

**Beyond race/ethnicity: Positivity of *Chlamydia Trachomatis* among women attending Washington state family planning clinics, 1997-2006, by individual risks and area-based socioeconomic measures**

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# Objectives

- Assess race/ethnic differences in chlamydia positivity and trends over time
- Assess trends in risks associated with chlamydia positivity in women aged 15-24 years seen in family planning clinics
- Explore area-based socioeconomic measures (ABSM) in conjunction with individual-level risk factors in predicting chlamydia positivity

# WA State IPP Annual Meeting 2007

- Presentation today is an **updated** version of a talk given at ISSTDR July 2007
- Re-analysis
  - Focus on Washington State CT records from FP clinics
  - Expand the sample to include 2006 IPP data
  - Same client population—female FP clients aged 15-24 years

# Methods

- **ISSTDR Study population**
  - All women 15-24 years screened for CT 1997 – 2005
  - 129 family planning clinics in Region X
  - 611,732 chlamydia test records
- **Washington State updated effort**
  - All women 15-24 years screened for CT 1997 – **2006**
  - 61 FP clinics in Washington selected
  - 365,717 chlamydia test records

# Methods: Characterizing Clients

## Measures

- The same data form was used by all clinics to collect individual-level measures
  - Demographics—age, race, ethnicity
  - Reason for clinic visit, exposed to chlamydia
  - Self-reported sexual risk behavior history, past 60 days—new sex partner (SP), multiple SPs, symptomatic SP
  - Other risk history items—condom use last sex, CT infection in past year
  - Clinical findings—MPC, friable cervix, ectopy and PID
  - Chlamydia test type

# Methods: ABSM

- Area-based socioeconomic measures
- ABSM were generated from U.S. Census 2000 Summary Files 1 and 3; HRSA/Rural Health Research Ctr.
- Geo-coded to ZIP code tabulation areas (ZCTA's)
  - Population density (RUCA)
  - Median household income
  - Percent racial minority
  - Percent Hispanic ethnicity
  - Education, % population age 25 or older with < HS diploma
  - Poverty, % population < 100% FPL
- ABSM categorized
- ABSM merged with individual CT test records via patient ZIP code

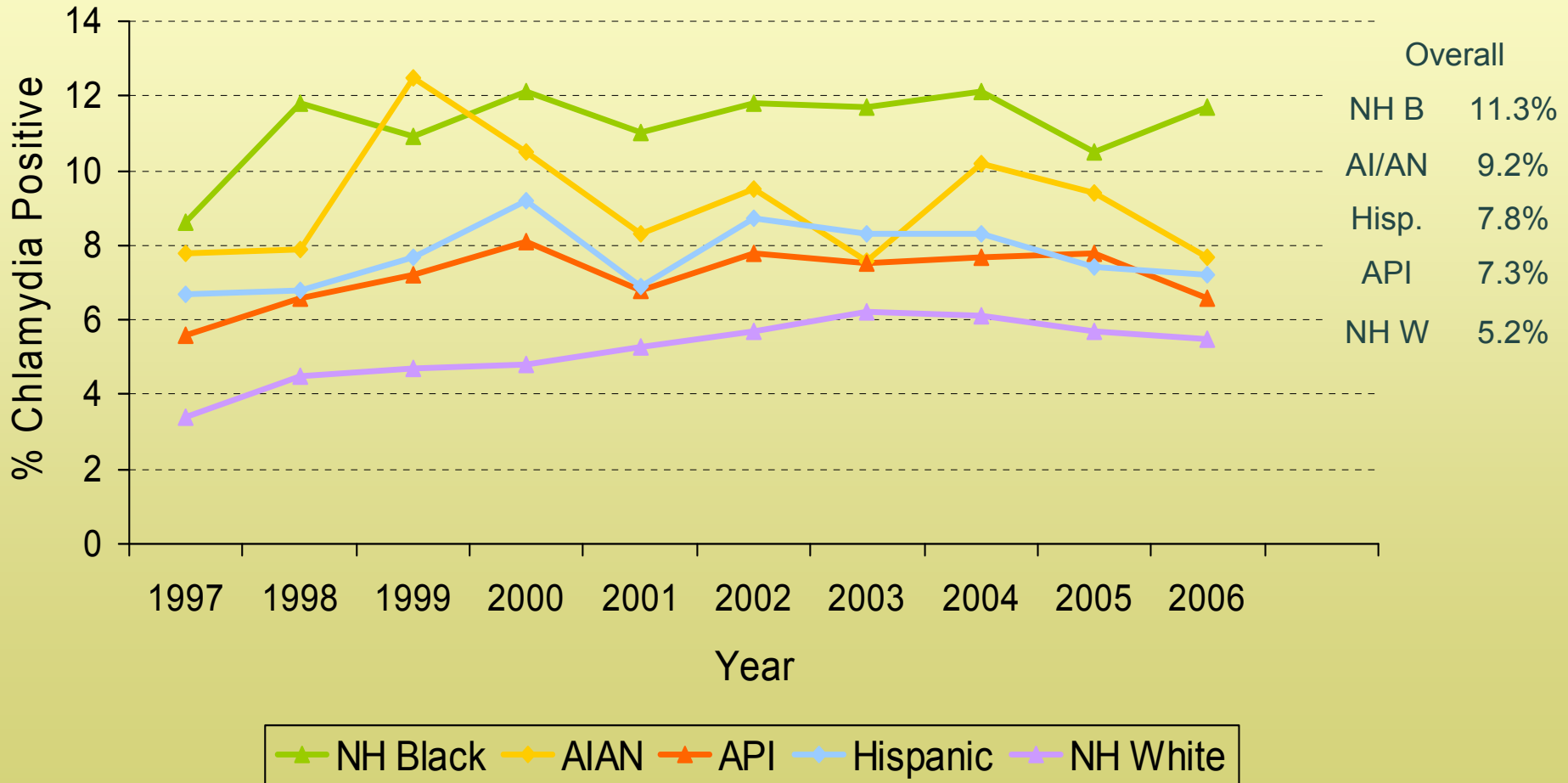
# Methods: Analysis

## Analysis

- Assessed trends over time in population characteristics and factors associated with chlamydia
- Calculated chlamydia positivity by demographics, behavioral risk history, clinical findings, and ABSM
- Generated models for overall sample and each race/ethnic group

# Results

## Chlamydia trends\* for 15-24 year old women in family planning clinics: WA, 1997-2006, by race and ethnicity



\*Positivity unadjusted for test type

# Individual-level risk factors and chlamydia—WA 1997-2006

Characteristic	Percent	% CT+
Age		
15 - 17	20%	7.2%
18 - 19	26%	7.1%
20 - 24	54%	5.4%
Race/ethnicity		
NH White	72%	5.2%
NH Black	6%	11.3%
American Indian/AK Native	2%	9.2%
Asian or Pacific Islander	7%	7.3%
Hispanic	12%	7.8%
Reason for visit, sex partner w/ CT		
No	98%	5.9%
Yes	2%	25.9%

## ABSM risk factors and chlamydia—WA 1997-2006

Characteristic	Percent	% CT+
Condom used, last sex		
No	73%	6.3%
Yes	27%	5.8%
Behavioral risks, one or more		
No	72%	5.0%
Yes	28%	9.2%
Clinical findings, one or more		
No	93%	5.3%
Yes	7%	15.7%
Chlamydia infection in prior year		
No	95%	5.8%
Yes	5%	13.3%
Test type, NAAT		
No	9%	3.9%
Yes	91%	6.4%

# ABSM risk factors and chlamydia—WA 1997-2006

Characteristic	Percent	% CT+
Household median income		
<\$30,000	7%	6.1%
\$30,000 thru \$34,999	16%	6.6%
\$35,000 thru \$39,999	16%	6.5%
\$40,000 thru \$44,999	18%	6.8%
\$45,000 thru \$49,999	12%	6.1%
\$50,000 thru \$59,999	19%	5.9%
\$60,000+	12%	5.0%
% Below 100% federal poverty level		
< 10%	45%	5.7%
10% - 19%	40%	6.8%
≥ 20%	15%	6.1%
Household median income, quartiles*		
Highest 3 quartiles	82%	6.2%
Lowest quartile	18%	6.5%

\*State-specific quartiles based on median incomes for **all** ZCTAs

## ABSM risk factors and chlamydia—WA 1997-2006

Characteristic	Percent	% CT+
% Minority race		
< 20%	59%	5.4%
≥ 20%	41%	7.5%
% Hispanic ethnicity		
< 20%	92%	6.1%
≥ 20%	8%	8.1%
% Population age 25+ without HS diploma		
< 20%	82%	5.9%
≥ 20%	18%	7.8%
Population density		
Urban	82%	6.4%
Rural	18%	5.5%

# Did the IPP study population of women visiting WA FP clinics change over time?

Changing Elements	1997	2006
Diagnosis by NAAT	22%	99+%
Race/ethnicity, NH White	76%	65%
Sexual risk behaviors	27%	23%
Chlamydia positivity	4.4%	6.3%

## Stable Elements, 1997 – 2006

### Individual risk factors

Age

Visit reason, SP with chlamydia

Clinical findings

CT infection in prior year

### ABSM

Median household income

Population density

Racial minority

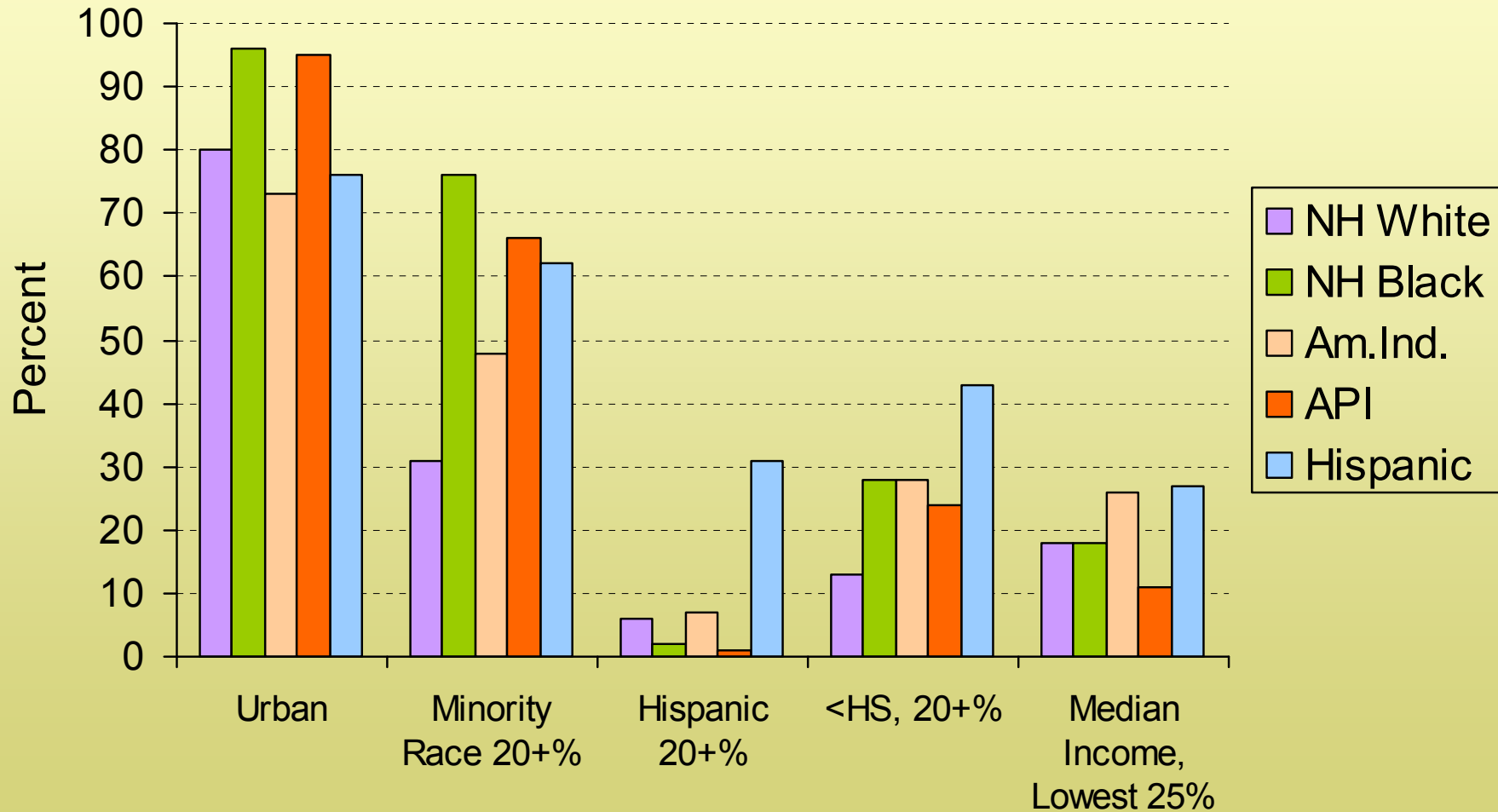
Hispanic ethnicity

HS diploma

## Race/ethnicity and individual-level factors—WA 1997-2006

Measure	NH White	NH Black	AI/AN	API	Hispanic
Age, 15-19 years	47%	49%	51%	42%	37%
CT infection in prior year	4%	12%	8%	7%	6%
Sexual risk behaviors, 1+	30%	28%	33%	23%	20%
Clinical signs, 1+	7%	9%	9%	10%	9%
Diagnosis by NAAT	91%	91%	91%	91%	93%

# Race/ethnicity and ABSM, WA 1997 - 2006



# Multivariate results—WA 1997 - 2006

Characteristic	Adj. OR	Characteristic	Adj. OR
<b>Individual factors</b>		<b>Individual factors, cont.</b>	
Age, 15 - 19 years	1.34	Clinical findings	3.10
Race/ethnicity		CT infection, prior year	1.72
NH White	Ref.	Diagnosis by NAAT	1.57
NH Black	1.93	Visit year	1.02
AI/AN	1.67		
API	1.29	<b>ABSM factors</b>	
Hispanic	1.39	Population density, rural	0.89
SP w/ chlamydia	3.66	Racial minority, $\geq 20\%$	1.20
Sexual risk behaviors	1.84	Hispanic ethnicity, $\geq 20\%$	1.26
No condom, last sex	1.16	< HS diploma, $\geq 20\%$	DNE
		Median household income lowest quartile	1.07

## Multivariate results—within race/ethnicity

### Selected findings, WA 1997-2006

Measure	Adj. OR				
	NH White	NH Black	AI/AN	API	Hispanic
Sexual risk behaviors	1.89	1.36	1.88	1.89	2.21
CT infection in prior year	2.04	1.26	1.40	1.76	1.70
Visit year, since 1997	1.04	0.99	0.97	1.01	0.99
Population density, rural	0.86	0.79	0.89	0.90	1.04
Racial minority, $\geq 20\%$	1.15	1.34	1.30	1.05	1.17
Hispanic ethnicity, $\geq 20\%$	1.03	1.36	1.46	0.78	1.37
< HS diploma, $\geq 20\%$	1.18	0.93	1.12	1.03	0.96
Median household income, lowest quartile	1.00	1.08	1.14	1.11	1.22

# Limitations

- Test records, not annual summary of individuals' tests
- Data collected by many individuals in different ways across clinics over time
- ABSM
  - Debate over validity, meaning and applicability
  - Use of ZCTAs and ZIP codes
  - ZIP codes versus census tracts
  - Time and mobility
  - A priori categories, relative operationalizations

# Conclusions

- Race/ethnicity
  - Chlamydia positivity was stable over time for race/ethnic minority groups, after adjusting for other risk factors
  - NH Whites showed a 4% annual increase from 1997-2006
  - Race/ethnic-specific associations and models varied
- ABSM
  - Had modest, but significant effect on relationship between race/ethnicity and chlamydia positivity
  - Impact varied by race/ethnicity
  - Racial composition of neighborhood affected risk of infection more than SES
  - Did not account for race/ethnic differences in predicted chlamydia positivity

# Future issues

- Estimate clinic chlamydia testing coverage
  - Other analyses suggest no race/ethnic differences in coverage among women aged 15-24 years
- Revisit measures
  - Practical proxies for sexual network indicators
  - Expand time frame for risk behaviors
  - Individual sexual risk behavior items rather than summary score
- Identify clinics where patient-level records can be created from test-level data
  - Adjust for tests/client
  - Calculate re-infection
- Explore possible shift in clinic client population and service delivery
  - Assess impact of new visit types collected beginning 2003
  - Community access to clinic services