Trends in gonorrhea incidence, chlamydia prevalence, and rates of pelvic inflammatory disease and ectopic pregnancy in Washington State, 1992-2005

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Background

- The Infertility Prevention Project (IPP) provides an estimate of the prevalence chlamydial infection among young women
- The IPP was implemented in Region X in 1988
- Chlamydia prevalence first declined and then rose after the implementation of IPP in Region X, including Washington

Background

- Previous analyses of chlamydia prevalence measured through IPP have not controlled for changes in populations tested over time
  - Addition of variety of clinic types over time

- Research Question 1: Does adjustment for changes in characteristics of the population and testing technology change the trend in prevalence of chlamydia observed via IPP?

Background

- In Washington State, a similar pattern of decline and subsequent increase has been observed for gonorrhea incidence
- Pelvic inflammatory disease (PID) and ectopic pregnancy (EP) have declined during the same period
- Research Question 2: Are trends in gonorrhea or chlamydial infection associated with trends in PID and EP?

Methods

Data

- Chlamydial infection:
  - Women ages 15-23 screened in IPP clinics
  - 1988-2005
  - Positivity among IPP participants

- Incidence of reported (clinician and lab) gonorrhea among all women, 1988-2005.

Methods

Data (continued)

- PID and EP:
  - Cases reported through the Comprehensive Hospital Abstract Reporting System (CHARS)
  - Women ages 18-44
  - PID measure -> per 1,000 women
  - EP measure -> per 1,000 pregnancies

Methods

Analysis 1: Adjusted chlamydia prevalence

- Adjustment via logistic regression
  - Model:

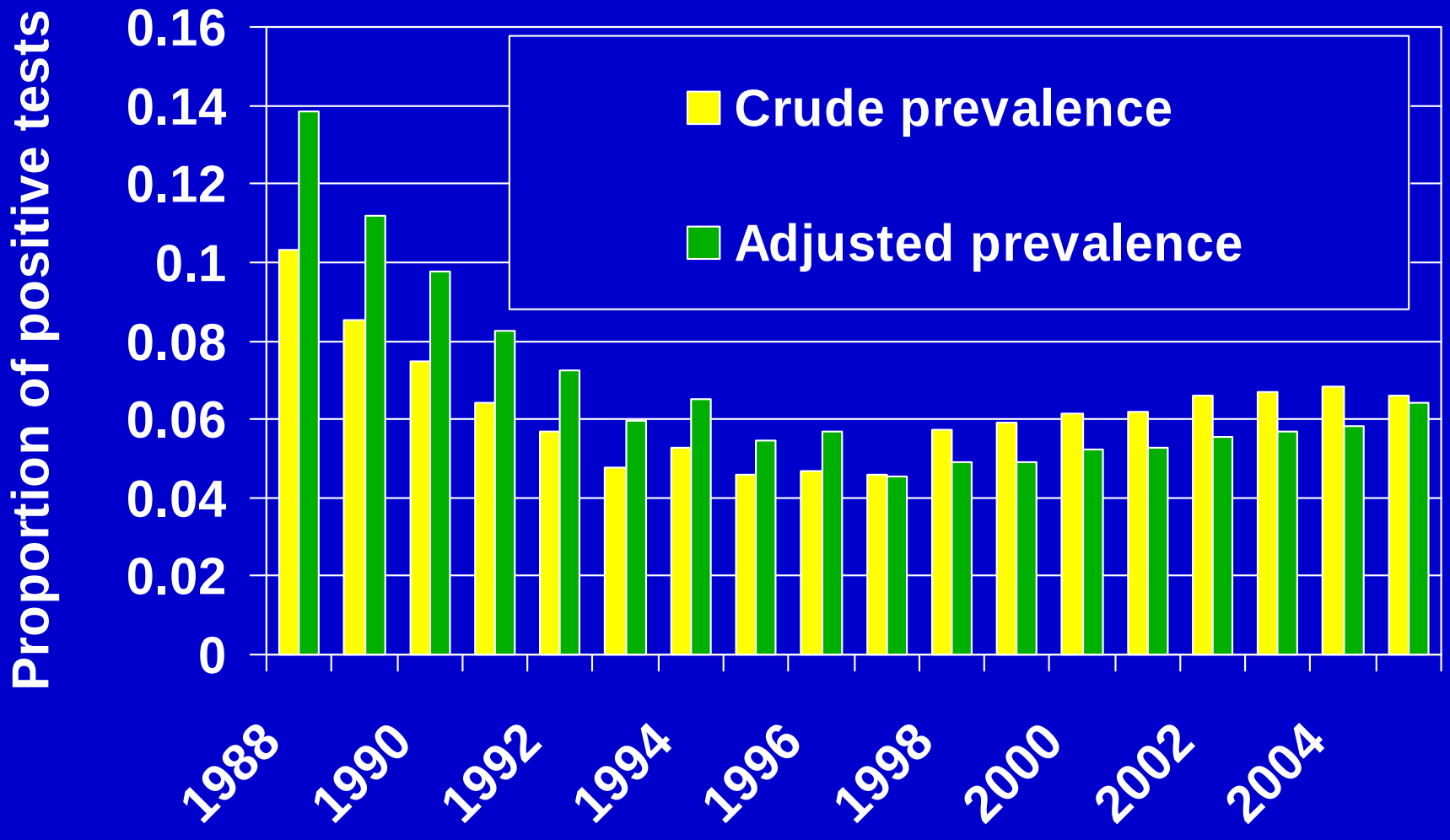
    CT lab result= age, race, clinic type, test type, year of exam
  - Utilized regression coefficients and average values for covariates across time to provide an adjusted estimate of prevalence for each individual year

Methods

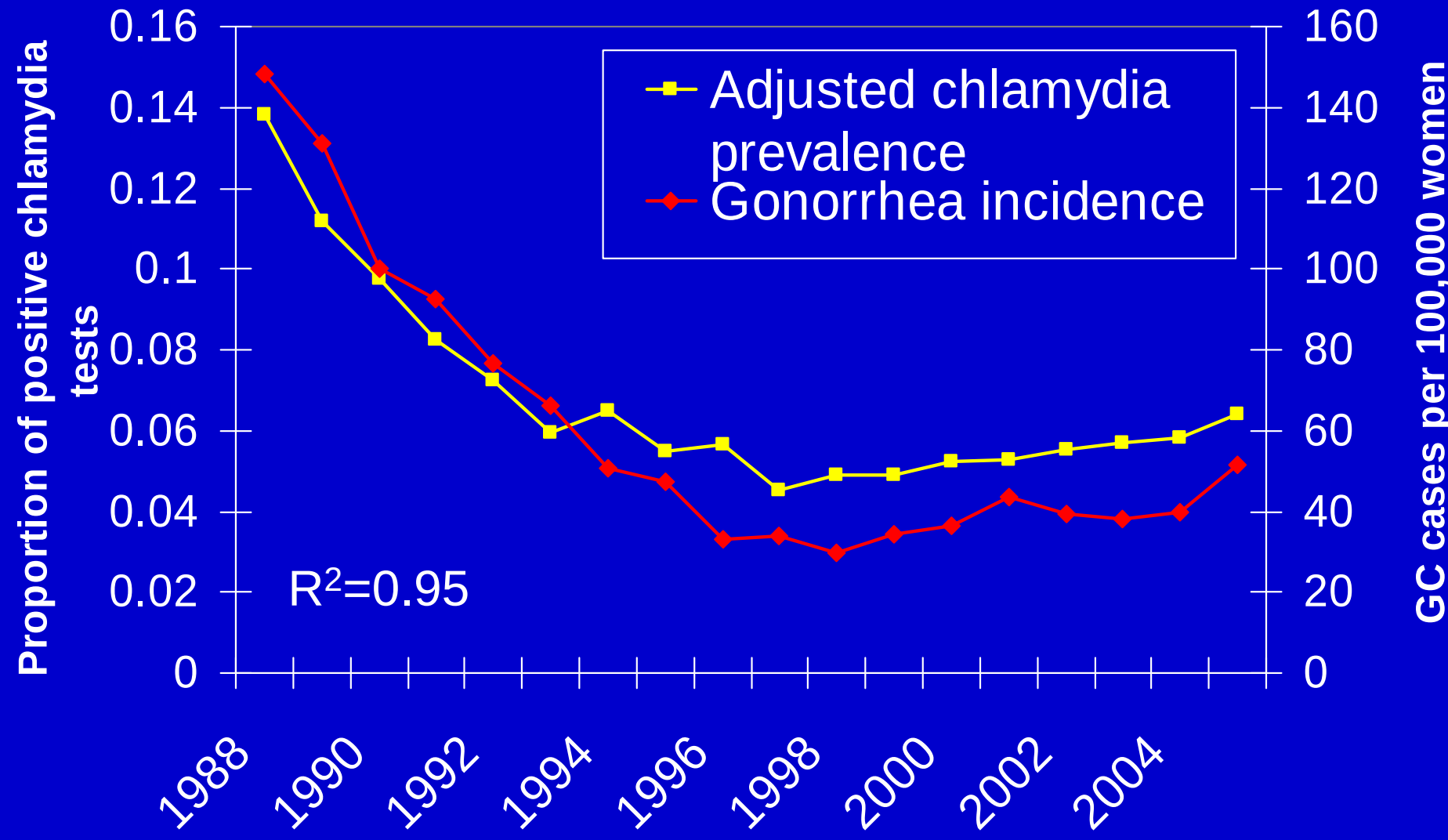
Analysis 2: Gonorrhea and chlamydia - associations with PID and EP

- Linear regression
- Predictors: Adjusted chlamydia prevalence and gonorrhea incidence
- Outcomes: PID and EP
  - Gonorrhea and chlamydia prevalence from 3 years earlier used to predict EP

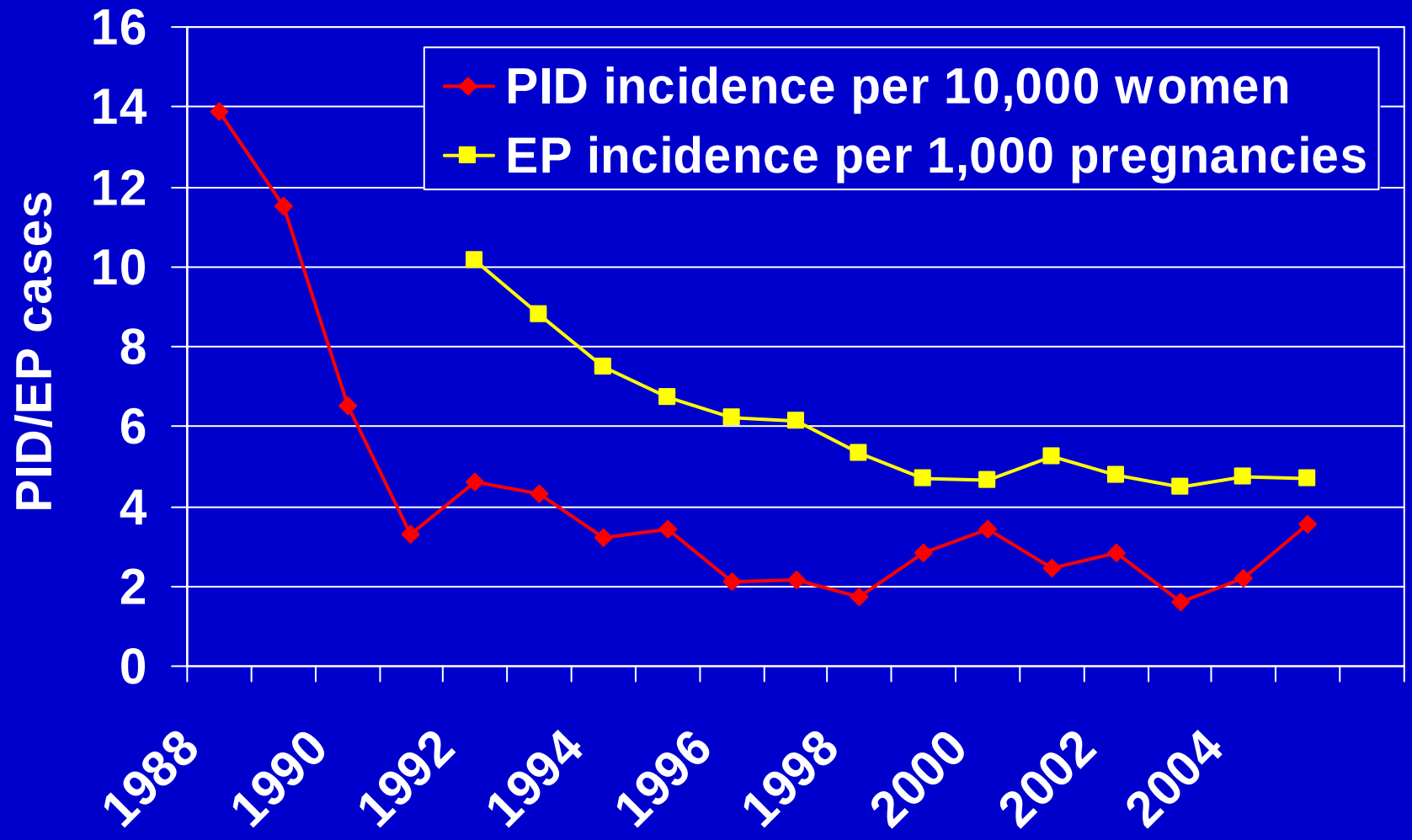
Results: Chlamydia Prevalence



Results: Adjusted chlamydia prevalence and gonorrhea incidence



Results: PID and EP Incidence



Results: Chlamydia and gonorrhea as predictors of PID/EP

	Std dev	Regression coefficient*	P-value
PID			
Chlamydia prevalence (adjusted)	7.2	0.057	0.02
Gonorrhea incidence	0.14	0.079	0.0001
EP			
Chlamydia prevalence (adjusted)	19.9	1.71	0.0001
Gonorrhea incidence	0.31	1.71	0.0001

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* Regression coefficients represent change in corresponding outcome per one std dev change in predictor values

Results Summary

- Adjustment to a standardized population resulted in a trend in chlamydia prevalence with:
  - steeper initial decline
  - smaller recent increases
- Downward trends in chlamydia prevalence and gonorrhea incidence highly correlated
- These trends are related to concurrent decline observed for PID and EP

Conclusions

- Limitations
  - Limited IPP variables available across time
  - CHARS data may not capture all PID and EP
  - Ecologic analysis

Conclusions

- Cannot infer with confidence that screening led to declining levels of chlamydia
- Reasons for recent increases in chlamydia prevalence are unclear
- Similar recent increases observed for gonorrhea incidence in Washington State
- Both chlamydia prevalence and gonorrhea incidence are related to trends in PID and EP

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Number of CT tests per year
WA State IPP, women ages 15-23

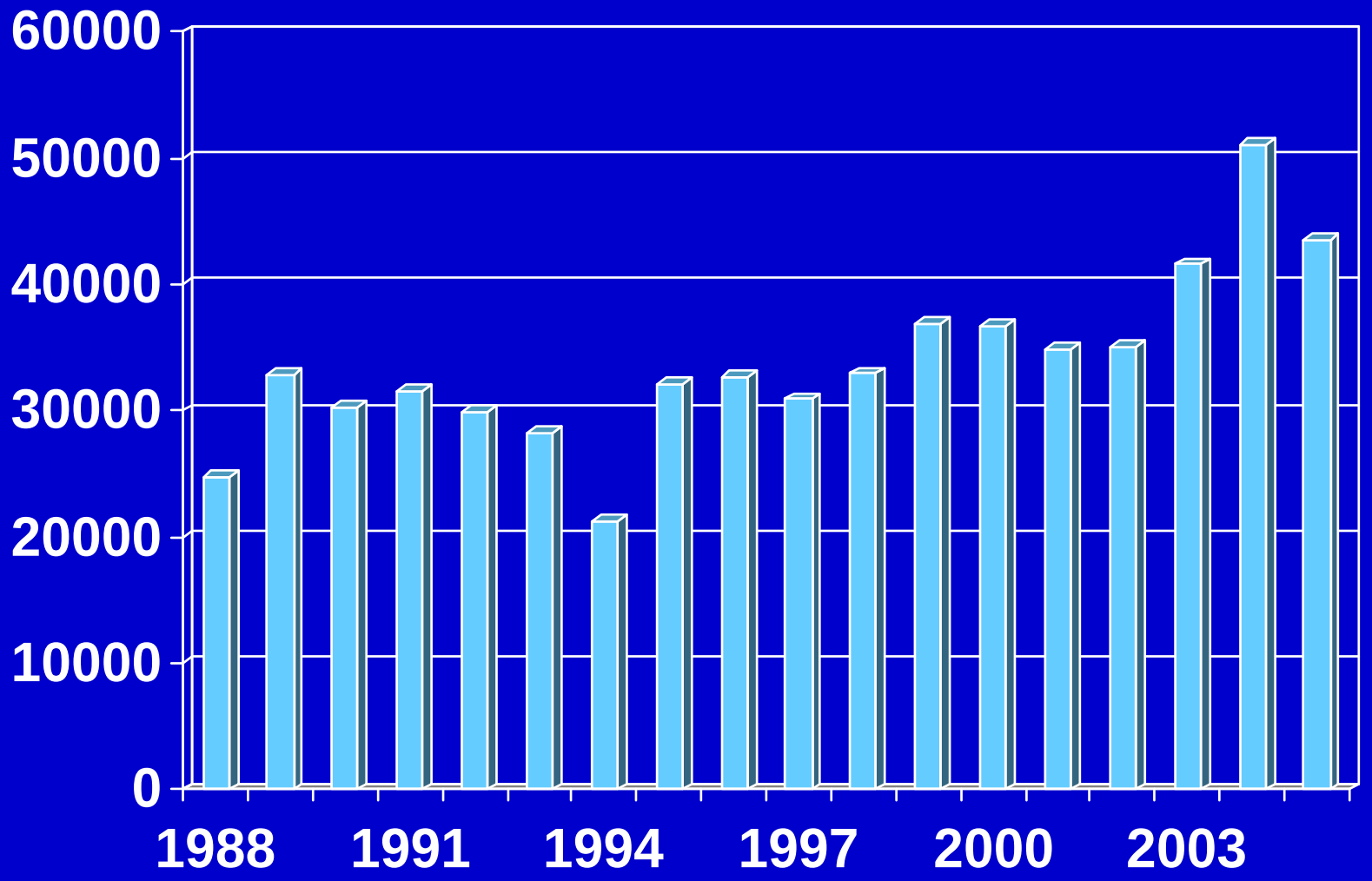
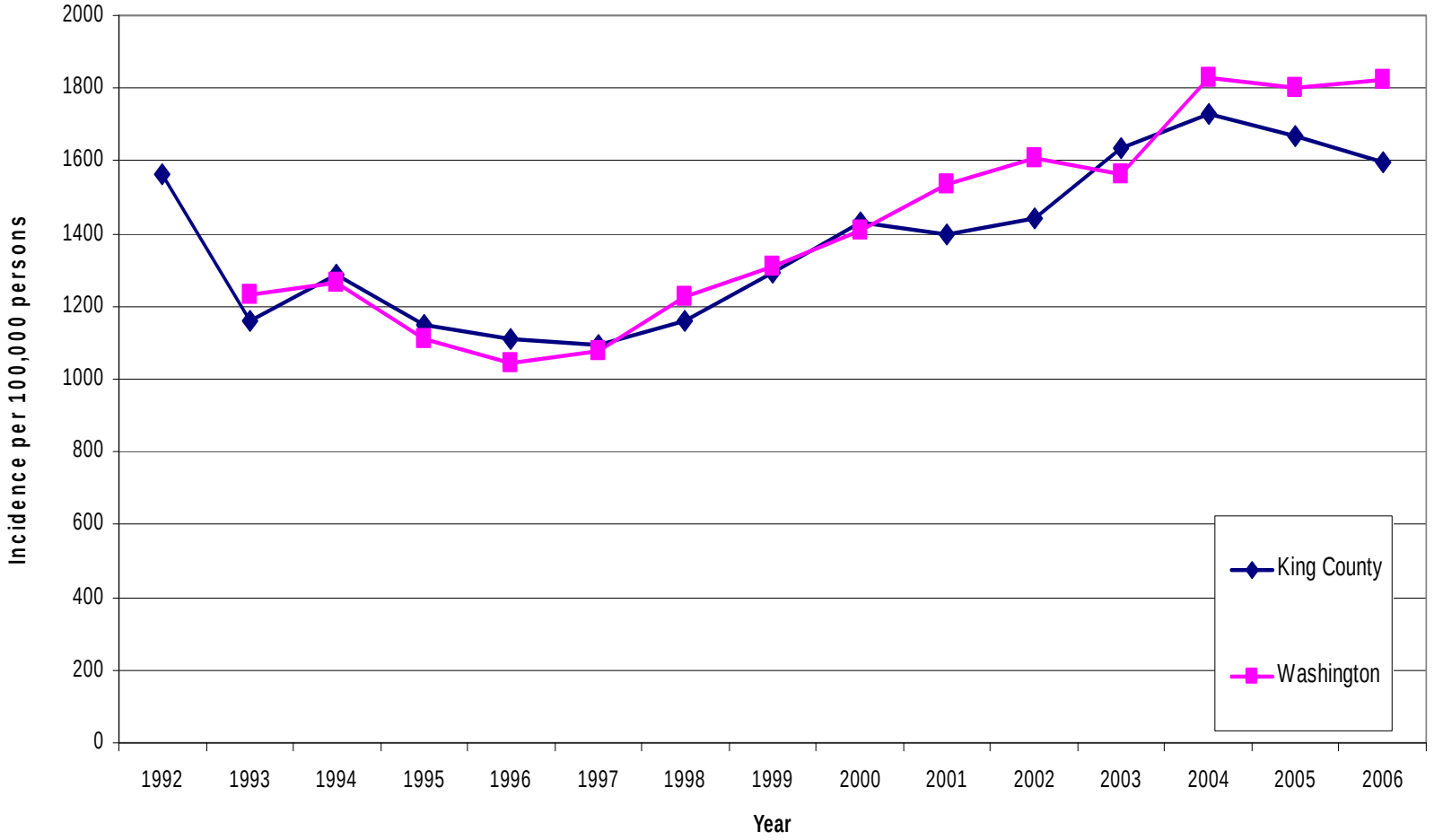


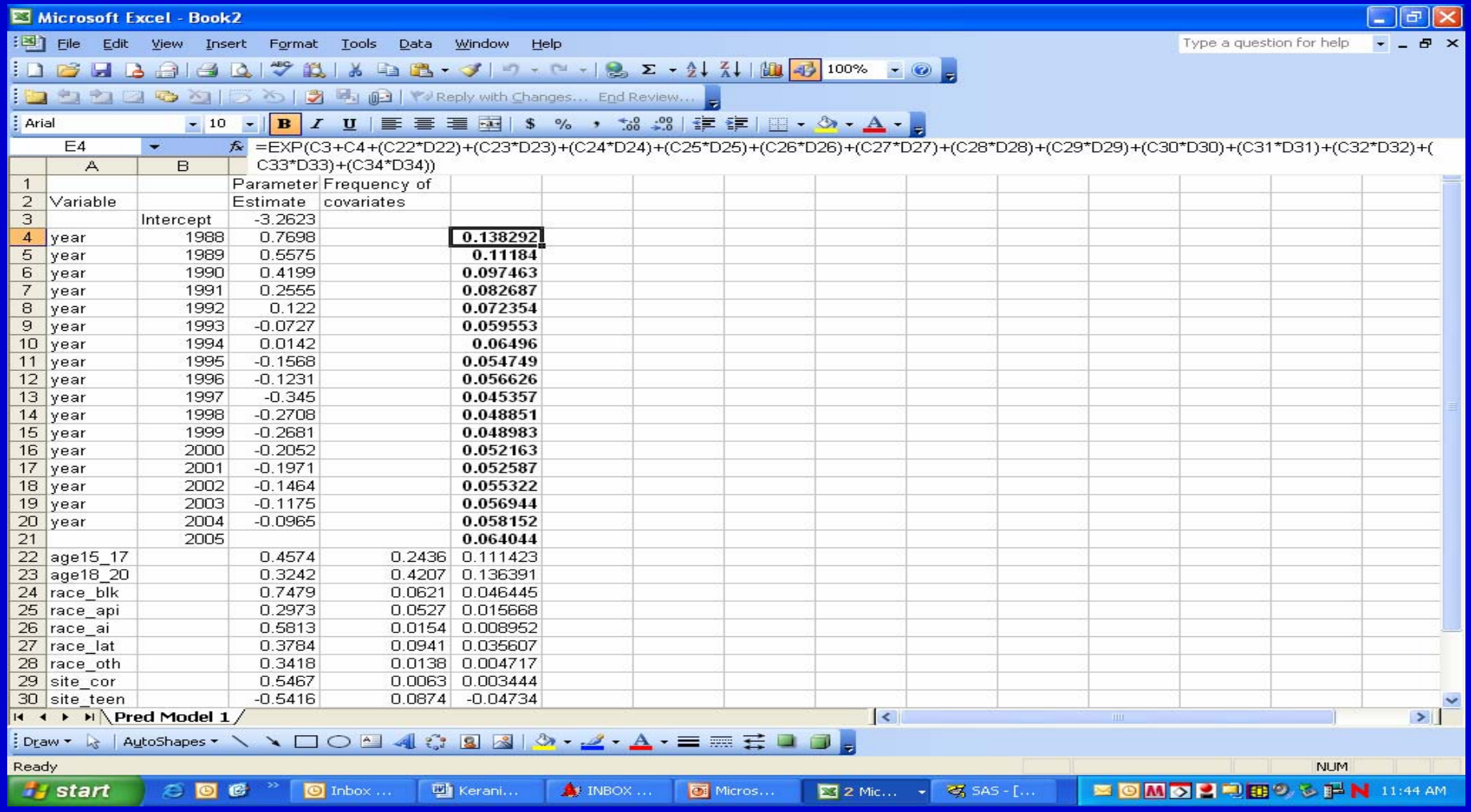
Figure 1: Chlamydia Incidence among Women ages 15-29*, 1992-2006
King County, Washington State, and U.S.



* Cases with unknown age were distributed according to annual age distributions among cases with known age and included in age-specific rates.

** National data for 2006 were not available at the time this report was prepared.

Adjustment of CT prevalence via logistic regression



	A	B	Parameter Estimate	Frequency of covariates	
1					
2	Variable				
3		Intercept	-3.2623		
4	year	1988	0.7698		**0.138292**
5	year	1989	0.5575		**0.11184**
6	year	1990	0.4199		**0.097463**
7	year	1991	0.2555		**0.082687**
8	year	1992	0.122		**0.072354**
9	year	1993	-0.0727		**0.059553**
10	year	1994	0.0142		**0.06496**
11	year	1995	-0.1568		**0.054749**
12	year	1996	-0.1231		**0.056626**
13	year	1997	-0.345		**0.045357**
14	year	1998	-0.2708		**0.048851**
15	year	1999	-0.2681		**0.048983**
16	year	2000	-0.2052		**0.052163**
17	year	2001	-0.1971		**0.052587**
18	year	2002	-0.1464		**0.055322**
19	year	2003	-0.1175		**0.056944**
20	year	2004	-0.0965		**0.058152**
21		2005			**0.064044**
22	age15_17		0.4574	0.2436	0.111423
23	age18_20		0.3242	0.4207	0.136391
24	race_blk		0.7479	0.0621	0.046445
25	race_api		0.2973	0.0527	0.015668
26	race_ai		0.5813	0.0154	0.008952
27	race_lat		0.3784	0.0941	0.035607
28	race_oth		0.3418	0.0138	0.004717
29	site_cor		0.5467	0.0063	0.003444
30	site_teen		-0.5416	0.0874	-0.04734