Transportation-related Injuries among US Immigrants: Findings from 2000-2005 National Health Interview Survey

Structure of the report

- Research Background
- Method
  - Data source and sample design
  - Variable definition
  - Statistical analysis
- Results
- Conclusion, limitation and future research direction

Background

- Immigrants are the fastest growing segment of the US population: >12%
- 33.5 million in 2003
- an increase of 23.9 million since 1970

Why to conduct a research on Injuries among Immigrants

- the leading cause of disabilities and mortality around the world and US:
  - Ranking forth for cause of death in the US, 1980: 105,718 death
  - Project to 106,742 death in the US, 2020

Research Purpose

I. Rate of transportation-related injuries

I. Relationship of length of immigration (years of residence in the US) and transportation-related injuries

II. The injury's pattern in terms of motor vehicle host (drivers and passengers) and type of vehicle between US-born and Foreign-born individuals

METHODS

- **Data Source and Sample Design**
  - The 2000-2005 National Health Interview Survey (NHIS): a complex oversampling survey design
  - Sample weights account for the complex sampling design and non-response.

Definition for Nativity and Years of Immigration

1. Foreign-born status:
   - if the birthplace was outside of the US
   - respondents born in the US territories

2. US-born persons: born in one of the 50 US states or Washington, D. C.

years of residence in the US

3. four groups according to their years of residence

- <5 years
- 5-9 years
- 10-14 years
- ≥15 years

Definition of Transportation-related Injuries

- injury events happened during the three months prior to the interview that was serious enough to require medical attention.
- the cause of the injury event according to ICD-9-CM external cause code

Measures

Age, gender, race/ethnicity, education levels, birth region, alcohol use, family income and access to medical care

Statistical Analysis

- Data from the 2000-2005 NHIS were combined and prepared first in SAS ;
- Data analyses were conducted using SUDAAN procedures to account for the complex sample design and weighting structure of the NHIS.

- The injury prevalence ratio (PR) and 95% confidence intervals (CI) in univariate and multivariate Cox proportional hazard regression models.

– By assuming a constant risk period (equal follow-up time for all subjects), the Cox model could be used to calculate PR and 95% CIs for a cross-sectional study.

- The outcomes of an association of transportation-related injuries with
  - nativity
  - and years of residence
    - adjusted confounding effects of major sociodemographic variables

RESULTS

- The overall household interview rates of the NHIS surveys
  - 86.5% ~ 89.6% for the years of 2000 to 2005.
- A total of 431,825 individuals aged 16 years and older were included in our analyses.
  - Of those respondents in our study, 19.8% were foreign-born.

Results I:
Rate of Transportation-related Injuries

- Injury events:
  - a total of 1,457 respondents reported transportation-related injuries during the 3-month period prior to the NHIS interview.
- Rates
  - Foreign-born respondents reported a lower rate of transportation-related injuries than US-born respondents, 28/10,000 vs. 36/10,000 (P-value <0.05).

Results II: Prevalence Ratio (PR) of Injuries by Nativity and Years of Residence

Model I (nativity status) and II (years of residence): adjusted for all confounding variables except alcohol drinking; US-born as a reference.

- ***For Foreign-born (model I): PR=0.56, 95% CI=0.14-2.29***
- ***For less than 5 years of residence (model II): PR=0.53, 95% CI=0.09-3.19***
- ***For15 years or more of residence (model II): PR= 0.64, 95% CI=0.15-2.76***

Model III (nativity status) and IV (years of residence): adjusted for all confounding variables including alcohol drinking; US-born as a reference.

- ***For Foreign-born (model III): PR=1.20, 95% CI=0.17-8.6***
- ***For less than 5 years of residence (model IV): PR=0.95, 95% CI=0.10-9.32***
- ***For 5~9 years of residence (model IV): PR=2.33, 95% CI=0.29-18.5***

- additional analysis
  - excluding this group of individuals with less than 5 years of residence in the US:
    - foreign-born individuals (29/10,000 individuals, 95% CI: 25/10,000-35/12,000).
    - the PR was similar between foreign-born individuals and US-born individuals after adjusting for other confounding variables in the Cox proportional hazard model.

Result III: Characteristics of Transportation-related Injuries

- the majority of injured persons were either a driver or a passenger in the vehicle (>90.0%) among both foreign-born and US-born respondents.

- Passenger in the vehicle at the time of injury
  - Foreign-born injured respondents : 27.2%
  - US-born injured respondents: 21.1%

- **The types of vehicles involved in transportation-related injuries**
  - **passenger cars**
    - **foreign-born respondents: 72.0%**
    - **US-born respondents: 60.4%**
    - **P-value <0.001**

- **Wearing a safety belt**
  - **Foreign-born injured individuals: 92.0%**
  - **US-born injured individuals:83.0%**
  - **P-value=0.02**

Study Limitation

- Lack of driving miles information
- Unclear for status of legal driver licenses
- status of car ownership

- injury information was self-reported
  - –not verified by police reports or automobile insurance records
- the undocumented foreign-born population: underrepresented in the survey

- Conclusions
  - Although we found that foreign-born individuals generally had a lower prevalence of transportation-related injuries, we did not find that injury risk ratio was significantly different between foreign-born and US-born individuals

- Suggestions
  - Information on driven miles, driver license status, car ownership status should be collected in future Survey

Collaborators

1. Xiaofei Zhang, Songlin Yu, and Huiyun Xiang are with the Center for Injury Research and Policy
2. Kelly Kelleher is with the Center for Innovation in Pediatric Practice, Columbus Children's Hospital and Children's Research Institute
3. J.R. Wilkins III is with the Division of Epidemiology, School of Public Health, The Ohio State University, Columbus.
4. Jun Xing is with the Department of Ethnic Studies, Oregon State University, Corvallis.

- **Acknowledgment**
- Funding for this study came from the National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention (PI: H. Xiang, Grant Number: R01OH008639-01). The views expressed here are solely the responsibility of the authors and do not necessarily reflect the official views of the Centers for Disease Control and Prevention.