DISPARITIES IN ALCOHOL USE PATTERNS AND ASSOCIATED PROBLEMS AMONG RACIAL/ETHNIC MINORITY GROUPS, ESPECIALLY AMERICAN INDIANS AND ALASKAN NATIVES (AI/ANS), IN THE US:

THREE NATIONAL ALCOHOL SURVEYS 2000-2010

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DECLARATIONS

- Authors declare no conflicts of interest, financial or other.
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BACKGROUND

- In 2010 AI/AN and Hispanic adults had the highest age adjusted number of physically unhealthy days in the past 30 days compared with other racial/ethnic groups (CDC Health Disparities & Inequalities Report U.S., CHDIR, 2013)
- In 2009, the homicide rate was highest among non-Hispanic blacks(19.9 deaths per 100K) followed by AI/ANs (9.0 deaths per 100K) (CHDIR, 2013)
- Although in 2009 overall suicide rates for AI/ANs were similar to those of non-Hispanic whites; 2005-2009 rates for adolescents and young adult AI/ANs (15-29) were substantially higher. (CHDIR, 2013)
- In 2011 the age-standardized percentage of AI/ANs living in poverty was among the largest compared to non-Hispanic whites (CHDIR, 2013).
- In 2011 the age-standardized prevalence of not completing high school among adults 25 and older was second largest for AI/ANs—second to Hispanics and similar to African Americans (CHDIR, 2013).
- In 2010 the prevalence of unemployment among adults 18-64 was highest among non-Hispanic blacks (16.5%) and AI/ANs (15.8%) (CHDIR, 2013).

Edward S. Curtis – Taos Girl source: http://www.firstpeople.us

BACKGROUND-ALCOHOL-RELATED MORTALITY

Among US adults, AI/AN populations show substantial disparities in mortality fully or partially attributable to alcohol:

- Rates of heart disease from 1999 to 2009 were 1.21 to 1.30 times higher for AI/AN people than for Whites (Veazie et al., 2014)
- Unintentional injury AI/NA rates were 3 times higher and poisonings, vehicular crashes and falls were 1.4 to 3.0 times higher than for Whites (Murphy, et al., 2014)
- Age-adjusted rates of diabetes as either an underlying or multiple cause of death between 2000 and 2009 were 2.5 to 3.5 times higher than for Whites (Cho et al., 2014).

Extreme intoxication was common among early American Colonists – alcohol was often provided by them to Indians to facilitate trading (e.g., for furs), thus modeling and encouraging extreme bouts of drunkenness (Beauvais, 1998). This continued later with miners, trappers and lumbermen through the 19th Century, especially in the Western US.

Edward S. Curtis – Zuni Governor – source: http://www.firstpeople.us

FURTHER BACKGROUND

Although the genetic risk component in Native Americans appears similar in magnitude to that of other populations, studies of genes coding for alcohol-metabolizing enzymes suggest many AI/ANs lack protective variants found in other populations (Ehlers & Gizer, 2013):

- Ehlers & Gizer argue that this lack, together with childhood trauma, early onset of use and environmental disadvantage may help account for elevated risks of consumption disorders.
- AI/AN and non-Hispanic White adults in 2011 were among those groups with the highest prevalence, frequencies and intensities of binge drinking, versus other racial/ethnic populations (Office of Minority Health & Health Equity, 2015)

Edward S. Curtis – Tenokai-Apache – source: http://www.firstpeople.us

RESEARCH FRAMING & QUESTIONS

- The National Alcohol Survey (NAS) provides *highly detailed* data about alcohol intake patterns, including Maximum in any day (prior 12 months), alcohol-related social and health consequences, and alcohol dependence.
- In bivariate and multivariate models we examined drinking patterns and problems for self-reported AI/AN and other racial/ethnic groups using a pooled sample of the three most recent waves of the NAS representing the US general adult population from 2000 to 2010.

NAS IRB-APPROVED CONSENT SCRIPT:

- Informed potential participants that: a) the study is funded by the National Institutes of Health; b) questions are "*about health related issues such as the experience of injuries, violence, and some background questions such as your age and marital status…[as well as] attitudes, opinions and use of alcohol and drugs even if you do not drink alcoholic beverages or use drugs*"; c) they were randomly selected as "*one of more than 7,000 persons*"; d) the information provided is important "*for treatment and policy on health-related issues*"; e) participation is voluntary; f) they have a right to skip questions if uncomfortable; and g) a right to postpone or end the interview at any time; h) answers will be confidential and "*entered into the computer in a form that does not allow any answer to be identified with any personal identifying information [and] grouped with those of all the other participants*"; i) the survey will take about 20-45 minutes. Further, a telephone number was provided if they wanted more information. Hot-line numbers were also given.

DATA: 3 NATIONAL ALCOHOL SURVEYS

Pooled sample of the 2000, 2005, & 2010 US National Alcohol Surveys **(*n*=22,500; 349 AI/ANs)**

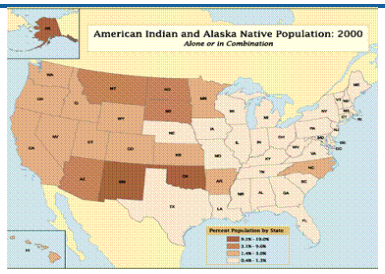
- CATI interviews with a randomly-selected sample of U.S. adults using RDD.
- Targeted oversamples of Black and Hispanic respondents and residents from low-population states (where many AI/AN live).
- The 2010 NAS used Dual-Frame Sampling: coverage of 97.5% of US households (Blumberg and Luke, 2009)
- Data were weighted to the general population of the US using Census data, taking account of age, sex, ethnic group and geographic area.

Table 1. Design Characteristics of the National Alcohol Survey (NAS) Series

Survey Characteristic	National Alcohol Survey (NAS) Waves		
	2000	2005	2010
N	7,612	6,919	7,969
Response Rate	58%	56%	52%
Sampling Design	List-Assisted RDD	List-Assisted RDD	List-Assisted RDD
Sampling Frame	50 States plus Washington DC	50 States plus Washington DC	50 States plus Washington DC
Interview Mode	Telephone	Telephone	Telephone
African American & Hispanic Oversamples?	Yes	Yes	Yes
Small States Augmented?	Yes	Yes	Yes

For details on these NAS surveys see: Greenfield TK, Ye Y, Bond J, Kerr WC, Nayak MB, Kaskutas LA, Anton RF, Litten RZ, Kranzler HR (2014) Risks of alcohol use disorders related to drinking patterns in the US general population. *J Stud Alcohol Drugs* 75(2):319-327.

DATA ON AMERICAN INDIANS/ALASKA NATIVES



Women						Men					
Asian	Black	White	Hispanic	AI/AN	Other	Asian	Black	White	Hispanic	AI/AN	Other
208	2596	7358	2292	178	88	235	1414	6113	1765	171	82

MEASURES

- The **Maximum** number of drinks consumed on any day in the last 12 months by current drinkers (Greenfield, Nayak, Bond, Ye, & Midanik, 2006). The measure, asked: 24 or more (24+) drinks, 12-23, 8-11 5-7, 3-4, and 1-2 drinks (Greenfield, et al., 2006).
- **Risky Drinking** is defined as *exceeding the US NIAAA "low-risk" drinking guidelines*: a) weekly (men ≤14 / 7 women) and (b) daily (≤4 drinks men; ≤3 women) (Greenfield, Ye, & Kerr, 2012; National Institute on Alcoholism and Alcohol Abuse, 2009, p 4)
- The NAS **Alcohol Dependence** measure used has 17 items that assess 7 domains of dependence symptoms. Consistent with DSM-IV criteria affirming symptoms in 3 of the 7 indicates DSM-IV dependence (American Psychiatric Association, 1994).
- The **Tangible Consequences** indicator is positive if 1 of 15 items was affirmed, including workplace, legal, health, and interpersonal problems (Midanik & Greenfield, 2000).
- **Demographics**: marital status (married/living with partner, never married, and other – widowed, separated or divorced); education (less than high school, high school graduate, some college, college graduate or more); employment (employed, unemployed, or other – retired, homemaker, student); age (continuous) and gender (a dummy variable for male).

OVERALL DESCRIPIVE BIVARIATE RESULTS

Percentages of Current (12 Month) Drinkers vs Abstainers by Racial/Ethnic Group [a]

	White	Black	Hispanic	Asian	AI/AN	Totals*
	(n=13,471)	(n=4,010)	(n=4,057)	(n= 443)	(n=349)	(22,500)
Current Abstainers: *n*	4,217	2,068	1,987	178	176	8,707
Current Abstainers: %	31.3	51.6	49.0	40.2	**50.4**	38.7
Current Drinkers: *n*	9,254	1,942	2,070	265	173	13,793
Current Drinkers: %	67.1	48.4	51.0	59.8	**49.6**	61.3
US Born–Current Drinkers: % [b]	-	47.7	63.0	-	-	-
Foreign Born–Cur. Drinkers: %	-	56.5	41.7	-	-	-

[a] table omits drinkers in "Other racial/ethnic groups" (*n*=170 with 89 current drinkers)
[b] US vs Foreign Born only for Blacks and Hispanics

OVERALL DESCRIPIVE BIVARIATE RESULTS

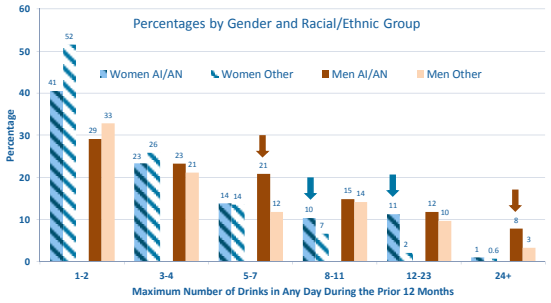
Percentages Among Current Drinkers by Racial/Ethnic Group [a]

	White	Black	Hispanic	Asian	AI/AN	χ2
	(n=9254)	(n=1942)	(n=2070)	(n= 265)	(n=173)	
24+ maximum drinks	1.82	2.09	2.52	2.07	4.13	9.49
12+ maximum drinks	7.96	4.99	9.54	6.98	**15.31**	38.12**
8+ maximum drinks	18.20	11.66	23.93	15.19	**27.70**	84.36***
Exceeding NIAAA daily limits	46.13	34.83	49.96	36.69	**50.50**	80.75***
Exceeding NIAAA weekly limits	15.39	13.50	15.27	9.07	**21.85**	22.51*
Tangible consequences (≥ 1)	10.60	15.14	17.18	10.93	**18.95**	77.28***
Dependence Symptoms (≥ 3)	3.63	6.12	**7.52**	3.86	**7.22**	60.03***

[a] table omits drinkers in "Other racial/ethnic groups" (*n*=89)

Note: For women, 8+, 12+ and exceeding daily low-risk guideline (all $p < .05$) and weekly guideline ($p < .01$) significant; for men 8+, exceeding daily limit and both tangible consequences and alcohol dependence all significant (all $p < .001$).

OVERALL DESCRIPIVE BIVARIATE RESULTS



Arrows represent differences seen in Bivariate Logistic Regression results (women Blue; Men Brown)

SUMMARY LOGISTIC REGRESSION - 12+

	Women			Men		
	AOR	95% C.I. Lower-Upper	P-value	AOR	95% C.I. Lower-Upper	P-value
Age	0.92	0.89 - 0.94	<<0.001	0.93	0.92 - 0.94	<<0.001
Race/Ethnicity (White is Reference)						
Asian	0.10	0.01 - 0.78	= 0.028	0.66	0.31 - 1.39	= 0.275
Black	0.19	0.08 - 0.47	<<0.001	0.44	0.29 - 0.67	<<0.001
Hispanic	0.40	0.20 - 0.83	= 0.013	0.65	0.47 - 0.89	= 0.008
American Indians/ Native Alaskans	3.64	1.28 - 10.34	= 0.015	0.71	0.29 - 1.75	= 0.463
Other	Omitted:	(Low n for Women)		0.46	0.14 - 1.47	= 0.190
Marital Status (Married/living with Ref)						
Divorced/separated/widowed	1.29	(0.52 , 3.19)	= 0.576	1.66	1.09 - 2.51	= 0.017
Never married	1.24	(0.70 , 2.17)	= 0.463	1.16	0.88 - 1.53	= 0.301

Summary Table: Omits Education and Employment (both NS for women); for men some college vs. completed college has AOR 1.53 [CI 1.14 - 2.05] (p < .01).

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Summary Table: Omits Education and Employment (both NS for women); for men some college vs. completed college has AOR 1.53 [CI 1.14 - 2.05] (p < .01).

SUMMARY LOGISTIC REGRESSION - 12+

After Inclusion of Alcohol Problems in Family of Origin

	Women			Men		
	AOR	95% C.I. Lower-Upper	P-value	AOR	95% C.I. Lower-Upper	P-value
Race/Ethnicity (White is Reference)						
Asian	0.12	0.02 - 0.94	< 0.05	0.72	0.34 - 1.50	NS
Black	0.19	0.08 - 0.47	<<0.001	0.42	0.28 - 0.66	<<0.001
Hispanic	0.43	0.21 - 0.88	< 0.05	0.64	0.46 - 0.89	= 0.01
American Indians/ Native Alaskans	3.31	1.17 - 9.35	< 0.05	0.69	0.28 - 1.66	NS
Other	Omitted:	(Low n for Women)				
Family History of Alcohol Problems	1.64	0.96 - 2.80	< 0.1	1.31	1.05 - 3.09	< 0.05

Summary Table: Also controls for base model variables: age, marital status, education and employment

RESULTS: BIVARIATE VS ADJUSTED LOGISTIC REGRESSION MODELS

- Fewer AI/ANs were 12-month drinkers (54% men, 45% women vs. overall 64% and 56%, respectively)
- But when drinking they consumed larger amounts than other groups:
  - For example, 4.2% drank 24+, as compared to 2.6% for Hispanics, 2.1% for both Asians and Blacks, and 1.8% for Whites
  - 53% AI/ANs exceeded low-risk guidelines vs. 48% for Whites.
  - AI/ANs (19%) and Hispanics (17%) had higher levels of ≥1 alcohol-related tangible consequences (vs. 11% for Whites) and alcohol dependence (7.2% and 7.5%, respectively, vs. 3.6% for Whites).
- When socio-demographic variables and family alcohol problem histories were controlled, most differences between AI/AN and other groups on drinking and problem outcomes were reduced to non-significance
  - Exception: AI/AN women drinkers exceeded other groups in rate of 12+ drinks on any day in the prior 12 months

MAXIMUM DISTRIBUTION: BIVARIATE VS ADJUSTED FINDINGS

- Regression analyses examined the overall distribution of the maximum among drinkers
- We used the 28-day drinking diary-determined mid-points of the categorical ranges
- In a model adjusting for age, gender and even family history, there was a significant difference between AI/AN and all other groups combined (Beta = 0.026, t = 3.146, p = .002).
- However, in a full model, with independent variables similar to those in the logistic regressions, the result was rendered non-significant (Beta = 0.009, t = 1.090, p = .276).

DISCUSSION

- This is our first (pooled) NAS analysis on AI/AN group and among the few National studies of this self-identified population
- Results suggest mainly a social determinants interpretation for the descriptive differences observed between AI/AN and other populations.
- That does not diminish the devastation of alcohol and alcohol related problems in AI/AN groups
- Offsetting this to some degree are high rates of abstinence; however, we still have to look at the prior heavy drinking group that quit versus lifetime abstention

LIMITATIONS

- Cross-sectional, self-report results, including ascertainment of racial/ethnic group.
- Small proportion (≈ 1%) and numbers (*n*=349) of AI/ANs (even smaller *n*s for drinkers).
- Other vulnerabilities, e.g., childhood trauma and early drinking onset not considered yet.
- Individual drinking histories and prior problem drinking and treatment also not considered yet, to be the focus of future work.

CONCLUSION

- On a national, descriptive basis, AI/AN drinkers consume alcohol more heavily and have a higher prevalence of associated harms than other groups.
- However, controlling for family drinking problems and other socio-demographics suggest that family history and current social determinants may largely account for many of the descriptive disparities observed in heavy drinking and alcohol-related harms among AI/AN drinkers compared to those in other racial/ethnic groups.
- Still, even after such adjustments, AI/AN drinking women appear to have significantly higher risks of ever drinking 12 or more drinks in a day.
- Attending to historical, cultural, and other risk factors affecting these disparities, and to AI/AN women's extreme drinking, should help plan more effective prevention and treatment strategies.

THANK YOU!

ARG ALCOHOL RESEARCH GROUP

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