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Presented at:
2012 Annual APHA conference
San Francisco, October 2012
Background
Excess mortality among AI/ANs

- After declining in 1900s, AI/AN death rates rose in mid-1980s
- AI/AN life span 6 years below U.S. average
- Large racial disparities in injury deaths
- Injury prevention has become a public health priority area for Indian Country
AI/AN race often misclassified on death certificates

- Race not always based on self-report or next-of-kin report
- Net result: morbidity and mortality measures are underestimated for AI/AN
- One approach: Linkage between Indian patient registration data and disease registries
Improving Data & Enhancing Access (IDEA-NW)

- Project goals: Reduce misclassification of AI/AN race in surveillance systems; disseminate health data to NW tribes
- Linkages between Indian patient registration and various disease registries
• Washington death certificates, 1990-2009

• **Northwest Tribal Registry**
  - AI/AN registered at IHS/tribal clinics in the NW
  - Augmented with data from urban clinics
  - All records are known AI/AN

• **Probabilistic linkage**
  - Link Plus software
  - Names, birthdates, SSN, etc. are compared
  - Each pair given a score indicating likelihood of a match, “gray area” matches reviewed by hand
Analysis

• Cause of Death defined using ICD-9/10 only underlying cause of death
• AI/AN in analysis = AI/AN on death certificate and/or matched Tribal Registry
  ▪ White race selected for comparison
  ▪ Used bridged-race field
    • Race collection changed from single to multiple-mention during study period
Analysis

- **Rates**: age-adjusted, per 100,000 population, 3-year rolling averages
- **Trends**: linear regression, p<.05
  - Annual percent change (APC)
    \[ APC = (e^{b_1} - 1) \times 100 \]
- **NCHS bridged-race population estimates used as population denominators**
Results
Linkage increased ascertainment of AI/AN deaths by 12%

<table>
<thead>
<tr>
<th></th>
<th>Before linkage</th>
<th>After linkage</th>
</tr>
</thead>
<tbody>
<tr>
<td>AI/AN Deaths</td>
<td>10,870</td>
<td>12,212</td>
</tr>
<tr>
<td>White Deaths</td>
<td>795,675</td>
<td>794,409</td>
</tr>
</tbody>
</table>
Washington AI/ANs died at younger ages (1990-2009)

<table>
<thead>
<tr>
<th></th>
<th>AI/AN</th>
<th>White</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age at death</td>
<td>57.7</td>
<td>73.6</td>
<td>15.9 years</td>
</tr>
</tbody>
</table>
Unintentional injury mortality rates over two times higher for AI/AN


- All: 80.4 (AI/AN), 34.6 (White)
- Male: 105.0 (AI/AN), 48.0 (White)
- Female: 57.5 (AI/AN), 22.4 (White)
Motor vehicle crashes and poisoning cause majority of injury deaths

Leading causes of unintentional injury deaths, Washington, 1990-2009

- Motor Vehicle Crash: 47% (AI/AN), 38% (White)
- Poisoning: 21% (AI/AN), 17% (White)
- Drowning: 7% (AI/AN), 4% (White)
- Falls: 6% (AI/AN), 22% (White)
Injury Trends
Unintentional injury mortality increased, AI/AN rates consistently higher than whites


- AI/AN: APC = +1.7%
- White: APC = +1.4%
AI/AN MVC mortality rates consistently higher than whites, gap growing

Motor vehicle crash mortality by race, Washington, 1990-2009

Age-adjusted rate per 100,000

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From 1994 onward, AI/AN unintentional drug poisoning rates higher than whites and increasing faster.
Fall mortality rates similar to whites and increased marginally


- Age-adjusted rate per 100,000
- APC = +3.2%

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Drowning deaths decreased for both races, not significantly for AI/AN


Age-adjusted rate per 100,000


APC = -1.3%

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Conclusions and Next Steps
Many disparities exist in mortality for Washington AI/ANs

- AI/ANs in Washington are dying much younger than whites
- Higher rates of mortality due to MVC, drug overdose
- Improvements in injury mortality experienced by whites have not always occurred for AI/ANs
- Correct racial classification is important factor in accurate mortality surveillance
  - Linkage can help address misclassification
Challenges & next steps

- Tribal Registry under-represents urban AI/AN and those with private insurance
  - Captures 75-80% of AI/AN population
- Even with combined data years, small numbers make AI/AN rates unstable
- Death certificate data does not answer the “why” questions
  - Other data sources help with behavioral, environmental factors
Thank You

Acknowledgements
The Tribes of Washington – patients and their families
Victoria Warren-Mears, PhD (P.I.)
Washington DOH Center for Health Statistics
Urban Indian Health Institute, Seattle Indian Health Board
Grant #R01HS19972, Agency for Healthcare Research & Quality