

# Comparisons of injury estimates from a population-based survey and provider based surveys

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**Centers for Disease Control and Prevention**  
**National Center for Health Statistics**

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# Objective

**To compare injury estimates from a population-based health survey with estimates from two provider-based surveys**

# Methods--Data Sources

**Three national surveys were used:**

- **Population-based survey**
  - ✓ **National Health Interview Survey (NHIS): 2006-2008**
- **Provider-based surveys**
  - ✓ **National Hospital Ambulatory Medical Care Survey, Emergency Department component (NHAMCS-ED): 2007**
  - ✓ **National Hospital Discharge Survey (NHDS): 2007**

# **Population-based survey: NHIS**

- **NHIS is a cross-sectional household interview survey of civilian non-institutionalized population.**
- **Data collected through personal interviews**
- **Respondents report information about injuries and Place of treatment**

# **Provider-based Survey: NHAMCS-ED**

- **NHAMCS-ED is a national probability sample survey of visits to emergency departments of non-institutional general and short-stay hospitals.**
- **Data abstracted from medical records by trained hospital staff**

# Provider-based Survey: NHDS

- **NHDS is a national probability sample survey of inpatient discharge records selected from non-Federal, short-stay hospitals.**
- **Data are collected by**
  - ✓ **Manual review of medical records (55%), medical abstract form**
  - ✓ **Automated system (45%), computerized data files containing machine-readable medical record data**

# Methods--Injury Definitions

- **NHIS:**

- ✓ Reported place of treatment for injuries was
  - Emergency Department for injury ED visits or
  - Hospital for injury hospital discharges

- **NHAMCS-ED: initial ED visit**

- ✓ Either a) a first-listed injury diagnosis code or b) a first-listed external cause of injury code (excluding adverse effects)

- **NHDS:**

- ✓ First-listed diagnosis code for injury

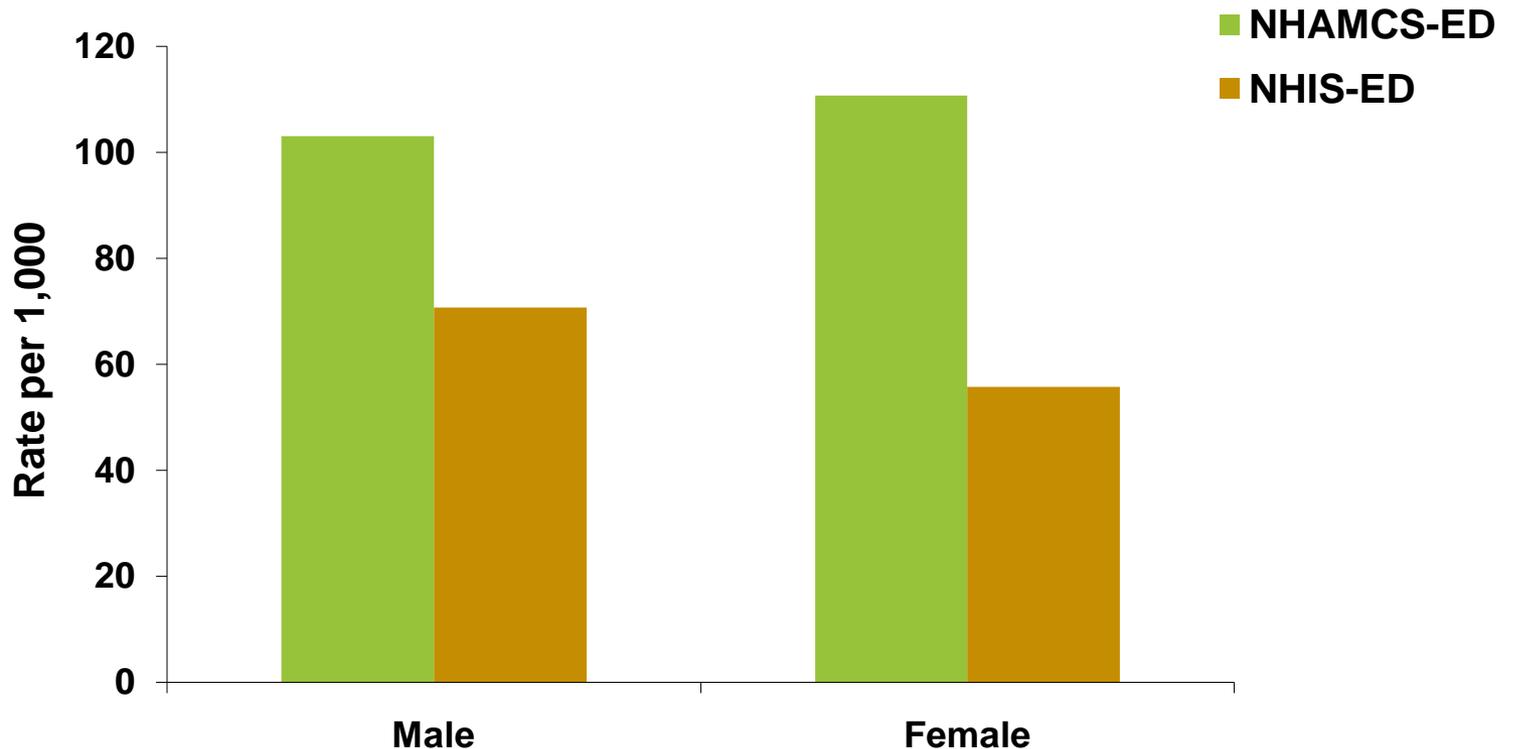
# Methods--Rate calculation

## Denominators for rates:

- **NHIS: US civilian non-institutionalized population, estimated from the sample.**
- **NHAMCS-ED and NHDS: US civilian population estimates provided by the Census Bureau.**

# Injury Treated in ED by Sex

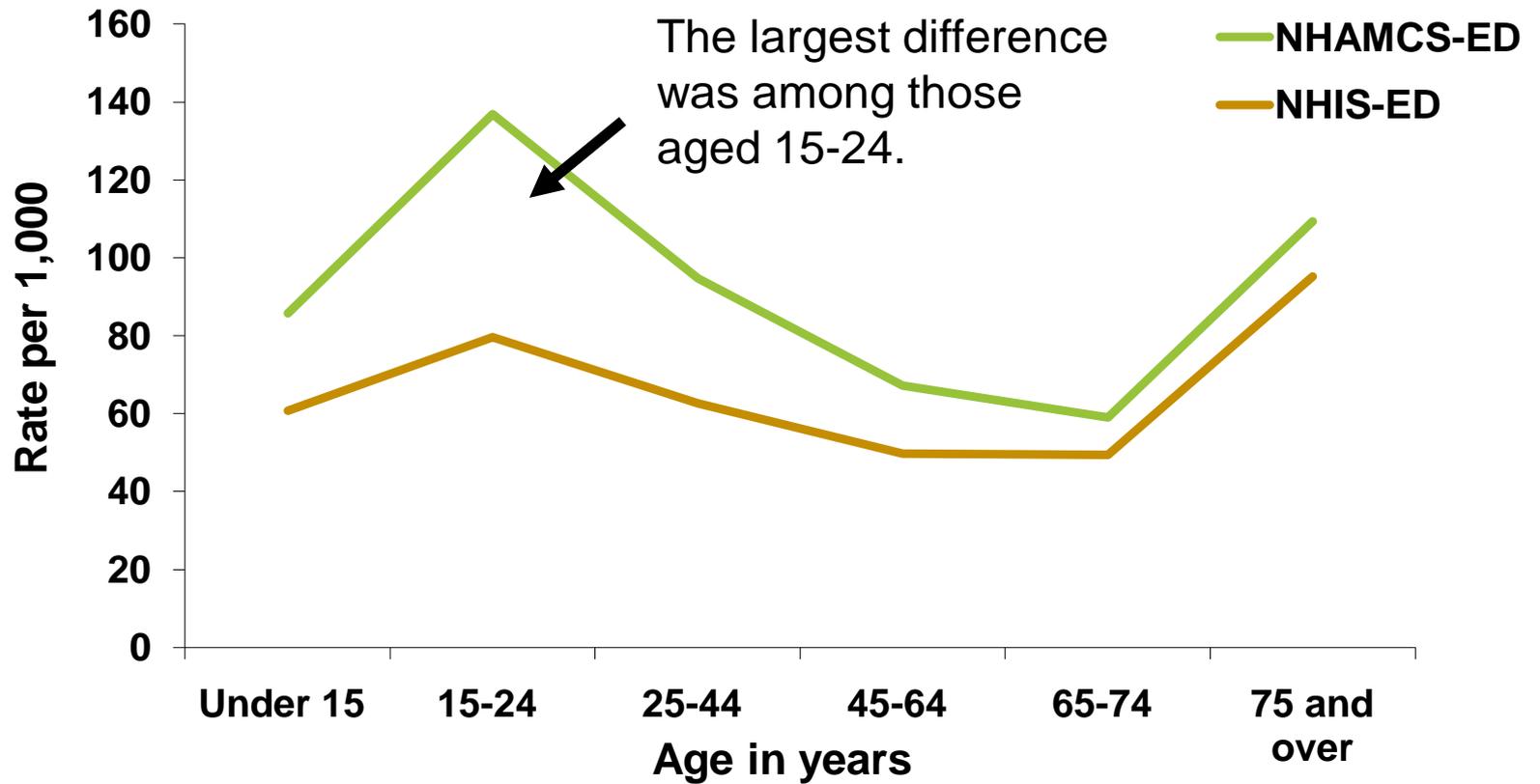
## NHAMCS-ED and NHIS



The estimated rate of injuries treated in the ED from NHIS was 63 per 1,000 population which is 0.7 times the estimate from NHAMCS-ED.

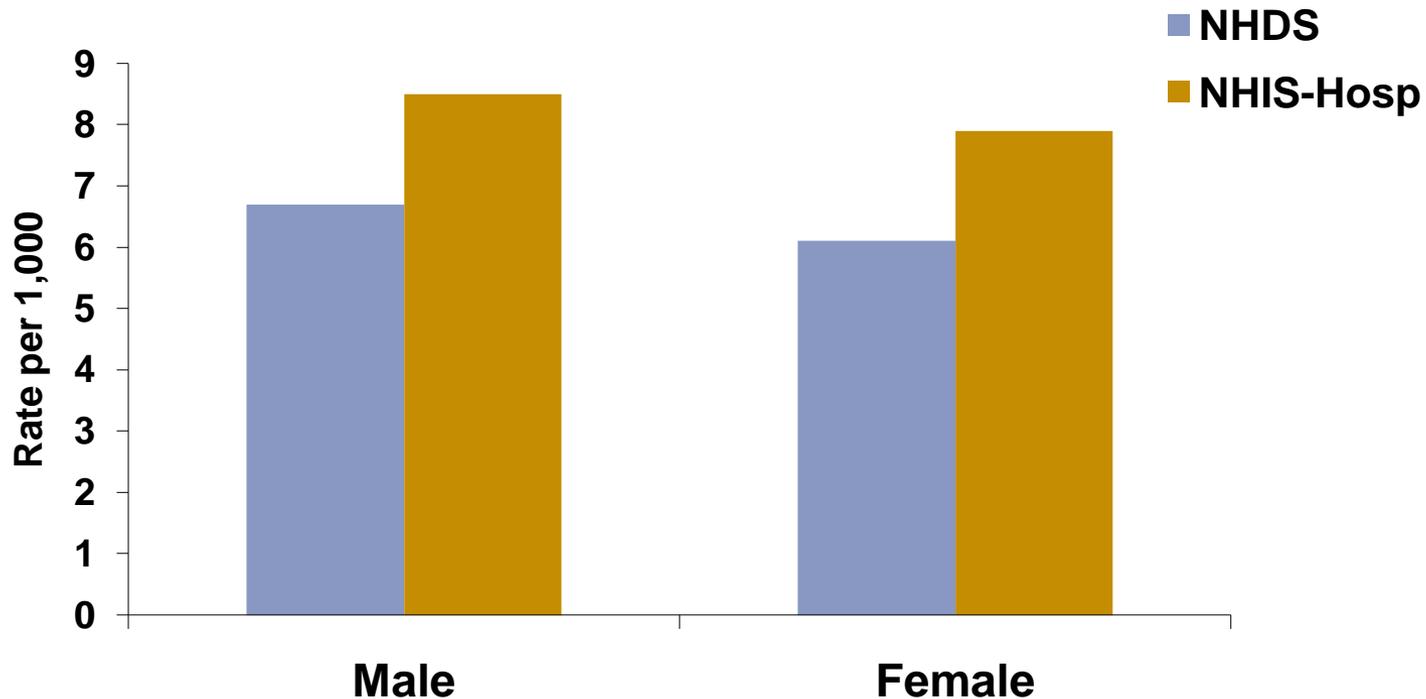
# Injury Treated in ED by Age

## NHAMCS-ED and NHIS



# Injury Treated in Hospital by Sex

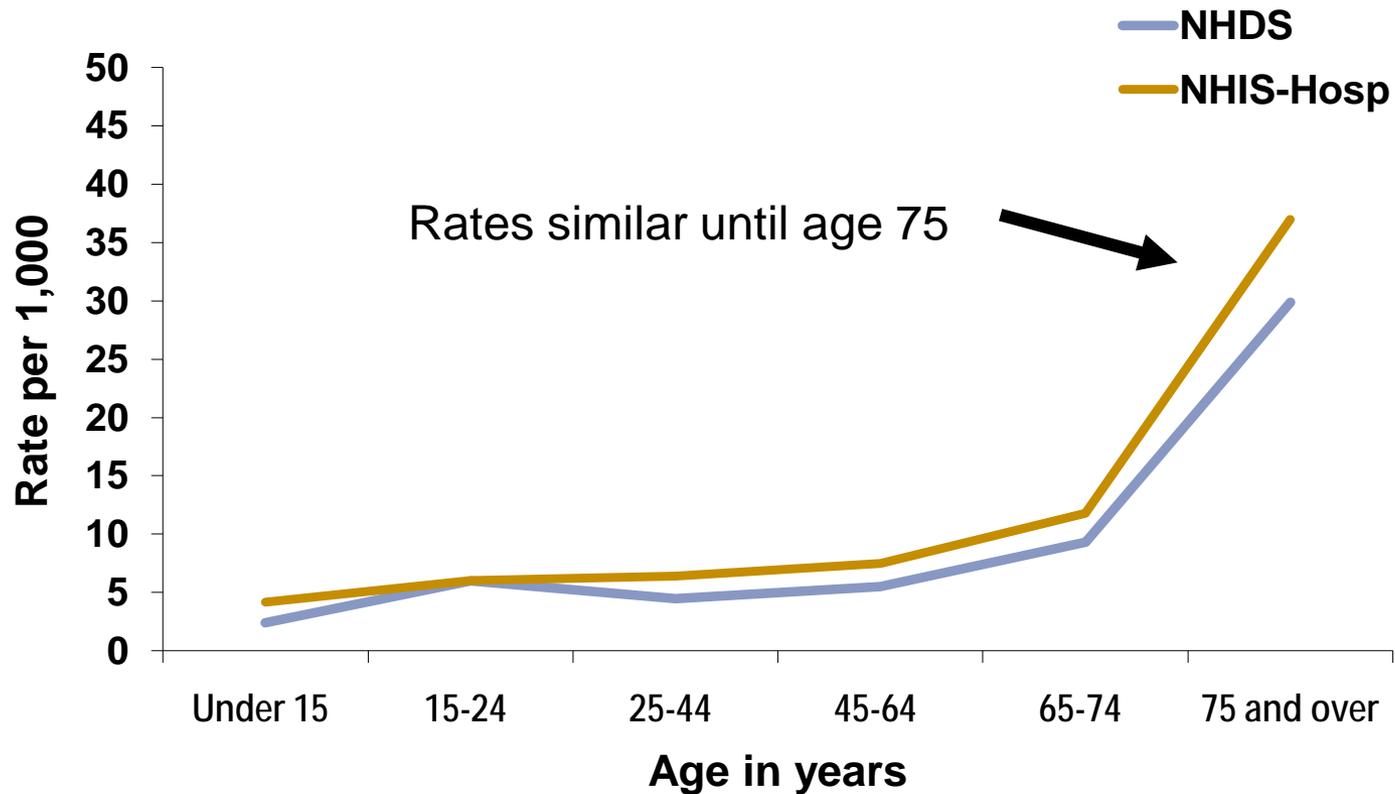
## NHDS and NHIS



The estimated rate for injuries treated in the hospital from NHIS was 8.3 per 1,000 population which is about 1.3 times the estimates from NHDS.

# Injury Treated in Hospital by Age

## NHDS and NHIS



# Differences between estimates

- **Injury emergency department visit rates:**
  - ✓ **NHIS estimates were 70% of the NHAMCS-ED estimates.**
- **Injury hospital discharge rates:**
  - ✓ **NHIS estimates were 130% of the NHDS estimates.**

# Possible reasons for the differences in emergency department injury visit rates

- **Injury episodes may not be reported in NHIS**
- **NHIS non-respondents may have higher ED injury rates than respondents.**
- **Injury incidence may be over estimated based on injury visits from NHAMCS-ED.**
- **Target population for NHAMCS-ED is difficult to determine.**
- **Different populations are covered by NHAMCS-ED and NHIS.**

# Possible reasons for the differences in injury hospital discharge rates

- Severe injuries are less likely to be forgotten during NHIS interview.
- NHDS includes non-federal, short-stay hospitals. NHIS response includes all hospitals.
- Injuries may be incorrectly classified as non-injury in the hospital discharge data based on medical records.
- Only first-listed injury diagnoses were included in injury hospital discharge rates in NHDS.

# Strengths of NHIS

- **The NHIS provides details not recorded on medical records which are useful for injury prevention and control.**
  - ✓ e.g. place of injury, activity when injured
- **Detailed demographic information**
  - ✓ e.g. race/ethnicity, income, education
- **Wide range of data available in one system**
  - ✓ e.g. functional limitation, health behavior
- **Linkable with other national data sets**
  - ✓ e.g. linked with mortality data through 2006

# Conclusions

- **For more severe injuries, such as those requiring hospitalization, the NHIS may provide higher estimates than medical records based surveys.**
- **For less severe injuries, such as those seen in the ED, the NHIS may underestimate the rate of injury.**
- **Rate differences could be due to issues in injury enumeration (e.g. misclassification, recall) and population coverage.**

# Questions?

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For more information on injury data and resources from NCHS,  
see: [www.cdc.gov/nchs/injury.htm](http://www.cdc.gov/nchs/injury.htm).

