Race, Ethnicity and Immunizations in Oregon

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Overview

- Context for tracking immunization rates by race & ethnicity
- National immunization tracking systems
- Oregon ALERT Immunization Information System
- Factors related to lack of immunizations
- Oregon two year old immunization rates
- Oregon adolescent immunization rates
- Oregon influenza immunization by race/ethnicity

Oregon Patterns

- Across the U.S., poverty and minority status are associated with lower immunization rates for young children
- In Oregon, OHP has provided more-equal access for low income children.
- OHP children have until recently had better immunization rates than non-OHP children.
- Mixed patterns overall regarding race and immunization rates.

Immunization Tracking

- Immunization rate tracking on the state and national level began with two year olds.
- Two major 'flavors' of two year old rates-
  - National Immunization Survey- 19-35 months of age (1994)
  - HEDIS- by 2nd birthday/24 months of age (1990)
- Teen rate tracking is a later addition
- State immunization registries as ALERT are a more recent addition

Oregon's ALERT IIS

- The ALERT Immunization Information System is Oregon's statewide all-age immunization registry
- ALERT IIS started incorporating race/ethnicity from birth records starting in 2000;
- Also captures race/ethnicity for all ages through electronic data transfers.
- Primary purpose of ALERT is to support clinicians in immunizing their patients
- Secondary purpose is to support public health in assessing immunization rates and identifying communities or populations at greater risk of vaccine-preventable disease

Using ALERT IIS to Assess Immunizations

- Surveys such as the NIS generate point estimates of immunization rates, with (wide) confidence intervals.
- IIS have biases which can affect point estimates- but extremely small CI (whole population)
- IIS are best at comparing different groups, or trends over time-
- IIS biases are largely negated when using comparison ratios.
- Language for ratios- one group is X times more likely to be up to date than another group

Point Estimate Example- NIS

In the most recent NIS, Two-Year Old UTD rates for the 4:3:1:3:3:1:4 series were nationally:

- Overall 70.7% with a 95% confidence interval (CI) of 69.2% to 72.2%
- 64.1% for African-Americans (95% CI of 59.6% to 68.3%)
- For Oregon, the 95% CI was for African-Americans was 14%

Concepts Behind Lack of Immunization

- Two major factors behind lack of immunizations-
  - Access issues
  - Vaccine hesitancy
- Access issues- who affected?
  - Rural populations
  - Minorities
  - Poor
  - *New?*- 'working insured'- low cost health plans that place barriers to getting immunizations
- Structural inter-relation of poverty, rurality, and race in most of U.S.;
- Oregon has a slightly different pattern with a largely white & poor rural population

ALERT IIS Race/Ethnicity Rates

- Rates for two year olds
- Rates for teens
- Flu rates- child and adult

Background: Two Year Old Annual Immunization Rates from ALERT IIS

- Based on two-year-olds by year of birth (calendar year birth cohorts)
- Uses ALERT Immunization Information System (IIS) data
- Products
  - Population-level rates for the state
  - Rates by small geographic area (county, & potentially ZIP code)
  - Rates by Race & Ethnicity
  - Rates by VFC, OHP, and WIC statuses

Oregon Two Year Old (24-35month) Immunization Series Rates

		2014	2015	2016	2017
Two-Year-Olds Up-to-Date Rate					
	4:3:1:3:3:1:4 (a)	60%	64%	66%	68%
	4:3:1:3:3:1 (b)	66%	68%	70%	72%
	Enrolled in DMAP (c)	60%	64%	66%	67%
	Not enrolled in DMAP (c)	59%	64%	66%	69%
	Hispanic (c)	63%	68%	70%	69%
	White (c)	60%	64%	66%	69%
	African American (c)	56%	59%	60%	62%
	Asian (c)	64%	67%	70%	74%
	American Indian and Alaskan Native (c)	59%	63%	68%	62%
	Hawaiian/Pacific Islander (c)	50%	53%	53%	57%
	Multiple Race (c)	57%	64%	64%	67%
	Other/Unknown (c)	47%	54%	57%	59%

(a) Fully immunized with 4 doses of DTaP, 3 doses IPV, 1 dose MMR, 3 doses Hib, 3 doses HepB, 1 dose Varicella, and 4 doses PCV. This is the official childhood vaccination series.

(b) Same as (a) minus PCV. Rate presented for historical tracking purposes.

(c) 4:3:1:3:3:1:4 series

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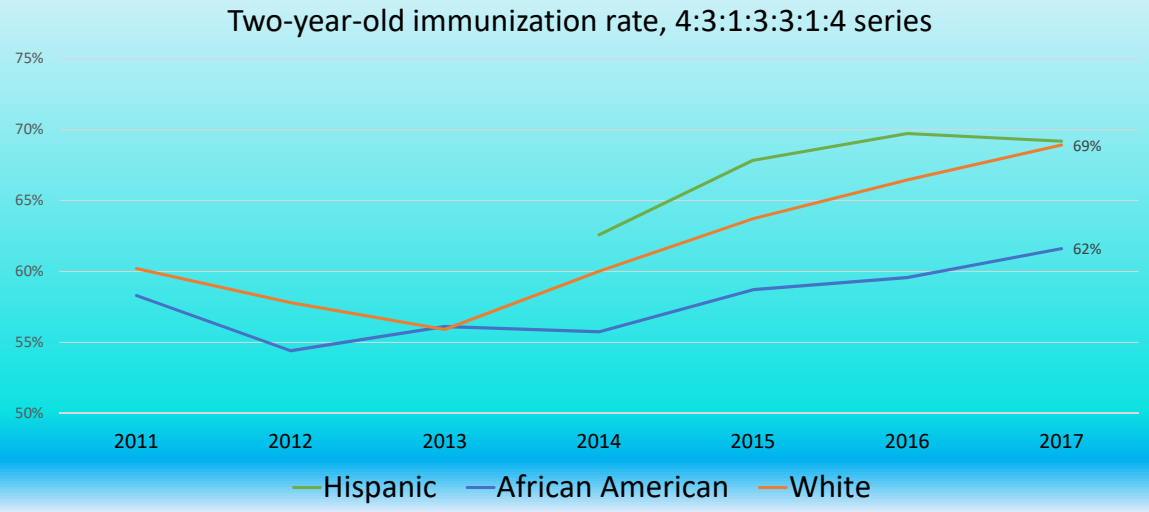
Emerging Immunization Rate Disparity?



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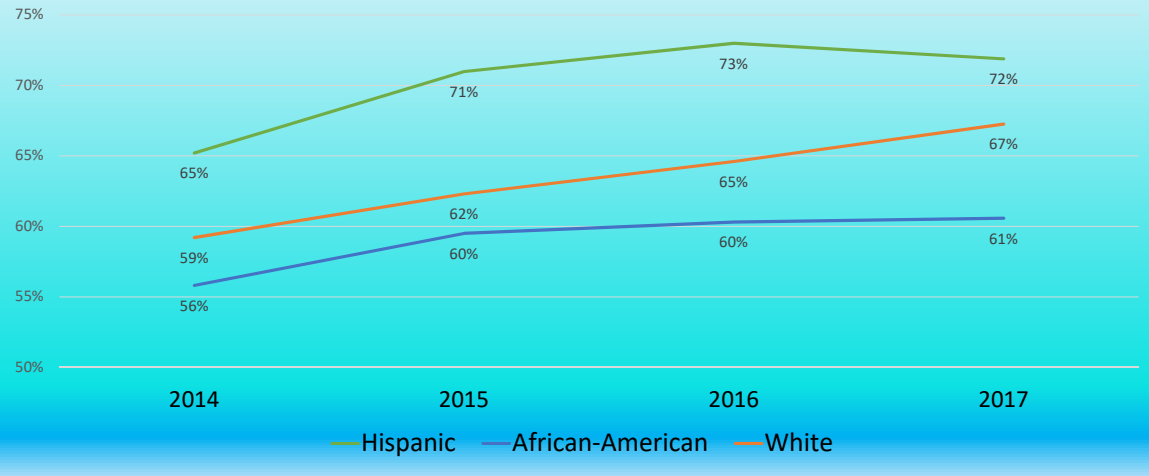
Vaccination Rate by Race and Year

DMAP Patients (Active Flag)



Oregon Adolescent Immunizations

- Adolescent immunization records are affected by more biases than early childhood records
- Oregon Immunization Program has developed a nationally-recognized process of weighting adolescent data to remove biases.
- HPV immunization is currently the adolescent vaccine of greatest concern.

National HPV Vaccine Stats

- Nationally, African-American adolescents are more likely to get HPV vaccine than Whites.
- Teen HPV UTD rates in 2016 (NIS):
  - African-American: 65.9%
  - White: 60.4%
  - Outside MSA's (50.7%)
- HPV vaccine:
  - is generally not school-required,
  - is expensive,
  - Is less likely to be stocked by providers in rural and poorer communities

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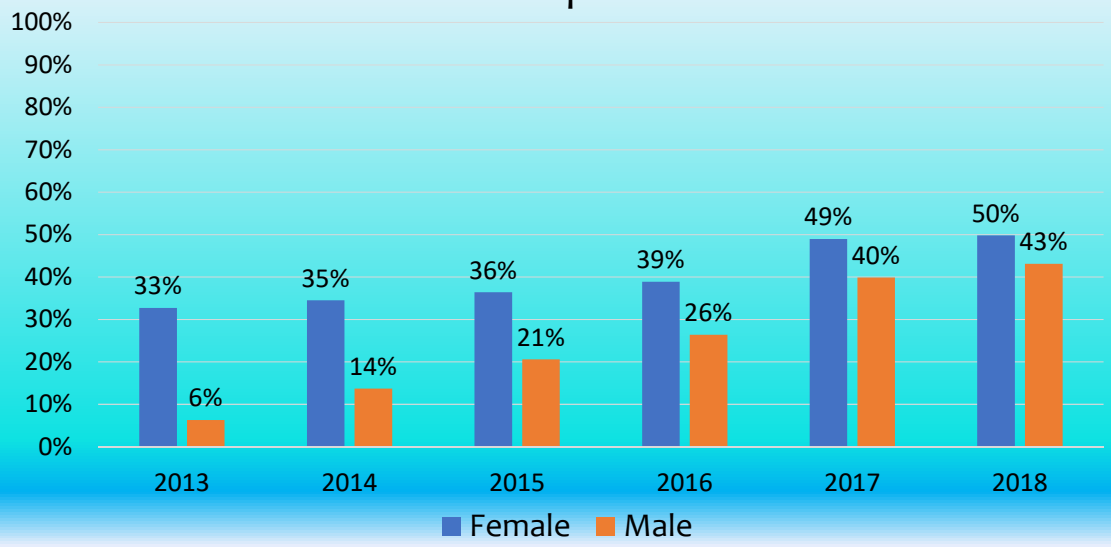
Oregon Adolescent Age 13-17 HPV Immunization Up-to-Date Rates



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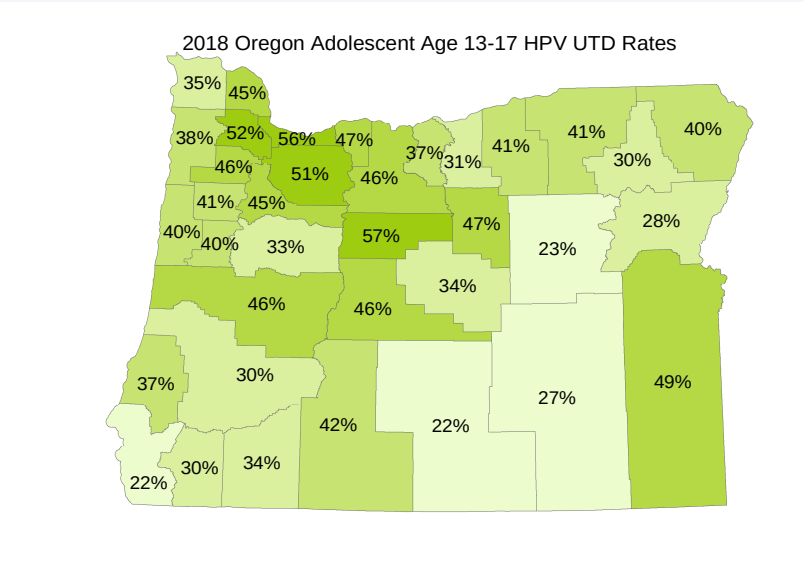
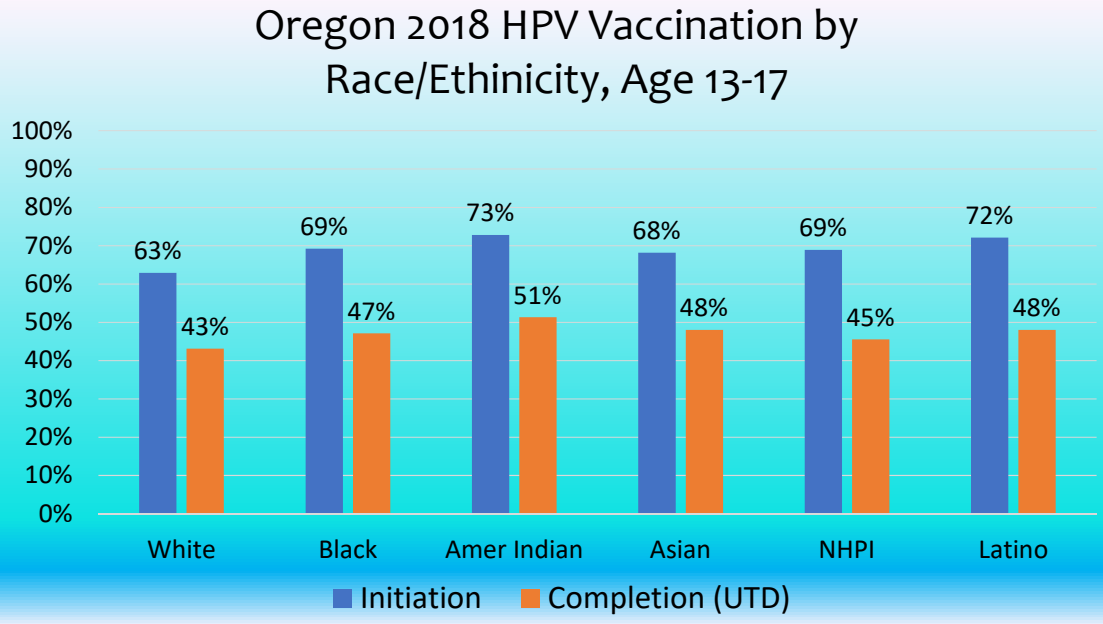
Oregon:

- Lower HPV vaccination rates outside of Portland-Metro Area,
- Lower rates in most rural areas and southern counties
- Reflects national 'urban vs rural' divide in HPV.





Deeper Look at ALERT IIS & HPV

- A strong approach with near complete population data spanning multiple strata is a 'matched cohort' analysis.
- Results are presented as likelihood ratios, controlling for most ALERT biases.

Matched Cohort Results for HPV

- Aggregate results (non-matched):
  - African-American adolescents are 1.1 times more likely to UTD for HPV than White adolescents
  - Latino adolescents are 1.2 times more likely to be UTD for HPV than White adolescents
- Matched cohort (matched on zipcode, age, gender)
  - African-American and White adolescents have the same HPV UTD rates (LR =1.0)
  - Latino adolescents are slightly (LR =1.04) more likely to be UTD for HPV than White adolescents

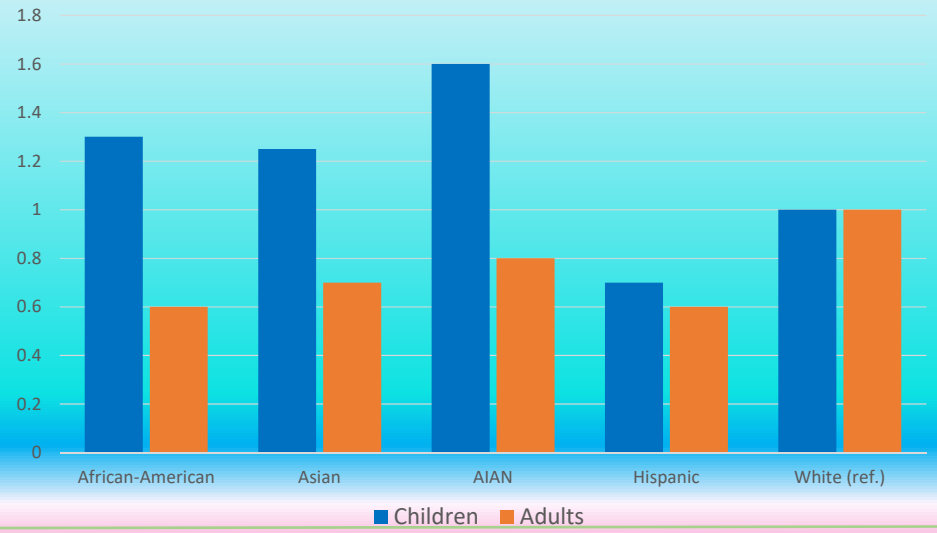
Medicaid and HPV

- Matched Cohort Results
  - African-American adolescents with any recent Medicaid enrollment are 1.3 times more likely to be UTD for HPV than non-Medicaid African-Americans.
  - White adolescents with any recent Medicaid enrollment are 1.4 times more likely to be UTD for HPV than non-Medicaid whites.

Influenza Immunization and Race

- ALERT has substantial but not perfect capture of race and ethnicity for adults.
- OIP estimates that ALERT is capturing ~80% of yearly influenza immunizations.
- Capture of influenza immunizations into ALERT is most likely for children and senior adults.
- Capture of race and ethnicity is highest for children.

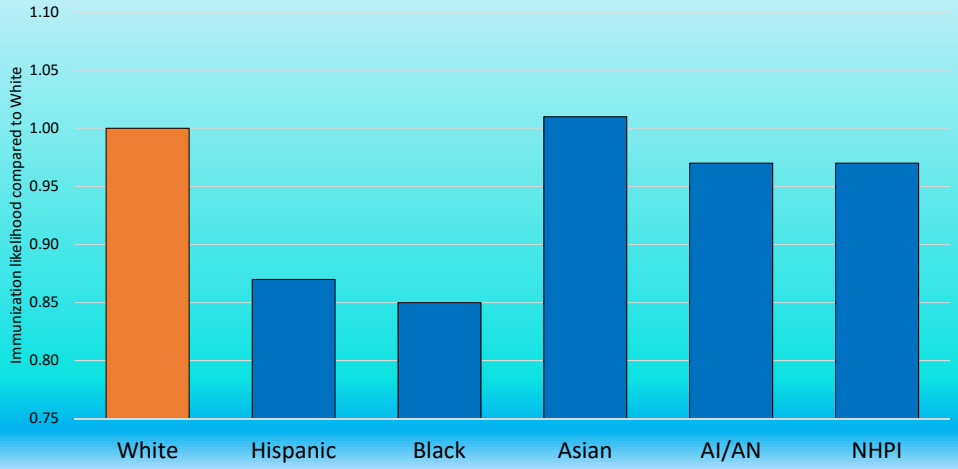
Increased/Decreased Likelihood of Influenza Immunization, by Race & Ethnicity in Oregon, 2016-17



Senior Influenza Disparities

- Seniors are the most vulnerable population for negative outcomes from influenza
- Child and non-senior adult immunization also serve to build herd immunity to protect seniors
- Senior immunization is more for direct protection than herd immunity

Oregon Senior Influenza Immunization Likelihood by Race/Ethnicity in 2017-18 Season (White as Ref. =1.0)



Conclusions

- Disparities in early childhood immunization exist in Oregon, and may be increasing.
- Oregon adolescent immunization disparities are potentially related to urban/rural issues.
- Adult and senior disparities in immunizations by race and ethnicity exist in Oregon.
- Childhood and senior disparities are an ongoing priority and research area for the Oregon Immunization Program.