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Why Parents Say 'No' to the HPV Vaccine

Dr. Anne Rositch & Dr. Melinda Krakow have indicated she has no relevant financial relationships within the past 12 months.



Why Parents Say 'No' to the HPV Vaccine

Shifting the focus from gender and sexuality
to necessity and safety

Anne F. Rositch, PhD, MSPH

Department of Epidemiology

Johns Hopkins Bloomberg School of Public Health

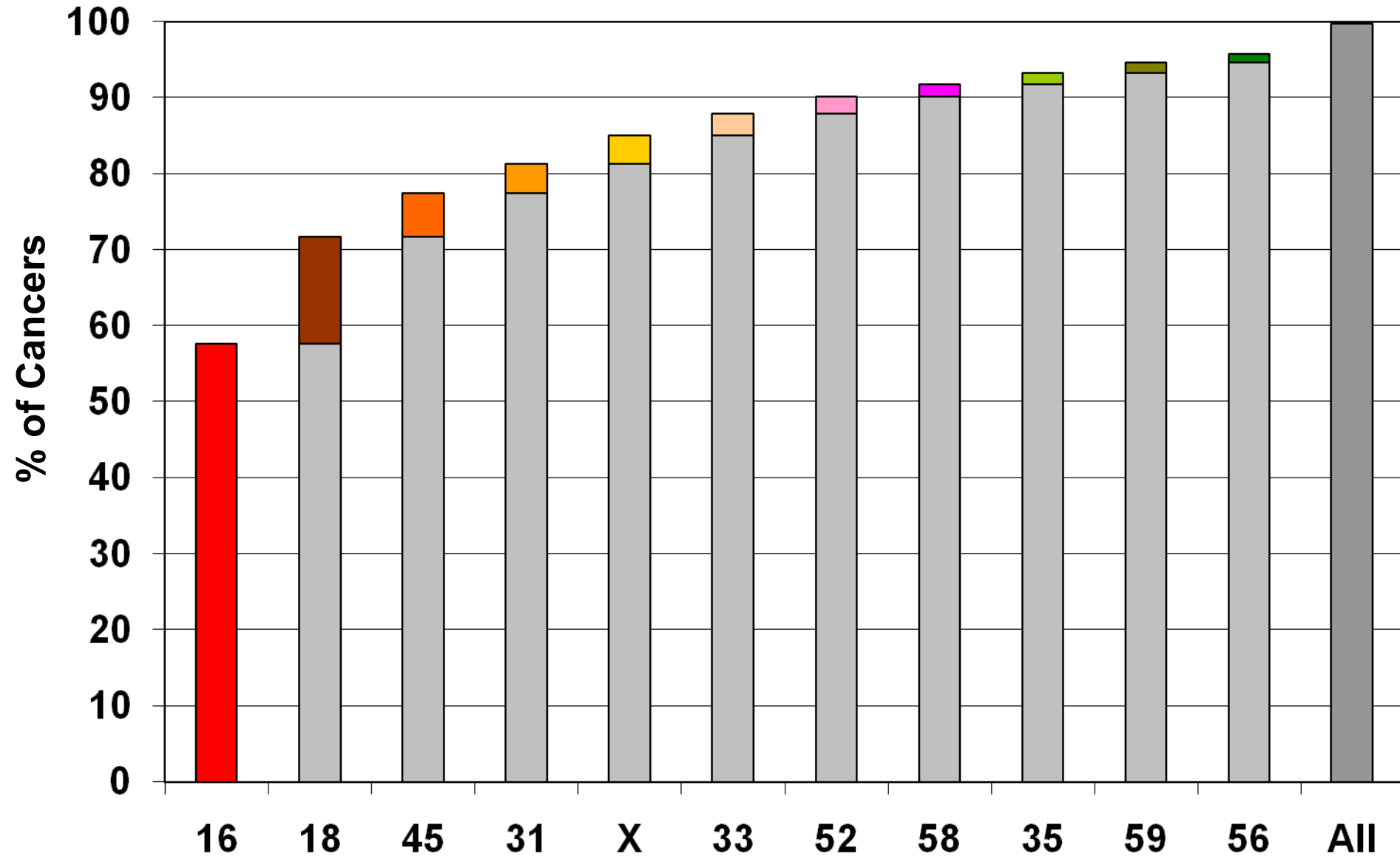
Sidney Kimmel Comprehensive Cancer Center

HPV and cervical cancer

- ◆ More than 100 genotypes identified which infect human epithelium, ~50 which specifically infect the anogenital tract
- ◆ Approximately 14-18 are high risk or oncogenic.
 - HPV 16, 18, 26, 31, 33, 35, 39, 45, 51, 52, 53, 56, 58, 59, 66, 68, 73, and 82
 - HR-HPV infection is necessary, but not sufficient for development of invasive cervical cancer
- ◆ Remaining HPV types are not associated with cancer risk (low risk or non-oncogenic), but can cause low grade cervical abnormalities or benign proliferative warts (esp. HPV 6 and 11)



Incremental Contributions of HPV Types

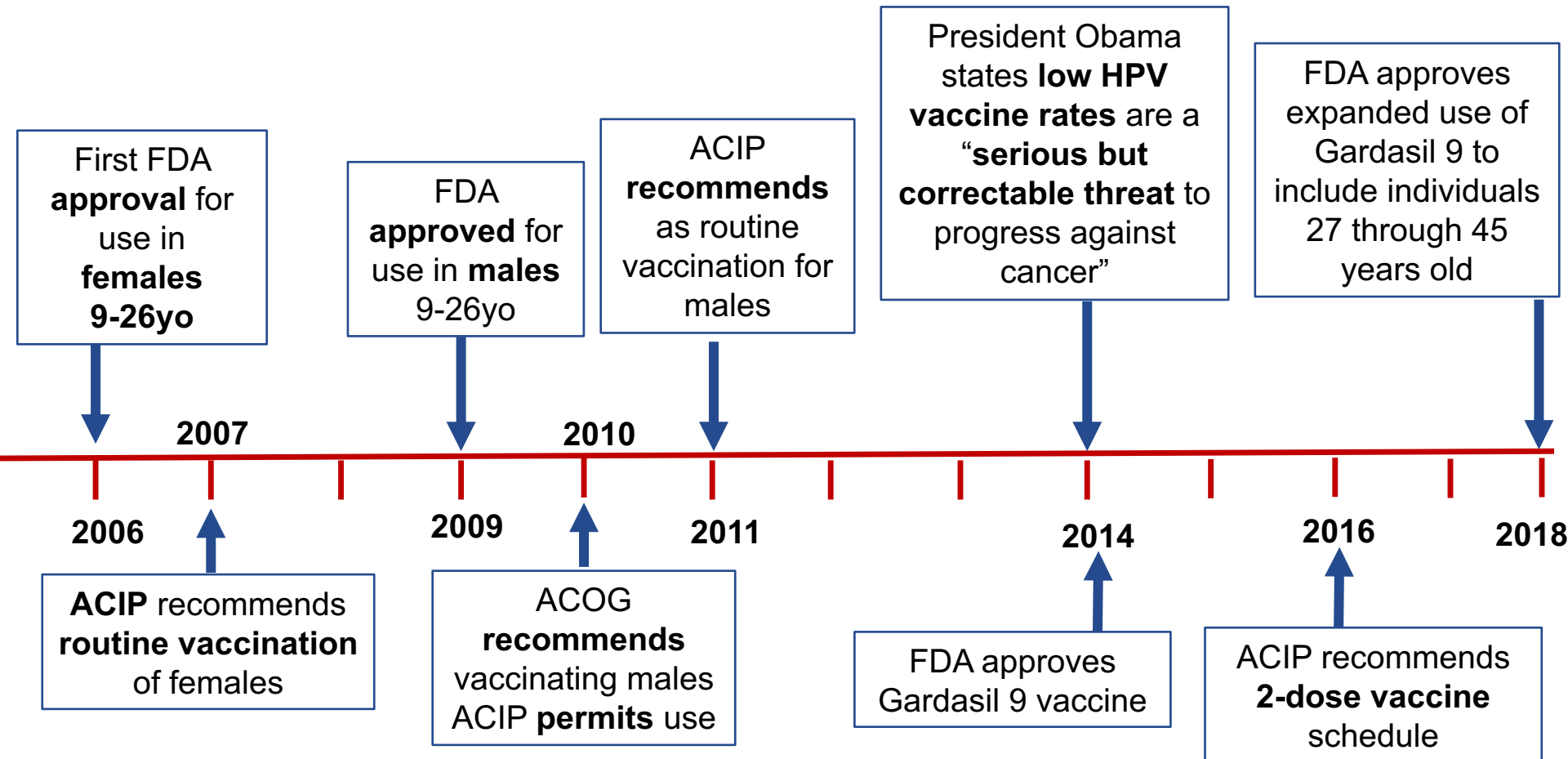


HPV vaccines

	Gardasil	Cervarix	Gardasil-9
Year FDA approved	2006	2009	2014
HPV types covered	6, 11 16, 18	16, 18	6, 11 16, 18 31,33, 45, 52, 58
Protection against cervical cancer	70%	70%	90%
Protection against genital warts	90%	0%	90%



HPV Vaccine History



* CDC Advisory Committee of Immunization Practices



Current ACIP Vaccine Recommendations: Females

Initiation after 15 th birthday OR Immunocompromised	Initiation before 15 th birthday
3 doses 9vHPV At 0, 1, and 6 months	2 doses 9vHPV 6-12 months apart
With 11-12 year vaccines Ages 9-26	With 11-12 year vaccines

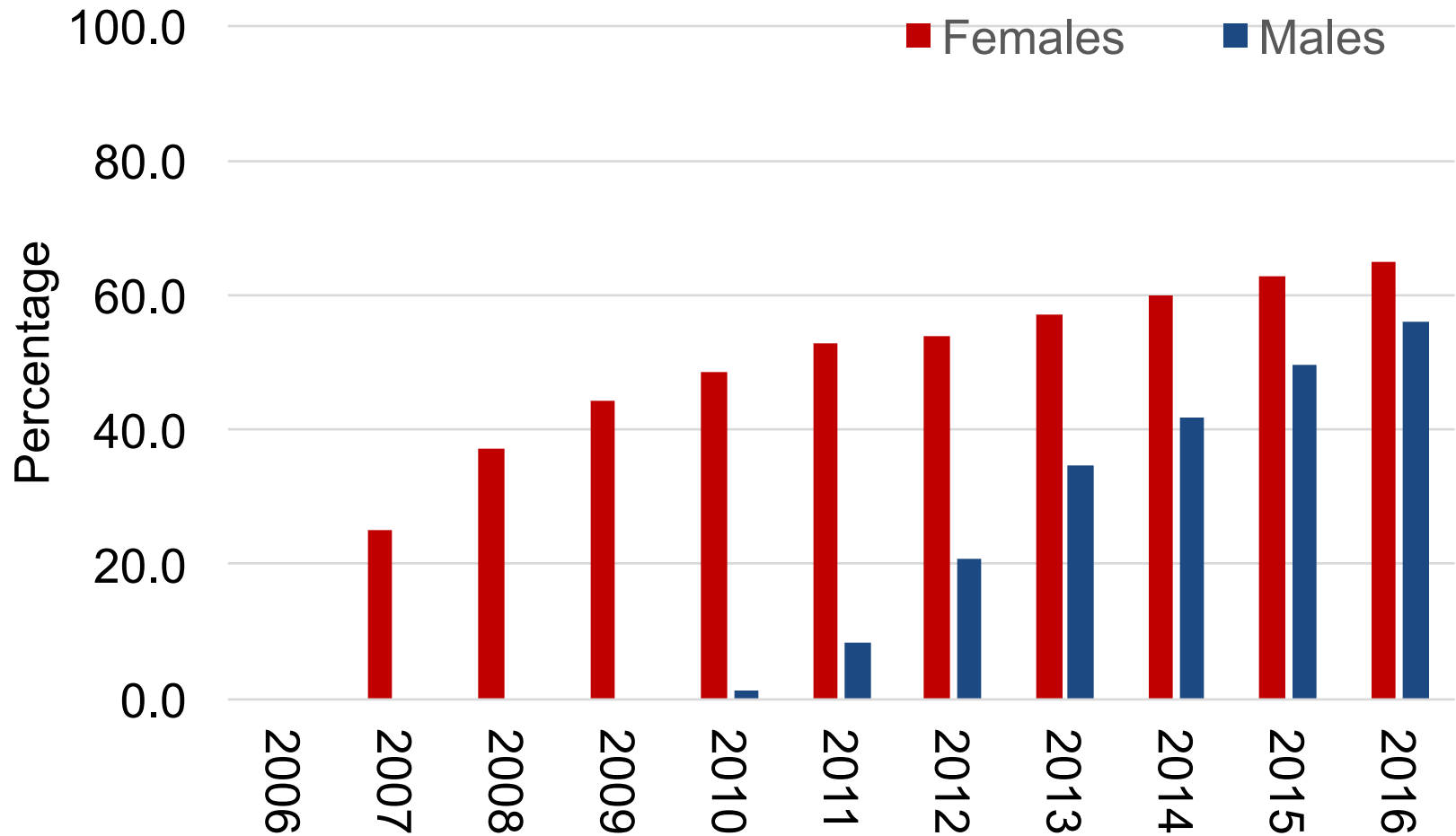


Current ACIP Vaccine Recommendations: Males

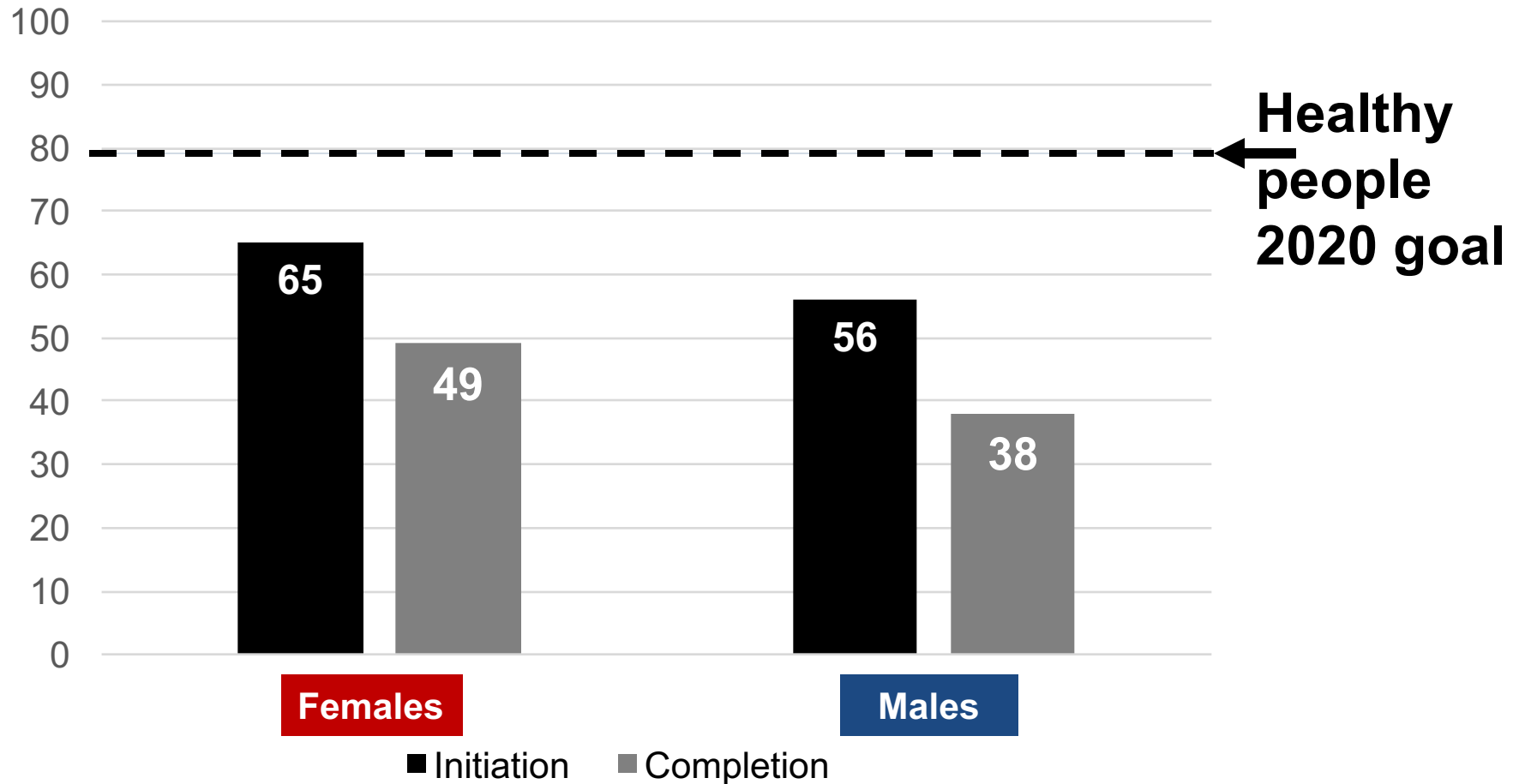
Initiation after 15 th birthday OR Immunocompromised	Initiation before 15 th birthday
3 doses 9vHPV 0, 1, and 6 months apart	2 doses 9vHPV 6-12 months apart
With 11-12yo vaccines Ages 9-21yo unless: MSM Transgender	



U.S. Vaccine Initiation Rates



Vaccine initiation and completion in 2016



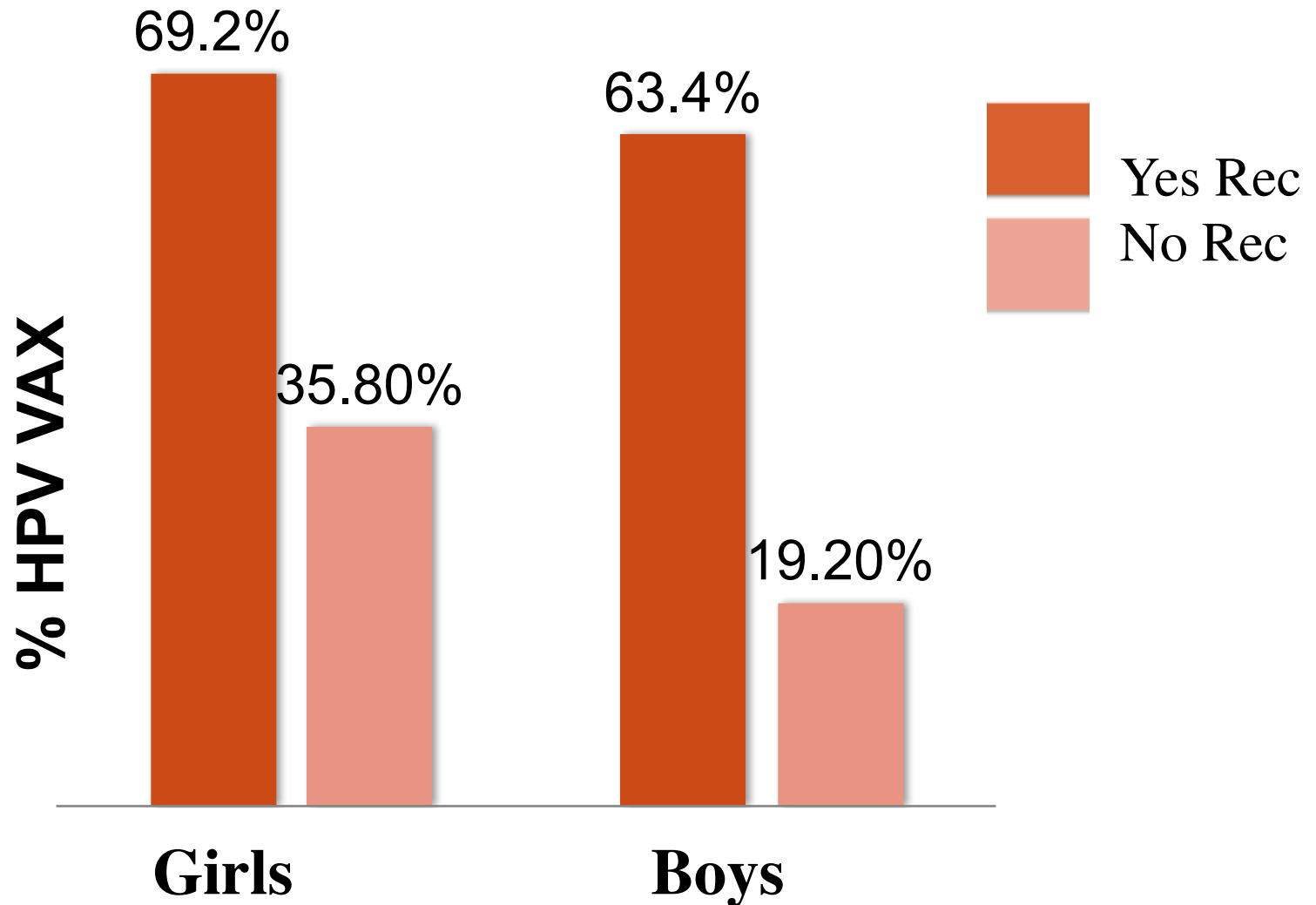
The impact of provider recommendation

Prevalence Ratios for HPV Vaccine Initiation

Provider Recommendation	All Teens (weighted n = 18,948)	Females (weighted n = 9386)	Males (weighted n = 9562)
Crude PR			
No	Ref	Ref	Ref
Yes	2.7 (CI: 2.4, 2.9)	1.9 (CI: 1.7, 2.2)	3.3 (CI: 2.9, 3.8)
Adjusted PR			
No	Ref	Ref	Ref
Yes	2.4 (CI: 2.2, 2.6)	1.8 (CI: 1.6, 2.0)	3.0 (2.6, 3.4)

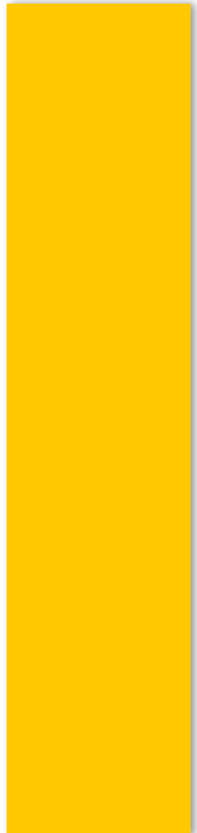


Vaccination by recommendation status



Who gets a provider recommendation?

74.3%



Girls

53.7
%



Boys

More likely if . . .

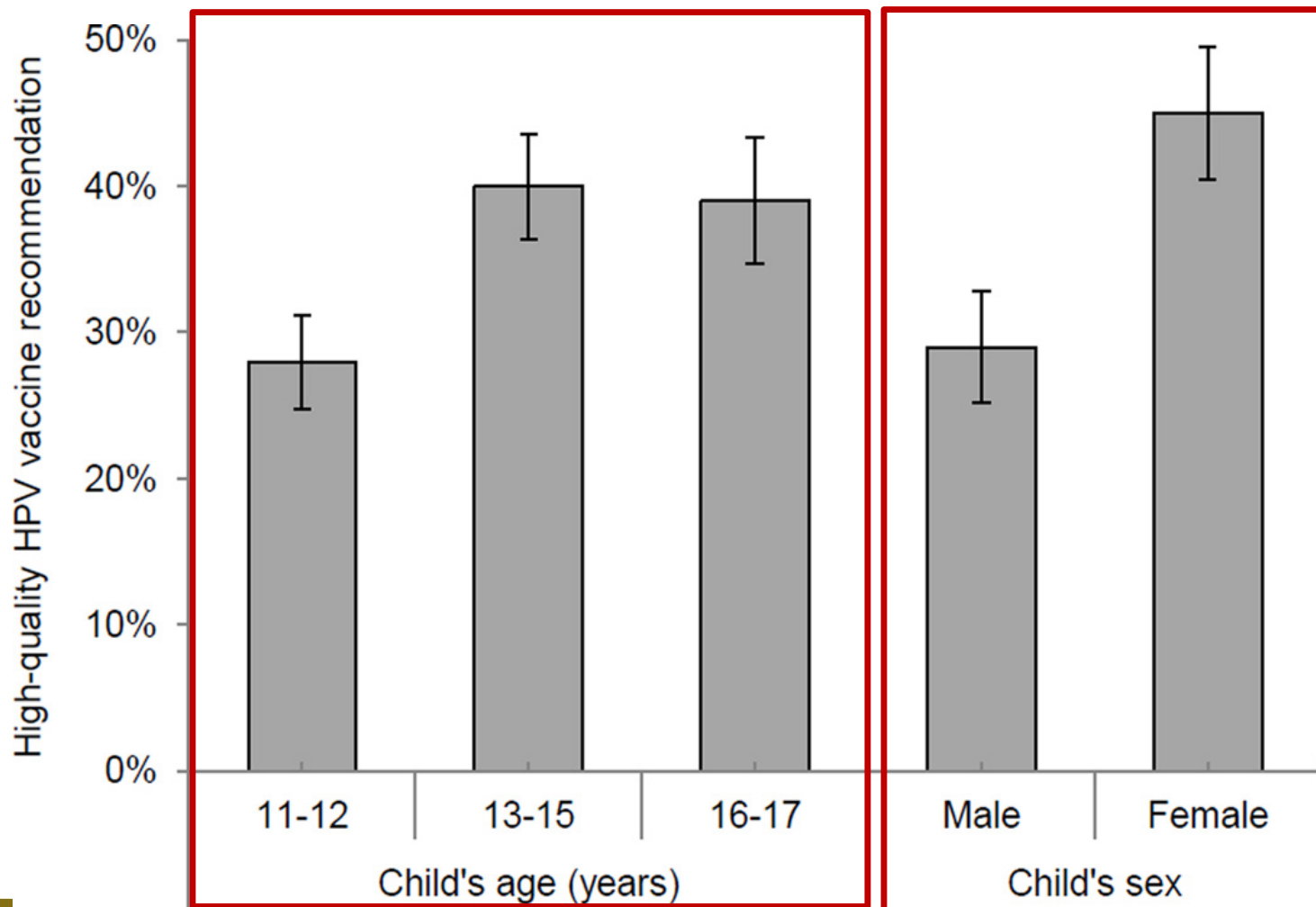
- Income > \$75,000 (PR: 1.13)
- “Other” insurance (1.09)
- Mom is a college grad (1.14)
- HepB & Tdap shots (1.22; 1.44)

Less likely if . . .

- Male (PR: 0.73)
- Midwest or South (0.95; 0.89)
- 1+ years since doctor’s visit (1.15-1.28)



Disparities in receipt of high-quality recommendation



Differences in vaccination even if recommended

Among teens with a recommendation...

Less likely to vaccinate if:

Male (PR: 0.91)

1+ years since last doctor's visit (0.70-0.89)

More likely to vaccinate if :

Older (PR: 1.12-1.24)

Hispanic (1.13) or Multi-racial (1.09)

Hepatitis B & Tdap vaccines (1.34; 2.17)

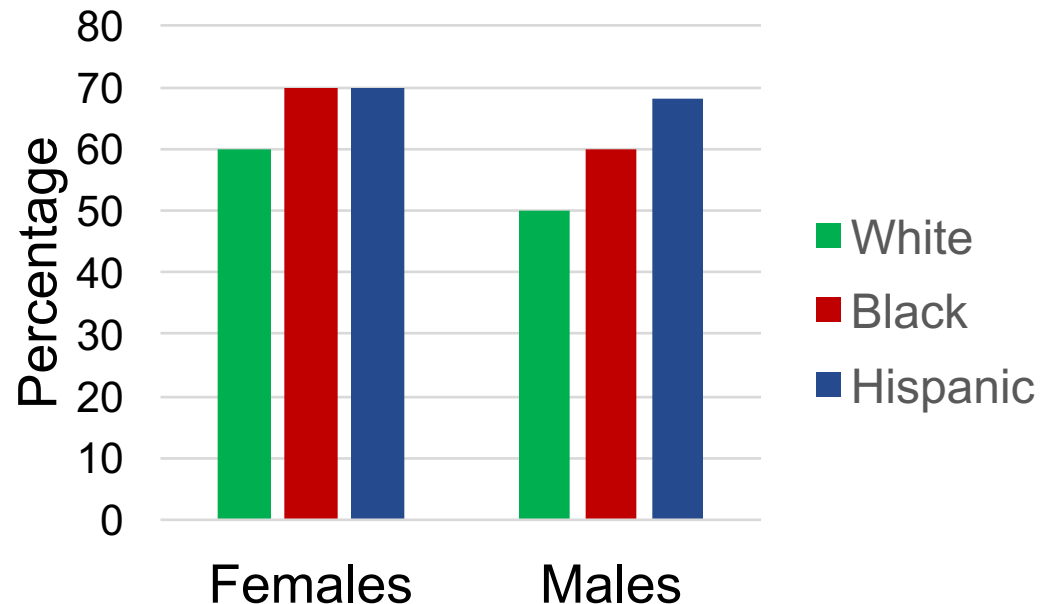


HPV vaccination initiation

Shown to be lower in adolescents who:

- Lack a provider recommendation
- Are above the poverty level
- Live in rural areas
- Male
- White race

→ So, we have a good sense of *who* isn't vaccinating but not *why*!



Study Objectives

1. To evaluate parental **reasons for not intending** to vaccinate their child
2. Identify **changes in reasons** for lack of initiation of HPV vaccination from 2010 to 2016
3. To examine **differences between reasons** reported for girls vs. boys



Data: National Immunization Survey-Teen

Annual, random digit-dialing survey conducted by the U.S. CDC

- Tracks national vaccination rates
- ~35,000 parents surveyed annually

We focused on:

- Provider-verified data
- Teens ages 13-17
- Data from years 2010-2016

→ If child hadn't initiated and parent didn't intend to vaccinate, asked: why?

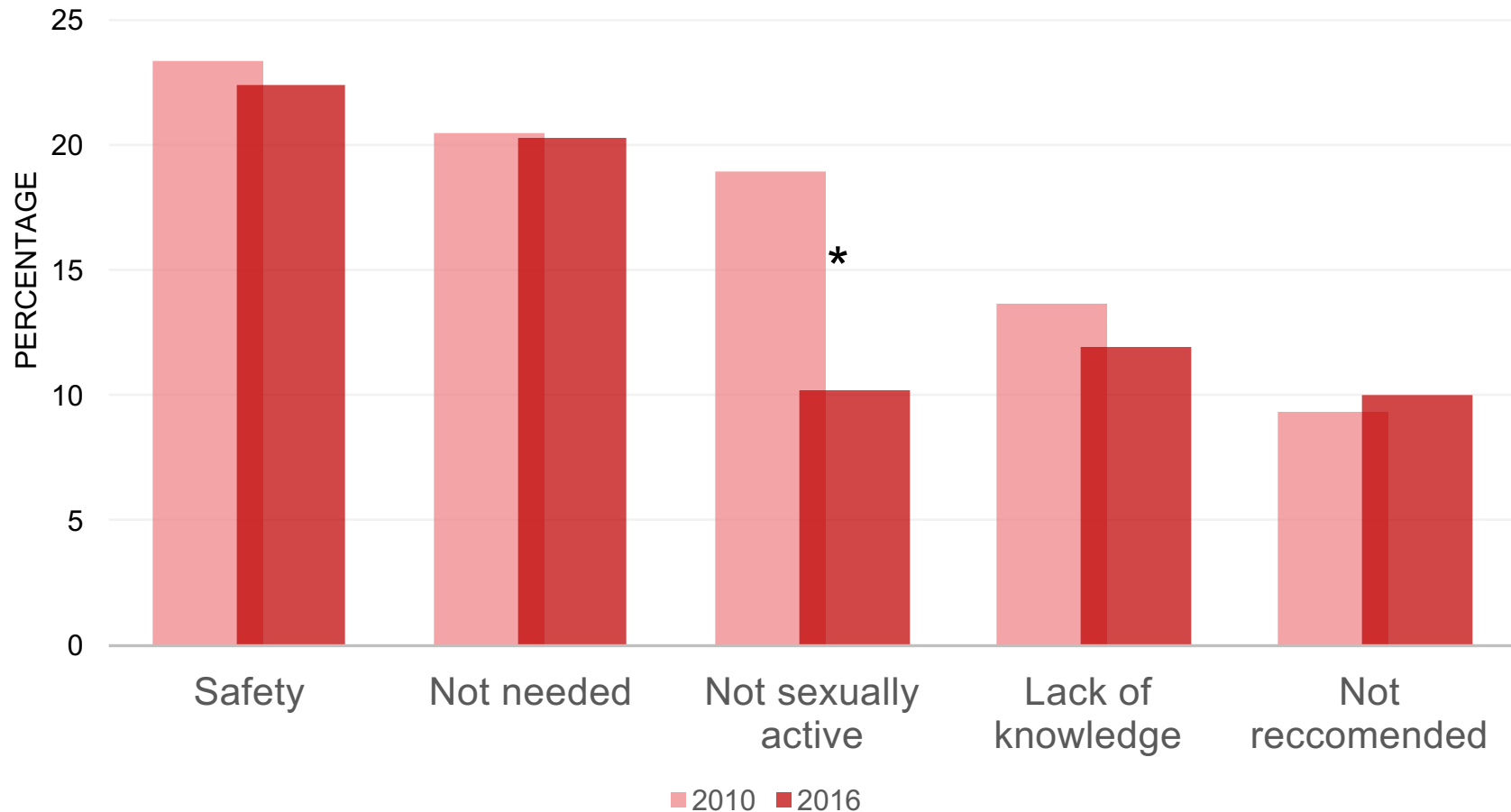


Assessing reasons for lack of HPV vaccination

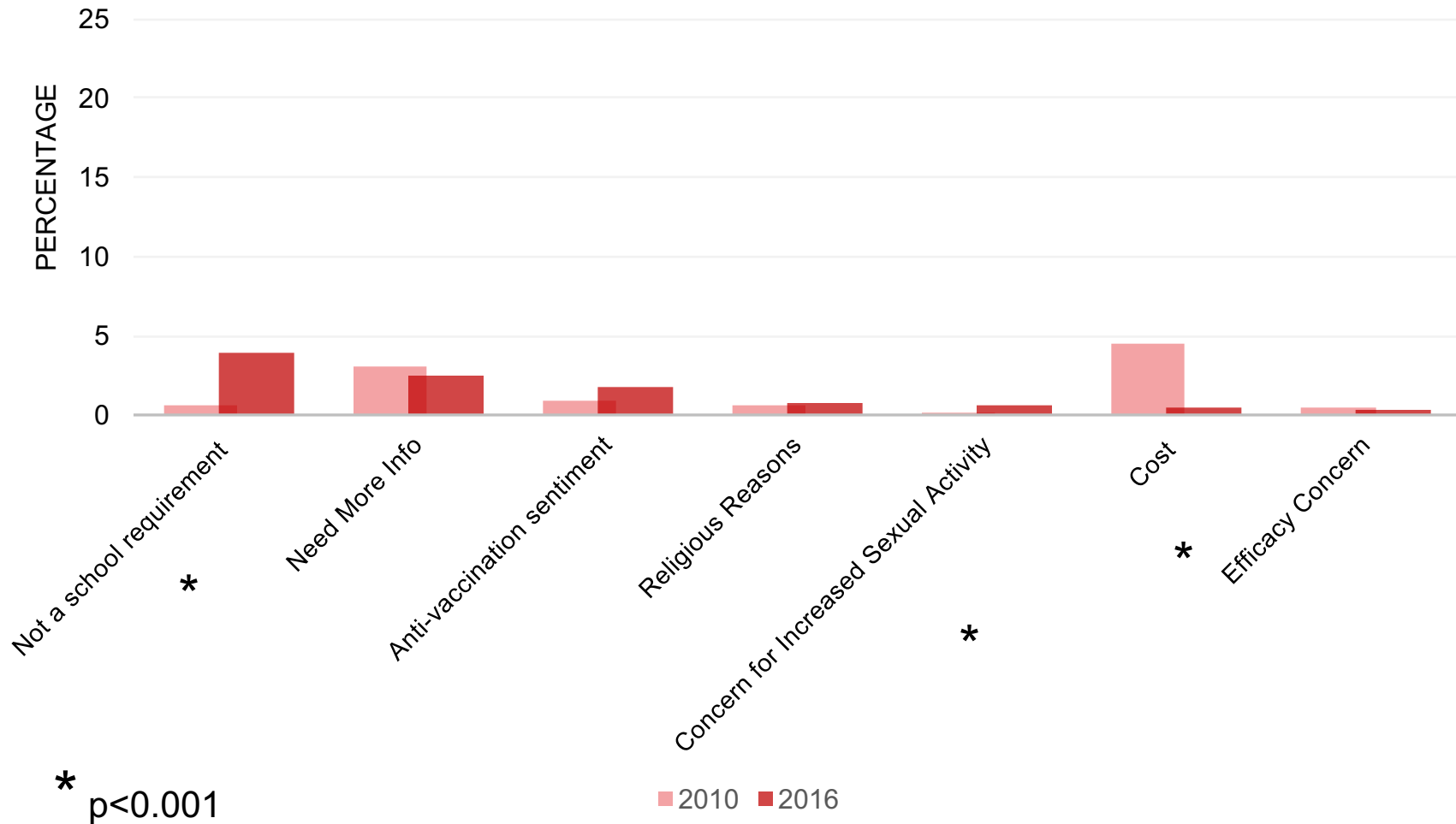
- Prevalence of each parent reported reason for lack of initiation
 - Calculated using survey-weighted methods
- Evaluate trends over time and compared girls vs. boys
 - Log-binomial regression



Reason for Lack of HPV Vaccine Initiation Girls: 2010 vs 2016

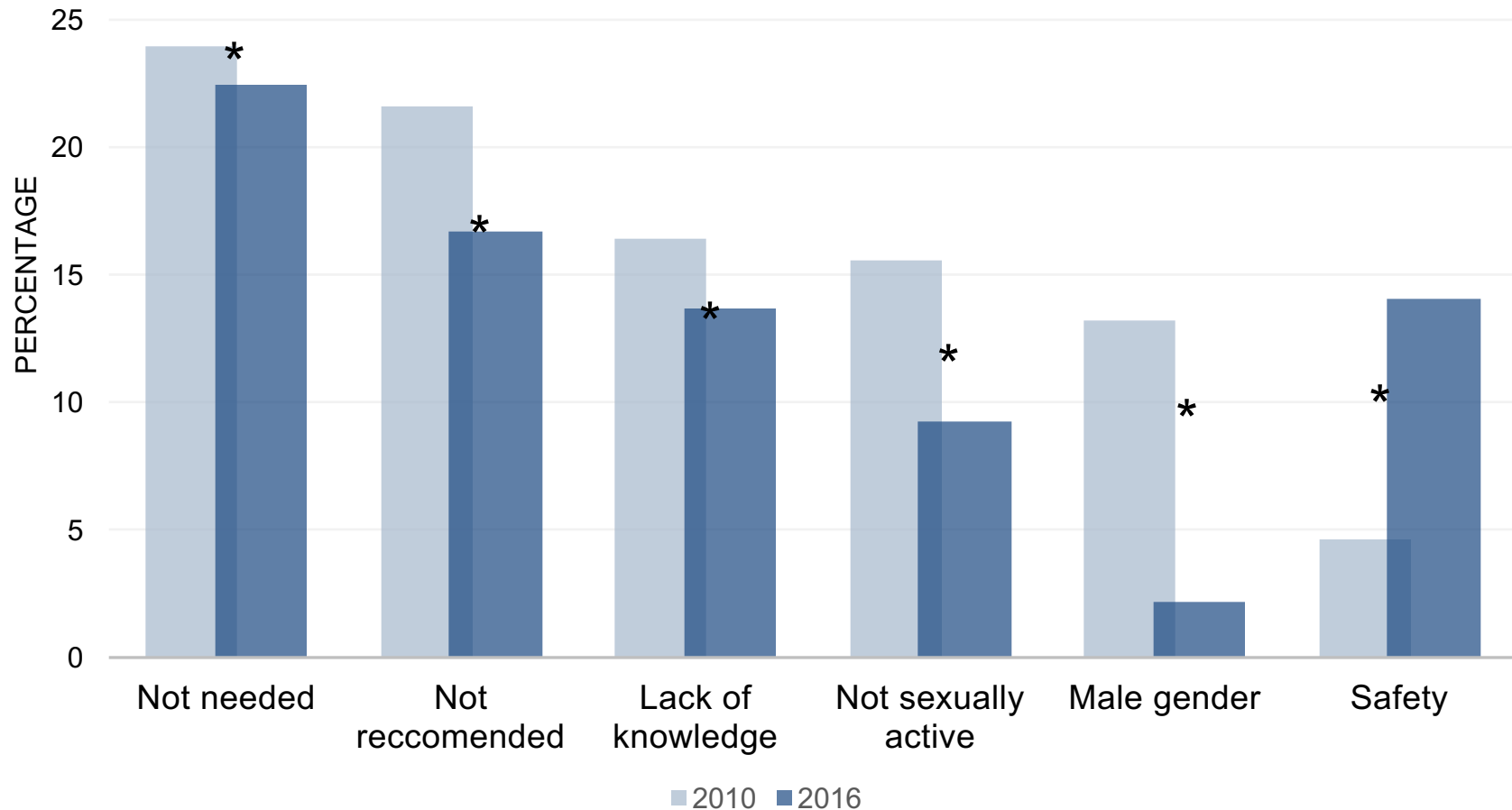


Reason for Lack of HPV Vaccine Initiation Girls: 2010 vs 2016



Reason for Lack of HPV Vaccine Initiation

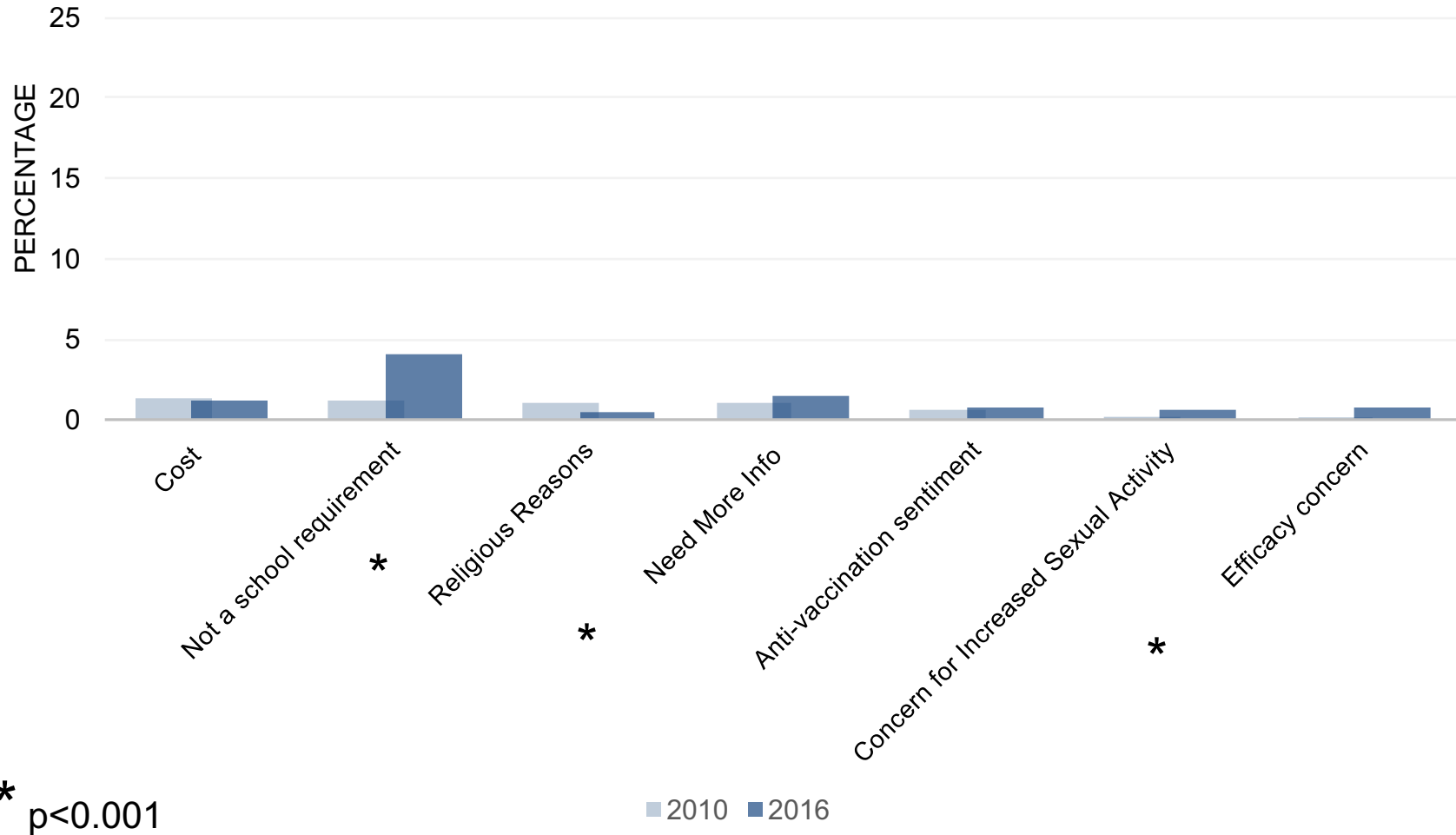
Boys: 2010 vs 2016



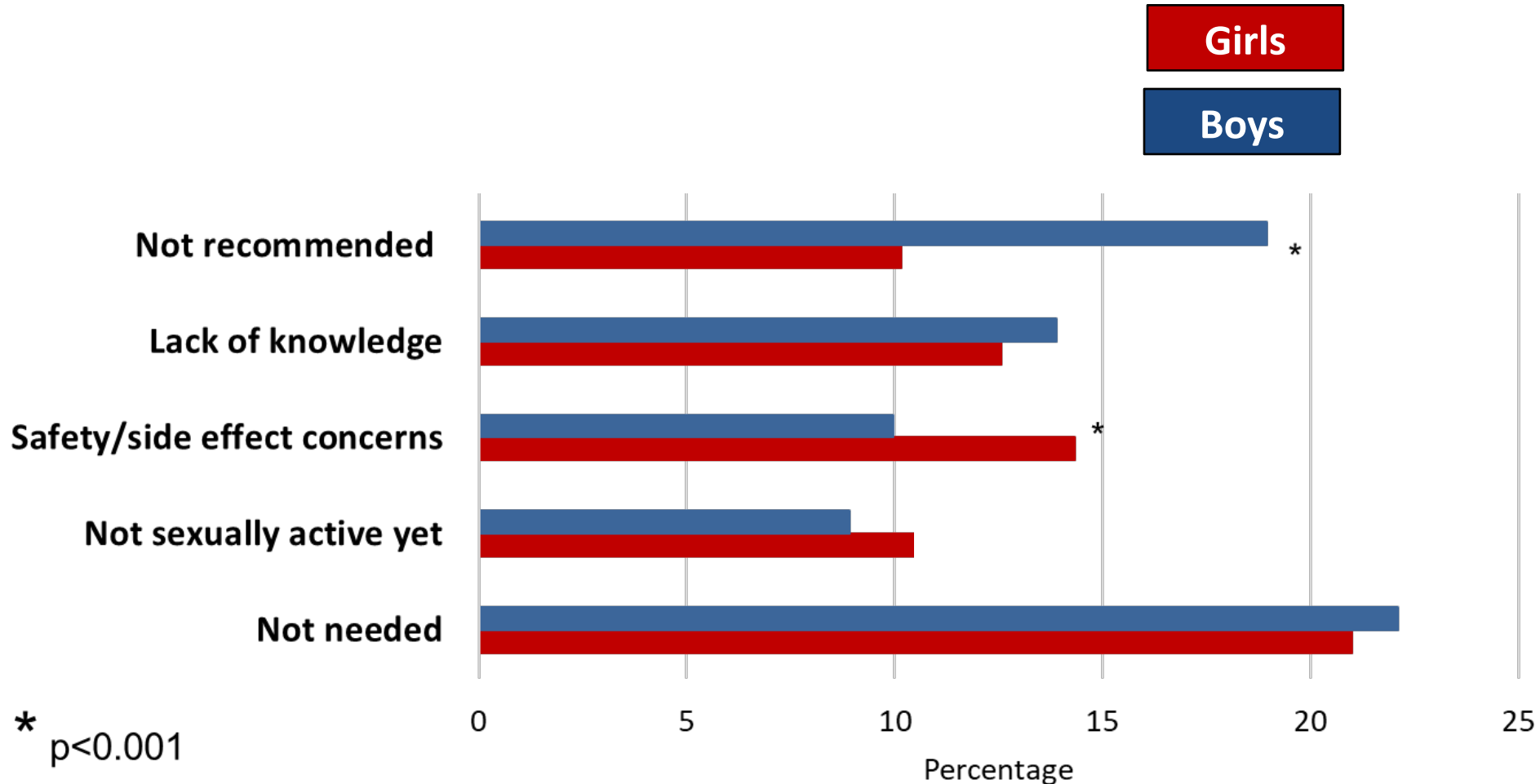
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p<0.001



Reason for Lack of HPV Vaccine Initiation Boys: 2010 vs 2016



Reason for Lack of HPV Vaccine Initiation 2016: Girls vs Boys



WASSERMAN
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DRAWN BY TRIBUNE MEDIA SERVICES

AHA! THE SURE SIGN
OF PROMISCUITY!!



Summary of key findings

- 1) **Perceived lack of necessity and lack of knowledge** have decreased slightly in males, but they remain the most common reasons for lack of vaccine initiation for both genders.
- 2) **Safety concerns still persist** but differed by gender, reported by 22% of parents of females and just 14% of parents of males in 2016.
- 3) **Child not being sexually active** was only reported by 10% of parents in 2016, which may reflect growing understanding of the need to vaccinate before sexual debut.
- 4) **Increase their child's sexual activity** was reported as a concern by less than 1% of parents.



HPV vaccine safety

TEXAS: 14-YEAR OLD VIRGIN FALLS PREGNANT AFTER FLU SHOT



f

401K

San Angelo, TX | A 14-year old schoolgirl

HOME \ NEWS \ NATIONAL

HPV vaccine cited in infertility case

Wis. sisters say drug led to ovarian failure by age 16



By Cheryl Wetzstein - The Washing

Two Wisconsin sisters have
them losing the ability to

ANOTHER MOTHER WANTS YOU TO SEE WHAT AN HPV VACCINE INJURY LOOKS LIKE

ARJUN WALIA • APRIL 24, 2017

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HPV vaccine safety

The NEW ENGLAND JOURNAL *of* MEDICINE

ORIGINAL ARTICLE

Quadrivalent HPV Vaccination and the Risk of Adverse Pregnancy Outcomes

Nikolai M. Scheller, M.D., Björn Pasternak, M.D., Ph.D.,
Ditte Mølgaard-Nielsen, M.Sc., Henrik Svanström, Ph.D.,
and Anders Hviid, Dr.Med.Sci.



HPV vaccine safety

Condition	Risk per one million doses	Risk increased?
Anaphylaxis	1.7	No
Guillan-Barre Syndrome	<1.4	No

Condition	Relative risk (95% CI)	Risk Increased?
Seizures/epilepsy	0.66 (0.54-0.80)	No
VTE	0.92 (0.54-1.57)	No
Auto-immune disorders	0.9 (0.5-1.5)	No

Over 10 years of unpublished and published data worldwide, showing that the HPV vaccine is safe, and the side effects are **NOT** different from other vaccines.

But, in the case of HPV vaccination, there is a noticeable gap between the science supporting vaccine safety and the perception of millions of parents of adolescents in need of cancer protection.



Conclusions

HPV vaccine messages should

- Reflect the current trends and focus on *persistent* concerns about knowledge, safety, and necessity
- Recognize that concerns regarding sexual activity are low and decreasing and should not be a barrier to discussing the vaccine
- Recognize differences in reasons for lack of vaccination for girls vs. boys



THANK YOU!

Feel free to contact me with questions: arositch@jhu.edu

Co-author acknowledgements:

Krakov M, Beavis A, Cosides O, Rositch AF.

Characteristics of Adolescents Lacking Provider-Recommended Human Papillomavirus Vaccination.

J Adolesc Health. 2017; 60(5):619-622.

Beavis A, Krakow M, Levinson K, Rositch AF.

Reasons for Lack of HPV Vaccine Initiation in NIS-Teen Over Time: Shifting the Focus From Gender and Sexuality to Necessity and Safety.

J Adolesc Health. 2018; 63(5):652-656.

Rositch AF, Krakow M.

Invited Commentary: Moving From Evidence to Impact for Human Papillomavirus Vaccination-The Critical Role of Translation and Communication in Epidemiology.

Am J Epidemiol. 2018; 187(6):1277-1280.

