

Trends in Inequality by Neighborhood SES of Influenza Hospitalizations, CT, 2003-18

CSTE HD Conference Call

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Outline

Background & Objectives

Methods

Results

Limitations

Conclusions

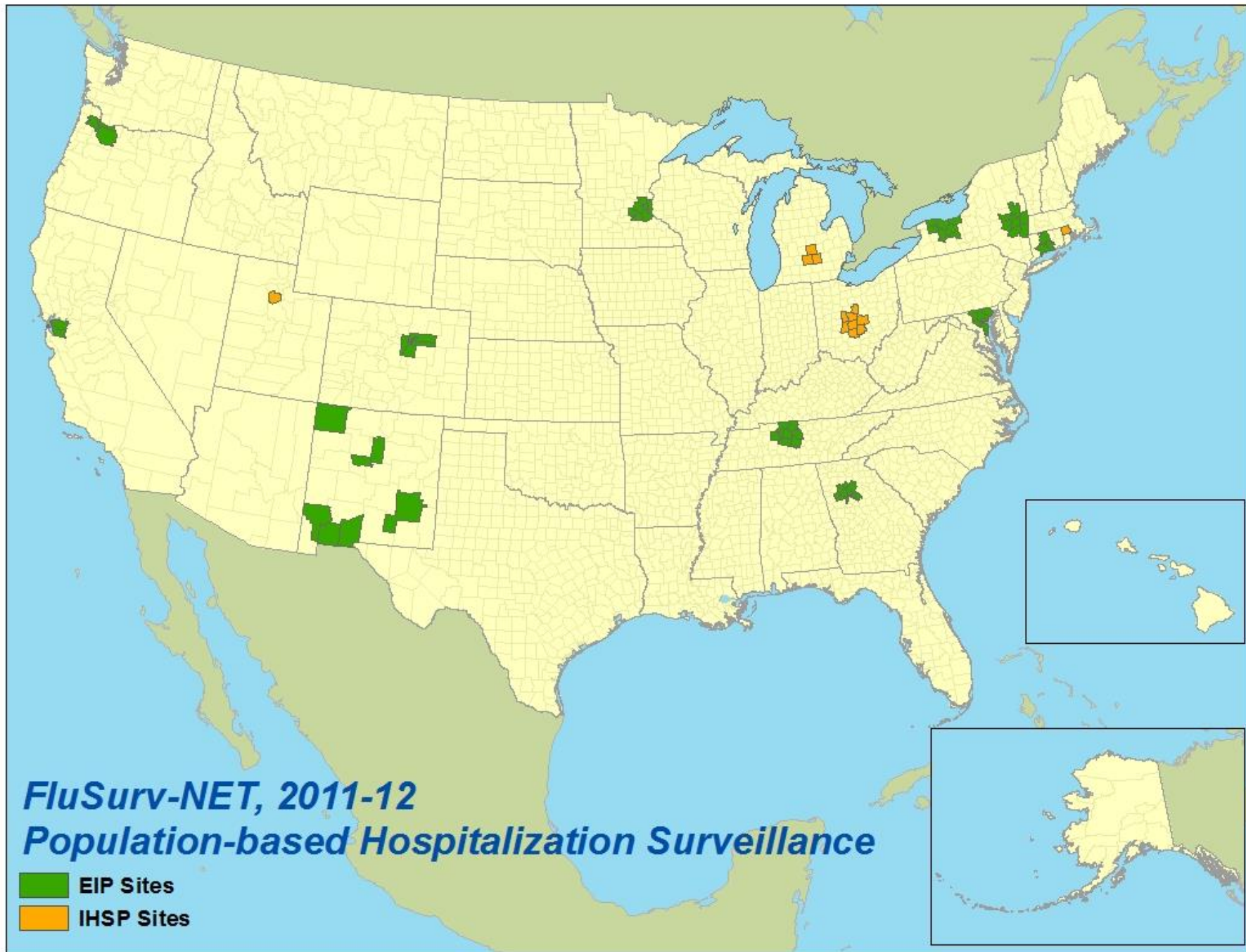
Recommendations

Importance of Seasonal Influenza

- Annual influenza epidemic in the US
 - 4,900 – 27,000 deaths
 - 114,000-624,000 hospitalizations
- Influenza vaccine can modulate annual epidemics
 - Currently recommended annually for all persons ≥ 6 months old

FluSurv-NET Influenza Hospitalization Surveillance

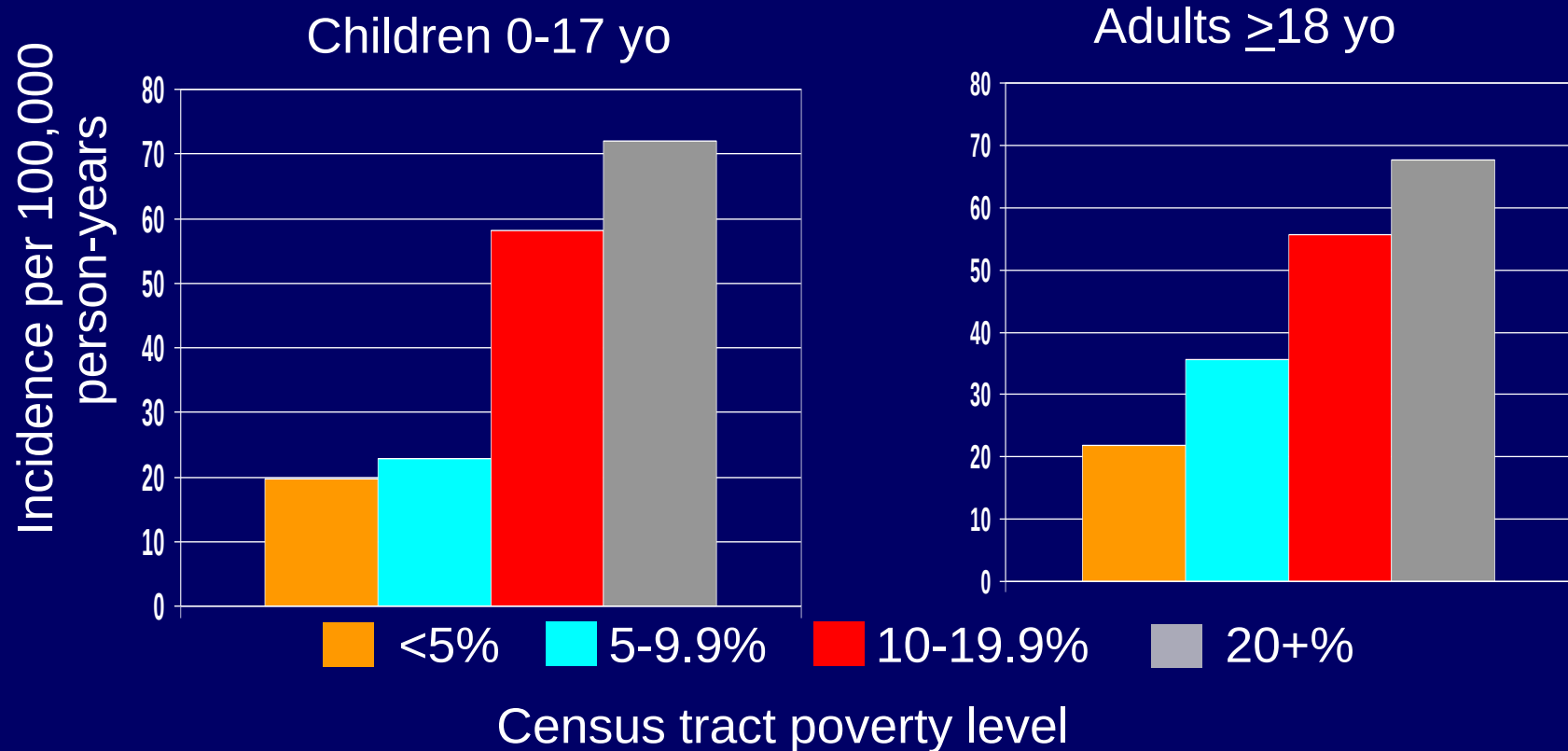
- Part of National network of standardized influenza surveillance systems supported by CDC.
- Influenza-related hospitalization surveillance
 - Enhanced surveillance for lab-confirmed persons with influenza admitted to the hospital
 - Established between 2003-2005 in 10 Emerging Infections Program states including CT
 - Expanded in 2009 to 5 other states (3 since 2013) → FluSurv-NET
 - Covers >70 counties, >27 million persons



Analyses of FluSurv-NET Surveillance Data

- Understanding who is at higher risk of severe influenza illness - important to annual vaccination efforts, pandemic influenza planning.
- Starting in 2009, growing interest in understanding whether SES is a factor in who is at risk for influenza and complications.
- No data on individual SES routinely collected, but do have data on address of residence → geocoding → link to census tract measures of SES

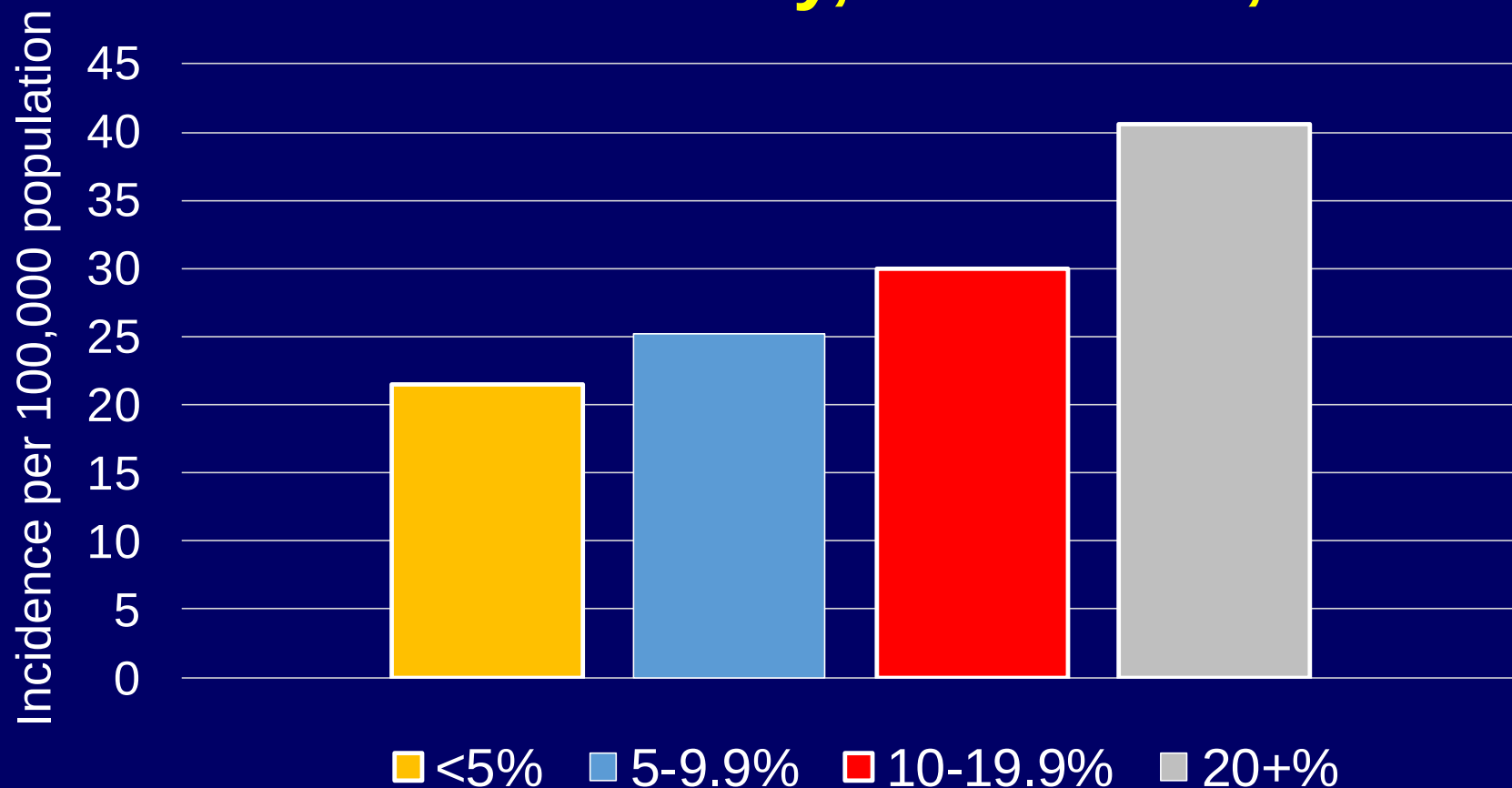
Incidence of influenza-associated hospitalizations by census tract poverty level, Children 2003-10, Adults 2007-11, NH County, Connecticut



AJPH 2011;101:1785;

IORV 2014;8:274-81

Influenza Hospitalizations: Age-adjusted 2-year Incidence by Census Tract-level Poverty, 2010-2012, USA*



Risk Factors for Severe Influenza

- Individuals known to be at higher risk:
 - Persons of any age with any of a variety of underlying conditions
 - Pregnant women
 - Children <5 yrs and adults ≥ 65 yrs
- Demographic groups at higher risk:
 - **Persons living in low SES** (high poverty, crowding) census tracts regardless of race/ethnicity

Initiatives in CT potentially affecting incidence & relationship to census tract poverty

- 2012 New requirement for influenza vaccination in licensed daycare
- 2013 -14 – full implementation of ACA
- 2012 – 15 – publication of association of influenza hospitalization and census tract poverty; presentations at conferences in CT and elsewhere; encouragement to heighten vaccination efforts in poor communities

Objectives

1. Compare findings from 2013-2018 to earlier studies from between 2003-2011.

Hypotheses:

- Relative incidence of hospitalizations in children compared to adults should decrease
- Vaccination rates in poor areas compared to wealthy ones should increase
- Disparities between high poverty and low poverty neighborhoods should narrow

Methods

1. Use data on hospitalizations from FluSurvNet in Connecticut.
2. Limit analyses to New Haven County, pop ~860,000
3. Calculate and compare age group-specific incidence rates from the most recent 5 years, 2013-2018 to previous studies (2003-2010 and 2007-11).
4. Calculate and compare relative incidence rates by age in highest vs lowest poverty groups ($RR \geq 20\%$ vs $< 5\%$)
5. Compare vaccination rates in highest vs lowest poverty cases

Methods 2

Age groups: <5, 5-17, 18-49, 50-64, ≥ 65 years

Poverty categories below FPL:

<5%, 5-<10%, 10-<19%, >20%

Denominators:

Earlier studies:

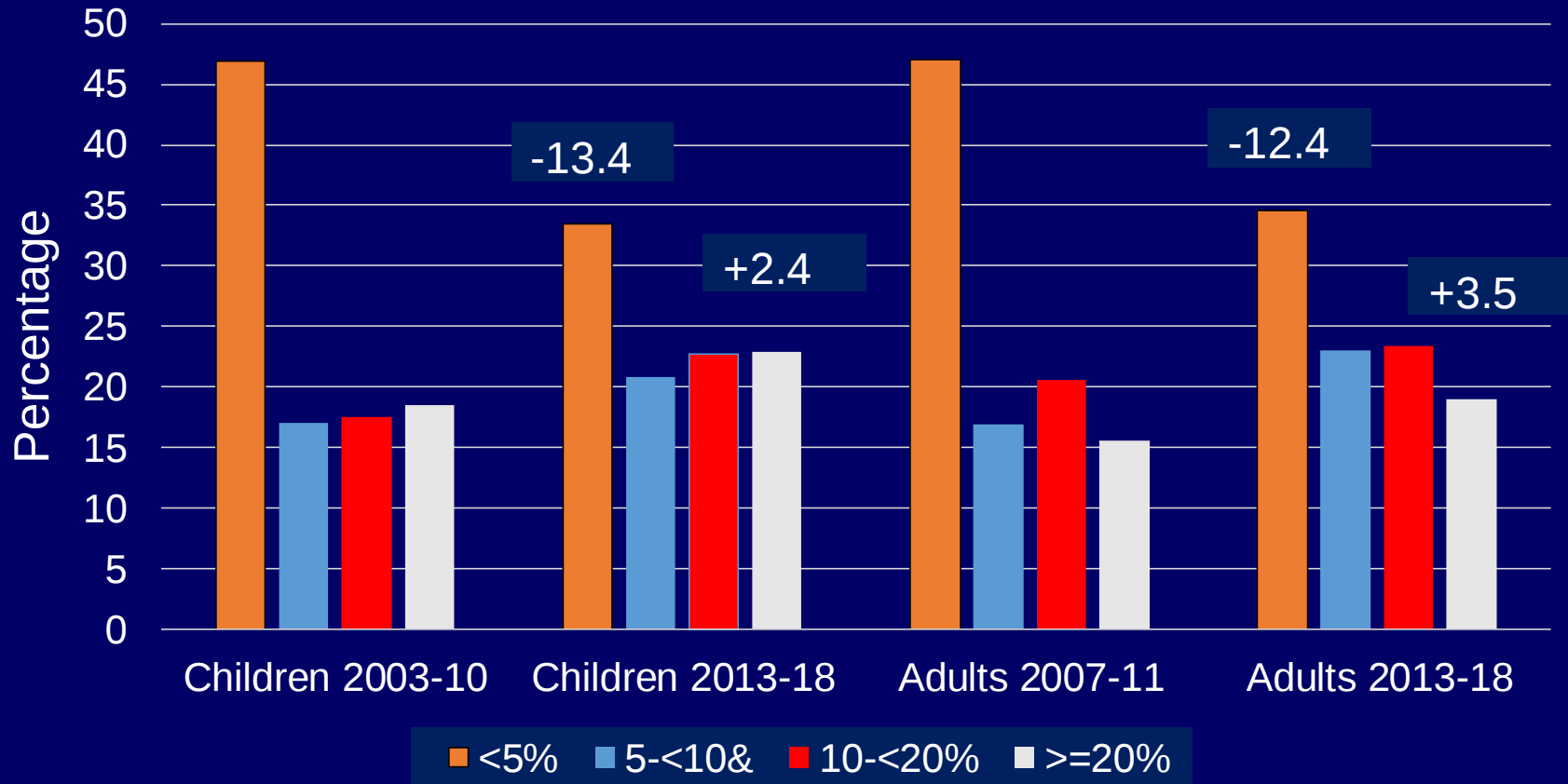
- Children: 2000 census, 2005-2009 ACS
- Adults: 2010 census, 2006-2010 ACS

2013-2018 studies

- 2010 census, 2013-2017 ACS

Results

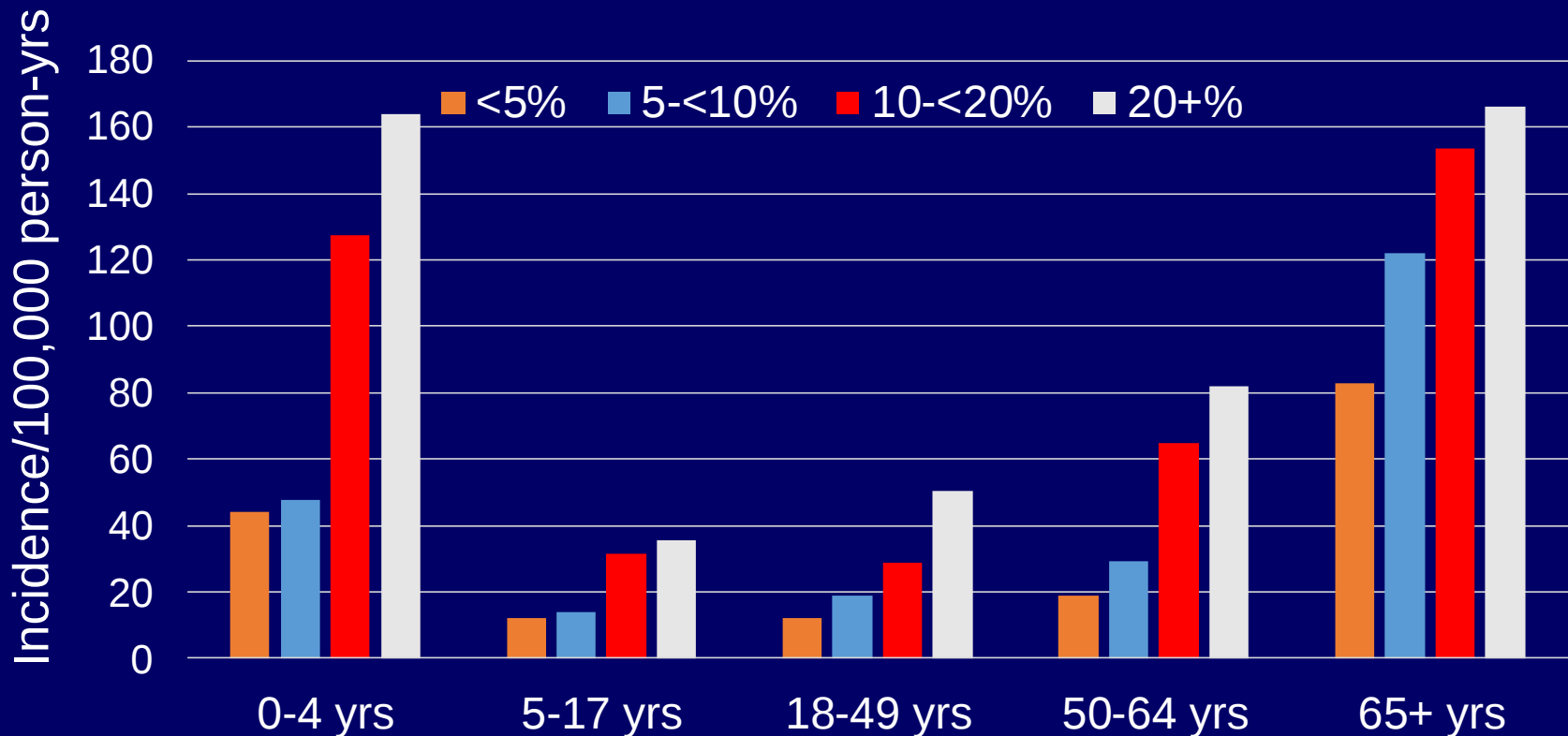
Population Distribution by Poverty Level



Age-specific Incidence and Difference, 2 time periods, NH County

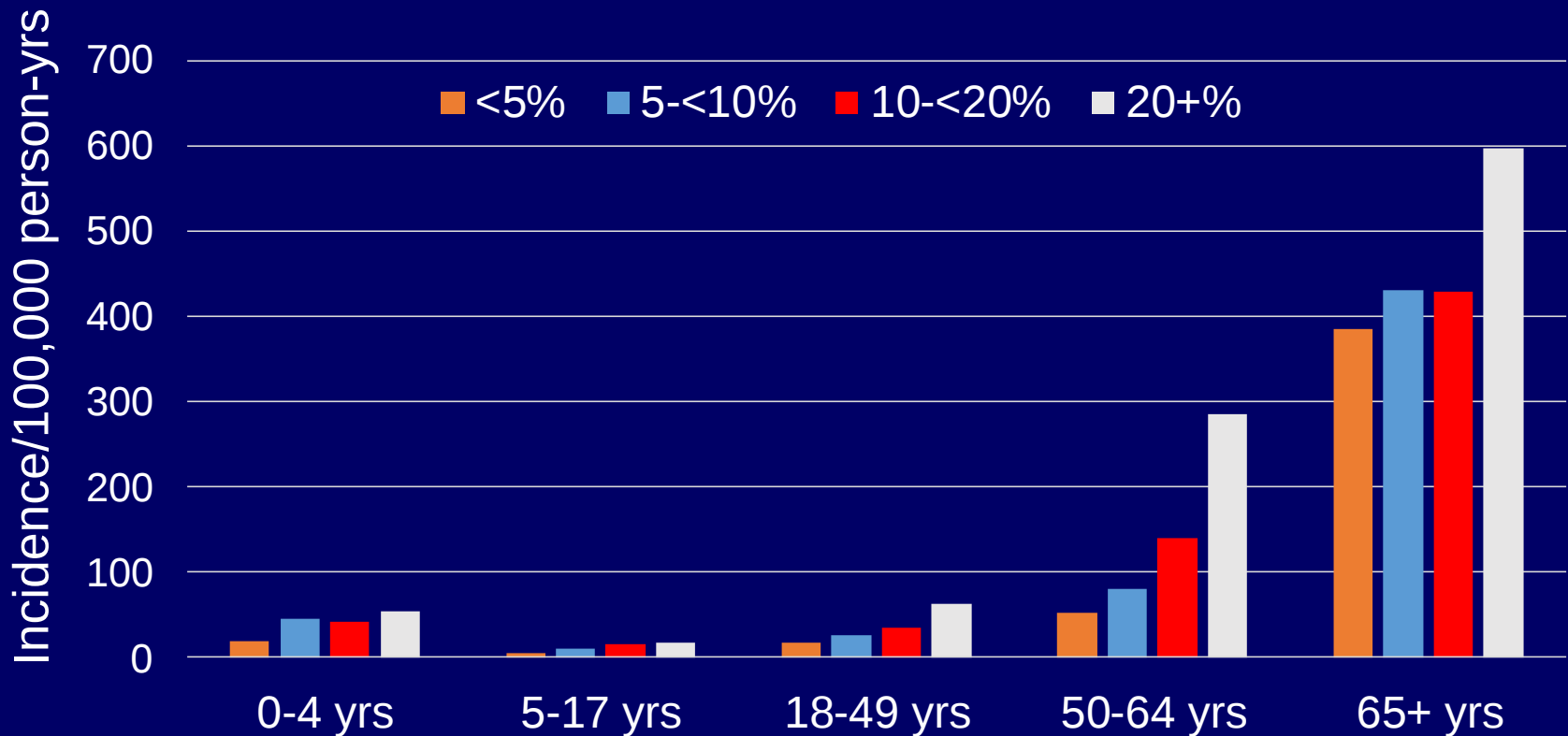
	Time period-specific incidence per 100,000 p-y		
Age Group (years)	2003-10 & 2007-11	2013-18	Difference
0-4	73.9	39.9	-40.0
5-17	17.5	11.4	- 6.1
18-49	22.7	34.2	+11.5
50-64	34.7	111.0	+76.3
≥65	104.1	435.3	+331.2

Incidence by Age-Group and Poverty Level, 2003-2011*

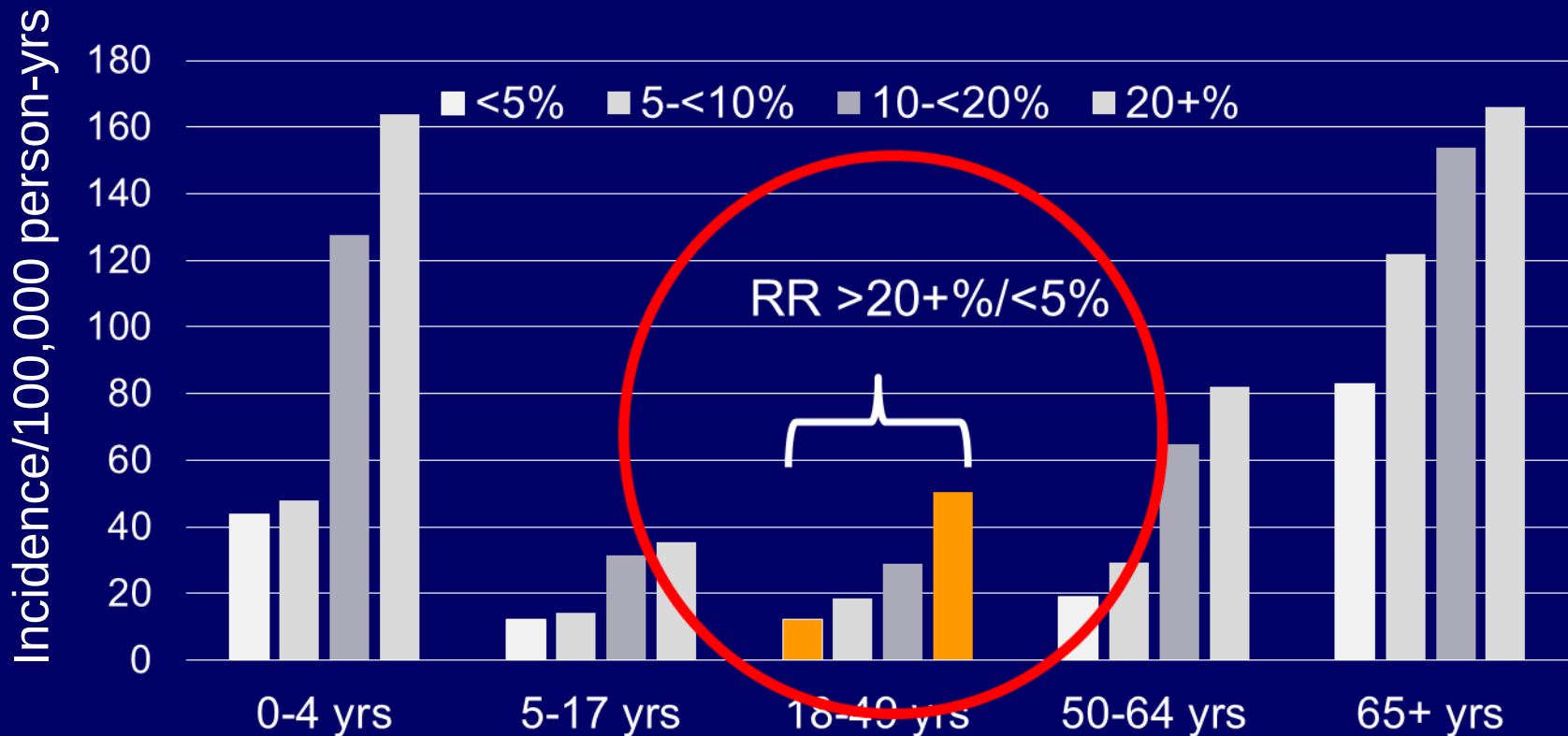


* 2003-10 for <18 yo; 2007-11 for adult age-groups

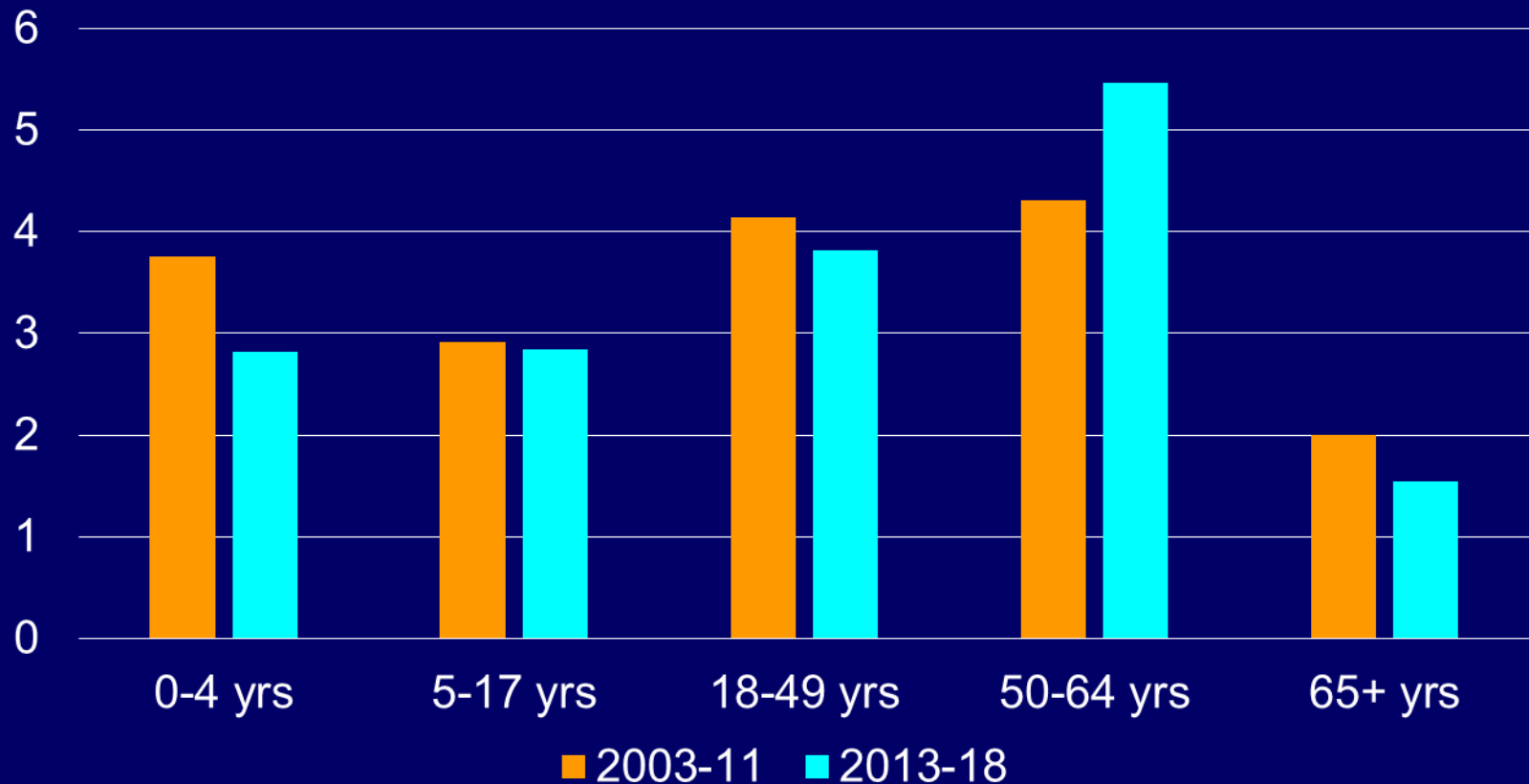
Incidence by Age-Group and Poverty Level, 2013-2018



Incidence by Age-Group and Poverty Level, 2003-2011*



Comparison of RR High/Low Poverty by Age and Time Period

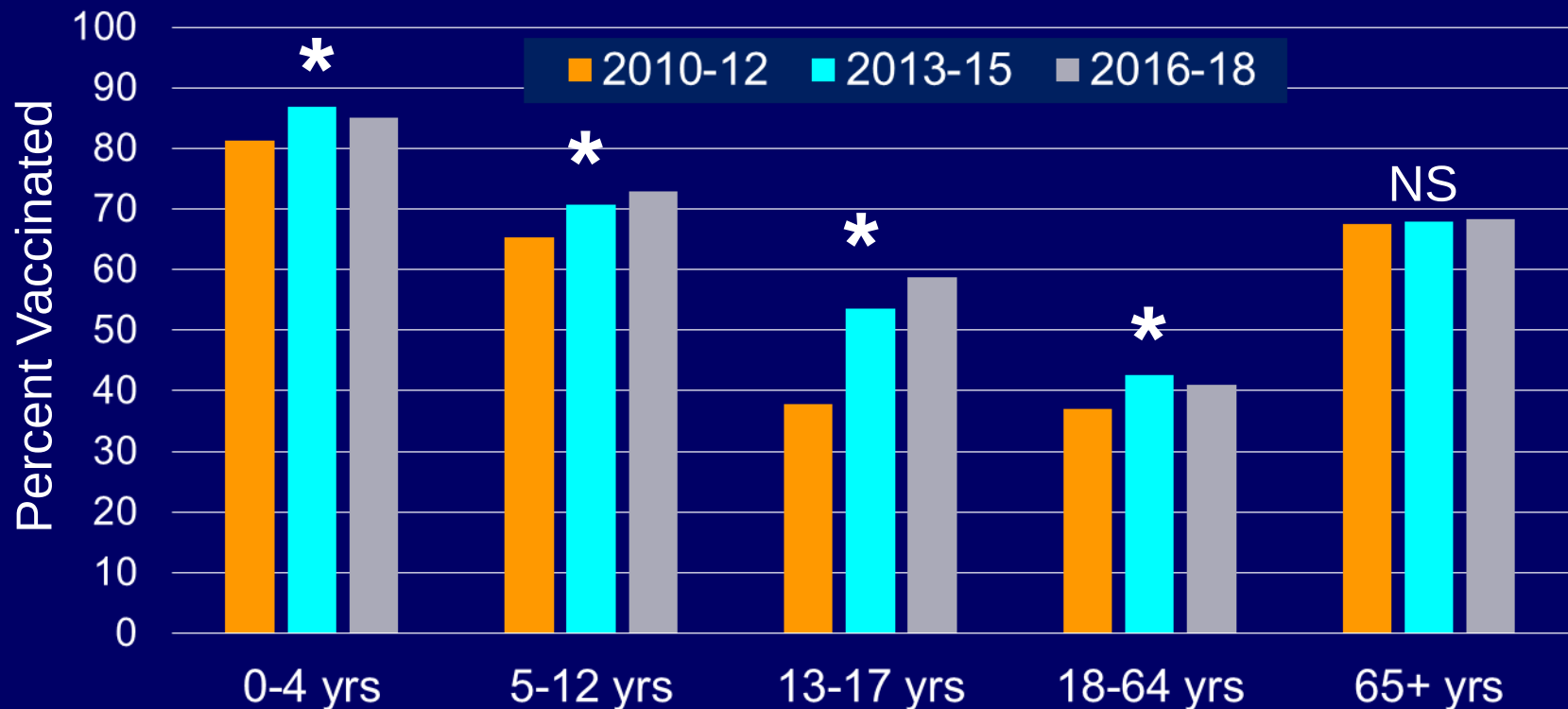


No statistically significant differences

Changes in vaccination rates

1. Overall, by age group
2. Cases, by poverty and age group

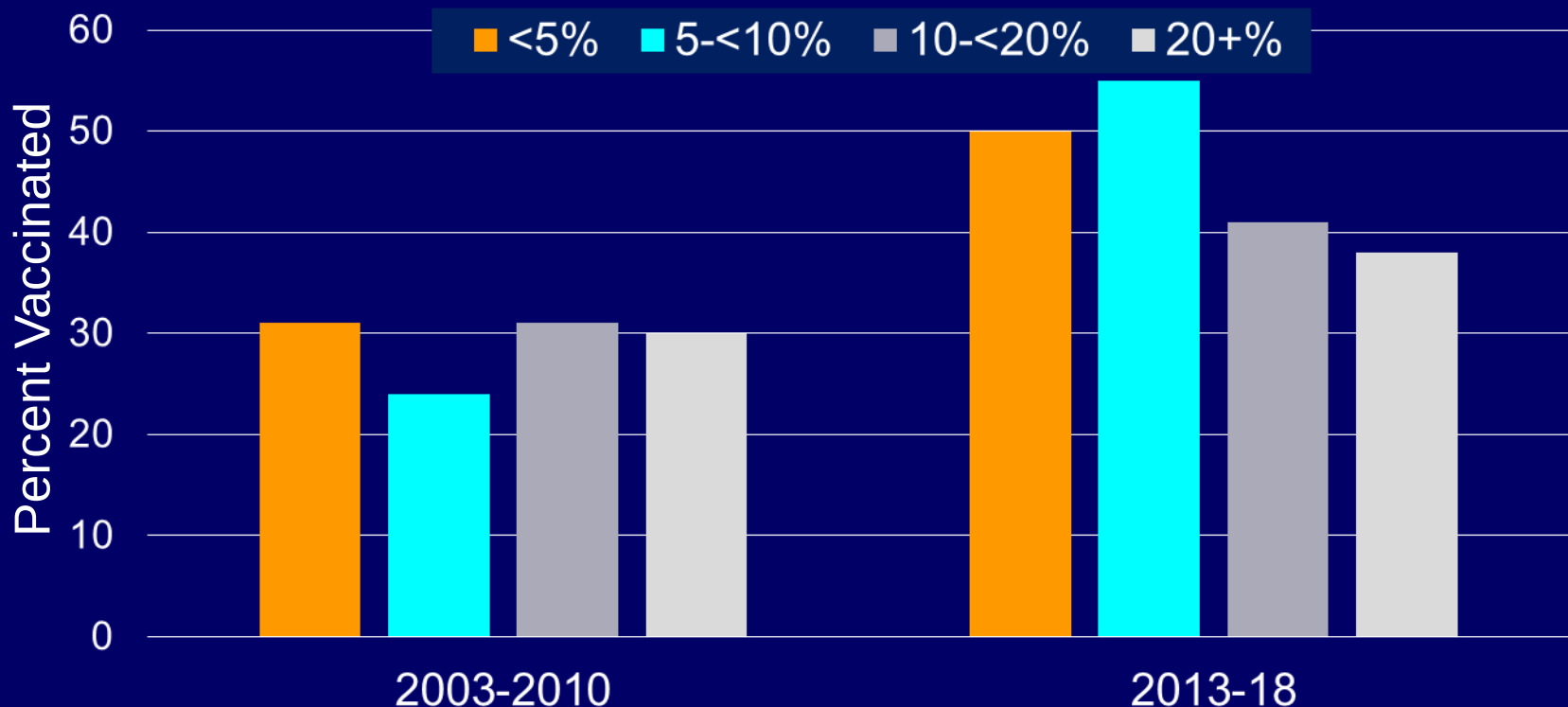
Influenza Vaccination Rates* by Age-group and time period



* p-value for trend < 0.03 for all but 65+ group

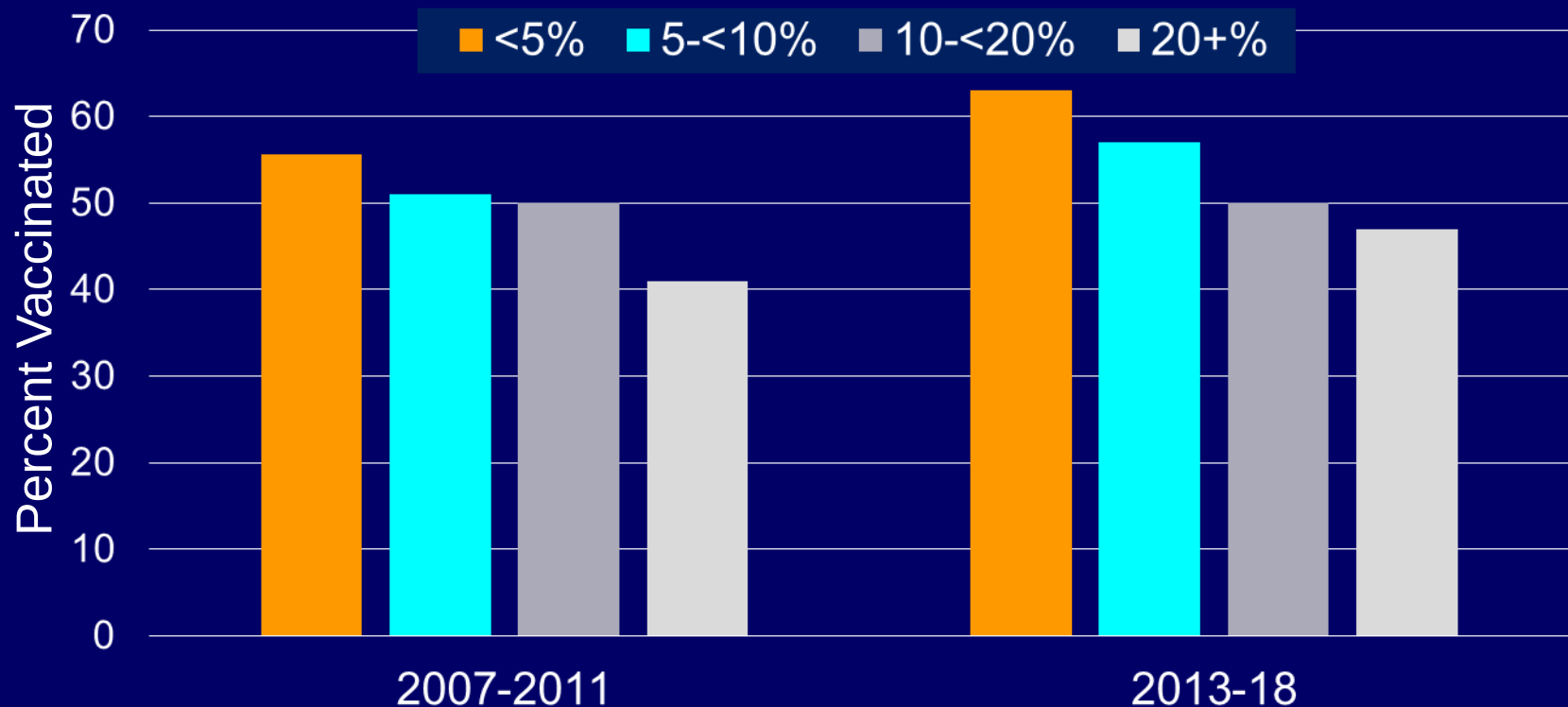
* CDC, FluVaxView Interactive

Influenza Vaccination Rates in 1-17 yo Cases by Poverty and Time period



No statistically significant findings comparing poverty levels within time periods

Influenza Vaccination Rates in ≥ 18 yo Cases by Poverty and Time period



Conclusions

1. Age-specific incidence of influenza-related hospitalization in CT has shifted dramatically from 1st to 2nd decades since 2000:
 - decreased in young children
 - increased multifold in older adults
2. Disparities in incidence by census tract poverty level in CT have not significantly changed for any age group since their recognition, publicity, implementation of ACA and mandatory daycare influenza vaccination.

Conclusions (cont)

3. Influenza vaccination rates in all age groups except ≥ 65 yo have increased since 2012, with most change around the time of implementation of the ACA.
4. No evidence that relative vaccination rates by census tract poverty level have changed in past decade.
5. No evidence by these measures that recognition of disparities by census tract-level SES has resulted in successful action to reduce them.

Recommendations

1. Special efforts are needed in CT to increase relative vaccination rates in poor census tracts.

Need to Set:

- Vaccination goals
- Disparity in incidence reduction goals

Need: Systematic efforts to actively offer vaccination to those in poor census tracts.