

The National Institute for Occupational Safety and Health (NIOSH)



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(NIOSH)

Promoting productive workplaces
through safety and health research 

Anthropometric Database for the EMTs in the United States

NIOSH DATASET RD-1008-2016-0

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Introduction

Deaths or serious injuries among emergency medical technicians (EMTs) and other ambulance occupants occur at a high rate during transport. According to a study by the National Institute for Occupational Safety and Health (NIOSH), EMTs and paramedics have higher fatality rates when compared to all workers, with forty-five percent of EMT deaths resulting from highway incidents, primarily due to vehicle collisions.¹ Data from the National Highway and Traffic Safety Administration showed that among the persons killed in crashes involving an ambulance between 1992 and 2011, twenty one percent were EMTs and patients, while four percent were ambulance drivers.² To reduce injury potential to the EMTs and other ambulance occupants, NIOSH, the Department of Homeland Security, the U.S. General Services Administration, and the National Institute of Standards and Technology, along with private industry partners, have committed to improving the workspace design of ambulance patient compartments for safe and effective performance. Up-to-date EMT anthropometric data were needed for this effort. Between December 2013 and May 2015, NIOSH conducted a nationwide anthropometric survey of 472 male and 161 female EMTs in the continental U.S. A total of 40 measurements (39 body dimensions and weight) were taken on the basis of their utility in facilitating the patient compartment design. All measurements were taken while participants wore lab attire (shorts for men; shorts and sports bras for women), and assumed either a standing or seated posture. The current database consists of summary statistics (mean, standard deviation, standard error, N, and percentiles) of all 40 measurements in both metric and English units.

Download Data

The primary data pertaining to these analyses are available below in .csv and descriptive statistics formats. A data dictionary which provides the description of each data element in the dataset is also available.

- [EMT Dataset](#)  [.csv]
- [EMT Dataset](#)  [.pdf]
- [Data Dictionary](#)  [.pdf]

Data Collection and Analysis

As part of the survey design, the continental U.S. were divided into the following four regions: Northeast and Mid-Atlantic, South, Midwest and Great Lakes, and Pacific West. Two data collection sites were selected within each region to make up a total of eight data collection sites. Specifically, data were collected in Richmond, VA; New Haven, CT; Tallahassee, FL; Fort Worth, TX; Mount View, MN, Columbus, OH; Phoenix, AZ; and Boise, ID. A sampling strategy that took into account age, sex, and race/ethnicity was used due to the impact of these factors on human sizes and shapes. All measurements were taken by the standard anthropometric instruments, which consisted of an anthropometer, a beam caliper (rearranged pieces of the anthropometer), a sliding caliper, and a steel measuring tape. Other instruments included a weight scale and a stool for seated measurements. To ensure data quality, a specifically designed software was employed for data entry. The software

signaled the operator when an unexpected value was entered. Any values flagged by the system were verified on-site by re-measuring the participant. To ensure its ability to represent the U.S. EMT population, the sample was weighted for sex, age and race/ethnicity distributions based on the Bureau of Labor Statistics (BLS) Current Population Survey (CPS). SAS 9.4 (Survey Procedures) was employed in the data analysis.

More Information about NIOSH Anthropometry

Information on other anthropometry research projects at NIOSH is available on the [Anthropometry](#) page.

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References:

¹ Reichard AA, Marsh SM, Moore PH. [2001]. [Fatal and Nonfatal Injuries Among Emergency Medical Technicians and Paramedics](#)  . Prehosp Emerg Care. 2011 Oct-Dec;15(4):511-7. Epub 2011 Aug 11.

² NHTSA. [2014]. [The National Highway Traffic Safety Administration and Ground Ambulance Crashes](#)   .

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