Oregon Immunization Program: Teen Immunization Rates

Steve Robison
Epidemiologist
Oregon Immunization Program

Oregon Health Authority

OIP Immunization Surveillance

OIP uses the ALERT IIS to:

- Compare populations & areas
- Find pockets of need
- Identify trends
- Evaluate interventions

Oregon Immunization Rates Using the ALERT IIS

- In 2007, OIP started using ALERT IIS data to report immunizations for two year olds by county.
- In 2013, OIP started to report teen age 13-17 immunization rates.

Pwning Teen Immunization Rates: A Sick Intro for Noobs

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Some Definitions:

- Pwning: utter domination- (from a typo for ‘owning’)
- Sick: cool or interesting
- Noobs: a synonym for newbie- may have connotations depending on who uses it….

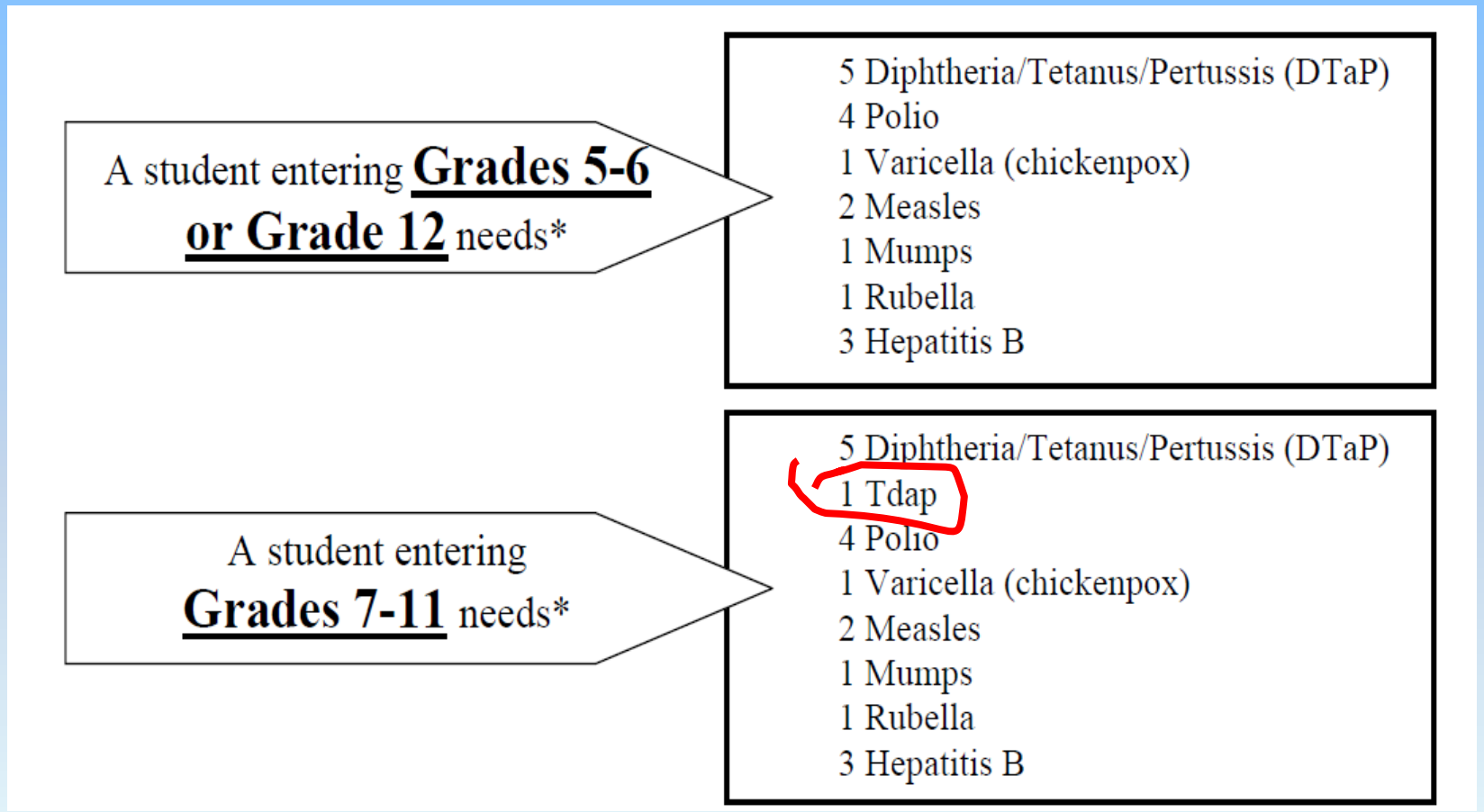
Common teen language, or so I thought…

Teen Comment

Dad, that's derp.

Oregon School Requirements

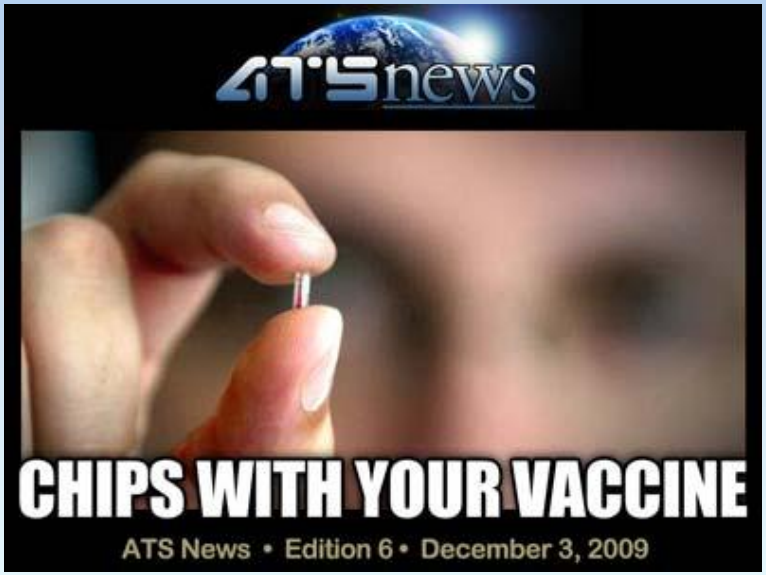
The real driver for teens to get immunized?



ALERT Teen Immunization Challenge

ALERT is good at capturing kids but:

1) often doesn't know they have moved away
2) Over time accumulates record fragments



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Goal of Teen Reporting

Overall:

- NIS provides state level comparisons of teen immunization rates

Registry Use:

- Find pockets of need within state
- Compare different populations and areas

Denominator Inflation Prevalence

- In 2012, the average state registry contained 117% of Census teen populations.
- Observation: any registry area with less than 100% capture of teen populations might have a problem with poor reporting.

Handling Denominator Inflation

Options:

- Better MOGE tracking (USPS, Credit Bureaus, DMV)
- Better exclusion rules for rate calculations
- Replace denominator with non-registry source(Census)
- Weighting records (Time since last shot/activity)

So Why Not Use the Census?

Known Issues:

- Undercounts of children
- Can not match to school counts
- Local variation in accuracy of estimates

Bigger Issue (Oregon perspective)

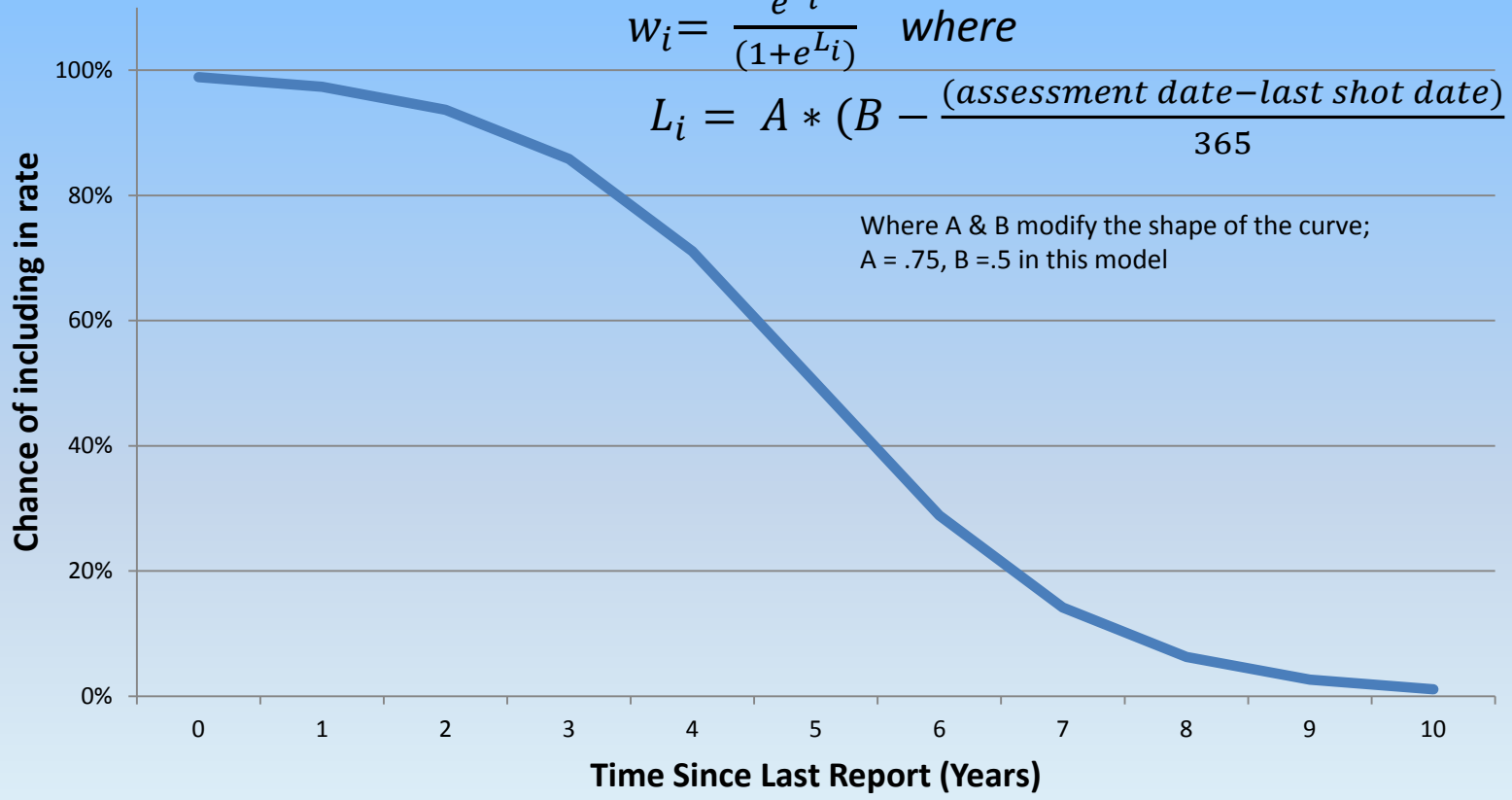
- *Using an external denominator with a registry numerator will mismatch biases*

Hybrid (Ogive) Teen Weight

$$w_i = \frac{e^{L_i}}{(1+e^{L_i})} \quad where$$

$$L_i = A * (B - \frac{(assessment\ date - last\ shot\ date)}{365}$$

Where A & B modify the shape of the curve;
A = .75, B =.5 in this model



Approach Evaluation

Compared several scenarios against an enhanced school count population (7th grade) on the county level including

- Raw ALERT
- Census
- 10 year no activity rate exclusion (AIRA/MIROW)
- Linear time weight
- Hybrid (ogive) time weight

Evaluation was by examining ratios of goodness of fit (reduction of variance on the county level)

Oregon 2013 Teen Rates Age 13

Table 1: Goodness of Fit Comparisons Between Denominator Estimates for Oregon 13 Year Olds

	Linear Weight	Census	AIRA-MIROW Exclusion	Base ALERT
Ogive Weight	1.96 (0.03*)	10.57 (0.00**)	17.84 (0.00**)	47.91 (0.00**)
Linear Weight	---	5.39 (0.00**)	9.09 (0.00**)	24.42 (0.00**)
Census Bureau Estimates	---	---	1.69 (0.07)	4.53 (0.00**)
AIRA-MIROW Exclusion	---	---	---	2.69 (0.04*)

**: significant at the 95% level; **: significant at the 99% level*

Conclusion: Weighting ALERT records is feasible for estimating teen denominators

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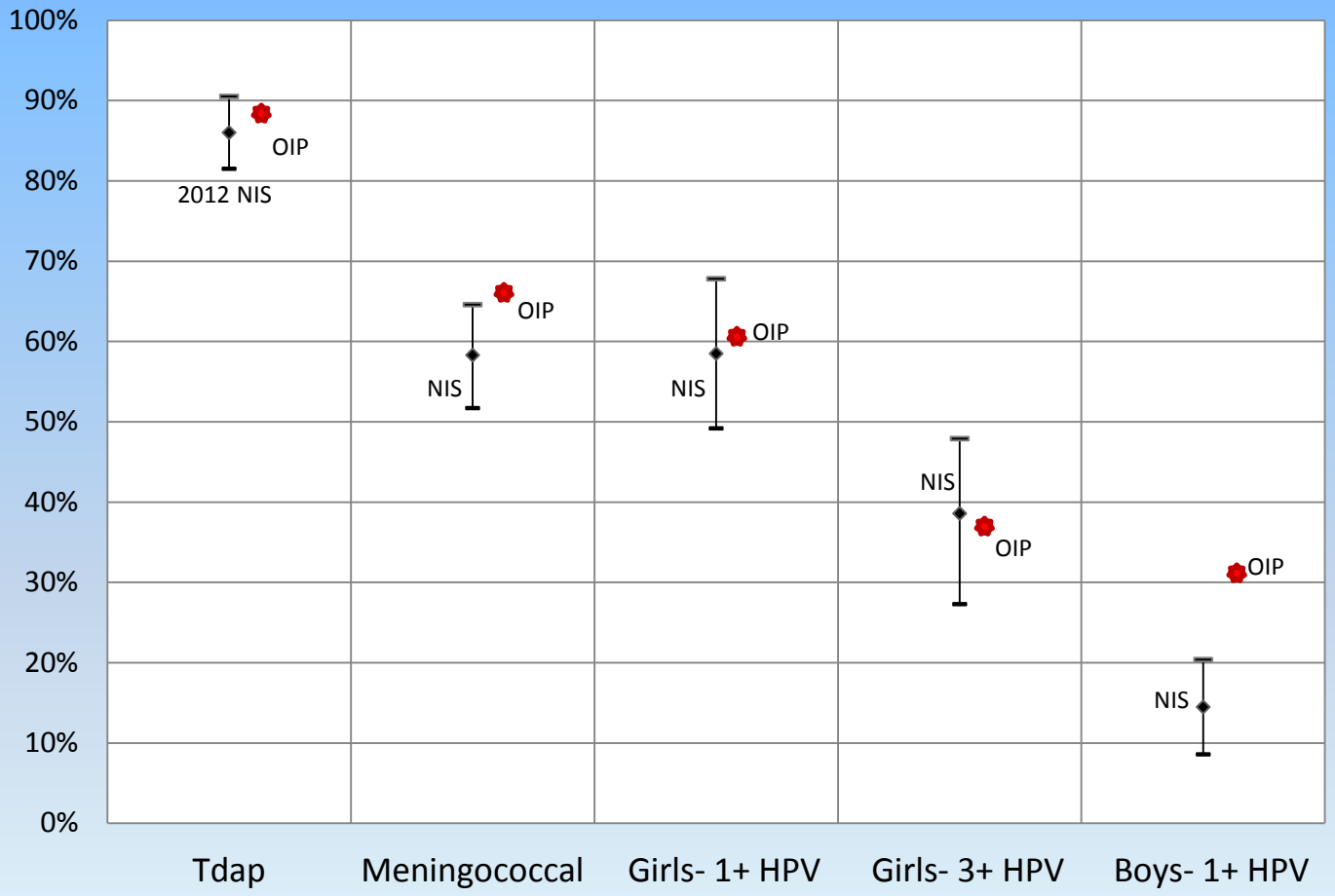
NIS Teen & OIP

- The National Immunization Survey (NIS) also covers teens
- OIP teen rates provide county level information to supplement NIS state results

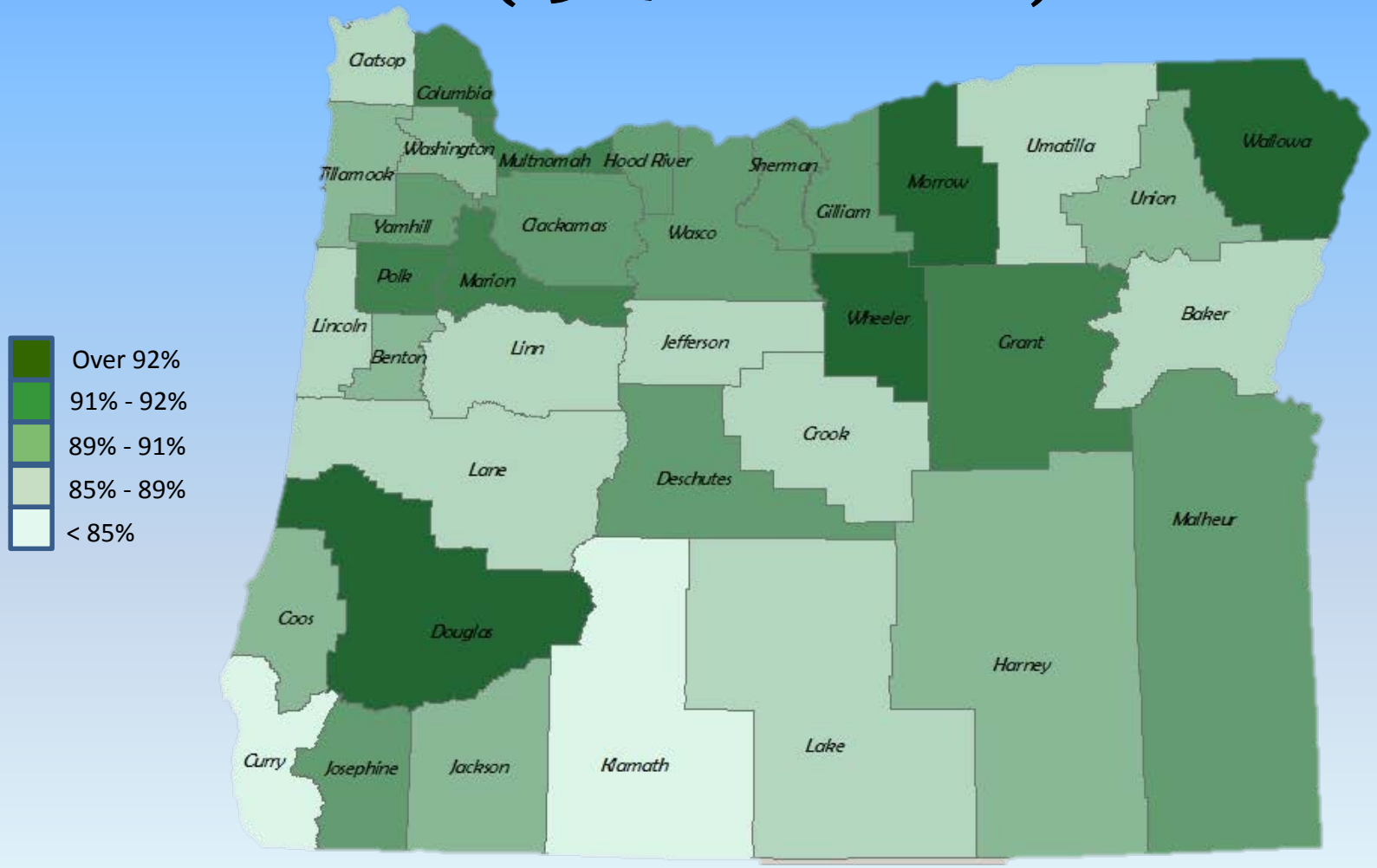
OIP 5/2013 versus 2012 NIS Rates (Age 13 to 17)



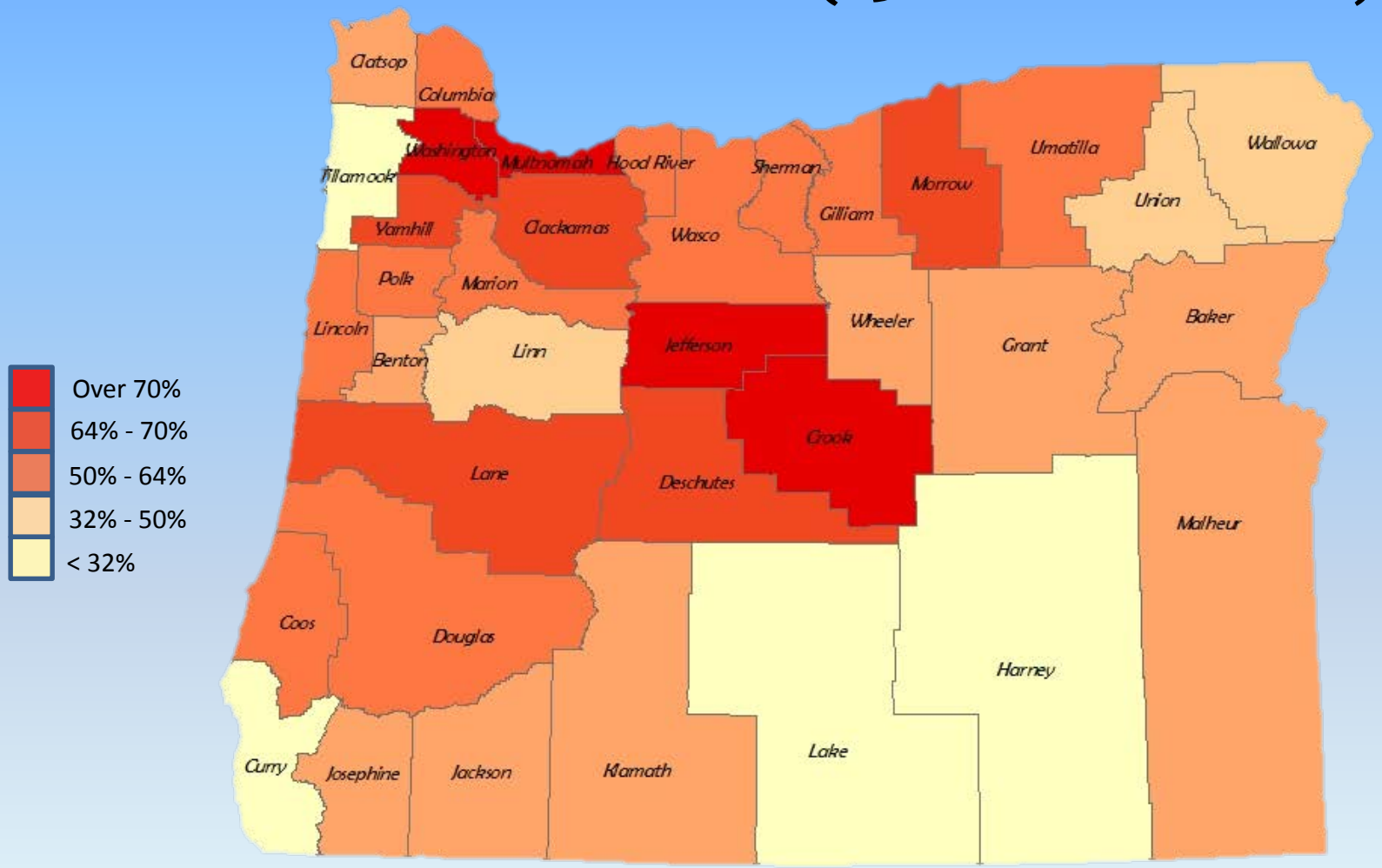
NIS to OIP Comparison

- Differences in NIS and OIP rates matched to differences in time frames
- 2012 Meningococcal outbreak drove rates higher- not fully captured by NIS in 2012 but was in 2013:
- OIP 5/2013 meningococcal estimate was 65.3%;
- 2013 NIS meningococcal was 65.3%.
- *We reported it first…*

OIP Hybrid 2013 Teen Tdap Rates (13-17 Year Olds)



OIP Hybrid 2013 Teen Meningococcal Vaccination Rates (13-17 Year Olds)



Limits

- The weighting methods used in Oregon apply to immunizations given at teen ages
- Teen estimates for immunizations given entirely or partially in early childhood are outside of this model
- MMR estimates may require a double weighting to reflect in-mobility as well as out-mobility

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Questions?

Contact:

Steve Robison

Steve.g.robison@state.or.us