	3.6	27.0
All other diagnoses	52.8	9.3
Children ages 1–17, total visits = 1,959,096 (20%)		
Acute upper respiratory infection	8.8	1.7
Otitis media and eustachian tube disorders (ear infection)	5.6	0.1
Open wound of head	5.2	0.4
Contusion with intact skin surface	4.5	0.3
Fractures, excluding lower limbs	4.3	5.2
All other diagnoses	71.6	5.4
Adults ages 18–34, total visits = 2,304,860 (24%)		
Abdominal pain	5.3	2.0
Open wound, excluding head	4.4	3.0
Contusion with intact skin surface	3.3	0.7
Chest pain	2.6	3.0
Acute upper respiratory infection	2.6	0.9
All other diagnoses	81.8	8.6
Adults ages 35–64, total visits = 3,400,298 (35%)		
Chest pain	5.6	20.8
Abdominal pain	4.4	3.4
Spinal disorders	3.9	3.2
Open wound, excluding head	2.9	2.4
Contusion with intact skin surface	2.7	1.1
All other diagnoses	80.5	20.8
Seniors ages 65 and older, total visits = 1,676,353 (17%)		
Heart disease	7.5	70.8
Chest pain	4.4	33.2
Pneumonia	4.0	78.3
Contusion with intact skin surface	2.5	4.5
Abdominal pain	2.4	7.3
All other diagnoses	79.1	52.0

Sources: Authors' calculations from the OSHPD emergency department encounter data, 2005, and OSHPD patient discharge data, 2005.

Notes: Diagnoses are based on ICD-9 codes for the primary diagnosis for the emergency department visit or, in the case of a hospital admission, for the inpatient stay.

How Much Are Emergency Departments Being Used for Nonurgent Conditions?

As noted above, there is growing concern, and some evidence to suggest, that emergency departments are being used to treat nonurgent and preventable conditions (California Health-Care Foundation, 2006b; Nawar, Niska, and Xu, 2007) and that this may be contributing to overcrowding. From a cost perspective, high emergency department use for conditions that could be treated in a primary care setting is an expensive proposition. Emergency department care is quite resource-intensive and some estimates place costs for emergency department treatment at two to three times more than for care provided in a different setting, for similar health conditions (Baker and Baker, 1994).

To better understand if emergency departments are being used to treat conditions that could otherwise be dealt with in a less costly medical care setting, we group all visits into broad categories of severity and type of condition based on the principal diagnosis. We use a classification system developed by a team of emergency physicians and health service researchers.⁹ This system is not intended as a triage

tool or to assess whether emergency care was appropriate for insurance reimbursement purposes; rather, it is a tool that policymakers and health service researchers can use to understand differences in emergency department use across groups and geographic areas (Billings, 2003). In some ways, this classification system may overstate the level of avoidable emergency department care; patients cannot often determine the severity of their condition before receiving a medical evaluation and principal diagnosis.

Figure 5 shows declining percentages of emergency department use for avoidable conditions,¹⁰ by age. Infants had the highest proportion of emergency department visits that could have been avoided with nearly 70 percent classified

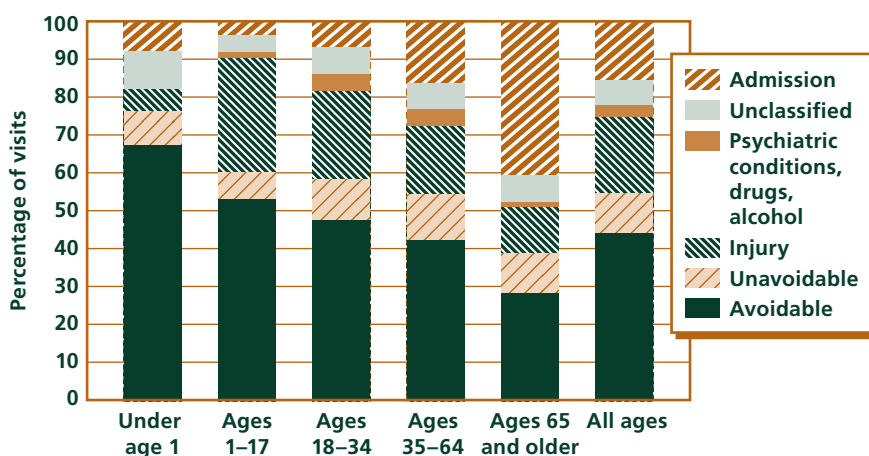
as nonurgent and treatable in a primary care setting or avoidable with appropriate, timely care. This pattern of avoidable emergency department visits among infants holds across insurance coverage groups (not shown). This finding suggests that for most new parents, irrespective of insurance status, health problems of their very young children are a source of heightened concern, and although their children's conditions are treatable in other ambulatory care settings, parents may feel an added urgency. By comparison, fewer than three in ten visits by the population over age 65 were considered potentially avoidable, and more than 40 percent of emergency department visits among adults over age 65 resulted

Children covered by Medi-Cal have nearly 11 percent more avoidable emergency department visits than privately insured children and about 5 percent more than uninsured children.

in a hospital admission. The proportion of injury-related conditions, including fractures and open wounds, was highest among children ages 1–17. There is little difference between adults ages 18–34 and 35–64, although visits among middle-age adults (ages 35–64) were more than twice as likely to result in hospital admission—17 percent—than among younger adults—7 percent.

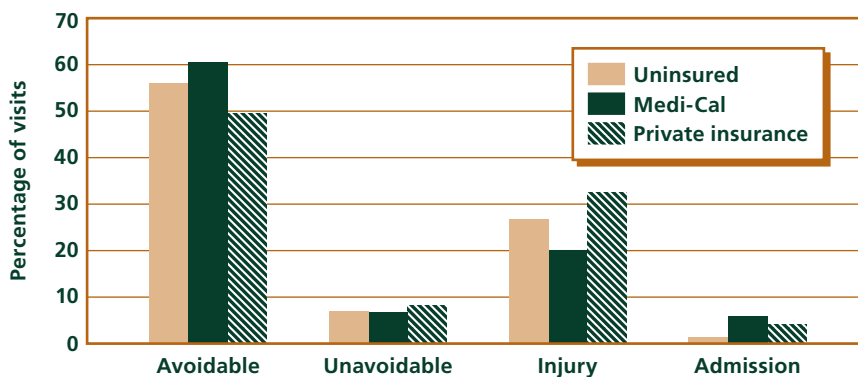
We also examine patterns in the type and severity of visits by insurance status separately for children and adults; these are displayed in Figures 6 and 7, respectively. Children covered by Medi-Cal have nearly 11 percent more avoidable emergency department visits than privately insured children and about 5 percent more than uninsured children. Nearly

Figure 5. Type and Severity of Emergency Department Visits, by Age Group



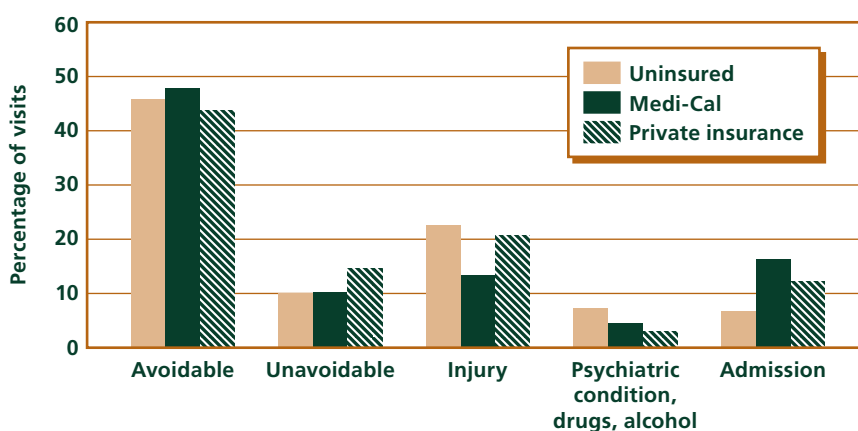
Sources: Authors' calculations from OSHPD emergency department encounter data, 2005, and OSHPD patient discharge data, 2005.

Figure 6. Type and Severity of Emergency Department Visits by Children Younger Than Age 18, by Insurance Coverage



Sources: Authors' calculations from OSHPD emergency department encounter data, 2005, and OSHPD patient discharge data, 2005.

Figure 7. Type and Severity of Emergency Department Visits by Adults Ages 18–64, by Insurance Coverage



Sources: Authors' calculations from OSHPD emergency department encounter data, 2005, and OSHPD patient discharge data, 2005.

one-third of all emergency department visits by privately insured children are injury-related, considerably higher than for Medi-Cal children—20 percent—and uninsured children—27 percent. Uninsured children, a relatively small group who constitute only 10 percent of children's visits, have much lower proportions of hospital admissions than children covered by Medi-Cal and by private insurance (1% compared to 6% and 4%, respectively).

Somewhat similar patterns of visit severity by insurance status are seen among nonelderly adult emergency department users. Uninsured and privately insured adults have largely similar patterns in type and severity of visits, with about 45 percent of visits categorized as non-urgent or avoidable and about one in five visits for both groups resulting from injury-related conditions. There are some exceptions, however. The uninsured have a higher percentage of visits related to psychiatric, drug, and alcohol reasons than the privately insured—7 percent and 3 percent, respectively. The privately insured and those covered by Medi-Cal are more likely to have visits that end in admission to the hospital—12 percent and 16 percent, respectively, compared to only about 7 percent of visits among the uninsured. Adult Medi-Cal patients have slightly higher avoidable visit rates than do the privately insured (48% compared to 43%) and considerably lower proportions of

visits for injuries (13% compared to 21%), perhaps because women are more likely to be covered by Medi-Cal than men, who have higher injury rates.

A California HealthCare Foundation study (2006) of insured Californians found that nearly half of recent emergency department users believed that their medical problem could have been treated in a primary care setting. Medi-Cal patients were more than twice as likely as privately insured, recent emergency department users to report difficulties accessing primary care. In addition, more than four in ten Medi-Cal patients who had recently visited an emergency department indicated that they would have seen a primary care provider had they been able to get an appointment within 24 hours (California HealthCare Foundation, 2006b). These studies, taken together with our finding that Medi-Cal patients, particularly children, are more likely to use the emergency department for conditions that could be treated in other settings, raise important questions about both Medi-Cal patients' ability to access alternative outpatient care sources and their knowledge of those alternatives. Only half of physicians in the state participate in the Medi-Cal program and Medi-Cal patients are increasingly being concentrated among fewer numbers of physicians (Bindman, Yoon, and Grumbach, 2003). Further cuts to Medi-Cal reimburse-

ment rates, already among the lowest in the country, will likely exacerbate this situation.

Regional Differences

In addition to patient insurance status and age, differences may exist in emergency department use that reflect variations in provider capacity and population demographics across regions. In a national study, Cunningham (2006) found significantly higher emergency department use in regions with more outpatient capacity constraints, as captured by longer average appointment waiting times. High-use regions also had smaller percentages of Hispanic residents and noncitizen residents (because both groups tend to use health care services less) and they had larger percentages of Medicare populations.

Table 3 presents different measures of emergency department use for large, urban counties in the state, including broad measures of alternative provider capacity (visits to primary care clinics and physician counts) and population demographics (percentage in poverty and percentage foreign-born).

The three counties with the highest emergency department visit rates are all in the Central Valley; they have higher rates of avoidable visits and a lower supply

The three counties with the highest emergency department visit rates are all in the Central Valley; they have higher rates of avoidable visits and a lower supply of physicians than other counties.

of physicians than other counties. This region also has some of the highest poverty levels and rates of uninsurance in the state. Kern County appears to be an exception, despite having similarly low physician supply and high uninsurance and poverty rates. Total emergency department visit rates and avoidable visit rates there are closer to the state average. This may result from Kern County residents' considerably higher visit rates to primary care clinics.

The Bay Area has mixed rates of use, with some counties, such as Contra Costa and Alameda, having more visits than other counties, whereas others, such as Santa Clara and San Mateo, are closer to the bottom of the

Table 3. California County Characteristics

County	Emergency Department Visits per 100 Population ^a	Avoidable Emergency Department Visits per 100 Population ^a	Medi-Cal Visits per 100 Beneficiaries	Clinic Visits per 100 Population	Total Doctors per 100,000 Population	Percentage Uninsured	Percentage in Poverty	Percentage Foreign-Born
Stanislaus	35.4	17.3	46.7	31.4	181.7	11.1	14.4	20.3
Fresno	30.1	13.5	39.6	47.9	216.9	18.6	20.7	22.6
San Joaquin	29.4	13.0	35.2	32.4	163.4	13.7	14.6	23.5
Contra Costa	28.6	13.1	49.1	15.4	301.8	8.8	8.1	23.1
San Bernardino	29.1	12.9	45.1	8.5	186.3	14.8	15.0	21.4
Alameda	28.0	12.8	44.5	39.9	323.3	11.3	11.8	30.3
Riverside	27.6	12.2	35.6	13.9	153.1	13.7	11.4	21.8
Kern	26.9	11.8	36.7	61.6	153.0	15.8	21.2	20.3
Los Angeles	24.5	10.7	26.2	25.4	298.7	16.5	16.3	36.0
San Francisco	23.1	9.4	30.0	65.9	808.0	9.4	12.2	35.8
Sacramento	23.9	10.1	28.1	10.2	295.3	9.1	13.6	20.0
San Mateo	23.0	10.4	33.7	12.4	426.6	7.8	7.4	34.6
Ventura	23.1	9.7	34.8	21.6	242.7	13.0	9.9	20.7
San Diego	22.2	9.0	35.8	45.2	343.4	13.1	11.0	23.4
Orange	21.9	9.1	28.8	13.0	323.9	15.1	8.8	30.4
Santa Clara	18.7	7.7	24.0	19.4	392.9	8.1	8.3	36.3
California	27.5	12.0	35.6	31.6	292.4	13.5	13.3	27.2

Sources: Authors' calculations from OSHPD emergency department encounter data, patient discharge data, and primary care clinic data; California Department of Health Services, Medi-Cal Beneficiary by Zip Code file; California DOF demographic data; CHIS; American Medical Association physician data; and the American Community Survey. All datasets are from 2005.

^a These rates have been age-adjusted using the age distribution of the total California population to account for differing age structures across counties.

distribution. In Southern California, coastal counties outside Los Angeles appear to have some of the lowest emergency department visit rates, substantially below the state average. The Inland Empire, including San Bernardino and Riverside Counties, has rates above the state average. This could be related to less outpatient capacity in these two counties as captured by data showing a relatively

lower supply of physicians and lower clinic capacities.

Despite recent stresses on its health care system, Los Angeles falls in the middle of most of the emergency department use statistics for reasons that are not altogether clear. The county's health care system has been under fiscal and capacity constraints for some time. Between 1995 and 2005, Los Angeles County received emergency

funding from the federal government through a Medicaid Section 1115 waiver to support its county-run health care system. Despite this infusion of more than \$2 billion (Bitler and Shi, 2006), the county continues to struggle. In February 2008, the county's Department of Health Services proposed privatizing its outpatient county clinic system through expanding an existing public-private partnership clinic

program and providing indigent care reimbursements.

Characteristics of Emergency Department Users

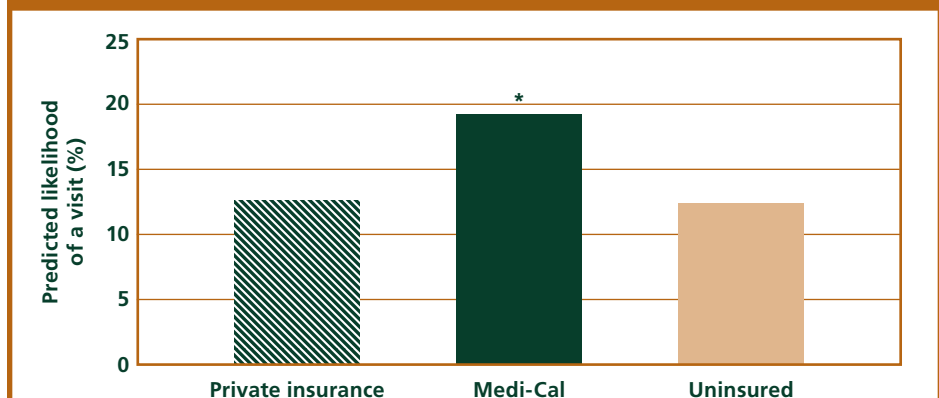
Because emergency department use and health care use more generally are usually driven by individual health, it is helpful to examine the roles of individual factors on the likelihood that a person will use an emergency department. Not surprisingly, previous research on emergency department use in California has found that individuals in poorer health are more likely than those in better health to use an emergency department and that individuals with Medi-Cal coverage are more likely than the privately insured to visit emergency departments (Lieberman, Newman, and Hays, 2004). In addition, there are observed patterns in use by racial/ethnic background and by immigrant status, which suggest that Hispanics, Asians, and noncitizens are less likely than other groups to use an emergency department (Lieberman, Newman, and Hays, 2004; Ortega et al., 2007).

Updating some of this work, we examined the predictors of recent emergency department use among a 2005 representative sample of nonelderly adult Californians, paying particular atten-

tion to the relationship between insurance status and likelihood of an emergency department visit, after accounting for differences in health status and other socio-demographic factors that exist across insurance coverage groups. Our findings, shown in Figure 8, are consistent with those noted above: Uninsured adults are no more likely than the privately insured to visit an emergency department. In addition, adults with Medi-Cal coverage are about 6 percent more likely than the privately insured to have visited an emergency department in the past year, even after adjusting for individual health status.

Uninsured adults are no more likely than the privately insured to visit an emergency department.

Figure 8. Likelihood of Visiting an Emergency Department by Adults Ages 18–64, by Insurance Coverage



Source: Authors' calculations from adult CHIS sample, 2005.

Notes: Results are from weighted regression models and have been adjusted to account for other demographic and health-related characteristics. Predicted likelihoods are calculated by holding all other characteristics at their mean values. Nonelderly adults with Medicare coverage are excluded from these analyses, as this group is primarily composed of disabled adults. Refer to the technical appendix at http://www.ppic.org/content/other/808SMCC_technical_appendix.pdf for more details.

* Denotes a significantly different value from that of those with private insurance coverage at or below the 5 percent significance level.

We also examined racial/ethnic and immigrant status patterns among nonelderly adults' use of emergency departments. Foreign-born Hispanics and both U.S.- and foreign-born Asians are less likely than U.S.-born non-Hispanic whites to visit emergency departments, without controlling for any other individual characteristics. As shown in Figure 9, we find that even after accounting for health status and other social and economic factors, foreign-born Hispanics and Asians remain significantly less likely than U.S.-born

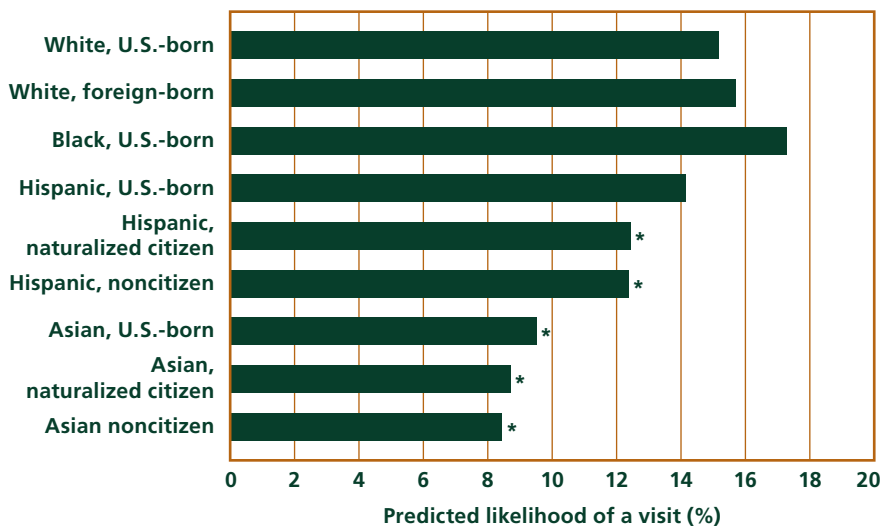
non-Hispanic whites to visit an emergency department. In particular, noncitizen Hispanics and Asians were, respectively, 3 percent and 6 percent less likely than U.S.-born whites to have visited an emergency department in the previous year. Noncitizen Hispanics and Asians appear to be quite similar to naturalized Hispanic and Asian citizens in their low likelihood of visiting an emergency department.

Use of emergency departments by immigrant groups and by undocumented immigrants in

particular has become a topic of recent policy concern. Although undocumented immigrants are not eligible for most public insurance programs, Medi-Cal does pay for emergency services to undocumented immigrants. In addition to the funds provided through the Medi-Cal program, the federal government also allocated funding in the 2003 Medicare Modernization Act (Section 1011) to reimburse hospitals for emergency health services provided to undocumented immigrants. California has received the largest share of this funding, with about \$70 million allocated in 2007 (Centers for Medicare and Medicaid Services, n.d.).

Although noncitizens are a difficult group to study, our finding that noncitizens (some of whom are presumably undocumented) are less likely to visit an emergency department is consistent with other research showing that the foreign-born, and especially undocumented immigrants, use less medical care and contribute less to health care spending relative to their share of the population (Bitler and Shi, 2006; Goldman, Smith, and Sood, 2006). Undocumented immigrants also pay considerably more of their medical costs out of pocket (36%) than the native-born (20%) and the foreign-born as a whole (27%). This is likely due to their lower rates of health insurance coverage (Goldman, Smith, and Sood, 2006).

Figure 9. Likelihood of Visiting an Emergency Department by Adults Ages 18–64, by Race/Ethnicity and Nativity/Citizenship



Source: Authors' calculations from adult CHIS sample, 2005.

Notes: Results are from weighted regression models and have been adjusted to account for other demographic and health-related characteristics. Predicted likelihoods are calculated by holding all other characteristics at their mean values. Refer to the technical appendix at http://www.ppic.org/content/other/808SMCC_technical_appendix.pdf for more details.

* Denotes a significantly different value from that of U.S.-born whites at or below the 5 percent significance level.

Conclusions and Policy Implications

Understanding the extent of problems that hospitals face with overcrowded conditions, as well as the variations in usage patterns among different groups and across regions, can more fully inform health policy debates regarding the state of the emergency department system. Although the number of operating emergency departments has declined over the past decade, visits per capita have stabilized, and existing emergency departments have added more capacity to deal with additional patients. At the same time, some emergency departments in the state are struggling with overcrowded conditions, especially large public hospitals and hospitals serving sizable Medi-Cal patient populations. These most notably include hospital emergency departments in Los Angeles County and the Central Valley.

Medi-Cal and Medicare patients are among the highest users of emergency departments. The uninsured are no more likely than privately insured Californians to report a recent visit to an emergency department, in part because the uninsured are expected to pay the high price of emergency services out of pocket. In addition, Medi-Cal patients,

particularly children, appear to visit emergency departments more often to treat nonurgent conditions than do the uninsured or privately insured. Hospital emergency departments already suffer from staffing shortages, lack of on-call specialists, and lack of available hospital inpatient beds. The more they must deal with treating nonurgent conditions that could have been managed in a less resource-intensive outpatient setting, the less capable they will be of stabilizing severely ill patients in a timely and effective manner.

These findings lead to a central question of why patients, particularly insured patients whose coverage should enable them to access alternative health care sources, are choosing emergency departments instead. Creating a strategy to reduce excess use of emergency departments requires a critical look at the larger health care system, specifically issues related to expanding access to, and improving the quality of, the primary care system.

Particularly for Medi-Cal patients, long appointment wait times and fewer available providers discourage patients from seeing nonemergency department providers. One new strategy implemented in 2007 by a Medi-Cal managed care plan that serves about 300,000 beneficiaries in San Bernardino and Riverside Counties involves contracting with networks of urgent care centers and conduct-

We find that even after accounting for health status and other social and economic factors, foreign-born Hispanics and Asians remain significantly less likely than U.S.-born non-Hispanic whites to visit an emergency department.

ing public information campaigns to inform users of this alternative, with its shorter waiting times and more convenient locations (Weinick and Betancourt, 2007).

Other research has found that Medi-Cal patients are more likely than privately insured patients to believe that the quality of care they receive in an emergency department is superior to that in primary care settings (California HealthCare Foundation, 2006b). This suggests an opportunity for policymakers not only to target the excess use of emergency departments but also to understand patient dissatisfaction and to consider ways to improve primary care providers' interaction with patients.

Expansion of primary care services, particularly by means of

Strategies to improve patient flow and reduce waiting times include creating or expanding urgent care centers or fast-track systems ancillary to emergency departments, which would treat low-acuity patients.

extended evening and weekend hours, to allow patients to make same-day or next-day appointments, may go a long way in reducing emergency department use. According to national statistics, peak times for children to arrive in an emergency department are between 7 p.m. and 8 p.m., outside regular physician business hours (McCaig and Burt, 2003). Providing more patient-to-provider telephone hotlines and access to on-call specialists, broadening the

network of community health care centers, and expanding urgent care clinics (both in numbers and in operating hours) have been suggested as promising strategies both for increasing the use of preventive health care services to the uninsured and underinsured and for reducing the overuse of emergency departments (California HealthCare Foundation, 2006b; Taylor, 2006). In addition, expanding the supply of primary care physicians, particularly in underserved areas such as the Central Valley, could also improve access to alternative outpatient care settings.

At the same time, many existing emergency departments in the state will continue to deal with the realities of high patient volume and lack of hospital capacity. Strategies to improve patient flow and reduce waiting times include creating or expanding urgent care centers or fast-track systems ancillary to emergency departments, which would treat low-acuity patients (Siegel, 2004; Wilson and Nguyen, 2004). Similarly, it has been suggested that hospitals

should support a greater role for mid-level providers or nurses both to provide patient education and to serve as a hands-on monitor in emergency waiting rooms—a strategy that Los Angeles County has recently adopted. Finally, to the extent that emergency departments are in essence the primary source of care for thousands of Californians, some have argued that they should consider building better clinical information systems to enhance their ability to handle frequent and repeat users (Siegel, 2004). As more hospitals adopt health information technology systems, this could result in more cost-effective and appropriate treatment for patients who frequently seek care in emergency departments.

Whatever short- and long-term strategies are chosen, it is clear that there is room to improve efficiency in the everyday operations of California emergency departments and a need to address other aspects of the broader health care delivery system that are intrinsic to emergency departments in the state. ♦

Notes

¹ The Emergency Medical Treatment and Active Labor Act—federal legislation passed in 1986—requires that hospitals evaluate and provide any necessary medical care to all patients who seek care at a hospital emergency department, regardless of their ability to pay.

² Analysis of closures in California from 1995–2000/2002 suggests that most of the closures were at smaller (1–99 beds), for-profit hospitals with lower occupancy rates.

³ Ambulance diversions are managed in California by 31 local emergency medical service (LEMS) authorities. To go on diversion status, hospitals must contact the LEMS in their region to request that ambulances be diverted. Some regions do not allow hospitals to divert ambulances at all, but others have implemented various policies to more effectively manage their diversions. For a more thorough discussion on ambulance diversion at the regional level, see The Abaris Group (2007).

⁴ The GAO also uses a cutoff of 10 percent for ambulance diversion as a measure of overcrowding, although this threshold might be too low. We therefore use an ambulance diversion cutoff of 20 percent to proxy overcrowding, with the caveats noted above.

⁵ In addition to county-operated hospitals, three University of California hospitals (Davis, Irvine, and San Diego) are also included, as they are contracted by counties who do not operate county hospitals to provide indigent care.

⁶ District hospitals are operated by local, independent hospital districts, which have publicly elected boards and were created to provide focused public services distinct from city and county governments.

⁷ A 2007 California law requires that hospitals charge uninsured patients the same rate as Medicare or Medi-Cal patients. Its passage was prompted by instances when uninsured patients were charged much more than insured patients.

⁸ There are various ways to categorize and examine leading diagnosed conditions among emergency department patients, depending on how detailed ICD-9 codes

(International Classification of Disease, 9th revision) are grouped. The most common diagnoses by age group presented in Table 2 are based on aggregating ICD-9 codes according to similarity of condition or injury (Nawar, Niska, and Xu, 2007).

⁹ For more information on the algorithm used to categorize visits, refer to the technical appendix at http://www.ppic.org/content/other/808SMCC_technical_appendix.pdf.

¹⁰ Avoidable visits include those that were classified as (1) non-emergent, (2) emergent, but treatable in a primary care setting, and (3) emergent, but avoidable with timely, well-managed care.

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