

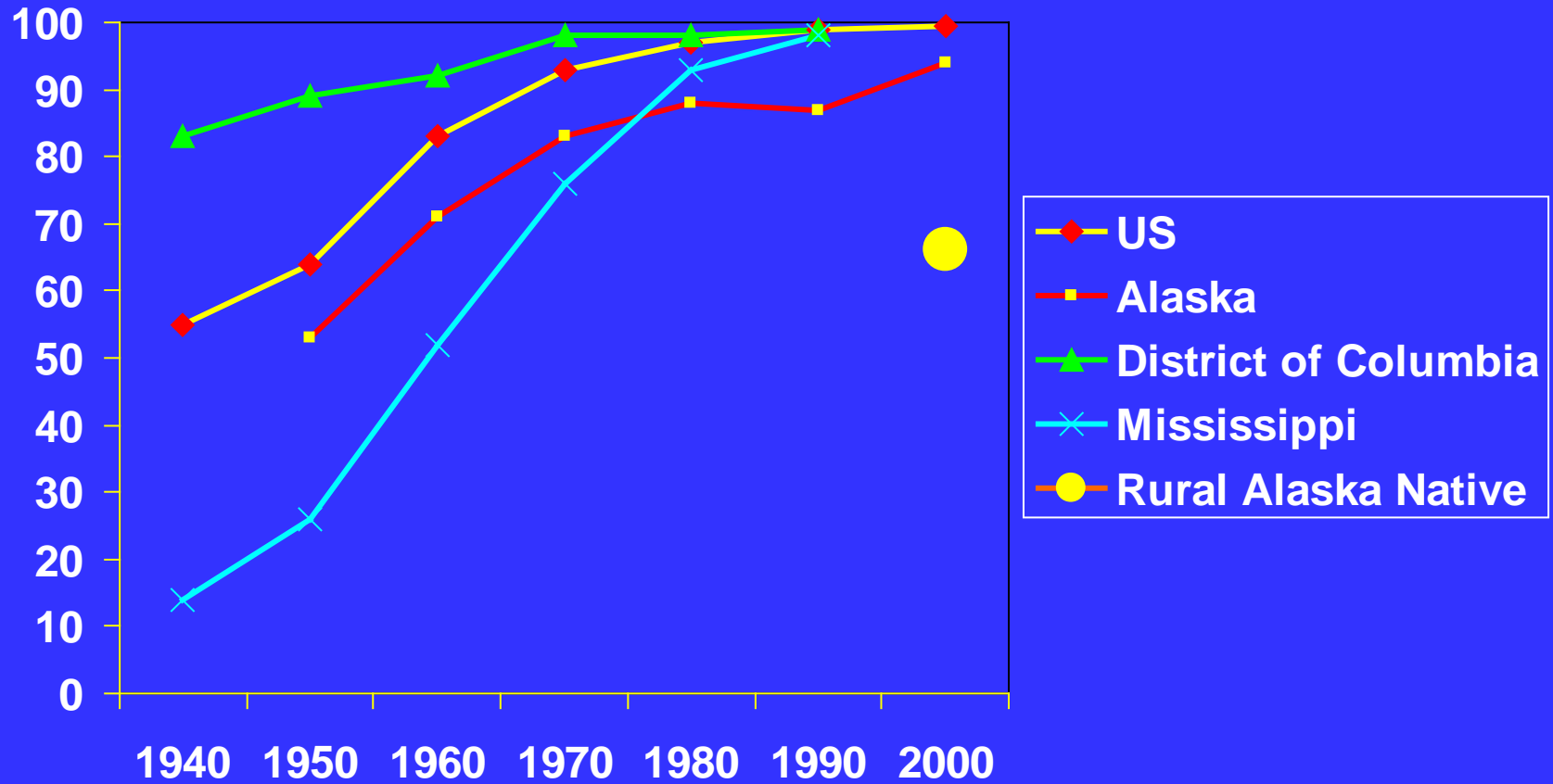
Surveillance for Hepatitis A in Alaska; the impact of childhood vaccination program

Liver Disease and Hepatitis Program
Alaska Native Tribal Health Consortium

Ref: R Singleton et al. Impact of a statewide childhood
vaccine program in controlling hepatitis A virus
infections in Alaska. Vaccine 28 (2010)



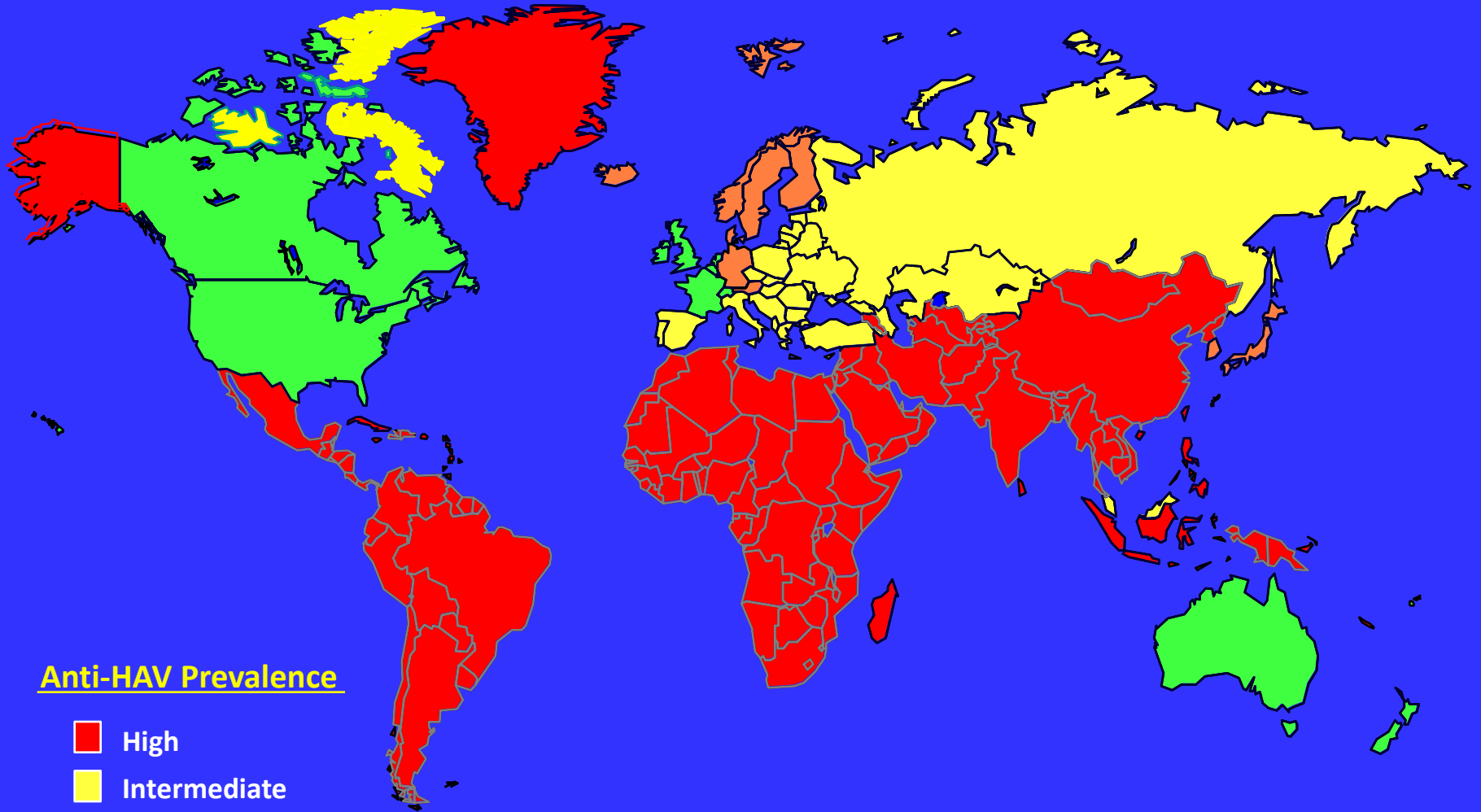
Proportion of US homes with complete plumbing



Hepatitis A: Background

- Alaska 1950-1990s HAV epidemics occurred every 10-15 years
- Alaska Native (AN) people (especially in rural villages) disproportionately affected
- Mid 1970 statewide outbreak AN people accounted for >60% of cases (16% Alaska population)
- 1993 retrospective serosurvey: 85% AN people born before 1945 had HAV antibodies

Geographic Distribution of HAV Infection - 1990



Anti-HAV Prevalence

- High
- Intermediate
- Low
- Very Low

Hepatitis A: Vaccines

- Havrix (GSK) and Vaqta (Merk) developed in 1980s
- Immunogenicity trial in AK late 1980s
- 1992-93 large outbreak with peak incidence in affected region:
 - > 2000 cases/100,000 persons per year
- Pre-licensure approval for demonstration project
- One dose Havrix given to >5000 susceptibles in 25 communities

Hepatitis A: Vaccines

- Outcome:
 - Communities with >80% vaccination, outbreak ceased in 4-8 weeks
 - In a large community with <50% vaccination outbreak continued for 50 weeks
- Hep A vaccine licensed 1995
- ACIP recommendation for routine vaccination of US children in populations with high rates of HAV
 - such as American Indian/Alaska Native (AI/AN) communities

Hepatitis A: Vaccines

- Jan 1996 Alaska Section of Epidemiology (SOE) implemented universal Hep A vaccination for all Alaska children age 2-14 years
 - Expanded to 2-18 years in 1997
 - Expanded to 1-18 years in 2006
- 2001 Hep A vaccine required in AK for daycare and school attendance

Hepatitis A: Surveillance

- Mandatory reporting of HAV infection to Alaska SOE since 1974
- Confirmed case defined as:
 - Acute illness with discrete onset of symptoms with presence of jaundice or elevated aminotransferase AND
 - Serologically confirmed IgM antibody to HAV OR epidemiological link to person with lab-confirmed HAV
- HAV cases reported by health care providers and laboratories

Hepatitis A: Vaccine coverage

- National Immunization Surveys

Hepatitis A: Impact

- 1996-97 Immunization of children in high incidence areas
 - 20x decrease in HAV incidence from 1997-2001 among all AI/AN (similar to overall US rate)
- 2001-2007
 - HAV incidence among AI/AN lower than rates of other racial/ethnic groups in US
 - vaccination coverage 24-35 month old AI/AN children, highest among all racial/ethnic groups in US

Table 1: Number (rate per 100,000) reported HAV cases by ethnic group, Alaska, 1972-2007

		Pre- vaccine 1972-1995	Implement -ation 1996-2001	Routine vaccination 2002-2007	% reduction, pre to post
Overall		6572 (60.0)	148 (4.0)	34 (0.9)	98.6
Ethnicity	AK Native	4267 (243.8)	13 (2.1)	2 (0.3)	99.9%
	AK Non- native	1766 (19.2)	91 (3.0)	23 (0.7)	96.3%
	Unknown race	539	44	9	
	RR (95% CI)	12.7 (12.0,13.4)	0.70 (0.36, 1.25)	0.54 (0.05,1.61)	

Population estimates derived from 1970, 1980, 1990, 2000 U.S. census data

Table 2: Number (rate per 100,000) reported HAV cases by age, Alaska, 1972-2007

		Pre- vaccine 1972-1995	Implement -ation 1996-2001	Routine vaccination 2002-2007	% reduction, pre to post
Overall		6572 (60.0)	148 (4.0)	34 (0.9)	98.6
Age (years)	0-14	3402 (112.4)	21 (2.2)	2 (0.2)	99.8%
	15-24	1239 (65.9)	16 (3.0)	4 (0.7)	98.9%
	25-44	1332 (33.3)	76 (6.2)	14 (1.2)	96.5%
	45+	274 (13.4)	35 (3.5)	14 (1.1)	91.6%

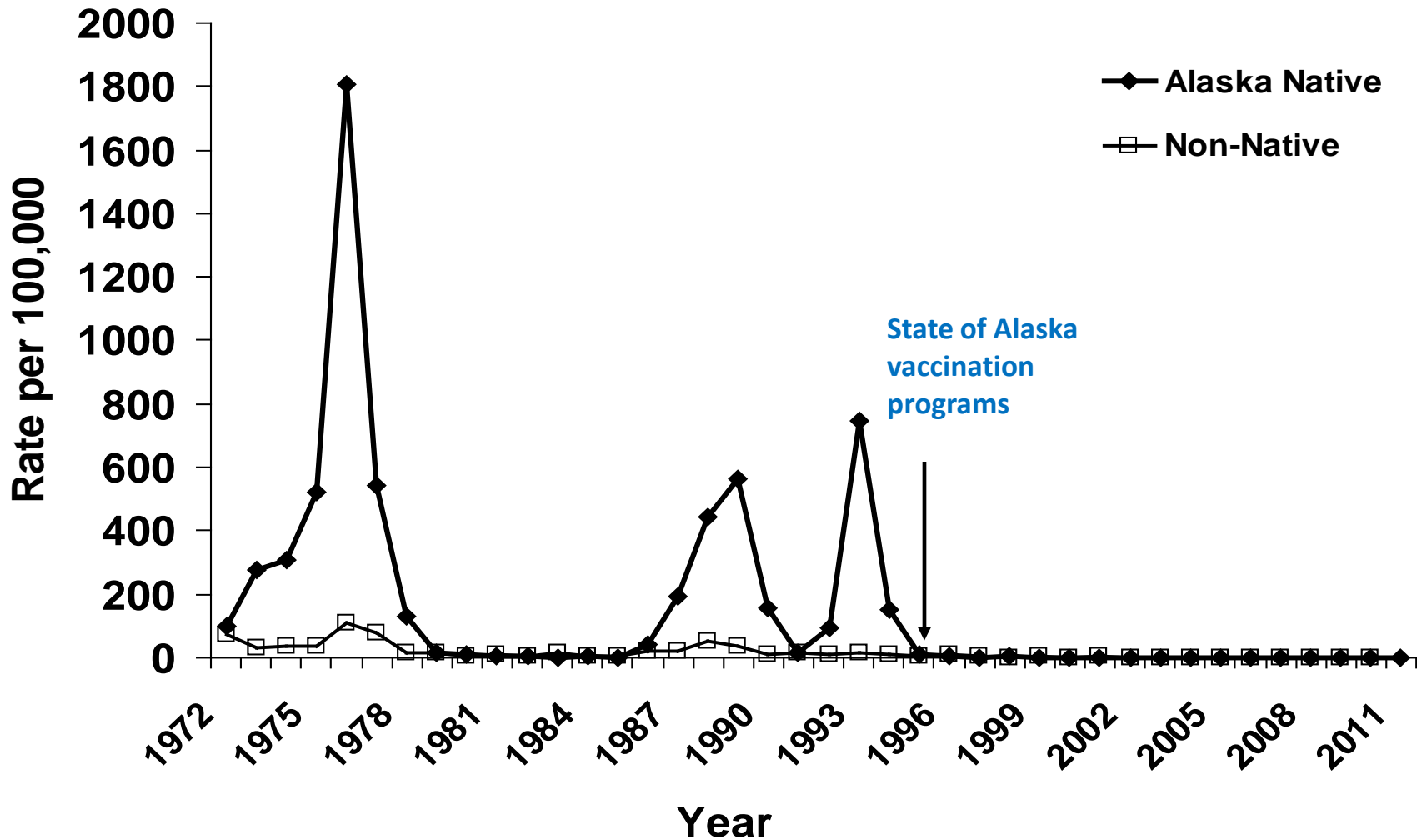
Population estimates derived from 1970, 1980, 1990, 2000 U.S. census data

Table 3: Number (rate per 100,000) reported HAV cases by region, Alaska, 1972-2007

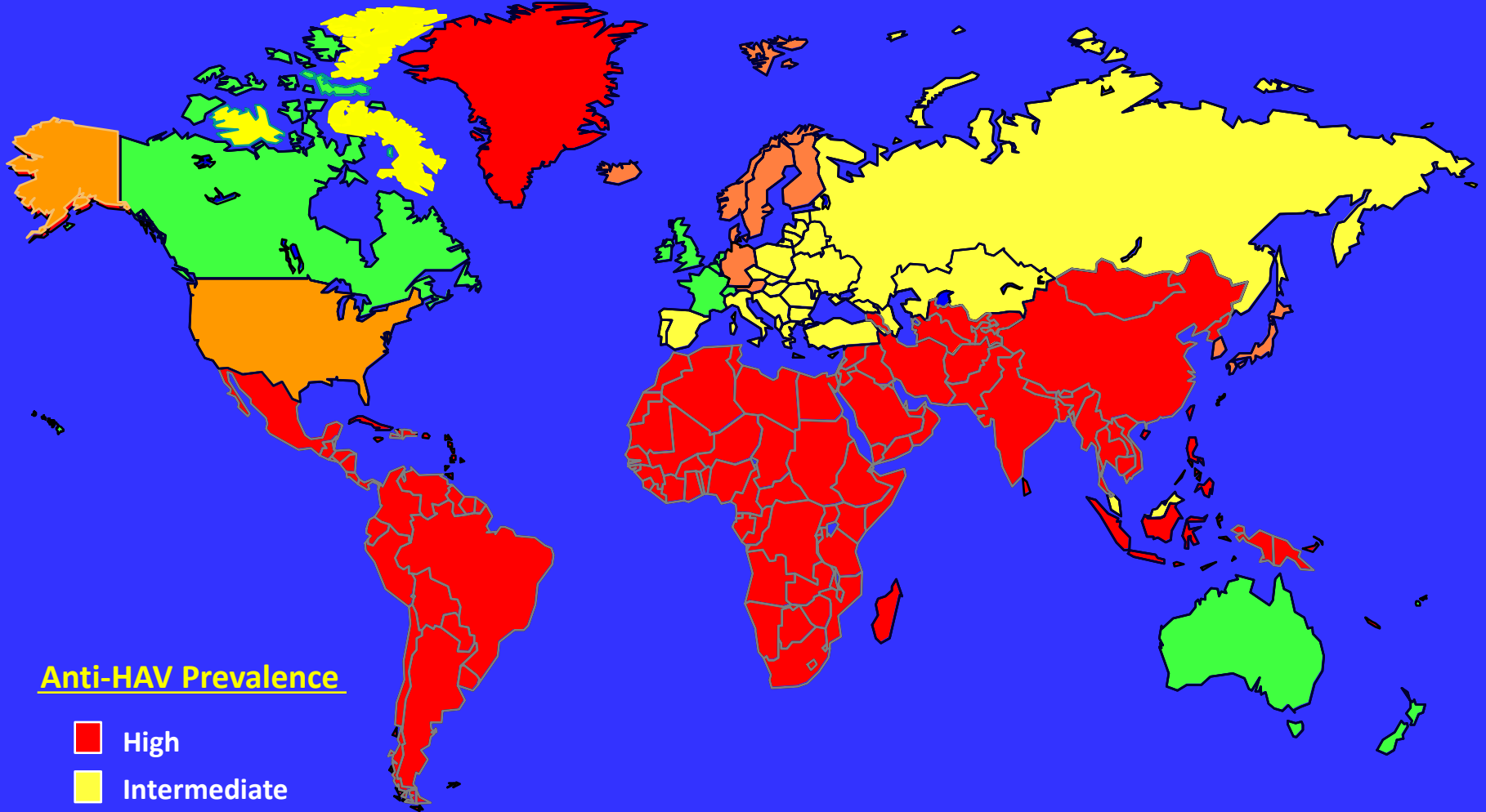
		Pre- vaccine 1972-1995	Implement -ation 1996-2001	Routine vaccination 2002-2007	% reduction, pre to post
Region	Anchorage	1402 (27.2)	69 (3.7)	21 (1.0)	96.3%
	Gulf coast	320 (27.2)	23 (5.4)	3 (0.7)	97.5%
	Interior	430 (24.5)	12 (2.1)	6 (1.0)	96.0%
	Northern	1622 (396.7)	4 (2.9)	0 (0)	100%
	Southeast	323 (23.5)	32 (7.5)	3 (0.7)	97.0%
	Southwest	2464 (330.3)	7 (3.0)	1 (0.4)	99.9%

Population estimates derived from 1970, 1980, 1990, 2000 U.S. census data

Hepatitis A in Alaska Natives and Non-Natives in Alaska, by Year



Geographic Distribution of HAV Infection - 2010



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Hepatitis A: Summary

- Prior to the availability of hepatitis A vaccine, Alaska experienced large recurrent outbreaks of acute hepatitis A with the highest impact in rural areas
- Introduction of universal childhood vaccination has dramatically reduced the incidence of acute hepatitis A infection in Alaska from the highest in the US to the lowest in the world



Arctic Viral Hepatitis Working Group Meeting

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Anchorage, Alaska

Alaska Native Tribal Health Consortium

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