



Putting Best Practices to Work: Colorado's Experience with IIS-Based Centralized Reminder/Recall Notifications

Heather Roth, MA
Program Manager

Colorado Immunization Information System
Disease Control and Environmental Epidemiology Division

American Immunization Registry Association Conference
April 6, 2016



COLORADO
Department of Public
Health & Environment



ACCORDS

ADULT AND CHILD CENTER FOR HEALTH OUTCOMES
RESEARCH AND DELIVERY SCIENCE

UNIVERSITY OF COLORADO | CHILDREN'S HOSPITAL COLORADO

Outline

- Background
- Previous Research Trials
 - Methods
 - Results
- Provider Survey
- Lessons Learned

CIIS Background

Confidential, secure, population-based, web-based system that:

- Consolidates immunization records for Coloradans of all ages.
- Recommends the vaccines a patient needs based on history and age.
- Supports activities to increase and sustain high immunization coverage rates, including reminder/recall.

CIIS by the numbers:

- Total Patients: 4.88 million
- Total Vaccinations: 53.4 million
- Active Users: 4,638

2010 Randomized Controlled Trial (NIH-funded)

Effectiveness and cost-effectiveness

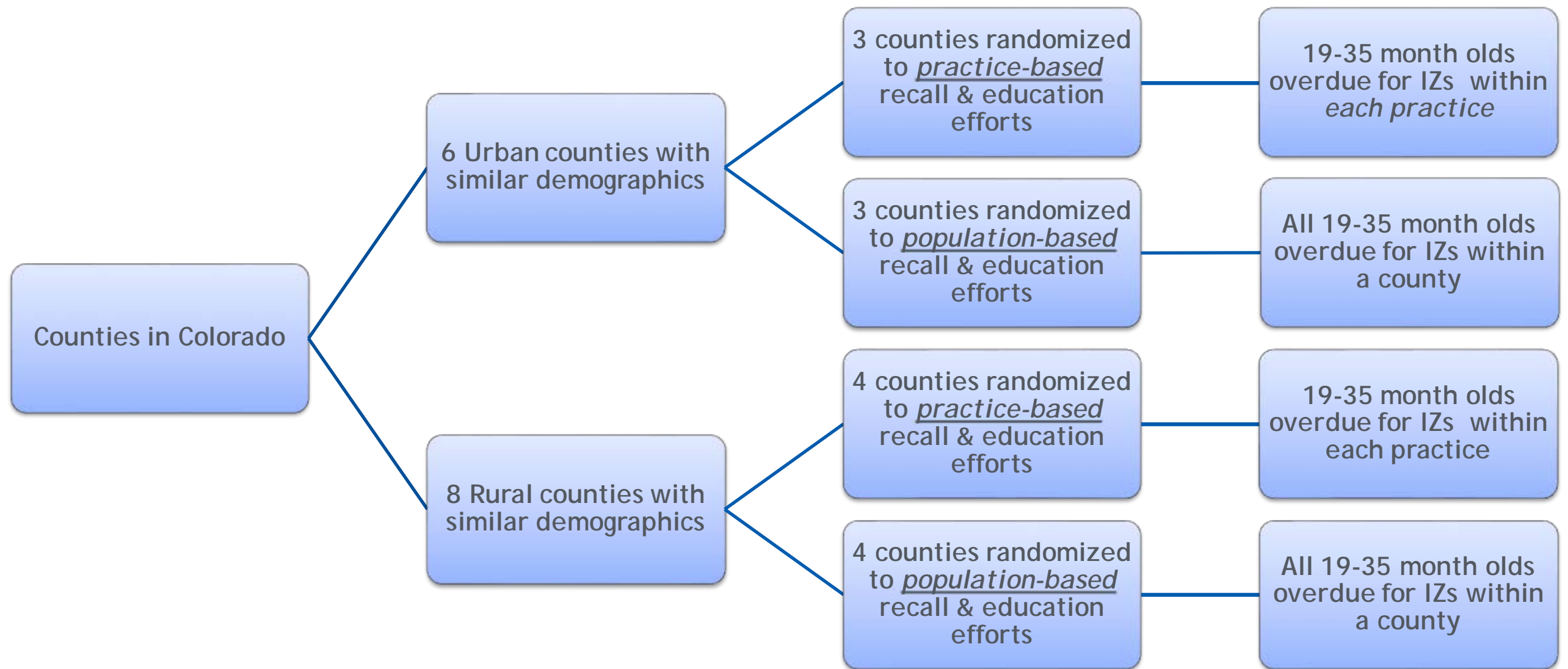
Overall Aims of Project

- To increase immunization rates in children prior to kindergarten
- To increase participation of clinics in the IIS
- To answer the question:
 - Is IIS-based reminder/recall more effective in increasing rates when conducted by individual clinics or centrally by the state health department?

Project Overview

- Population of interest: 19-35 month olds overdue for 1+ immunizations
- Study design: Group randomized trial at the county level comparing two approaches for recalling children overdue for shots
 - Practice-based recall at individual primary care clinics (control group)
 - Population-based (geographic-based) recall at the county level (intervention group)

Study Design Summary



Methods

➤ Population-based counties:

- Up to three mailings sent to parents (English/Spanish)
- Branded with local public health logo and CIIS logo
- Addresses updated in between mailings
- Removed children who became UTD between mailings

➤ Practice-based counties:

- Invited clinics to webinar to train them how to perform recall using CIIS
- Offered clinics financial incentives to conduct recall for their patient populations

Centralized Recall Postcard

Reminder

Based on state immunization records in the Colorado Immunization Information System (CIIS) we show that **your child may be due for one or more** of the following immunizations:

- o Hepatitis B
- o Polio (IPV)
- o Varicella (chicken pox) (Varicela)
- o Hib (influenza type B) (influenza tipo B)
- o Prevnar (pneumonia) (neumonía)
- o MMR (measles/mumps/rubella)
(sarampión/paperas/rubeola)
- o Dtap (diphtheria/tetanus/pertussis)
(difteria/tétano/tos ferina)

Basado en los registros de inmunización del estado en el Sistema de Información de Inmunización de Colorado muestra que **su niño/a debe de recibir uno o más de estas vacunas.**



Eagle County

Please call your child's doctor or your local health department to find out what your child needs and schedule an appointment. To schedule an appointment with the public health department, please call one of Eagle County's three locations for an appointment:



Avon: 970-949-7026; 100 W. Beaver Creek Blvd, Suite 107; Avon, CO 81620

Eagle: 970-328-8840; 500 Broadway; Eagle, CO 81631

El Jebel: 970-704-2760; 0020 Eagle County Drive, Suite E; El Jebel, CO 81623

If you think your child already has all needed shots, please return a copy of the certificate of immunization record to one of the above listed locations, so we may update our records. Please call 970-328-8840 with any questions regarding your child's immunizations.

Por favor llame al doctor de su niño/a o a su departamento local de salud pública para averiguar que es lo que su niño/a necesita y para hacer una cita. Para hacer una cita con el departamento de salud pública por favor llame a una de las siguientes 3 locaciones en el condado de Eagle:

Avon: 970-949-7026; 100 W. Beaver Creek Blvd, Suite 107; Avon, CO 81620

Eagle: 970-328-8840; 500 Broadway; Eagle, CO 81631

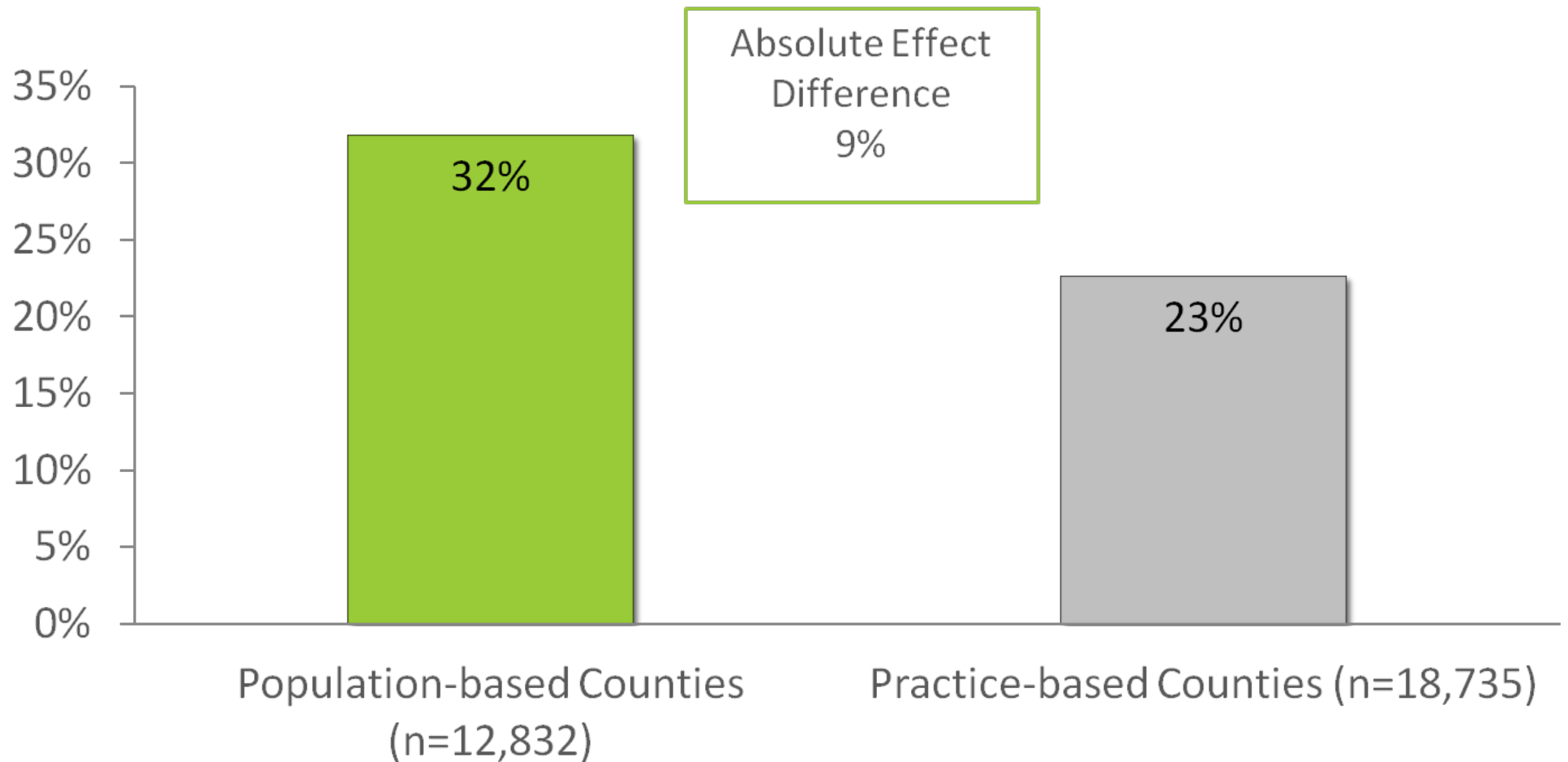
El Jebel: 970-704-2760; 0020 Eagle County Drive, Suite E; El Jebel, CO 81623

Primary Outcomes

- Change in UTD rates from baseline six months after intervention in population-based compared to practice-based intervention counties
- Percent children who received ANY additional vaccine in each type of intervention county
- Cost/benefit of each approach

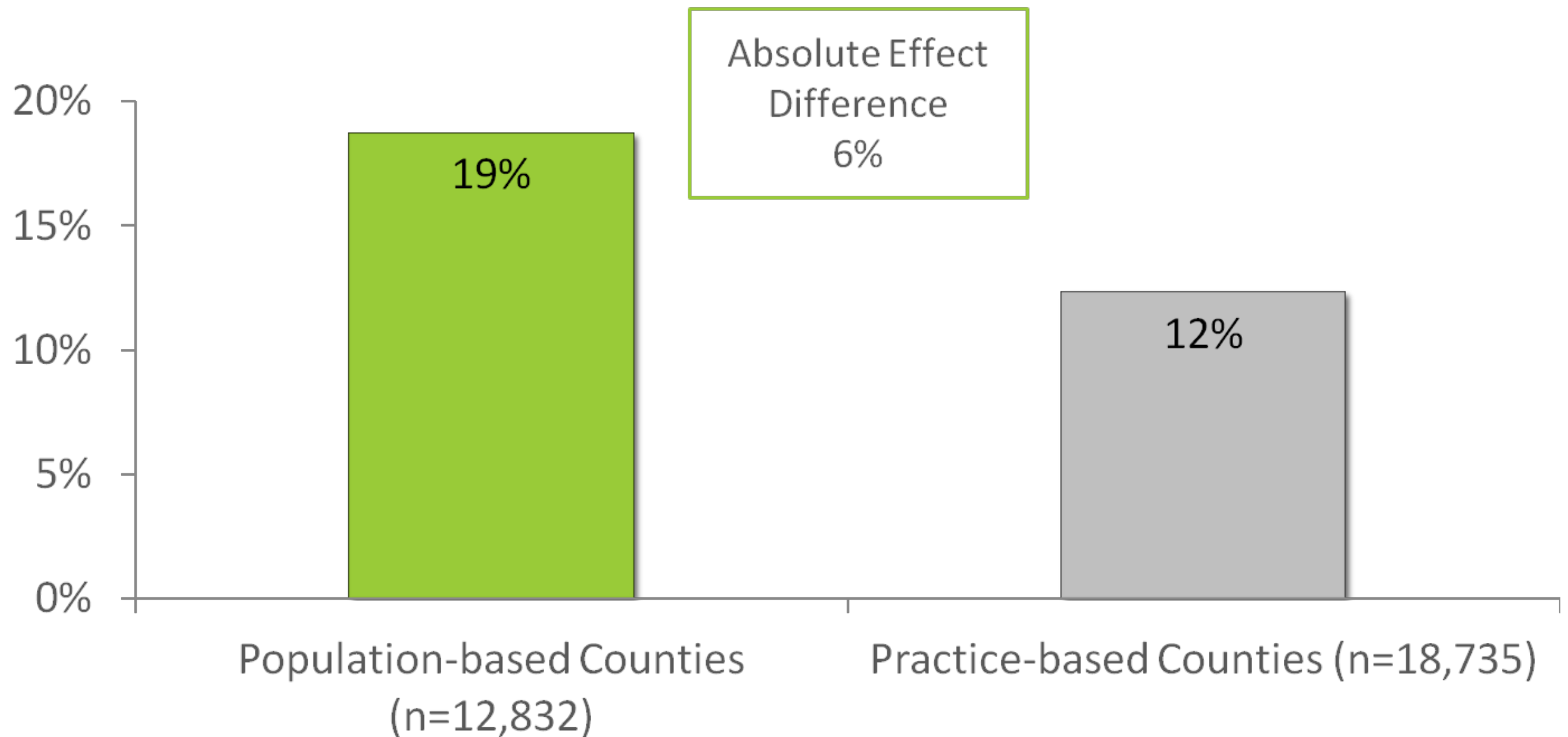
Results

Percent Children Receiving Any Vaccine within 6 months of intervention (of those needing vaccines at baseline)



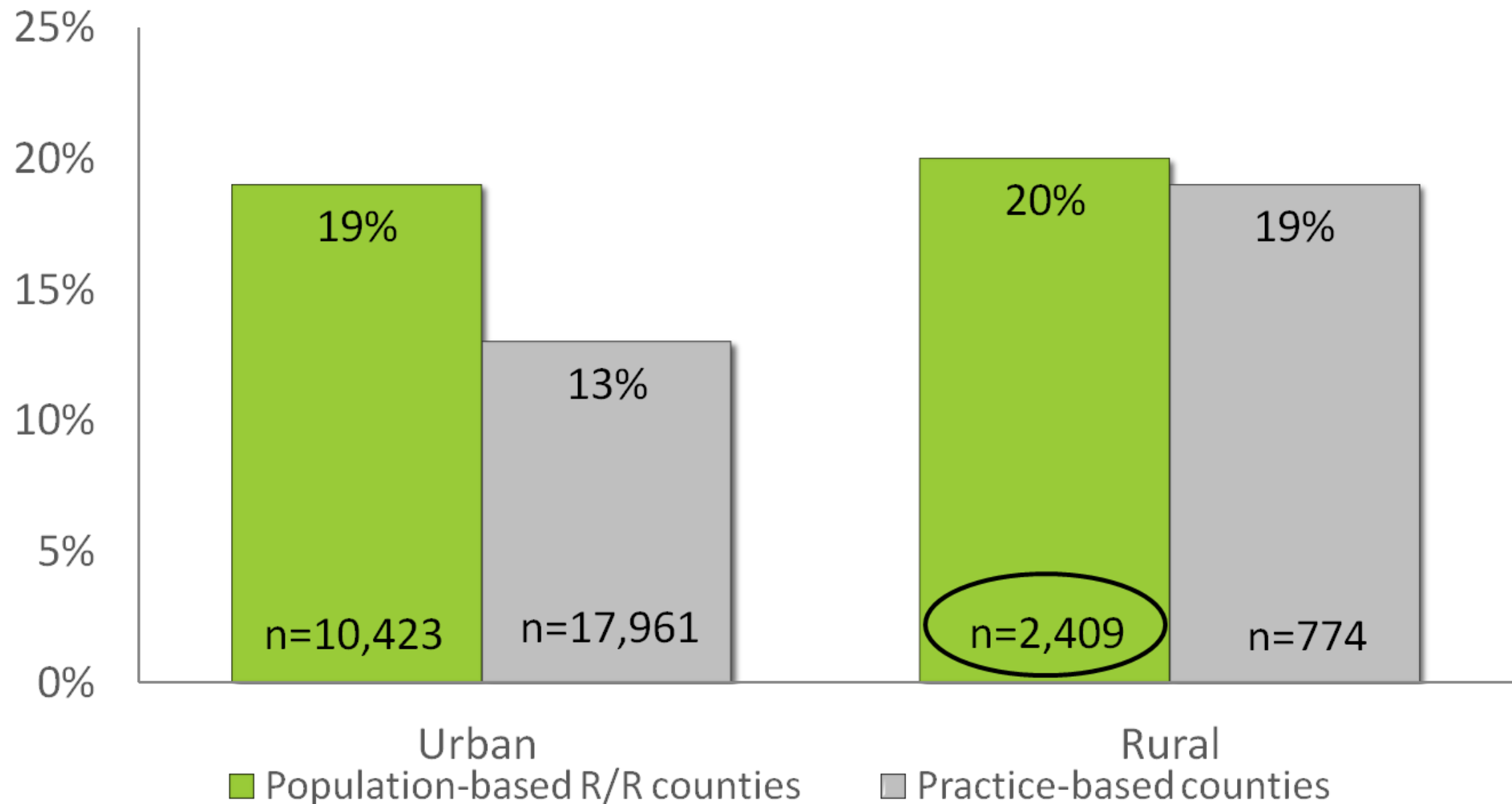
Results

Percent of Children Brought Up-to-Date within 6 months of intervention (of those needing vaccines at baseline)



Results

Percent Children Brought Up-to-Date: Urban vs Rural Study Counties

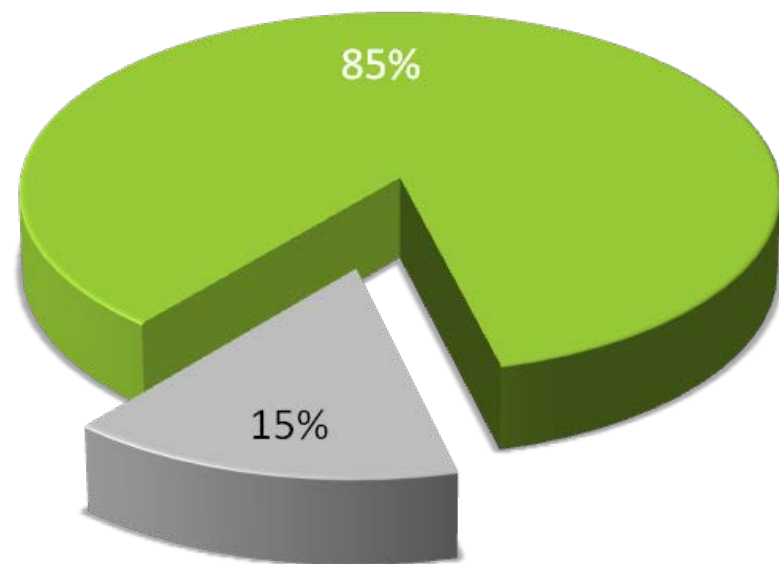


Results

Intervention Reach in Population-based Counties vs. Practice-based Counties

Population-based Counties Reach

188 practice sites
n=12,832 children eligible for recall

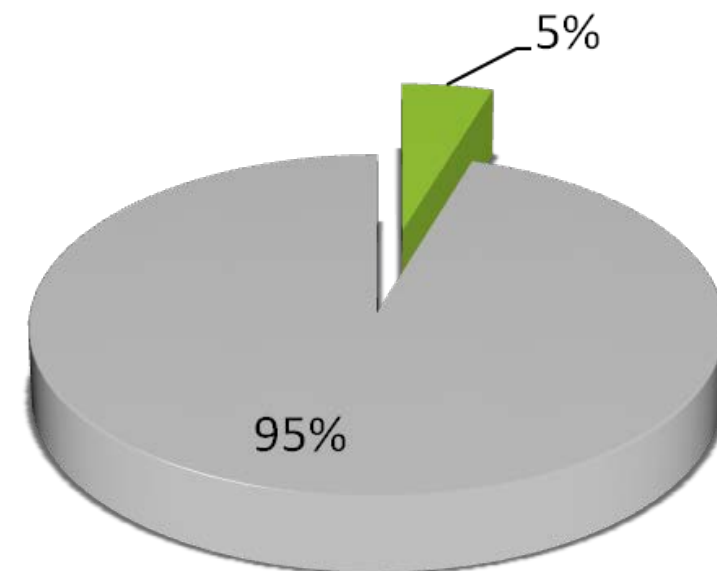


- Received ≥ 1 Recall Notice*
- Did Not Receive a Recall Notice

*Assuming 85% receipt of at least one R/R notice

Practice-based Counties Reach

195 practice sites—10 did recall
n=18,735 children eligible for recall

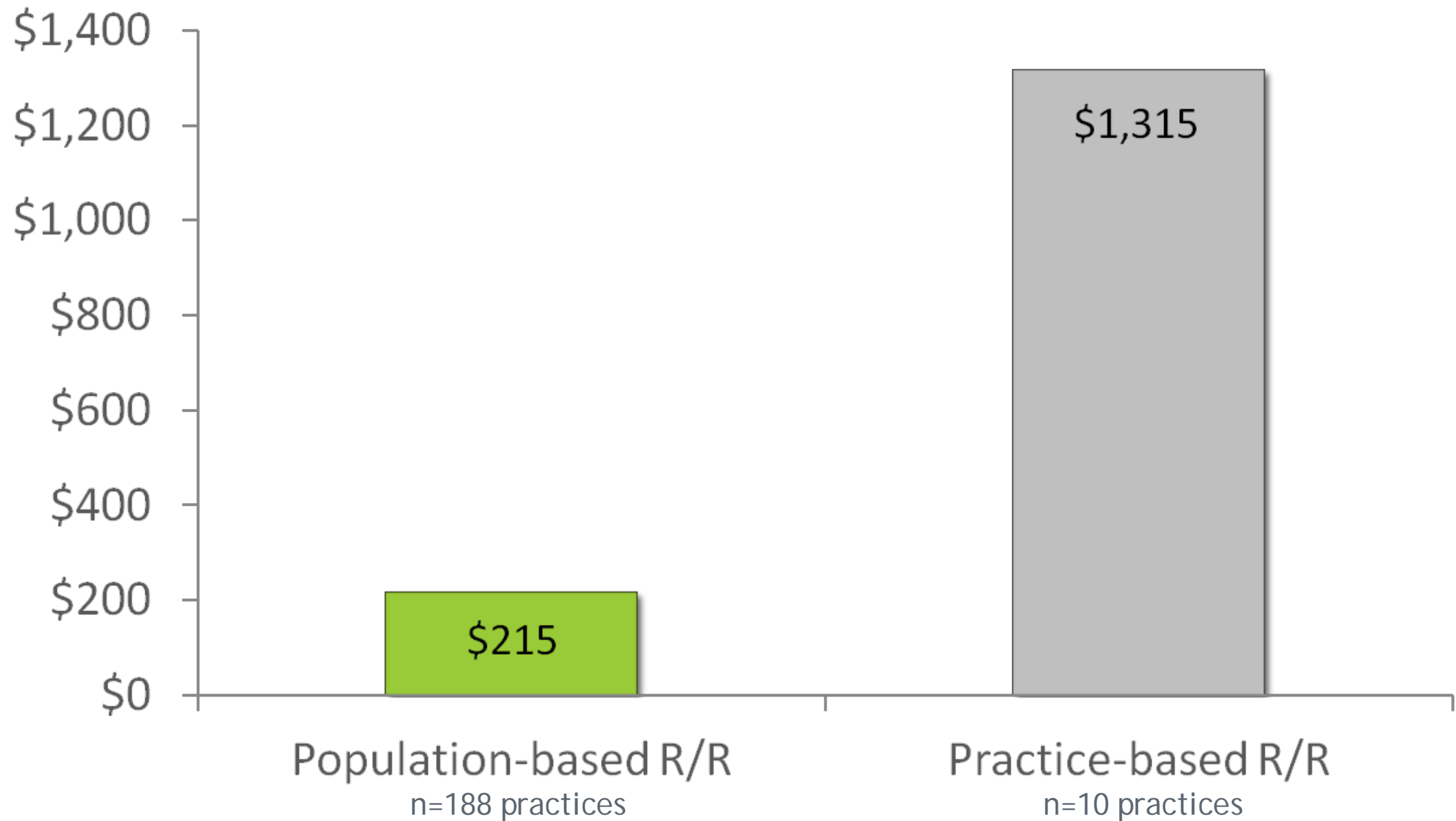


- Received ≥ 1 Recall Notice**
- Did Not Receive Recall Notice

**Assuming 100% receipt of R/R notices among eligible children

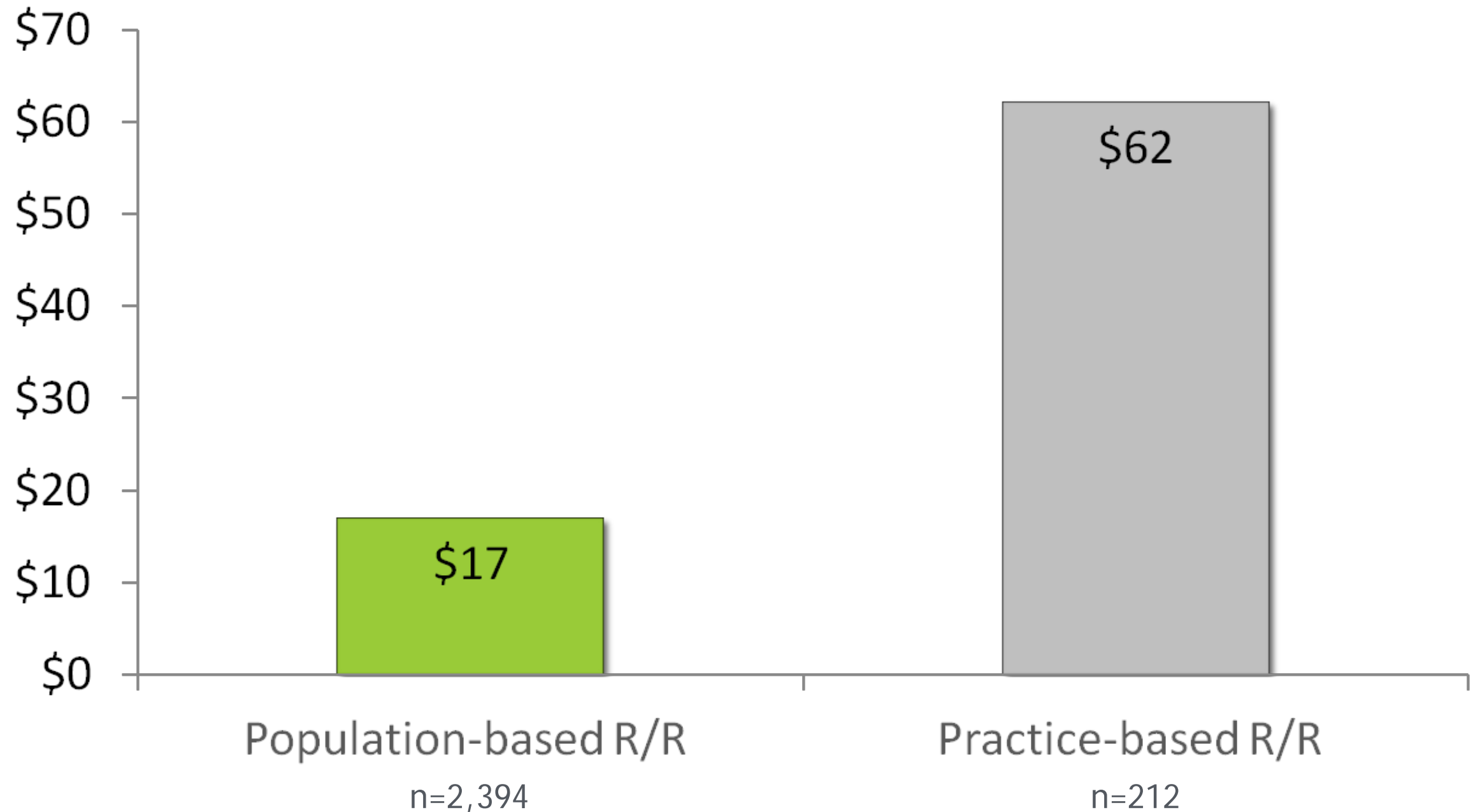
Results

Cost of Conducting R/R per Practice



Results

Cost of R/R Per Child Brought Up-to-Date



Trial Conclusions

- Population-based R/R was more effective than practice-based R/R in increasing immunization and UTD rates among 19-35 month olds in urban counties.
- R/R approaches were comparable in rural counties, likely because of highly engaged local public health agencies.
- Cost per practice or per child vaccinated were much lower for population-based R/R.

2011-2015 Randomized Controlled Trials (AHRQ-funded)

Differences from Previous Trial

- Invited practices in centralized recall counties to “collaborate”
 - Uploading updated demographic information
 - Assisting with bad addresses
 - Endorsing recall messaging by including practice name
- Embedded trial with centralized recall counties to compare two recall methods
 - Mail only
 - Auto-dialer/default to mail

Centralized Recall Postcard



Make sure your child is protected!

According to records in the state immunization registry your child **may** need at least one of the following shots. These shots help to protect your child from serious diseases.

- | | |
|----------------------------------|--|
| ◇ HepB (Hepatitis B) | ◇ PCV (pneumococcal disease) |
| ◇ IPV (Polio) | ◇ MMR (measles/mumps/rubella) |
| ◇ Varicella (chicken pox) | ◇ DTaP (diphtheria/tetanus/pertussis) |
| ◇ Hib (influenza type B) | |

Please call your child's doctor «Optin_Name_Default_Clinic» «Optin_Phone_Default_Clinic» to discuss your child's needs. If your child does not have a doctor, please call the Tri-County Health Department at 303-451-0123. You can find information about their walk-in clinics at www.tchd.org/immunizations.html.

If you feel you have received this in error or would like to be removed from future mailings please call us toll-free at 1-855-288-6715 or send us an email at StopRecalls@ucdenver.edu.



«Optin_Name_Default_Clinic»
«Optin_Phone_Default_Clinic»



¡Asegúrese que su hijo/a esta protegido!

Según los registros de la base de datos de vacunación del estado, su hijo/a **puede** necesitar por lo menos una de las siguientes vacunas. Estas vacunas ayudan a proteger a sus hijos de enfermedades serias.

- | | |
|--|---|
| ◇ HepB (hepatitis B) | ◇ PCV (<i>infección neumocócica</i>) |
| ◇ IPV (<i>poliomielitis</i>) | ◇ MMR (<i>sarampión/paperas/rubéola</i>) |
| ◇ Varicella (<i>varicella</i>) | ◇ DTaP (<i>difteria/tétano/tos ferina</i>) |
| ◇ Hib (<i>influenza tipo B</i>) | |

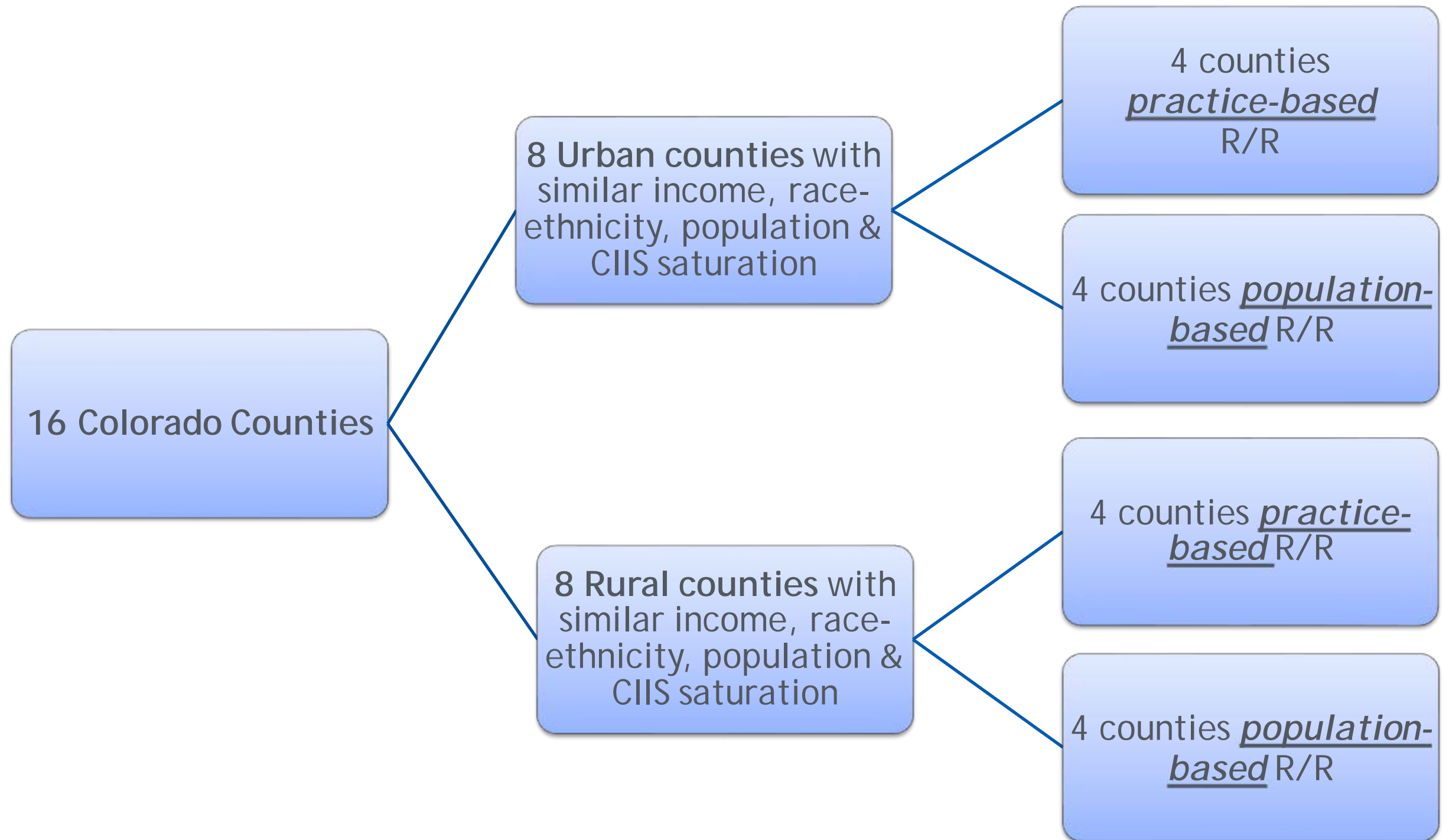
Favor de llamar al doctor de su hijo/a «Optin_Name_Default_Clinic» «Optin_Phone_Default_Clinic» para discutir las necesidades de su hijo/a. Si su hijo/a no tiene un doctor, favor de llamar al departamento de salud de Tri-County al 303-451-0123. Puede encontrar información sobre las clínicas ambulatorias en www.tchd.org/immunizations.html.

Si usted siente que ha recibido esto por error o si le gustaría ser removido de la lista para no ser contactado en el futuro favor de llamar toll-free al 1-855-288-6715 o mandarnos un correo electrónico a StopRecalls@ucdenver.edu.



«Optin_Name_Default_Clinic»
«Optin_Phone_Default_Clinic»

Randomization of Counties



All eligible children in Population-based Counties

Auto-dialer/Mail Group

Phone calls x 2

Postcards x 2

Mail-only Group

Letter x 1

Postcards x 3

Without a Phone Number

Letter x 1

Postcards x 3

With a Phone Number

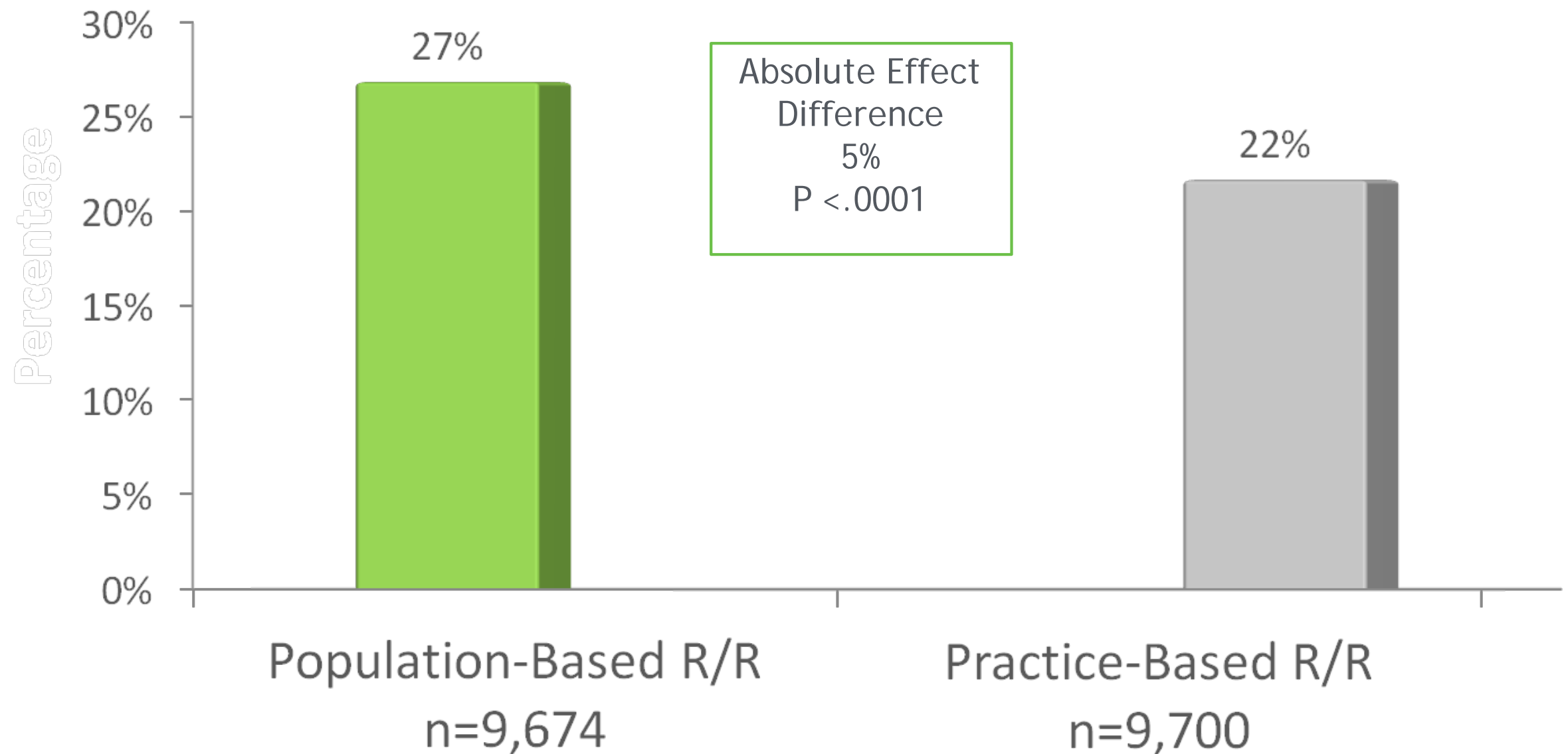
Phone calls x 2

Postcards x 2

Note: Groups were randomized at the patient level regardless of if patient had telephone number in CIIS.

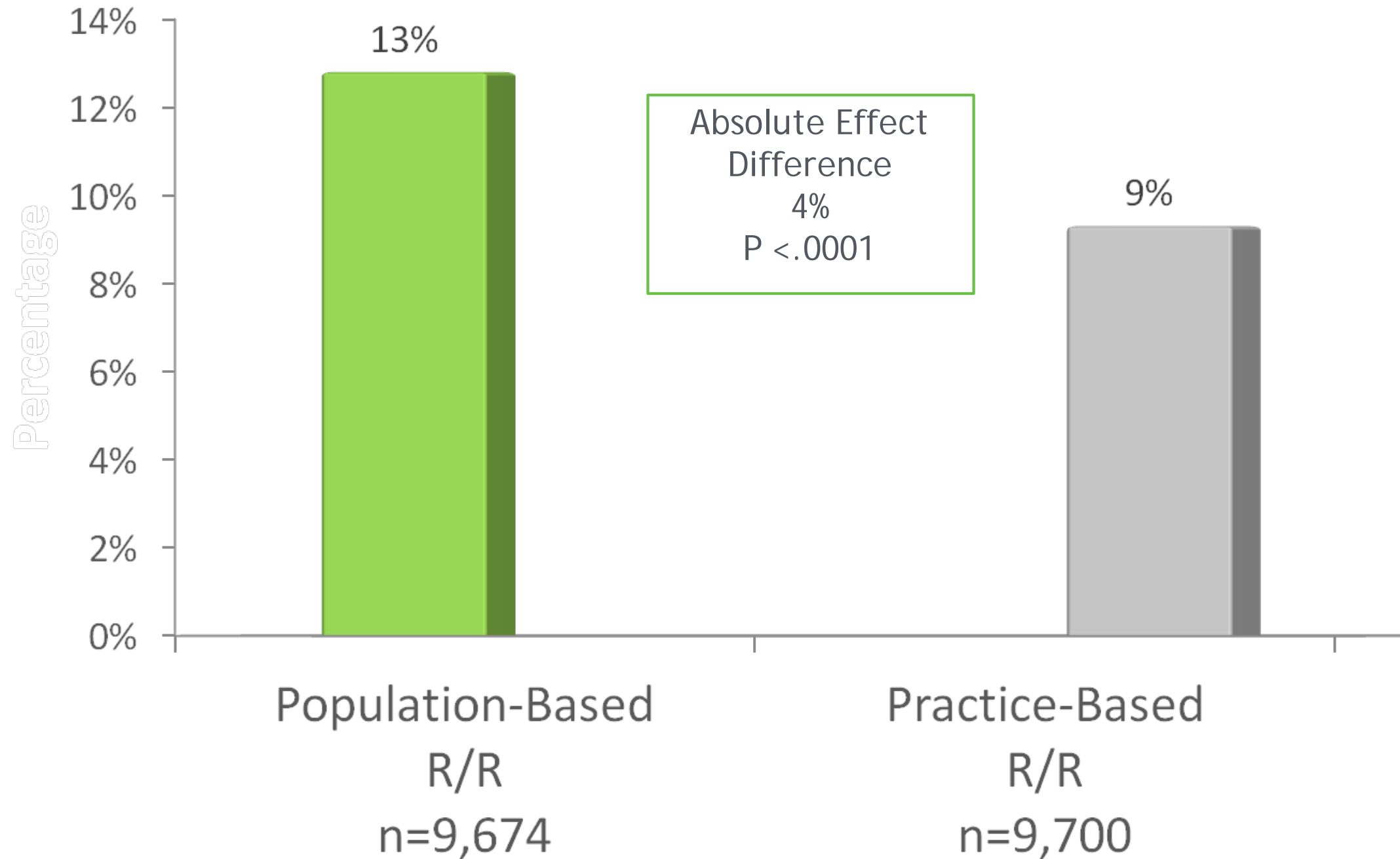
Results

*Percent Receiving Any Vaccine of those not UTD
(within 6 months)*



Results

Percent Brought UTD (within 6 months)

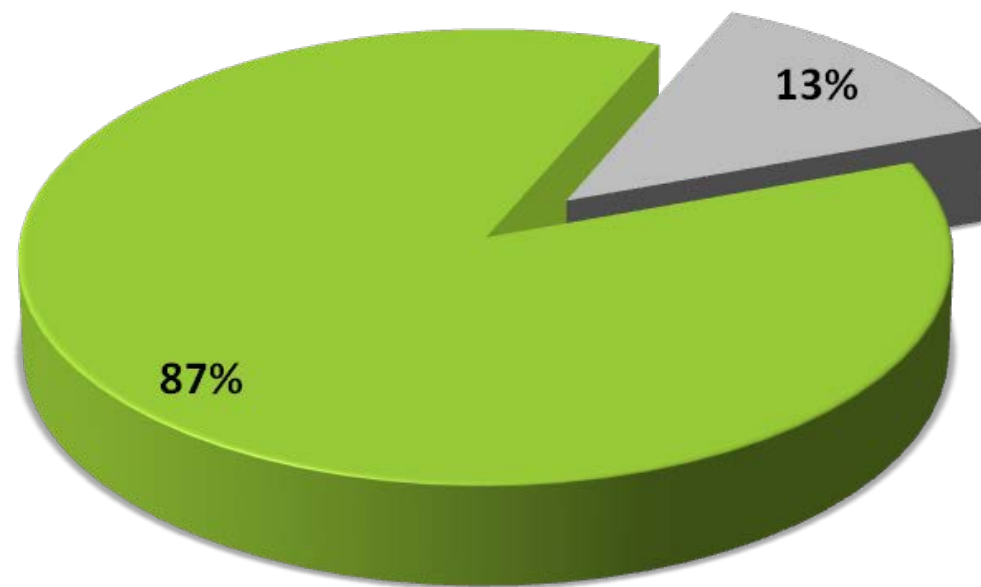


Results

Comparison of Intervention Reach

Population-based R/R Reach

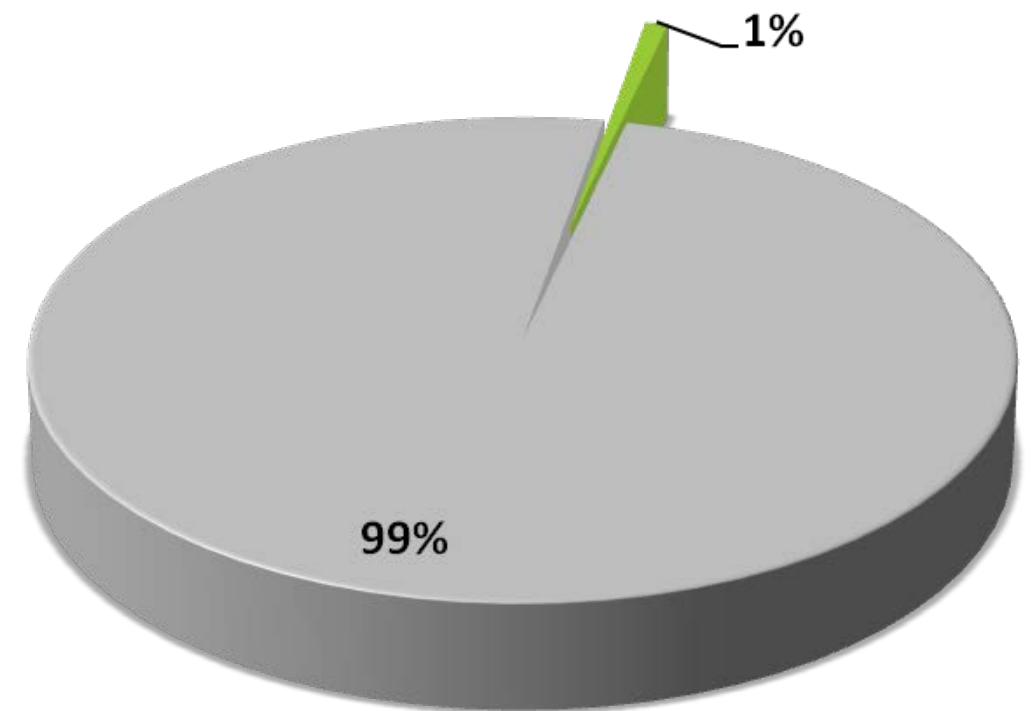
268 practice sites; n=9,049 eligible children



- Received ≥ 1 Reminder Notice (assuming 85% received R/R)
- Did not receive a R/R notice

Practice-based R/R Reach

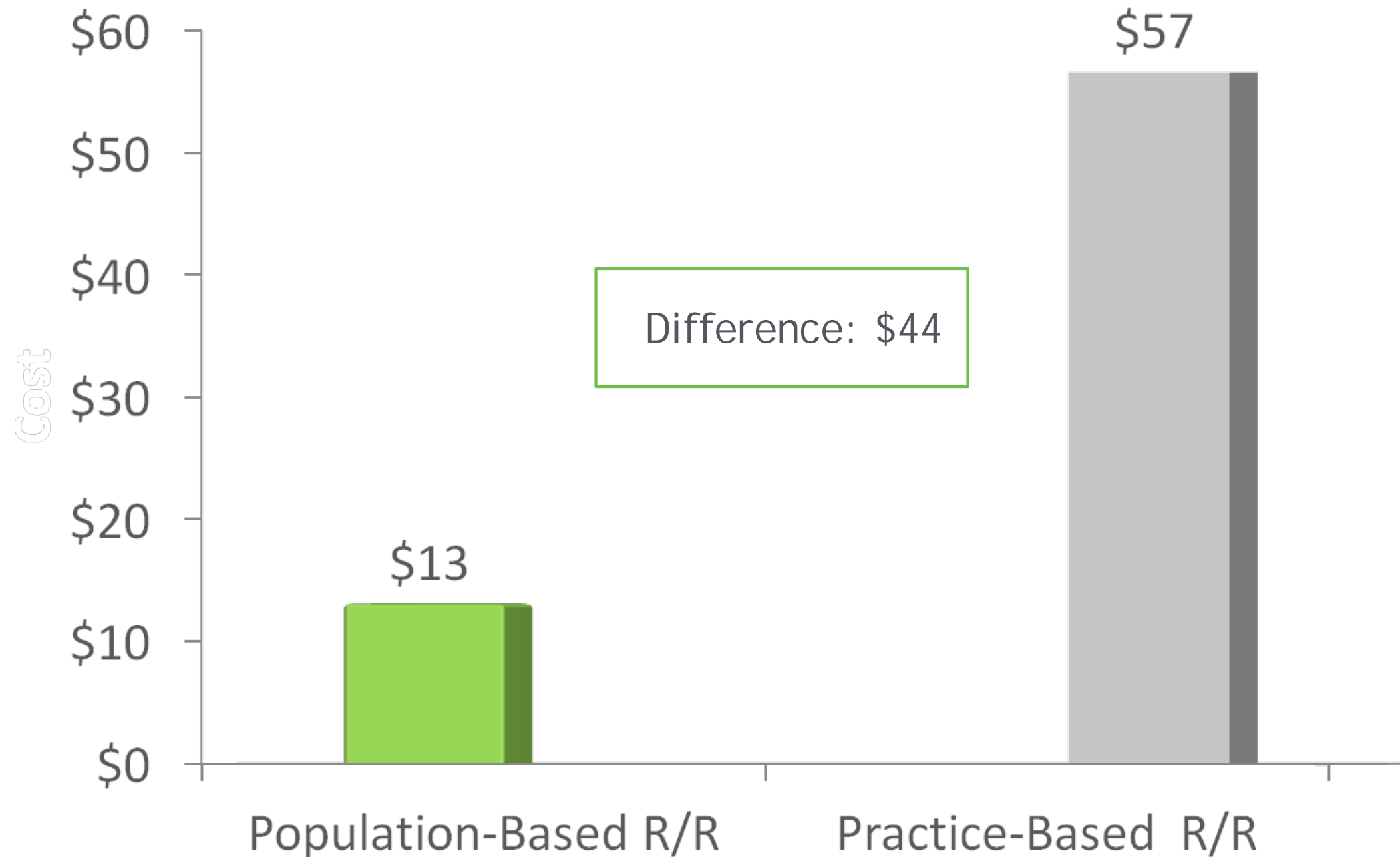
308 practice sites (2 did recall); n=9,186 eligible children



- Received ≥ 1 Reminder (assuming 100% received R/R)
- Did not receive R/R

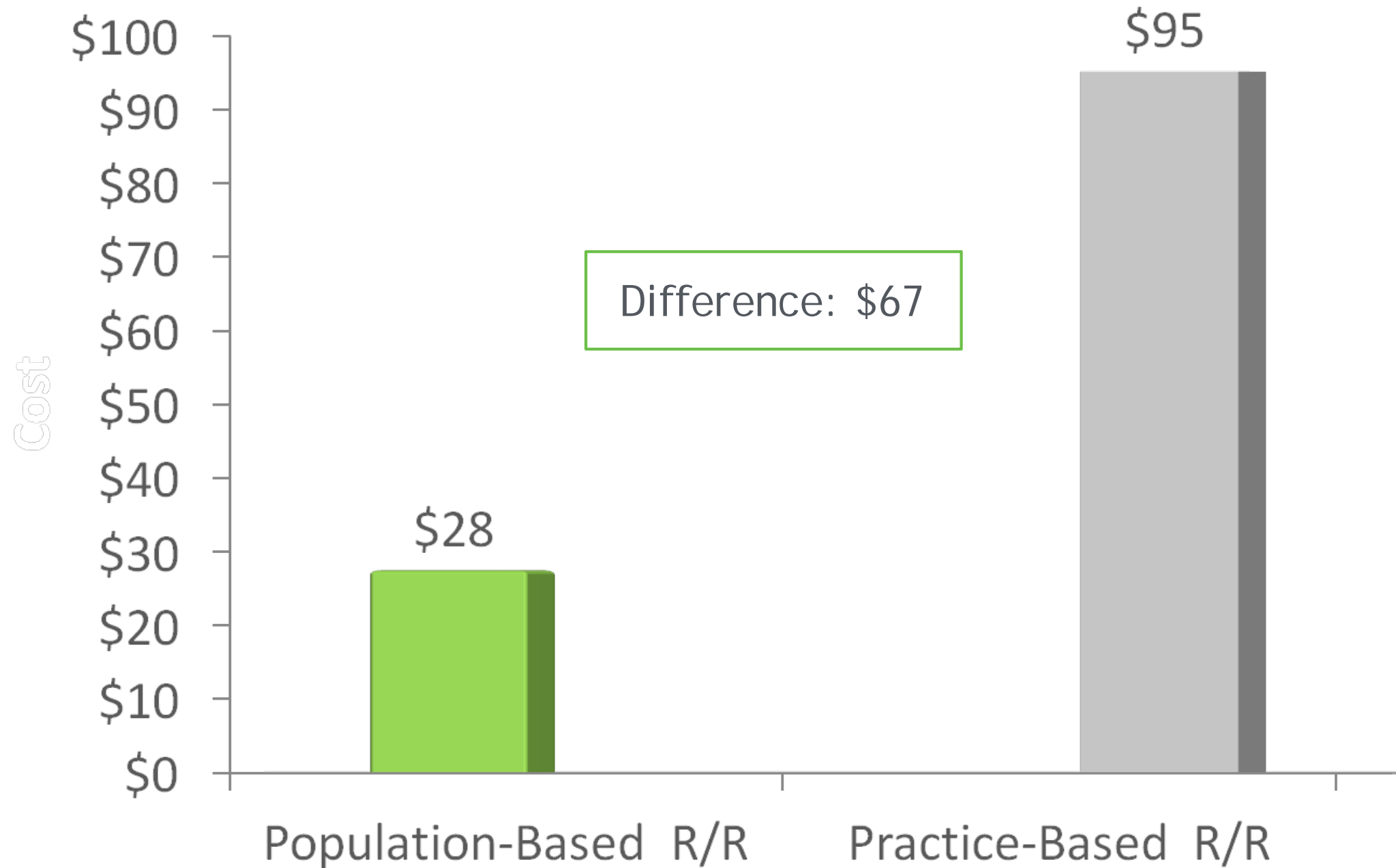
Results

Cost of R/R Per Child Receiving Any Vaccine



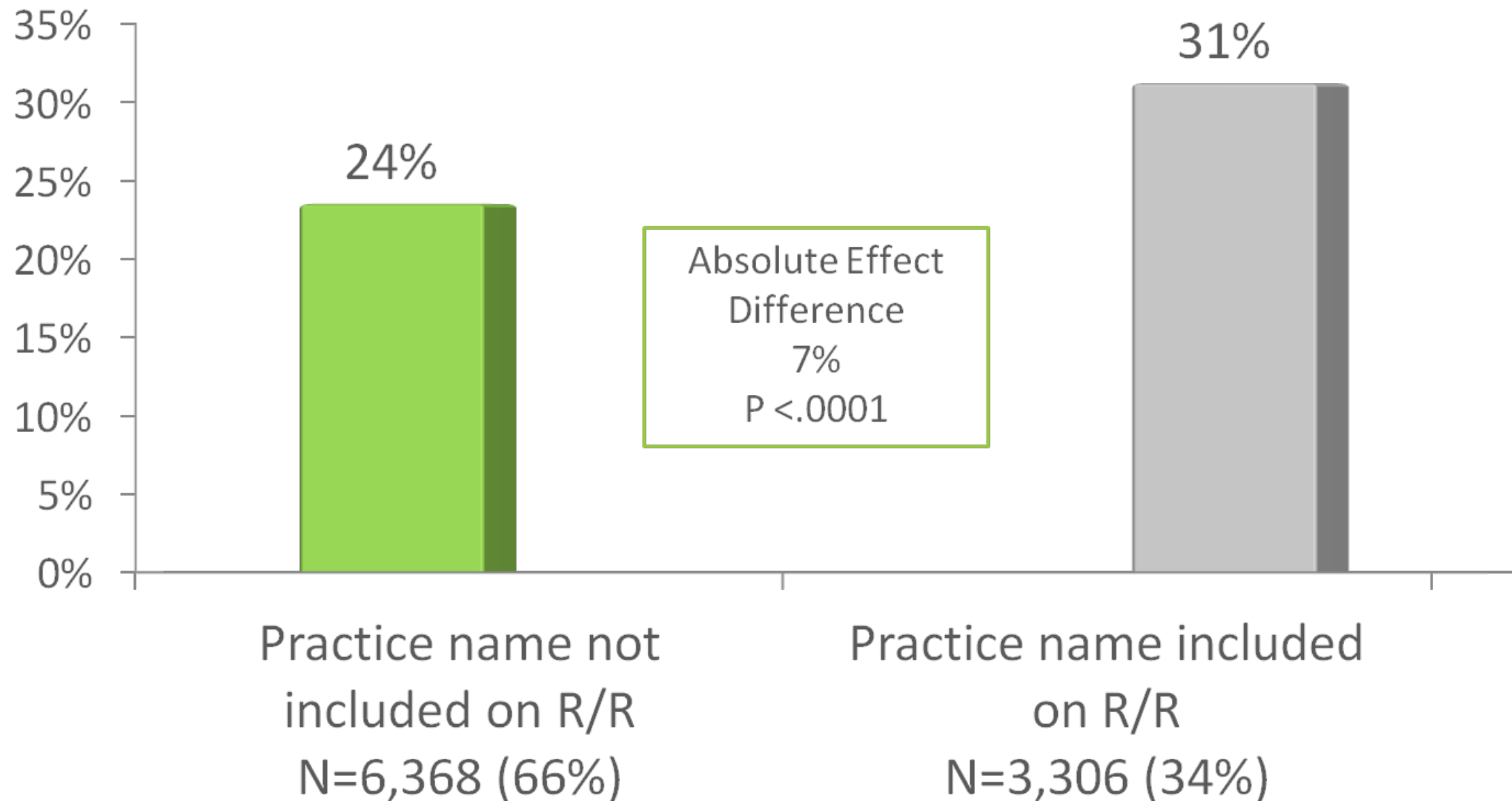
Results

Cost of R/R Per Child Brought UTD



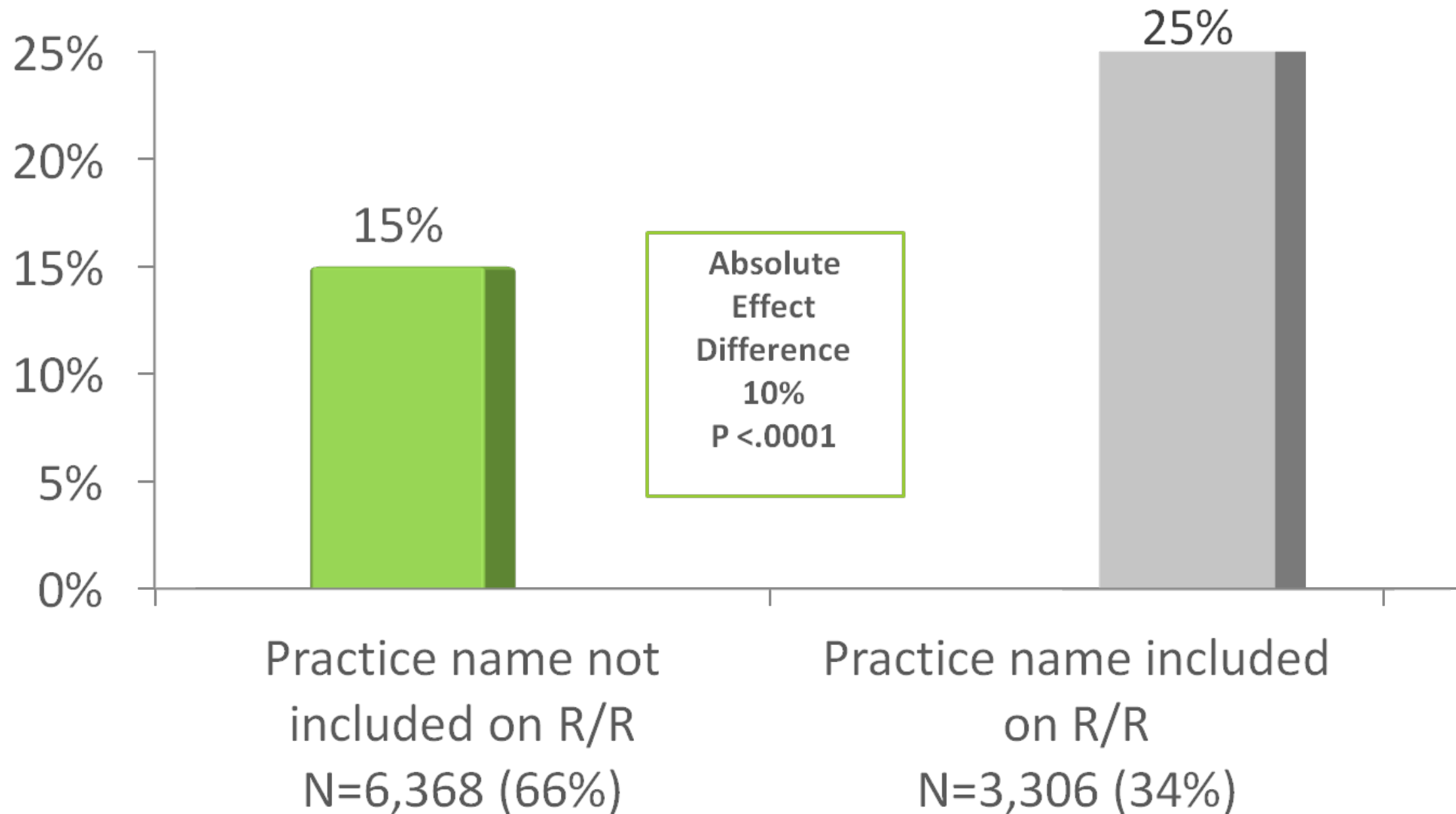
Results

Sub-analysis of Population-based R/R: Percentage Receiving any Vaccine



Results

Sub-analysis of Population-based R/R: Percentage Brought UTD



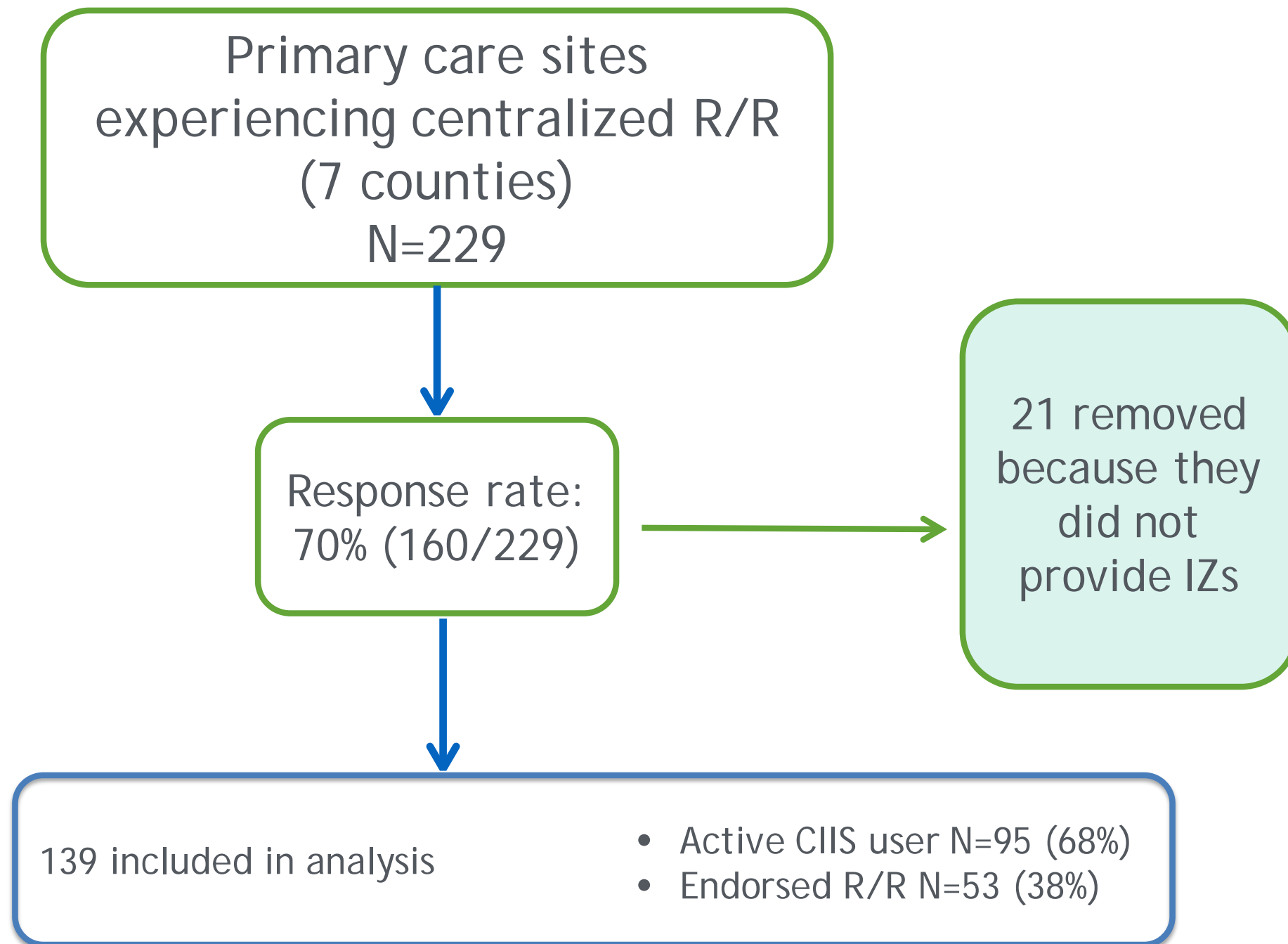
Trial Conclusions

- Both practice-based and population-based R/R was effective.
- Overall, at a county level, population-based R/R was more effective than practice-based R/R because of unwillingness of practices to perform R/R even when incentivized.
- Cost per practice or per child vaccinated were much lower for population-based R/R.

Provider Survey

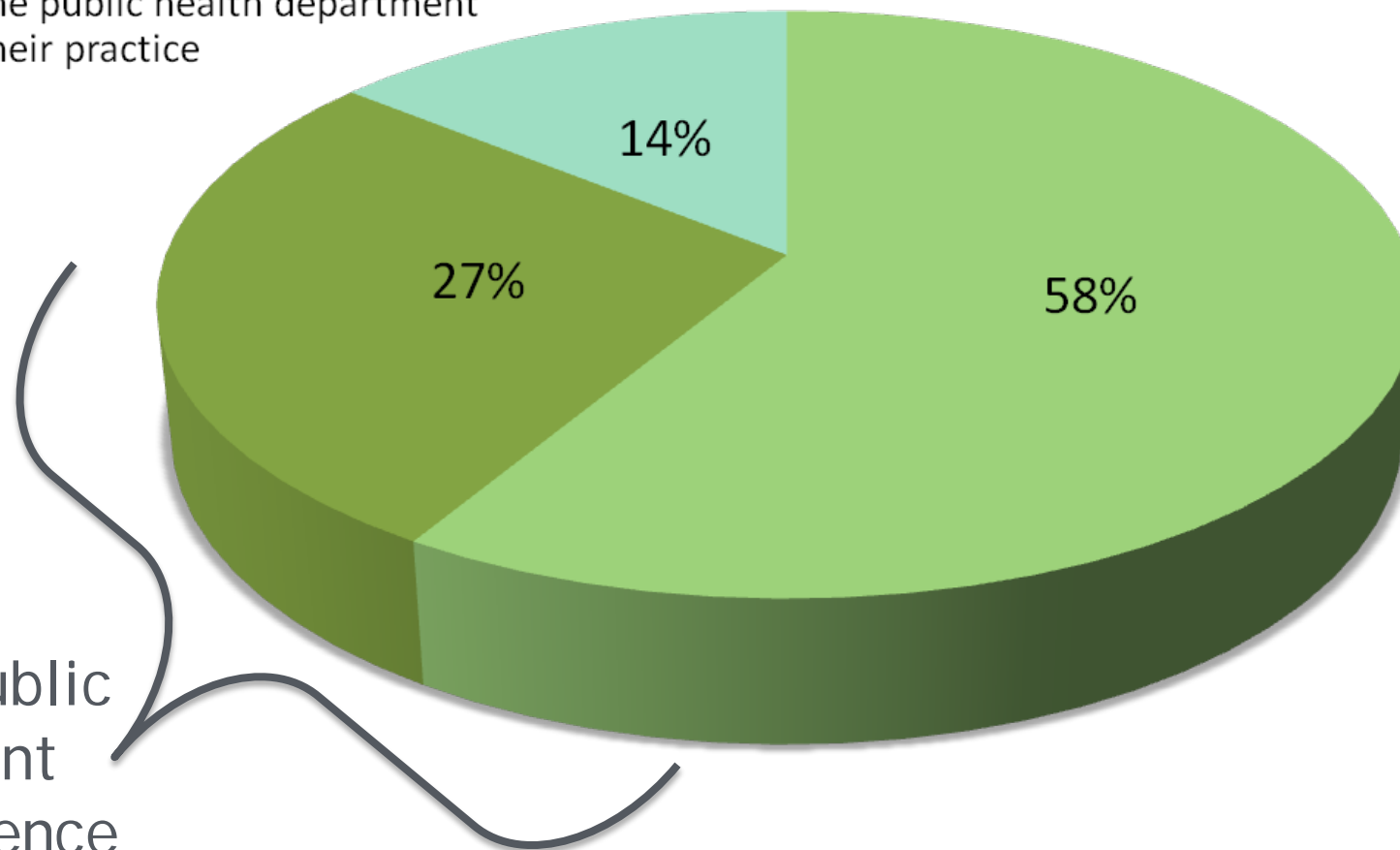
February 2014-May 2014

Survey Respondents



Preference for who practices wanted to conduct recall overall

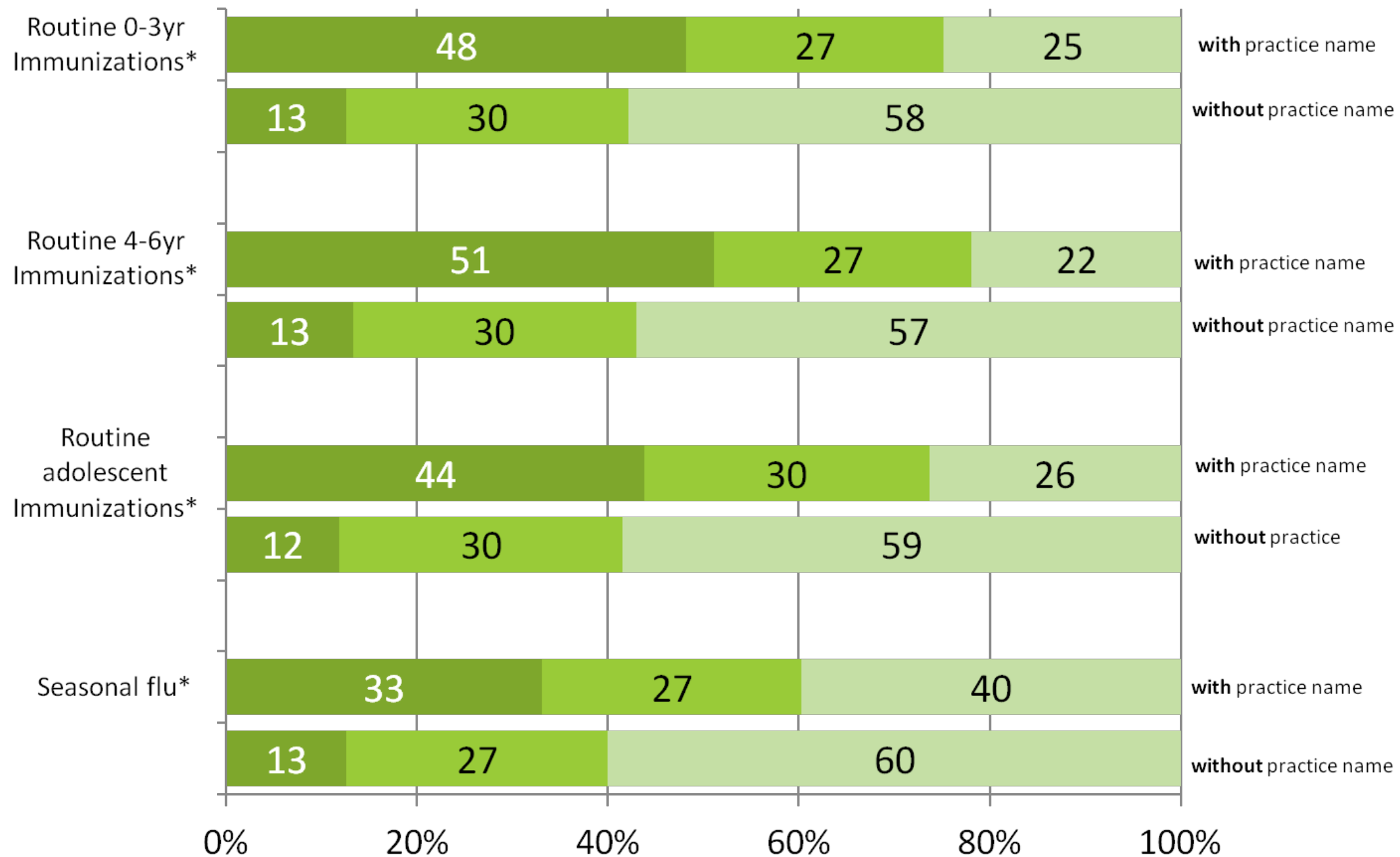
- Okay with either the public health department or their practice
- Prefer the public health department
- Prefer their practice



85% preferred public health department or had no preference

How Interested are Providers in Centralized R/R for Different Vaccines?

■ Very interested ■ Somewhat interested ■ Not very/not at all interested



Survey Conclusions

- There is strong support for centralized IIS-based R/R conducted by public health departments if practice names are included in the R/R message, but much less support if they are not.
- Support for centralized R/R is strong for routine childhood and adolescent vaccines, but there is less interest for influenza vaccine.
- Given the success of this method and provider support, it should be more widely adopted.
- Most of the practices that endorsed the centralized R/R (by including their name on the R/R notifications) had a positive experience and would do it again in the future.

Lessons Learned

- Informing local public health agencies and physician groups is essential
- Identify ways to address known limitations of data
 - Immunization data - gaps in reporting
 - Demographic data - methods of updating (Medicaid, providers, electronic files)
- Plan for IIS staffing needs in advance
- Mitigate risks of contacting parents of a deceased child
 - Daily files from Vital Records to IIS

Lessons Learned

- Be open to modifying R/R methods when you see changes in the data
 - More phone numbers in IIS → text notifications
 - More email addresses in IIS → email notifications

- Be aware of possible regulatory considerations before performing R/R
 - Telephone Consumer Protection Act
 - Work with State attorneys to interpret and determine risk
 - Statutory authority (or lack thereof) to perform centralized R/R

Publications

- Kempe A, Saville A, Dickinson LM, Eisert S, Reynolds J, Herrero D, et al. Population-Based Versus Practice-Based Recall for Childhood Immunizations: A Randomized Controlled Comparative Effectiveness Trial. *Am J Public Health* 2012 Dec 13; PM:23237154.
- Saville A, Beaty B, Dickinson LM, Lockhart S, Kempe A. Parent perceptions regarding novel immunization reminder/recall approaches: rural and urban differences. *Acad Pediatr* 2014;14(3):249-255.PMID:24767778
- Albright A, Saville A, Lockhart S, Racich KW, Beaty B, Kempe A. Provider Attitudes Toward Public-Private Collaboration to Improve Reminder/Recall: A Mixed-Methods Study. *Acad Pediatr* 2014;14(1):62-70. PMID: 2436987
- Kempe A, Saville AW, Dickinson LM et al. Collaborative Centralized Reminder/Recall Notification to Increase Immunization Rates Among Young Children: A Comparative Effectiveness Trial. *JAMA Pediatr*.2015;169(4):365-373.

Acknowledgements

Adult and Child Center for Health Outcomes Research and Delivery Science (ACCORDS), University of Colorado Denver

- Allison Kempe, MD, MPH, Principal Investigator
- Alison Saville, MSPH, MSW, Project Manager
- Dennis Gurfinkel, MSPH, Coordinator
- Brenda Beaty, MSPH, Analyst
- L. Miriam Dickinson, PhD, Biostatistician
- Sheri Eisert, PhD, Health Economist

NIH Trial: The project described was supported by Award Number RC1LM010513 from the National Library of Medicine of the National Institutes of Health. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Library of Medicine or the National Institutes of Health.

AHRQ Trial: This project was supported by Award Number P01HS021138 from the Agency for Healthcare Research and Quality. The content is solely the responsibility of the authors and does not necessarily represent the official views of the Agency for Healthcare Research and Quality.

QUESTIONS?

Heather Roth, MA
CIIS Program Manager
heather.roth@state.co.us