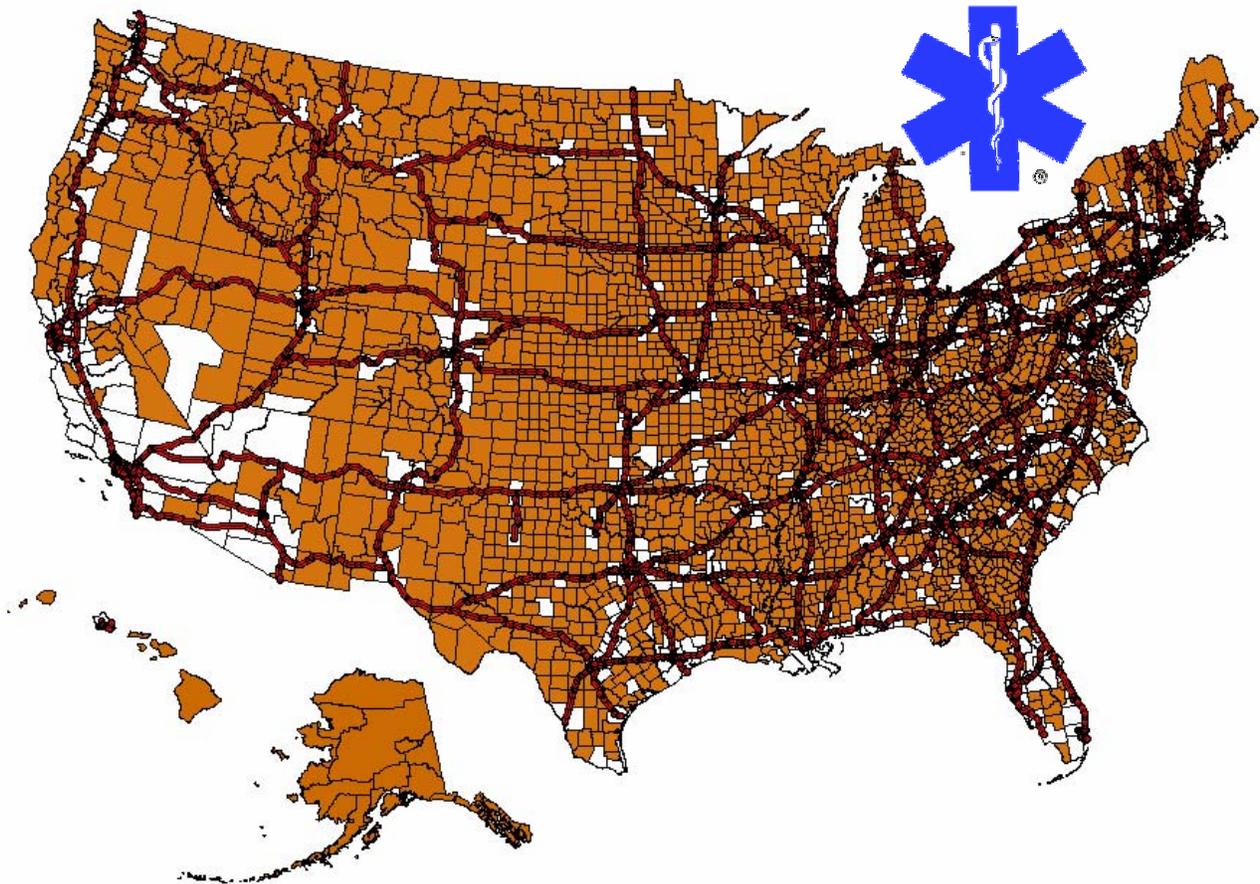


# Investigating Rural Emergency Medical Service (EMS) Infrastructure

A Developmental Methodology for Measuring the Availability of EMS Resources



*At the Heart of Public Health Policy*

# Investigating Rural Emergency Medical Service (EMS) Infrastructure:

## A Developmental Methodology for Measuring the Availability of EMS Resources

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# Executive Summary

## Background

Emergency Medical Service (EMS) has been defined as a total and complete system capable of responding to the medical and surgical emergencies of a community with prompt and adequate emergency care. Beyond a broad definition, agreed-upon measures of EMS infrastructure are not available. Rural and frontier communities are known to experience shortages of physicians, nurses, dentists and other health professionals and may lack sufficient and adequate EMS resources.

## Purpose of EMS Study

We explore a *potential* indicator of EMS availability, Expected Annual Emergency Miles per Ambulance (EXAMB). The ambulance is used as the core unit of availability due to its importance for safe transport and the initiation of medical services. The EXAMB measure calculates expected annual emergency miles per ambulance beginning with the number of ambulances, the land area of a county as a proxy for distance, and county population. These “raw” statistics are then “adjusted” using the ratio of the county value to the state value for five county characteristics: physician availability, mortality rates from disease and motor vehicle crashes, poverty rate, and age distribution.

The potential application of the EXAMB measure is illustrated using five states, (Mississippi, Oregon, South Carolina, Washington, and Wyoming) that were able to provide information on ambulance availability at the county level.

## Findings

- In three of five states, EXAMB values varied in parallel with other measures of resource availability:
  - In Mississippi, South Carolina and Washington, EXAMB values increased as rurality increased, (measured by rural/urban continuum code).
  - In the same states, EXAMB values increased as population density decreased.
  - In Mississippi and South Carolina, EXAMB values were higher in whole-county HPSAs.
- In Oregon and Wyoming, no relationship was found between the EXAMB indicator and measures of rurality or health services availability.
- In all states, the EXAMB was positively related to the proportion of the county population in poverty.

## **Policy Recommendations**

Nationally uniform definitions and reporting of EMS resources, and the relationship of these resources to populations, are an essential prerequisite to defining “adequate” infrastructure. A consensus based set of definitions and standardized assessment of EMS infrastructure is needed before policy development can go forward. The data analysis provided in this report suggests that standardized assessment tools can be developed. The following recommendations are offered:

- The Secretary of the US Department of Health and Human Services, in collaboration with the Secretary of the US Department of Transportation, should convene a consensus conference to develop a uniform data set for defining and recording EMS infrastructure, such as practitioners, communications/dispatch services, and transport vehicles.
- The Secretary of the US Department of Health and Human Services, in collaboration with the Secretary of the US Department of Transportation, should provide technical assistance to states in the development of data systems that support monitoring and tracking of EMS personnel and facilities.

## **Research Recommendations**

Development of a quantifiable and policy-relevant measure of EMS availability will require a significant research effort. It is therefore recommended that:

- The Secretary of the US Department of Health and Human Services should provide funding for research into the relationship between EMS infrastructure and population health outcomes, particularly across rural populations.
- The Secretary of the US Department of Health and Human Services should support research into the development of effective comparative measures of EMS infrastructure.