



# Issue Brief

From The University of Memphis

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## Non-Urgent ED Use in Tennessee, 2004

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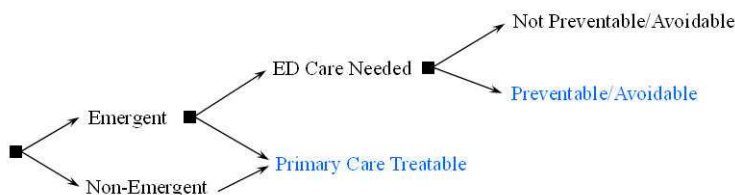
### Why is this issue important?

Excessive use of the Emergency Department (ED) for non-urgent care places financial and logistic burdens on the hospital that provides this service. It contributes to overcrowding, increased ED wait times, and potentially avoidable costs.<sup>1,2</sup> It has been reported that ED overcrowding compromises patient safety and adversely affects the ability of ED staff to provide timely response.<sup>3,4</sup> Further, examination of the characteristics of patient use of the ED for non-urgent care is a method to examine the soundness, effectiveness and accessibility of the primary care system in providing preventive care.<sup>2,5</sup>

### What is a non-urgent ED visit?

Using a computerized algorithm devised by J.D. Billings et al. at New York University,<sup>6</sup> the probability of an ED admission being non-urgent is determined based on the primary diagnosis (ICD-9 code) with which the patient presents. This algorithm, called the ED Use Profiling Algorithm,<sup>7</sup> places ED visits that do not result in admission into the following four categories:

1. Non-Emergent – Treatment not needed within 12 hours
2. Emergent but Primary Care Treatable – Treatment needed within 12 hours, but care could have been provided in a primary care setting
3. ED Care Needed, Preventable/Avoidable – Care needed but condition may have been preventable had effective primary care been delivered
4. ED Care Needed, Not Preventable/Avoidable – ED care needed and could not have been prevented.



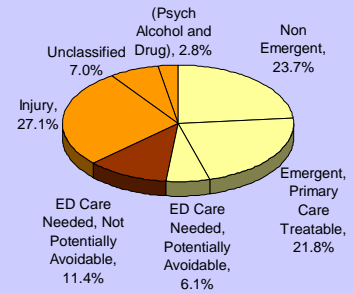
### Summary of Findings

- In 2004, 2,037,680 ED visits were made by residents and non-residents of Tennessee. Of this total, 1,053,163 (51.7%) are estimated to be non-urgent.
- Total billable ED charges amounted to \$2,059,139,639 for 2004, of this, \$948,569,175 (46.1%) are estimated to be charges incurred by non-urgent visits.
- \$665,064,180 of total billable ED charges (32.3%) were incurred by TennCare patients.
- TennCare patients made up 41% of all ED visits and 58.3% of these were non-urgent. Uninsured patients, in contrast, made up 12% of all ED visits and 50% of these were non-urgent.
- Female patients tend to have a higher percentage of non-urgent visits than males, 55.8% vs. 46.4%.
- 57.5% of Black patients' ED visits were non-urgent while the percentage of non-urgent visits for Hispanic and White patients were 55.3% and 50.2%, respectively.
- Patients younger than 5 years of age are most likely to be presented to the hospital for non-urgent treatment.
- Shelby County Hospitals reported fewer overall ED visits per 1,000 county residents. However, a larger percentage of ED visits in Shelby County were non-urgent when compared with other major urban counties.

Following the method of Billing et al., we define an ED visit as “non-urgent” and, therefore, potentially avoidable, if a visit meets the definition of any of the first three types of ED visit defined above. Psychological, alcohol and drug-related diagnoses, injury, and any other unspecified diagnoses are tracked separately as Other ED visits.

Figure 1 to the right displays the major classifications of ED visits found in the Tennessee database. The three categories of non-urgent ED visits (non-emergent, 23.7% of total ED visits in 2004; emergent but primary care treatable, 21.8% of total; and ED care needed but potentially avoidable, 6.1% of total) are displayed in light yellow.

Figure 1. Classification of ED visits, Tennessee, 2004.



### What are the key questions?

- (1) Which demographic groups are more likely to use the ED for non-urgent visits? Specifically, do race, age and gender influence the likelihood of a non-urgent ED visit?
- (2) Is the patient’s insurance provider correlated with the likelihood of making a non-urgent visit?
- (3) Is the likelihood of an ED visit different among the four major urban Counties in Tennessee?

### The data

Data were drawn from the annual Hospital Discharge Database for 2004, an electronic database compiled by the Division of Health Statistics of the Tennessee Department of Health. We selected from this patient-level database all hospital outpatient discharges that capture admission details of patients who sought outpatient care in any of the licensed hospitals in Tennessee for the period 1/1/2004 to 12/31/2004. The NYU algorithm described above was used to identify non-urgent ED cases.

### Key findings

In 2004, non-urgent ED visits comprised 51.7% of the 2,037,680 total ED visits in Tennessee (including the Other category). This rate is slightly higher than the finding using the same NYU methodology for New Jersey,<sup>8</sup> similar to the finding for Arizona,<sup>9</sup> but slightly lower than the findings for Houston, Texas<sup>10</sup> and Utah.<sup>11</sup>

Total billable ED charges in Tennessee amounted to \$2,059,139,639 in 2004. Applying the ED algorithm to the total ED charges allows for

Figure 2. Non-urgent visits as a percent of all ED visits by Gender, Tennessee, 2004

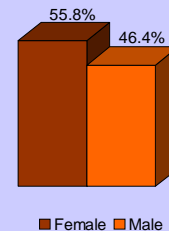
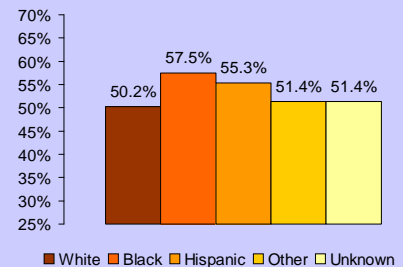


Figure 3. Non-urgent visits as a percent of all ED visits by Race, Tennessee, 2004.



an estimation of charges attributed to non-urgent cases of \$948,569,175, or 46.1% of total ED charges in 2004.

Within Tennessee, female patients tend to have a higher percentage of non-urgent visits than males, 55.8% vs. 46.4% (Figure 2). Race also appears to have an influence on the probability of an ED visit being non-urgent (Figure 3): Among the different racial groups, 57.5% of Black patients' ED visits were non-urgent while the percentage of non-urgent visits for Hispanic and White patients were 55.3% and 50.2%, respectively.

Among the different age groups, children under 5 years of age had the highest rate of non-urgent use at 66.9% while children aged 5-17 had the lowest rate at 46.6%. The rates for other age groups hover around 50%, with those in the 18-34 range having a slightly higher rate and those in the over-65 group having a lower rate.

Among insurers, 40.9% of all ED visits were made by patients covered by TennCare, 26.3% by commercially insured patients, 15.3% by Medicare patients, and 11.9% by uninsured patients (Figure 5). Patients with other types of insurance or with an unknown insurance type comprised the remaining 5.6% of total ED visits.

TennCare patients were more likely to make a non-urgent ED visit, with 58.3% of all TennCare visits classified as non-urgent (Figure 6). In comparison, commercial patients had a non-urgent visit rate of 46.5%, and Medicare and Uninsured patients' rates of non-urgent ED visits were about 50% each. TennCare patients are, by definition, lower-income patients. Their higher tendency to use ED service is consistent with the findings for other states such as New Jersey, Utah, and Texas and suggests opportunities for improving the delivery of primary care for this large segment of the insured population.

Out of the total non-urgent ER charges of \$948,569,175 for 2004, 36.4% (\$345,265,839) were incurred by TennCare patients, 29.1% (\$275,617,839) by patients covered by private health plans, 10.3% (\$97,369,280) by Medicare, and 20.8% (\$197,477,636) by uninsured patients (Figure 7). Patients with other/unknown insurance incurred 3.5% (\$32,839,055) of total non-urgent ED charges.

Figure 4. Non-Urgent visits as a percent of all outpatient visits by Age, Tennessee residents, 2004.

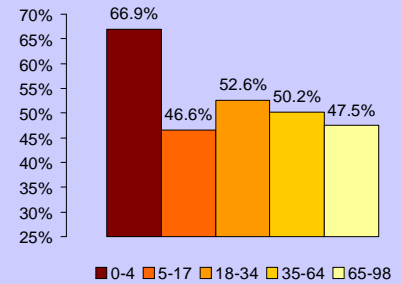


Figure 5. Total ED Discharges by Payer, Tennessee 2004

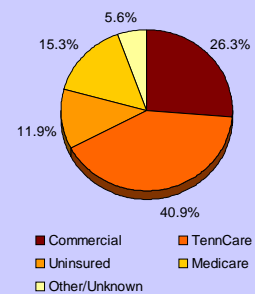


Figure 6. Non-urgent visits as a percent of all ED visits by Payer, Tennessee, 2004.

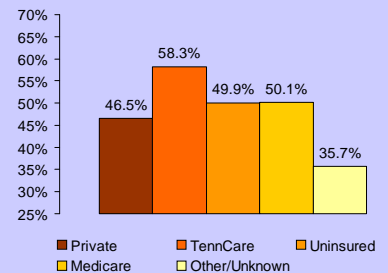


Figure 7. Non-urgent ED visit charges by Payer, Tennessee, 2004.

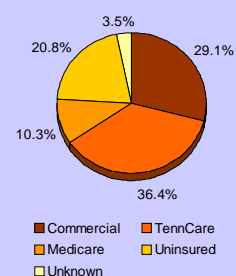


Table 1 presents average charges incurred for all ED visits and for non-urgent ED visits. For all ED visits, average billable charges were the highest for uninsured patients (\$1,707 per visit), followed by commercially insured (\$1,203), TennCare (\$798), and Medicare patients (\$755). Average billable charges for non-urgent visits followed a similar pattern among the major insurers and were slightly lower than those for urgent visits.

Among the four major urban counties, Shelby County, with 53.4% of all ED visits being non-urgent, had the highest proportion of non-urgent visits in 2004 compared to the other three large urban Counties (Figure 8). Hamilton followed with 52.7%, Knox, Davidson and the rest of the State all fell below 51.7%. The proportion of ED visits that were non-urgent do not appear to be very different among the four urban population centers in Tennessee.

However, Shelby County had a very low population-based use rate of 22 visits per 100 population. Knox, Hamilton and Davidson all had higher use rates of 44, 42 and 37 per 100 population, respectively. The comparison of four major urban counties clearly suggests that Shelby County residents have a much lower total ED use among the four major counties but they tend to have a greater tendency to use the ED for non-urgent reasons.

### Summary

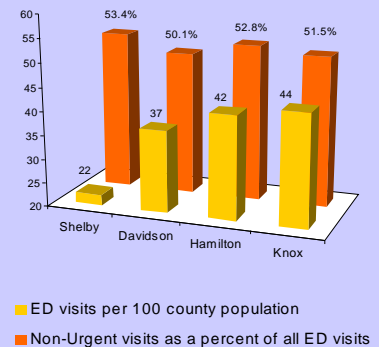
Non-urgent use of the Emergency Departments within Tennessee occurs at a similar rate to that of Houston, Texas, New Jersey, Arizona and Utah when measured by the ED algorithm of the New York University. Rates of non-urgent use vary according to demographic characteristics, with young age, female gender, TennCare patient status and Black and Hispanic races being associated with higher rates of non-urgent use. Geographically, Shelby County has a slightly higher proportion of non-urgent cases than the other large Counties and the lowest population-based ED use.

Further research into the reasons for such high non-urgent use is needed to target the causes and enable providers to deliver effective primary care in the ambulatory care setting. Effective educational campaigns are needed to inform health care users of the resources available to them. Research into the financial implications for the health care system is also needed to measure the extent of the financial impact of these potentially avoidable ED visits.

Table 1. ED Charges, Tennessee, 2004.

	Total ED	Non-urgent ED
Commercial	\$ 1,203	\$ 1,105
TennCare	\$ 798	\$ 711
Medicare	\$ 755	\$ 624
Uninsured	\$ 1,707	\$ 1,635
Unknown	\$ 886	\$ 802
Total	\$ 1,011	\$ 901

Figure 8. ED Visits in 4 Major Urban Counties



## References

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