Do Tribal Child Safety Seat Laws Work?

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November 5, 2007

Northwest Portland Area Indian Health Board

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Outline

- Background on MV injuries
- Methods of the 2003 Northwest Tribal Child Safety Seat Study
- Statistical approach
- Results
- Discussion


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Background

- Injuries are the leading cause of death for AI/ANs age 1-44
- AI/AN children have the highest fatal injury rate of any race in the U.S.
- AI/AN children 3.8 times more likely to die from MV injury than all races
- More hospitalizations than all races


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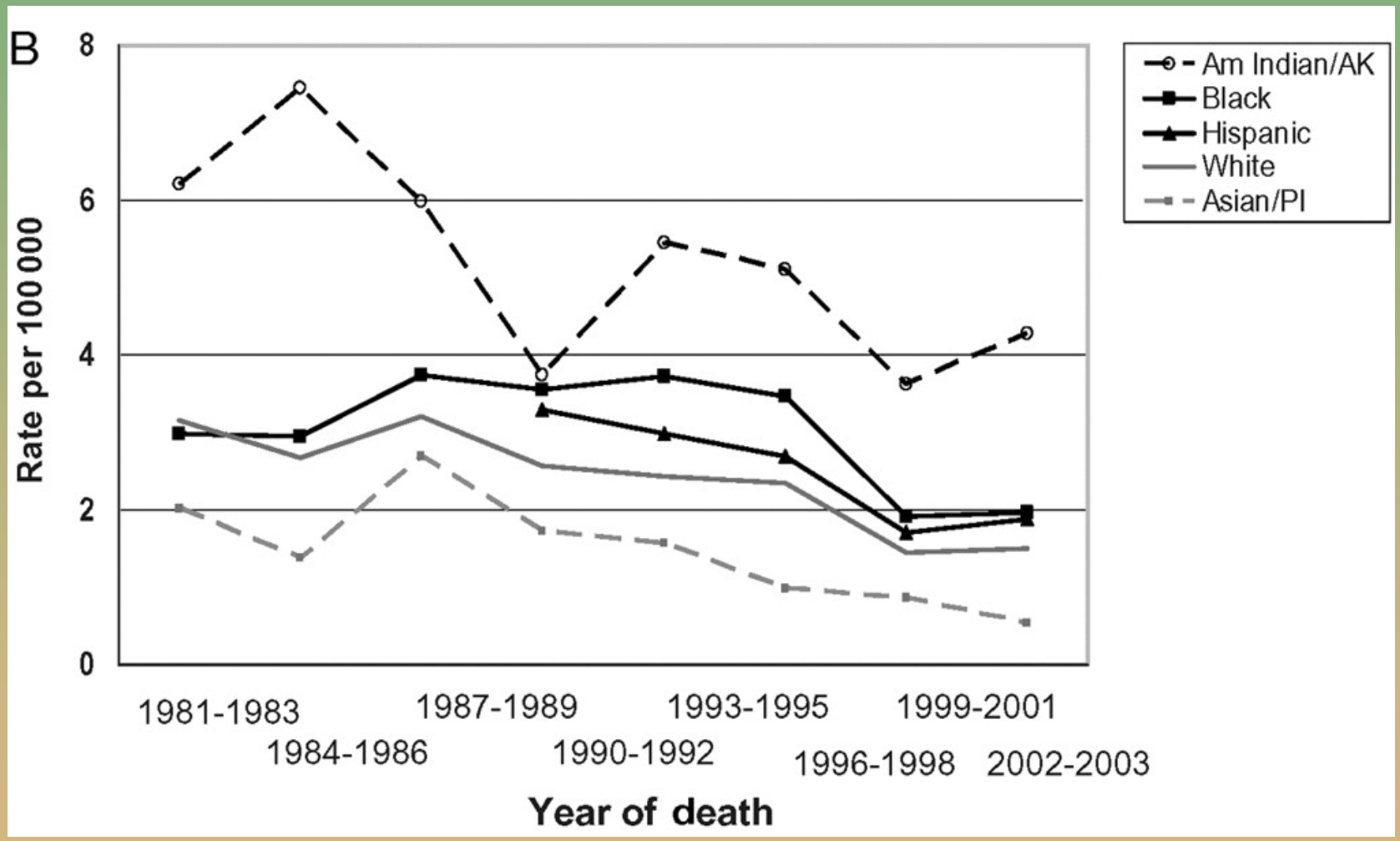
Motor vehicle occupant injury 20-year mortality trends for children age 1-4



Pressley, J. C. et al. Pediatrics 2007;119:e875-e884

PEDIATRICS®

Child Seats

- Reduction in MV mortality largely due to child seats
- Other factors:
  - Improved road conditions
  - Improved vehicle safety
  - Reduced drinking and driving

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Child Safety Seat Laws

- Laws are present in all 50 states
- Laws may be primary or secondary
- Tribes are sovereign nations
- Enforcement of tribal laws depends on agreements with local and state authorities
  - Tribal police
  - State or local police

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2003 NT Child Safety Seat Study

Francine Romero, PI

- Cross-sectional, observational survey of vehicles
  - 6 randomly selected tribes in WA, OR and ID
- Tribal lands
  - 4 tribes have well-defined tribal lands
  - 2 do not
- Passenger restraint laws
  - 5 tribes had laws similar/identical to state law
  - 1 tribe had no law
- Enforcement
  - Tribal police enforced passenger restraint law in 4 tribes
  - State and county police responsible for enforcement in 2 tribes

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2003 NT Child Safety Seat Study

- Surveys conducted June – July 2003
  - 574 Vehicles
  - 816 children
- Driver estimated children's age, weight and distance from home
- Trained observer evaluation
- Driver survey


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Child Restraint Laws

Child Passenger Restraint Laws in Northwest States in 2003 and 2007

State	Law in effect in 2003		Law in effect in 2007	
	Child Safety Seat Required	Max Fine	Child Safety Seat Required	Max Fine
Idaho	<4 yrs or <40 lbs	$60	CSS: <4 yrs or <40 lbs Booster: <6 yrs	$60
Oregon	<4 yrs or <40 lbs	$94	CSS: <4 yrs or <40 lbs Booster: <6 yrs OR <60 lbs	$97
Washington	Rear-facing: <1 yr or <20 lbs CSS: 1-4 yrs or 20-40 lbs Booster: <6 yrs or <60 lbs	$101 effective July 2003, previously $86	Rear-facing: <1 yr and <20 lbs CSS: 1-4 yrs or 20-40 lbs Booster: <8 yrs or <4'9" tall Children < 13 must ride in rear seat if practical	$101

Statistical Approach

- Child restraint use in three categories:
  - Proper
  - Incorrect
  - Unrestrained
- Identify factors associated with child restraint status
  - 3 binary logistic regression models constructed
  - GEE method used to account for clustering


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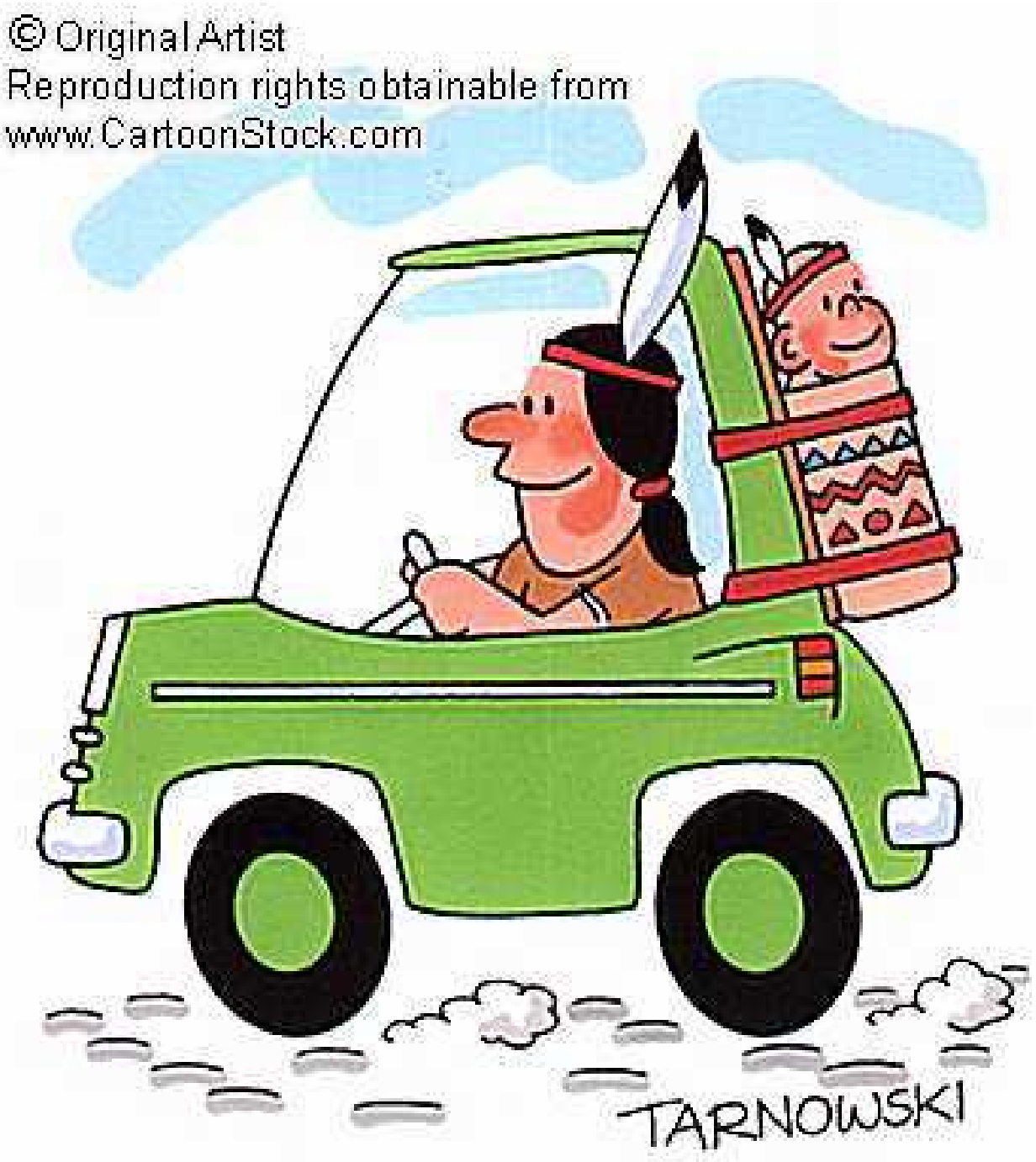

Recommended Child Passenger Restraint Guidelines

Buckle Everyone. Seat children age 12 and under in the back seat.

	Infants (Birth – 1 Year)	Toddlers (1 – 4 Years)	School-Age Children (4 – 8 Years)
Recommended Weight Requirements	Up to 20 pounds; if an infant is >20 pounds, use a seat that is labeled for rear-facing use up to 30 pounds.	Over 20 pounds and up to 40 pounds; if a toddler is <20 pounds, use a rear-facing child safety seat.	Over 40 pounds and up to 80 pounds, under 4'9"; if a school-age child is <40 pounds, use a forward-facing child safety seat.
Type of Seat	Infant only or rear-facing convertible	Convertible or forward-facing harness seat	Belt positioning booster seat
Seat Position	Rear-facing only	Can be rear-facing until 30 pounds if seat allows; generally forward-facing	Forward-facing
Notes	Children should use rear-facing seat until one year of age **AND** at least 20 pounds. Harness straps should be at or below shoulder level.	Harness straps should be at or above shoulder level. Most seats require harness straps to be in top slots for forward-facing use.	Belt positioning booster seats must be used with **both** lap and shoulder belt. Shield booster seats are not recommended.
Key safety tips	*Never* place an infant in the front seat of a vehicle with a passenger air bag. A rear-facing seat spreads crash forces over an infant's entire body, minimizing injury to the delicate brain and spinal cord.	Children in forward-facing child safety seats should never sit in the front of a vehicle with a passenger air bag. Properly installed forward-facing CSSs minimize the risk of head and brain injury by reducing head movement in a crash.	The purpose of a belt-positioning booster is to position the child so that the adult seat belt will fit optimally across the child's hips and chest. The lap belt must fit low and tight across the hips, and the shoulder belt must fit over the shoulder and snug across the chest to avoid abdominal injuries.

Source: National Highway Traffic Safety Administration, American Academy of Pediatrics. http://www.aap.org/policy/re0116.html

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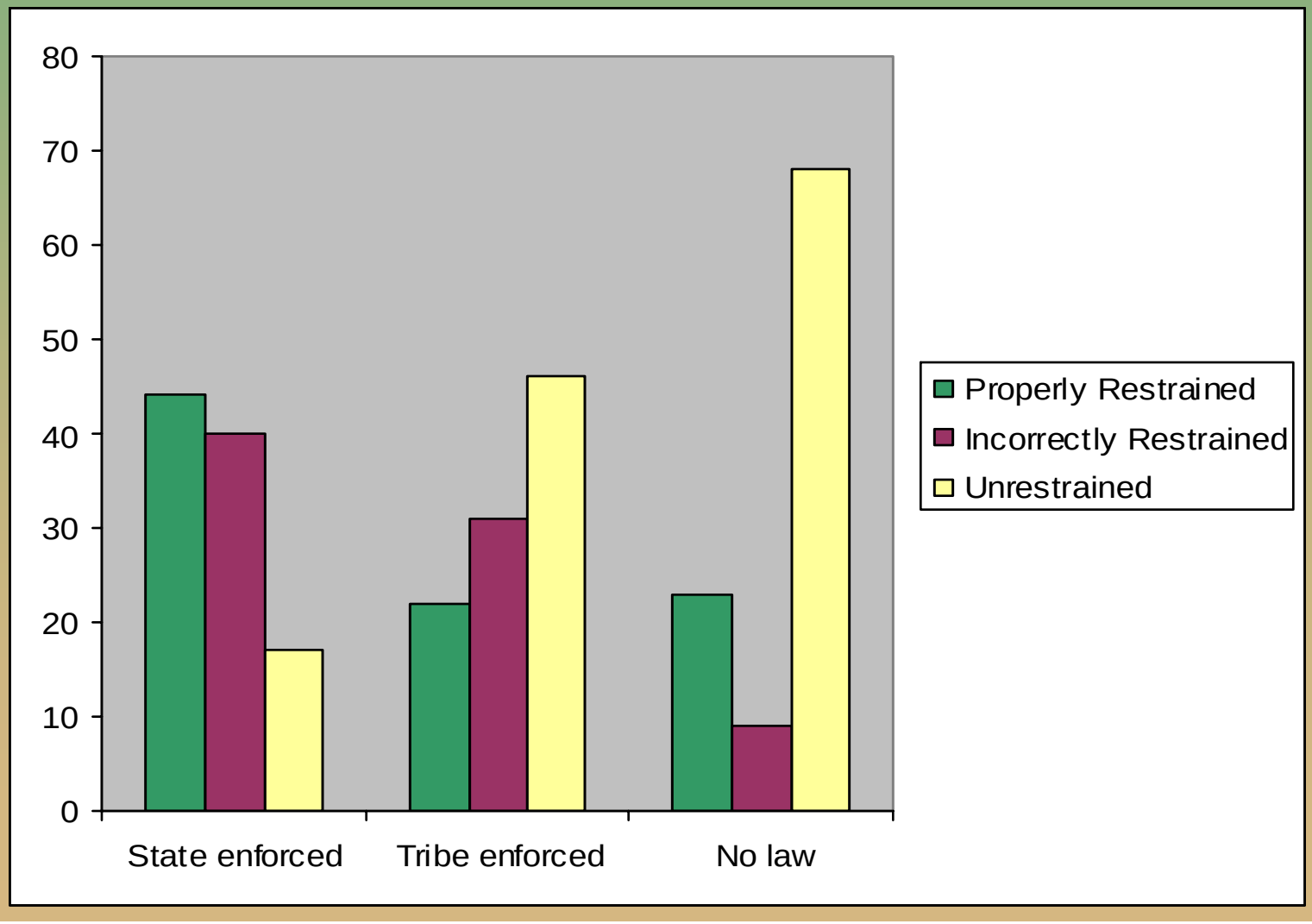
Percent of children properly restrained by law enforcement type

Overall, 29% properly restrained, 30% incorrectly restrained, 41% unrestrained



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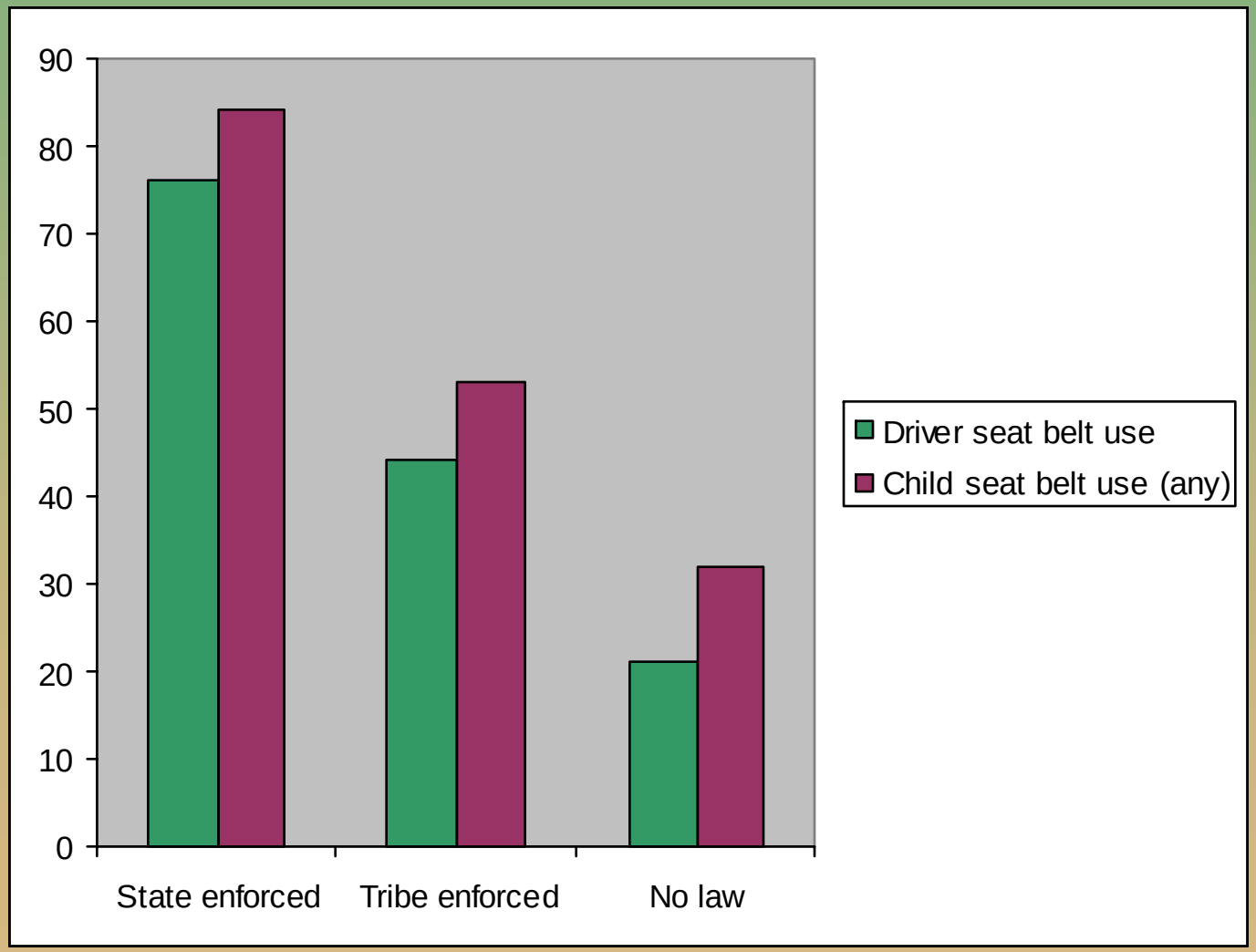
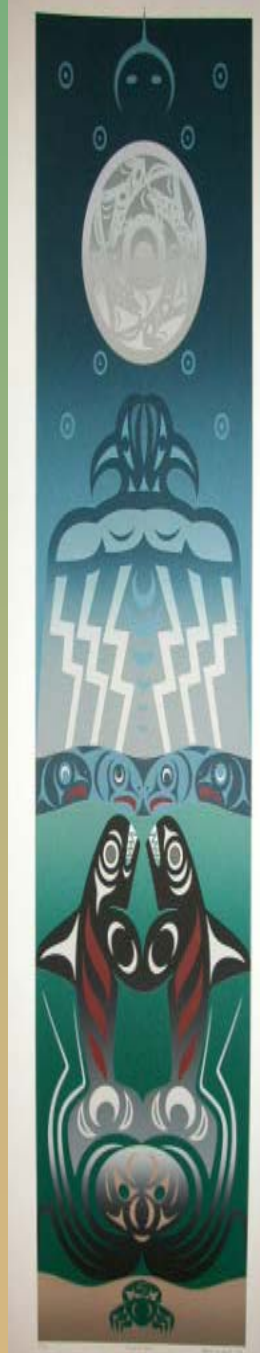
Percent of drivers and children restrained by law enforcement type





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Regression modeling results

- Assoc. with properly vs unrestrained
  - Child's seat eligibility
  - Driver seat belt use
  - Child seating location
  - Type of law & enforcement
  - Driver's relationship to the child
  - Vehicle model year
- Odds Ratio for kids subject to state law vs no law: 4.4


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Regression modeling results

- Assoc. with Incorrect vs unrestrained
  - Driver seat belt use
  - Type of law enforcement
  - Child age
  - Seating location
  - Vehicle model year
  - Distance from home
- OR for tribal law vs no law: 6.6
- OR for state law vs no law: 2.4


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Regression modeling results

- Assoc. with properly vs incorrect
  - Child's seat eligibility
  - Driver's relationship to the child
  - Child's seating location
- Law status and enforcement not significant in this model


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	Properly Restrained vs Unrestrained		Incorrectly Restrained vs Unrestrained		Properly Restrained vs Incorrectly Restrained	
	OR	95% CI	OR	95% CI	OR	95% CI
Child age (years)			**0.90**	**0.81 - 0.98**		
Seat eligibility						
Infant seat	**25.10**	**10.55 - 59.7**			**15.71**	**7.27 - 33.93**
Child seat	**8.65**	**4.88 - 15.34**			**7.54**	**4.54 - 12.51**
Booster seat (referent)	1.00	---			1.00	---
Seating location						
Front seat (referent)	1.00	---	1.00	---	1.00	---
Rear center seat	**3.39**	**1.59 - 7.21**	0.96	0.56 - 1.66	1.78	0.85 - 3.72
Rear outboard seat	**5.57**	**3.08 - 10.07**	**1.78**	**1.22 - 2.60**	**1.93**	**1.13 - 3.28**
Driver relationship to child						
Parent	**3.88**	**1.80 - 8.34**			**2.85**	**1.54 - 5.27**
Nonparent (referent)	1.00	---			1.00	---
Driver age	1.01	0.98 - 1.04			1.01	0.98 - 1.03
Driver seatbelt use						
Restrained	**6.51**	**3.65 - 11.61**	**9.47**	**5.72 - 15.68**		
Unrestrained (referent)	1.00	---	1.00	---		
Vehicle model year	**1.05**	**1.01 - 1.10**	**1.03**	**1.01 - 1.07**		
Distance from home (minutes)			**1.02**	**1.01 - 1.04**		
Type of law and enforcement						
Tribal law & enforcement	1.07	0.56 - 2.06	**2.38**	**1.15 - 4.93**	0.61	0.26 - 1.40
State law & enforcement	**4.43**	**1.92 - 10.26**	**6.61**	**2.88 - 15.20**	1.09	0.45 - 2.63
No law & enforcement (referent)	1.00	---	1.00	---	1.00	---


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Discussion

- Tribal seat belt laws were effective at getting children to use some type of restraint
- Laws make a statement about the community's priorities
- Enforcement may be more motivating than having a law on the books
- Perceived risk of a ticket may outweigh perceived risk of crashing


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Restraint use among AI/ANs

- NHTSA and BIA established first baseline for reservations in 2004
  - Overall seat belt use for all occupants: 55.4%
  - Ranged from 8.8 - 84.8% by location
- Seat belt use varied by law status
  - 68.6% on reservations with primary law
  - 53.2% on reservations with secondary laws
  - 26.4% on reservations with no seat belt law


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Seat belt laws in Indian Country

- Child restraint laws effective for Navajo
- After primary law was passed in WA State, two Portland Area reservations reported an increase in restraint use.
  - Warm Springs
  - The Yakama Nation


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Limitations

- Only six tribes, though 100+ observations per tribe
- Modeling based on enforcement, not on type of law (primary vs secondary)
- Does not adjust for state which has been shown by BIA to be associated with restraint use.


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Conclusions

- AI/AN children at excess risk for motor vehicle injury death
- Higher risk for incorrect and non-restraint use
- Pressing need for culturally competent interventions
- Tribal laws are effective
- Increased enforcement may be effective


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Acknowledgments

- 6 participating Northwest tribes
- Jodi Lapidus, PhD, OHSU
- Northwest Portland Area Indian Health Board
  - Joe Finkbonner, Executive Director
  - Victoria Warren-Mears, EpiCenter Director
  - Tam Lutz, MCH co-director
  - Leslie Randall, MCH co-director

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Thank You!

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Funding information:

2003 CSS Study funded by the Indian Health Service as part of the Native American Research Centers for Health (NARCH) Initiative

Secondary analysis funded by the US Department of Health and Human Services thru a Closing the Health Disparities Gap: SIDS and Infant Mortality Initiative