



International comparisons of injury using the ICE indicators

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Centers for Disease Control and Prevention
National Center for Health Statistics

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What we'll talk about....

- International Collaborative Effort on Injury Statistics (ICE) criteria for indicators
- Barriers to comparability
 - Coding rules
 - Unspecified codes
- Global Injury Mortality Database
- Fatal injury indicators
 - All injury
 - Motor vehicle traffic
 - Suicide
 - Homicide
- Discussion



The ICE on Injury Statistics criteria for indicators

Desirable qualities of injury indicators:

1. **Case Definition.** The indicator should reflect the occurrence of injury satisfying some case definition of anatomical or physiological damage.
2. **Serious Injury.** The indicator should be based on events that are associated with significantly increased risk of impairment, functional limitation, disability or death, decreased quality of life, or increased cost (i.e. serious injury).
3. **Case Ascertainment.** The probability of a case being ascertained should be independent of social, economic and demographic factors, as well as service supply and access factors.



The ICE on Injury Statistics criteria for indicators

Desirable qualities of injury indicators (con't)

4. **Representativeness.** The indicator should be derived from data that are inclusive or representative of the target population that the indicator aims to reflect.
5. **Data Availability.** It should be possible to use existing data systems, or it should be practical to develop new systems, to provide data for computing the indicator.
6. **Specification.** The indicator should be fully specified to allow calculation to be consistent at any place and at any time.

Cryer C, Langley J. Developing indicators of injury incidence that can be used to monitor global, regional and local trends, 2008.



Barriers to international comparability

- **Coding rules**

Example: Manner of death

- **Data quality**

Example: Unspecified codes

- **ICE developed fixes**

Categorization of ICD codes into meaningful groups: External cause of injury matrices, Injury Mortality Diagnosis Matrix, and Barell Matrix for body region and nature



Example: International comparison of drowning death rates

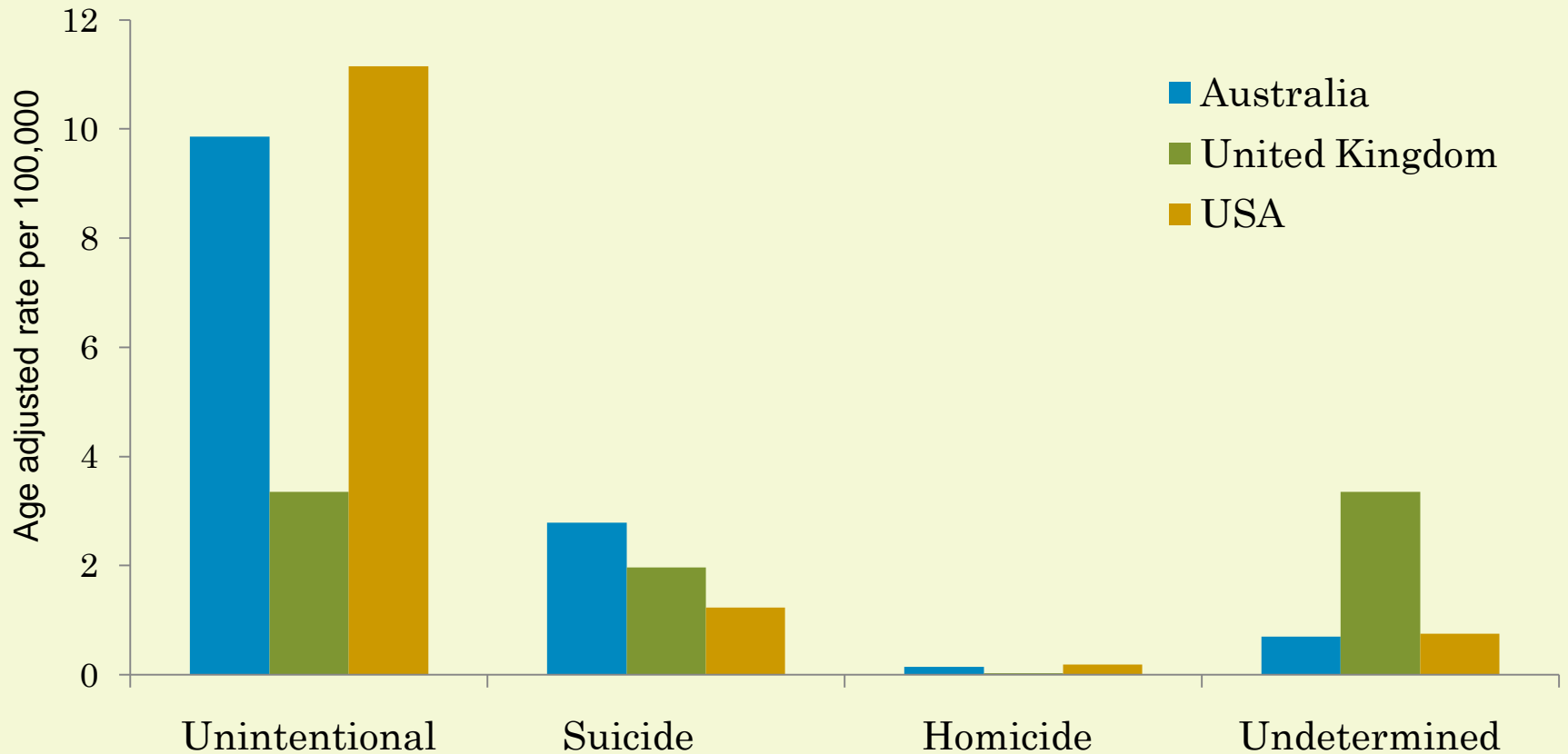
<u>Country</u>	<u>Unintentional drowning Death rate per 100,000</u>
Australia	9.9
United Kingdom	3.4
United States	11.1



Why is the UK rate so low?



Drowning rates per million population for selected countries, 2004



External cause of injury mortality matrix

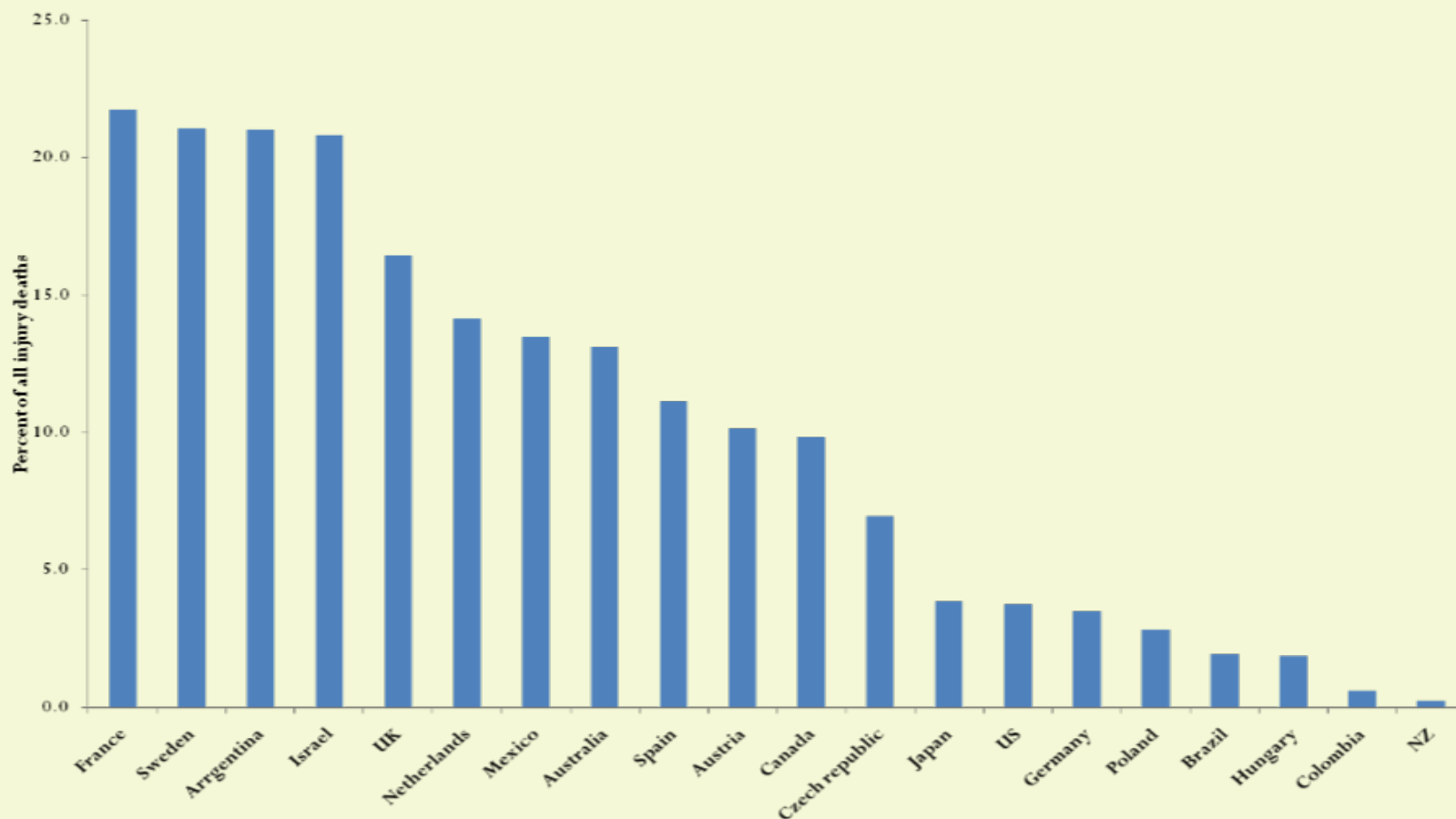


	Unintentional	Suicide	Homicide	Undetermined	Legal intervention / war
All injury					
Cut / pierce					
Drowning					
.					
.					
.					
Suffocation					
Unspecified					

ICD External cause codes

Exposure to Unspecified Factor*

Death rates, Selected countries, 2005



* ICD-10 X59 Exposure to Unspecified factor

Source: Bhalla, K., Harrison, J., Fingerhut, L., Shahrzad, S., Abraham, J., Hsiu-Yeh, P., on behalf of the GBD Injury Expert Group, The Global Injury Mortality Database, Version 2.0, Released on October 21 2009, Available from www.globalburdenofinjuries.org



Data Source

Global Injury Mortality Database

Data included:

- Country level cause of death (injury) tabulations disaggregated by age-sex external cause categories (based on Global Burden of Diseases (GBD) & ICE definitions)

Sources of data:

- National civil registration systems
- If possible, from the WHO Mortality Database
- Other data submitted by the GBD Injury Expert Group*

* <http://sites.google.com/site/gbdinjuryexpertgroup>



Data Source

Global Injury Mortality Database

Processing of data:

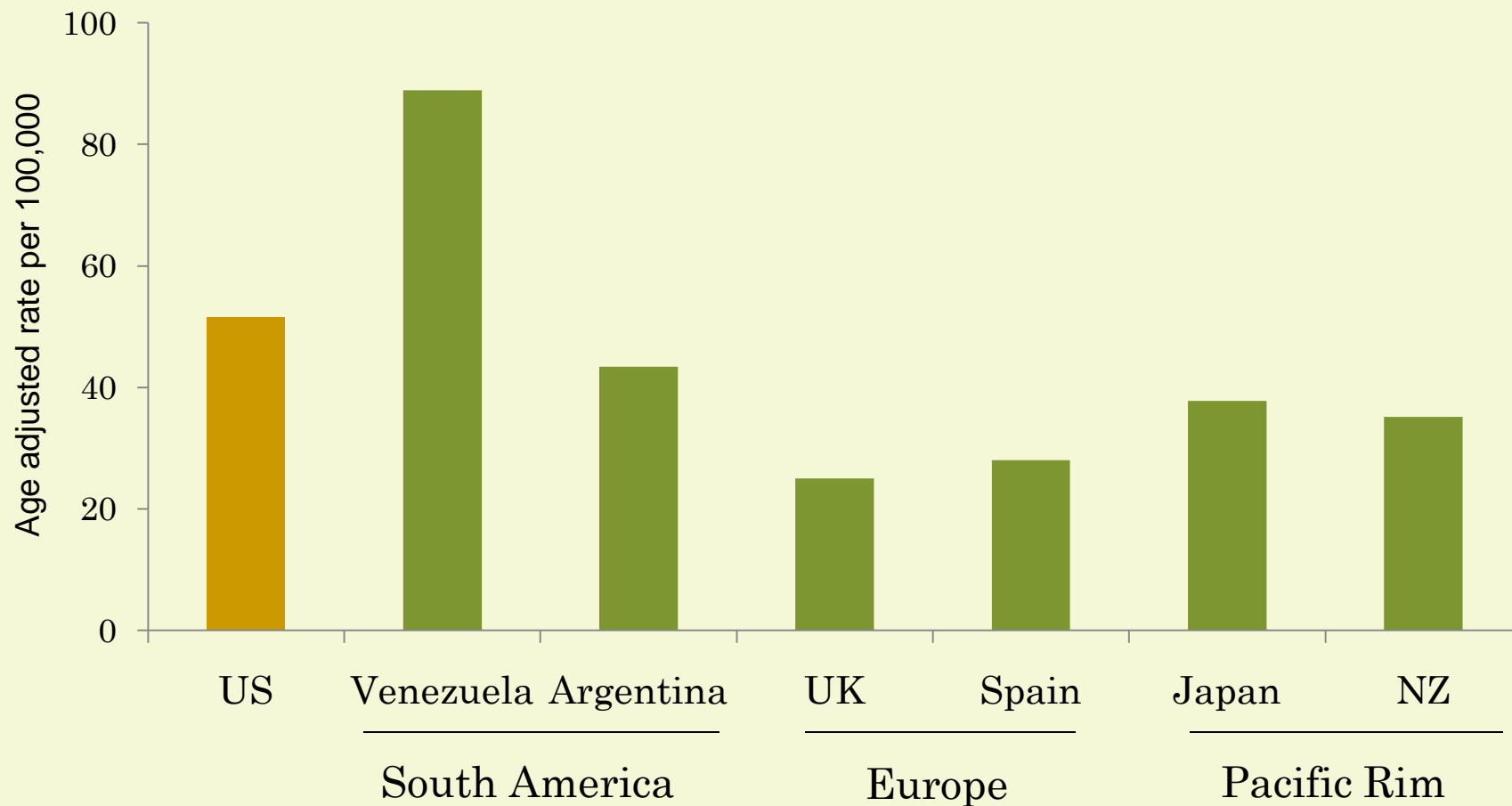
- Reclassified external causes to GBD and ICE definitions
- Quality checked by accessing the proportion of deaths coded to partially specified causes
- Redistributed cases with unspecified causes

Data access:

- GBD Injury Expert Group Website at <http://sites.google.com/site/gbdinjuryexpertgroup>
- Use the Mortality Data : ICE Matrix Definitions

Injury death rates

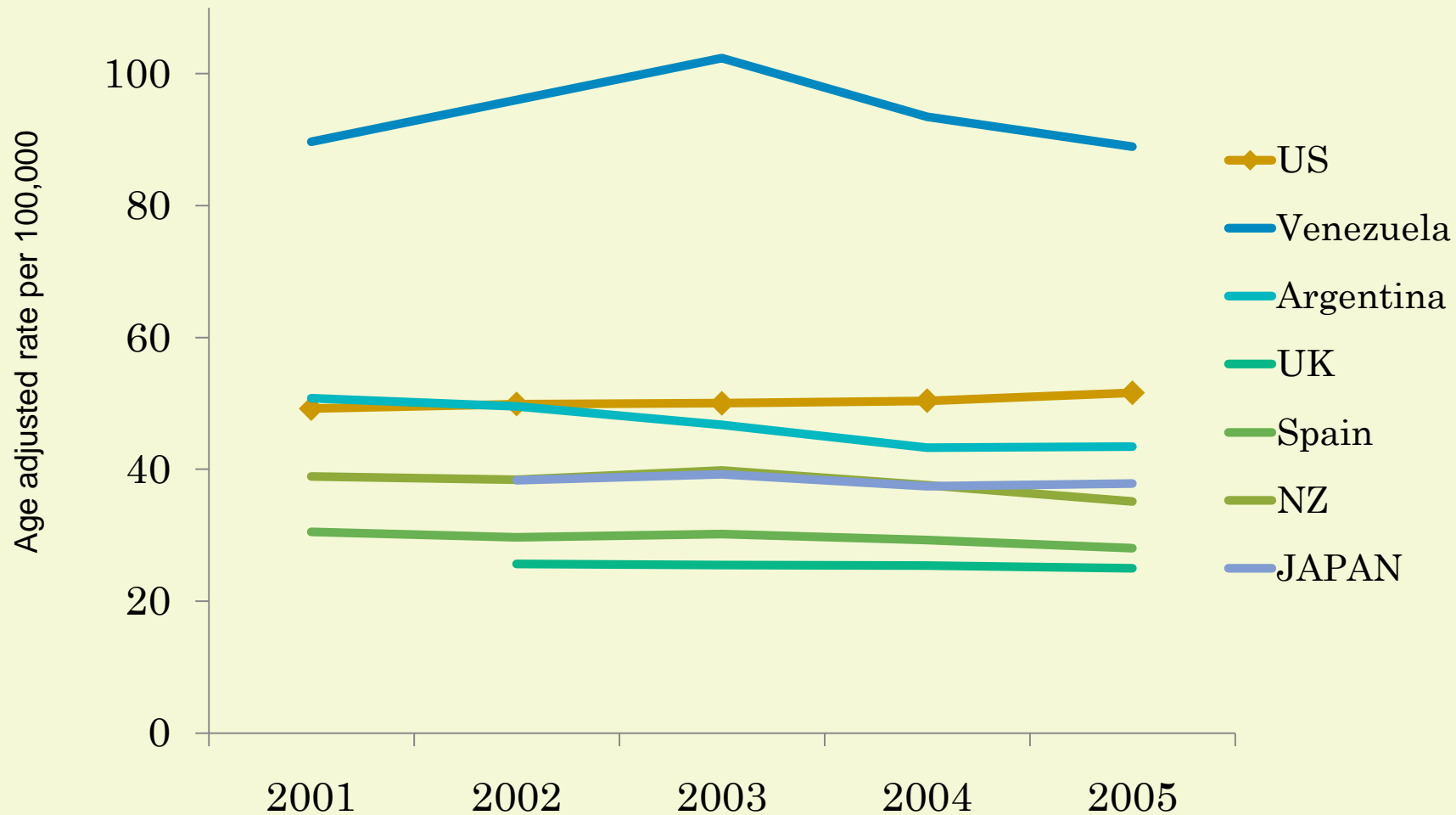
Selected countries, 2005



Source: Bhalla, K., Harrison, J., Fingerhut, L., Shahrzad, S., Abraham, J., Hsiu-Yeh, P., on behalf of the GBD Injury Expert Group, The Global Injury Mortality Database, Version 2.0, Released on October 21 2009, Available from www.globalburdenofinjuries.org

Injury death rates

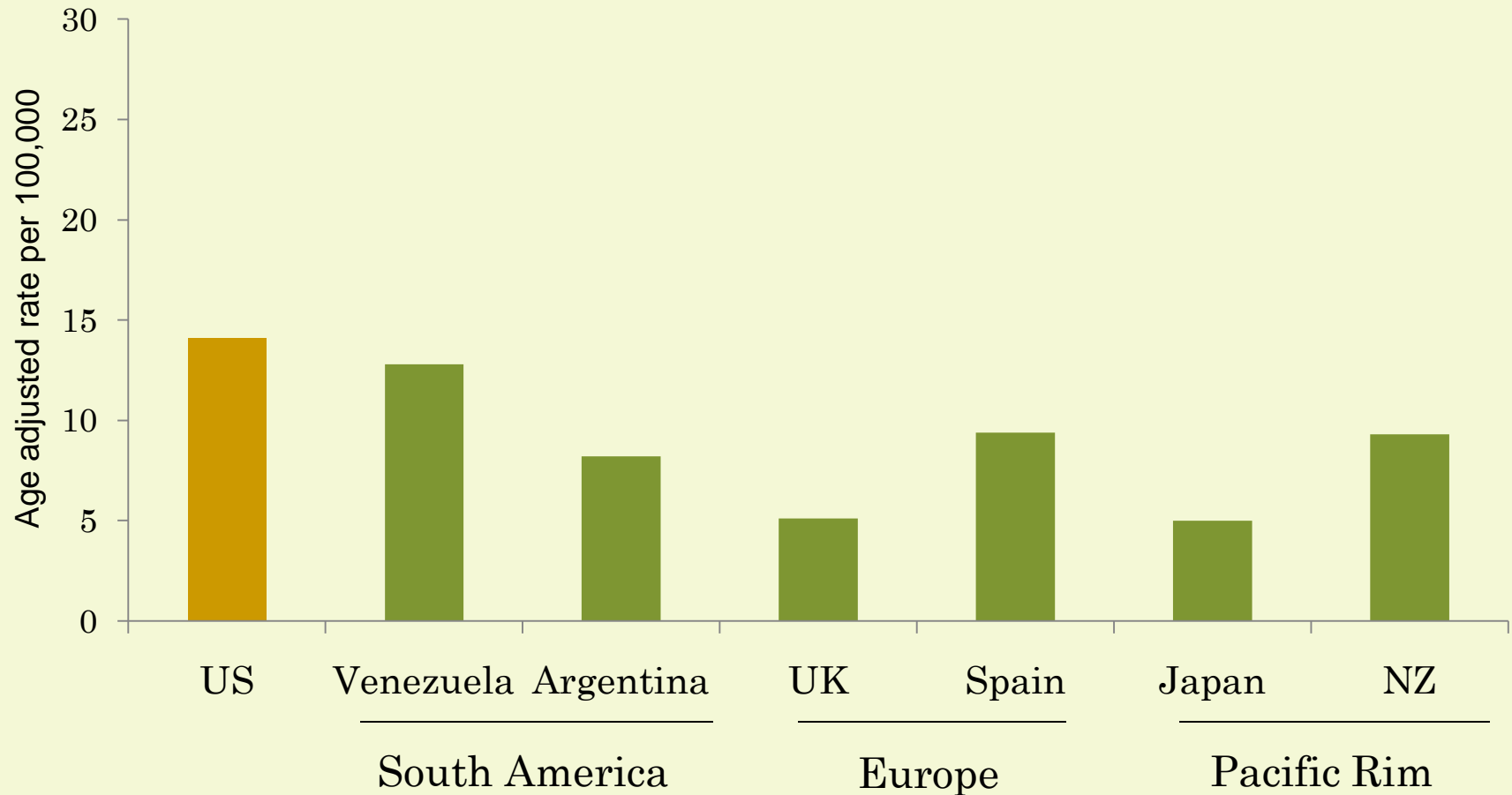
Selected countries and years





Motor vehicle traffic death rates

Selected countries, 2005

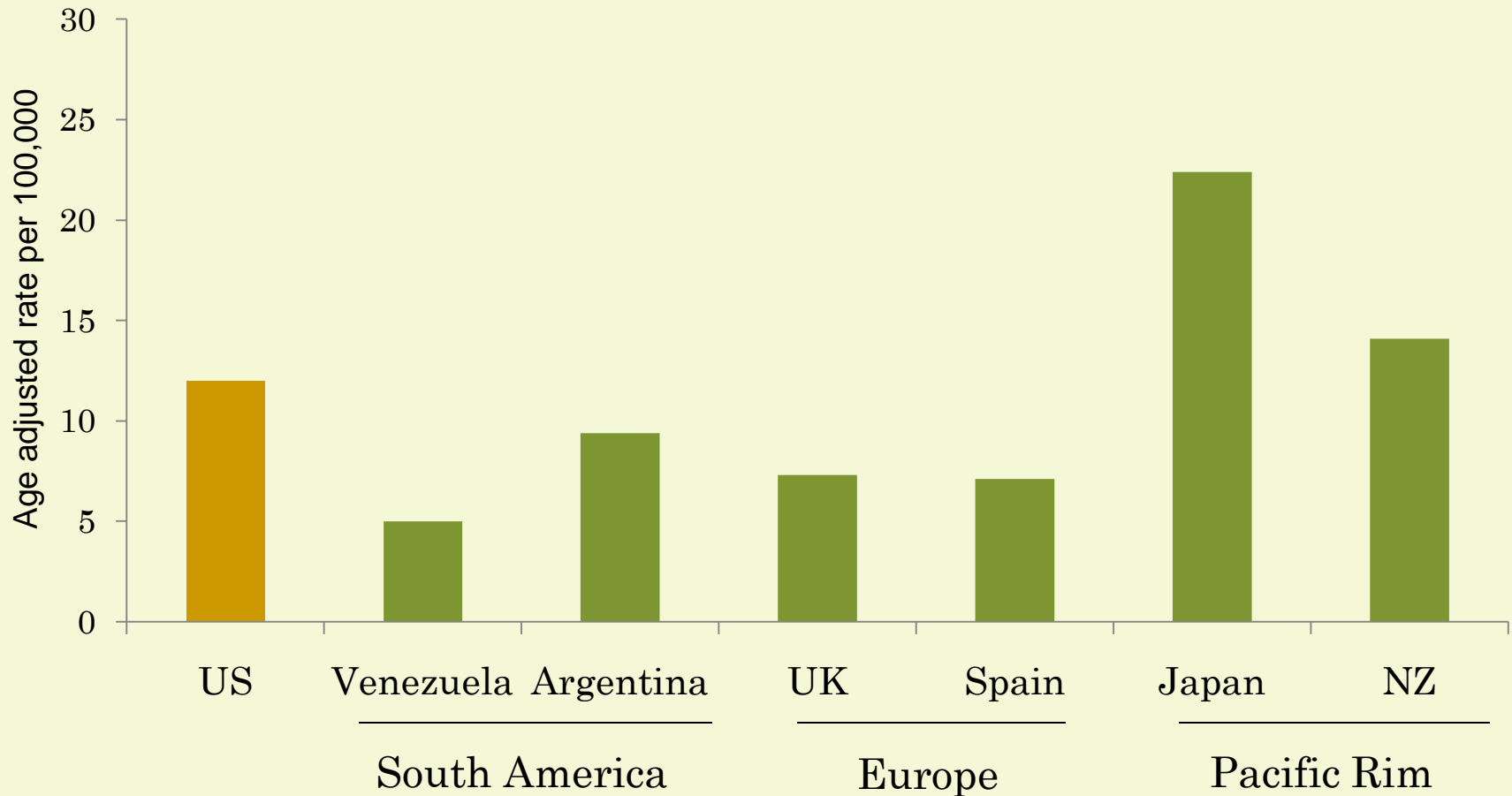


Source: Bhalla, K., Harrison, J., Fingerhut, L., Shahrzad, S., Abraham, J., Hsiu-Yeh, P., on behalf of the GBD Injury Expert Group, The Global Injury Mortality Database, Version 2.0, Released on October 21 2009, Available from www.globalburdenofinjuries.org



Suicide rates

Selected countries, 2005

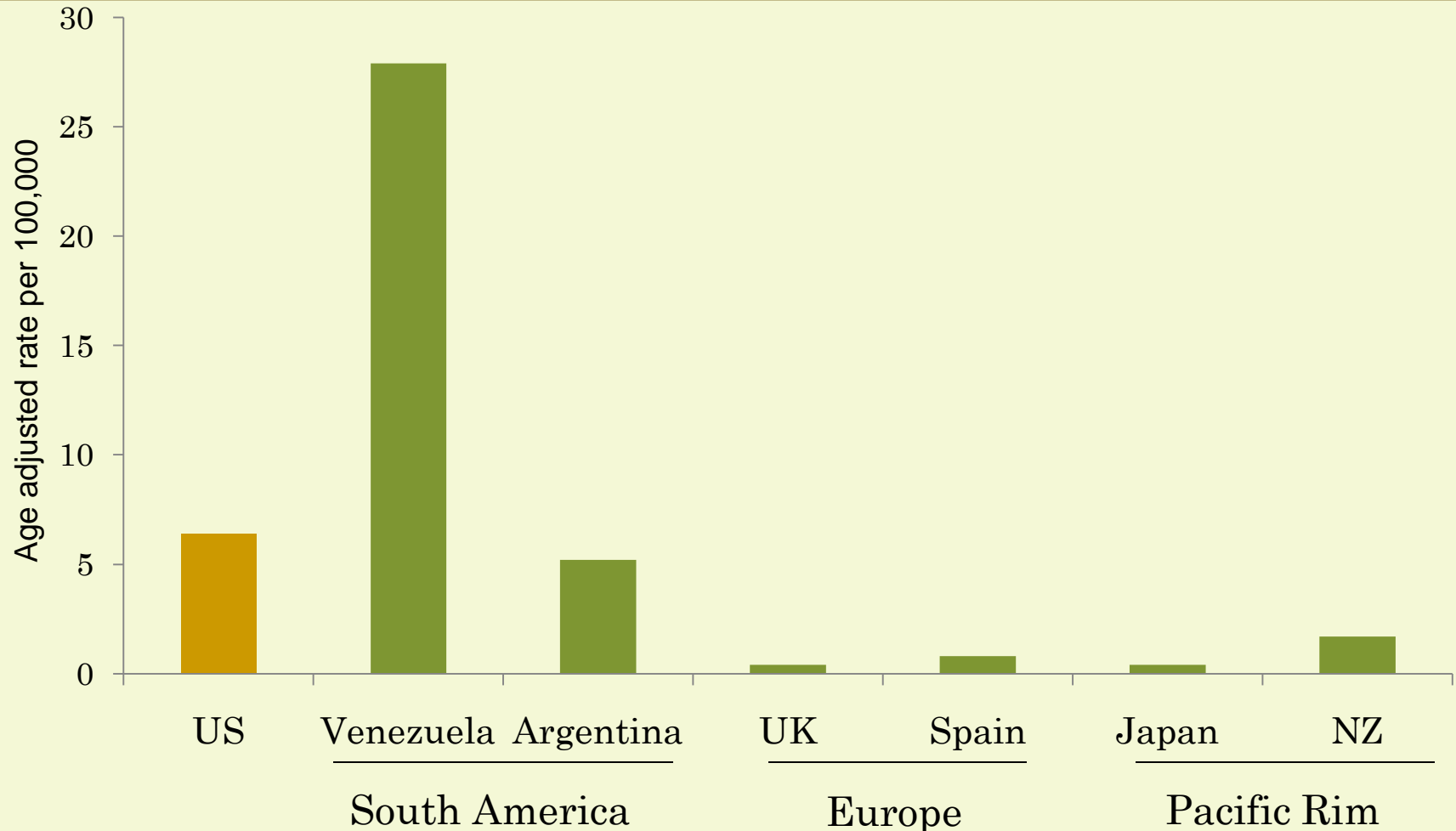


Source: Bhalla, K., Harrison, J., Fingerhut, L., Shahrzad, S., Abraham, J., Hsiu-Yeh, P., on behalf of the GBD Injury Expert Group, The Global Injury Mortality Database, Version 2.0, Released on October 21 2009, Available from www.globalburdenofinjuries.org



Homicide rates

Selected countries, 2005



Source: Bhalla, K., Harrison, J., Fingerhut, L., Shahrzad, S., Abraham, J., Hsiu-Yeh, P., on behalf of the GBD Injury Expert Group, The Global Injury Mortality Database, Version 2.0, Released on October 21 2009, Available from www.globalburdenofinjuries.org



ICE mortality indicators

- **Progress on mortality indicators**
 - Defined criteria
 - Identified potential indicators
 - Compared trends for selected countries
- **Limitations of mortality indicators**
 - Quality and completeness of data
 - Non-comparable data sources
 - Potential measurement of extraneous factors



More ICE indicators to come ...

- **Traumatic Brain Injury mortality indicator**
- **Morbidity indicators**
 - Severity threshold for inclusion
 - Probability of death
 - Probability of admission
 - Functional outcomes/ disability



Questions?

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For more information on injury data and resources from NCHS,
see: **www.cdc.gov/nchs/injury.htm**.

