



Vaccination beliefs among parents in Marin County, California: Opportunities for new understanding

Jasmine Carver, MPH

Sharayn Forkel, RN, MS

Jessica Cunningham-Krahl, MPH

Karina Arambula, MPH

Rochelle Ereman, MS, MPH

Matthew Willis, MD, MPH

CSTE Annual Conference 2015

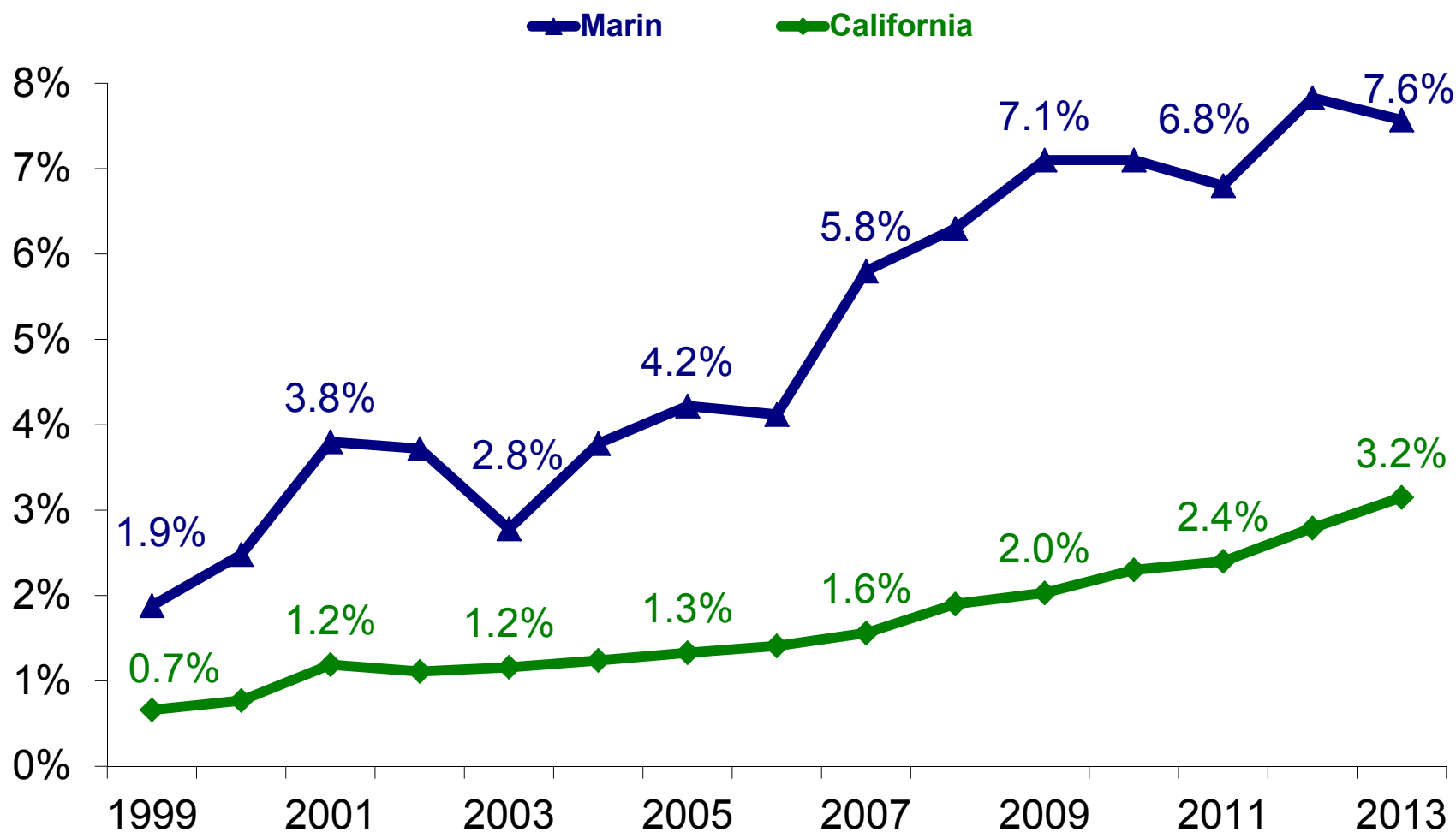
Marin County, California

- Affluent county in the San Francisco Bay Area
- Population ~256,000 people
- National attention for vaccine hesitancy
- Marin-specific reasons that parents requested vaccine exemptions were not well known

California Personal Belief Exemptions (PBEs)

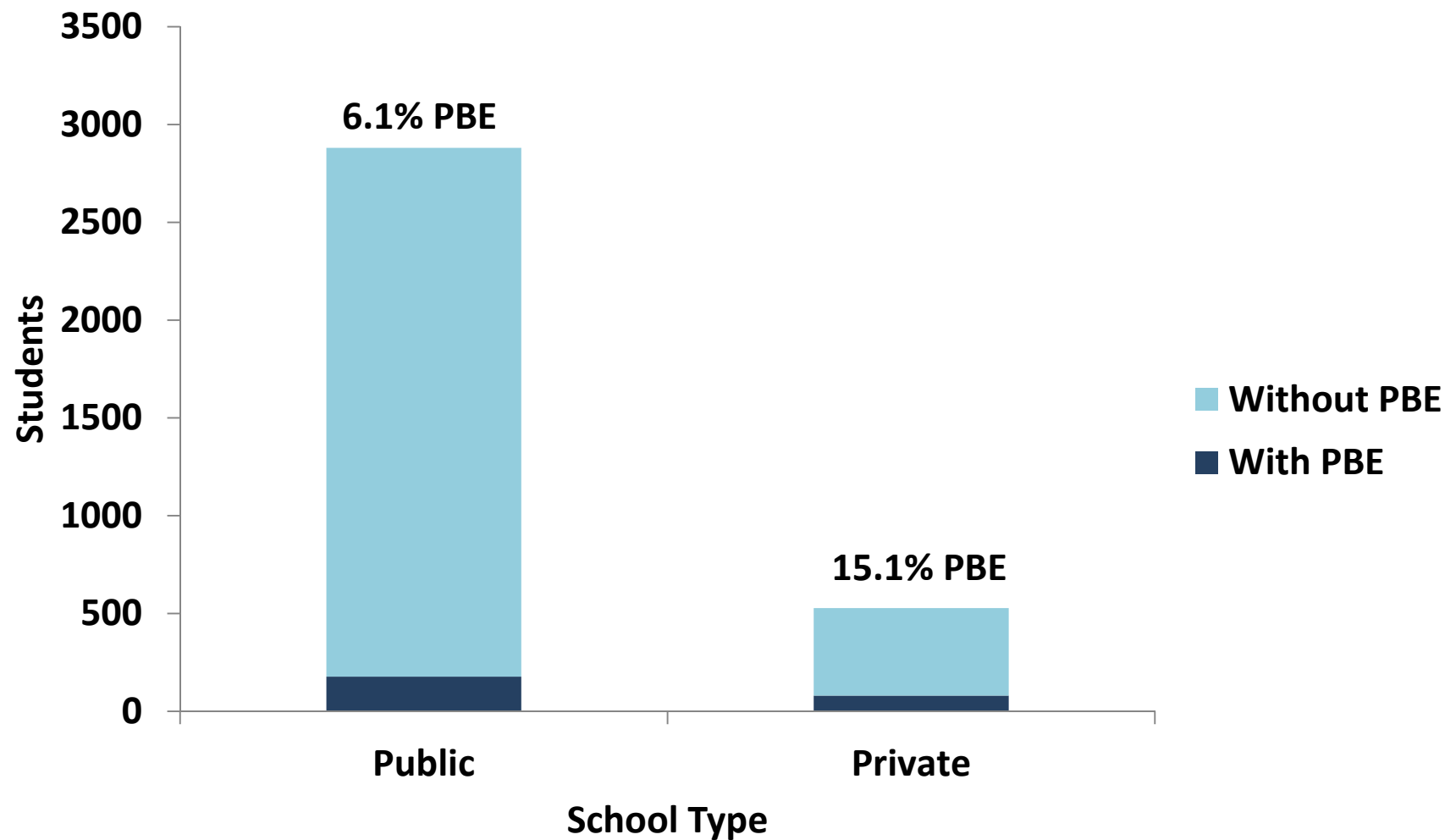
- Exemptions from required immunizations if immunization is contrary to parent or guardian beliefs
- New 2014 California Law
 - Assembly Bill (AB) 2109
 - Requires documented conversation with health care practitioners to receive exemption
 - Religious exception

Kindergarten PBE Rates in Marin County and California, 1999-2013



Source: California Department of Public Health Immunization Branch, Statewide Kindergarten Assessment

Kindergarten Personal Belief Exemption Rates in Marin County by School Type, 2013-2014



Study Purpose

Better understand vaccine decision-making in Marin to equip providers for conversations required under the new law

Specific Aims:

- Identify differences between parents who choose PBEs compared with those who do not
- Learn more about PBE decision-making
 - Vaccine-specific uptake
 - Leading reasons for PBEs
- Share results with providers, schools and public health professionals

Methods

Survey Development and Data Collection

- Developed Marin Kindergarten Vaccination Survey
- Pilot-tested with 10 respondents
- Translated finalized survey into Spanish
- Emailed the Survey Monkey link to ~2,300 kindergarten parents with assistance from school immunization coordinators

Survey Content

- Demographics
- Sources of immunization information
- School entry vaccination status
- For parents with PBEs
 - Child's status by vaccine
 - Reasons for PBE request

Data Analysis

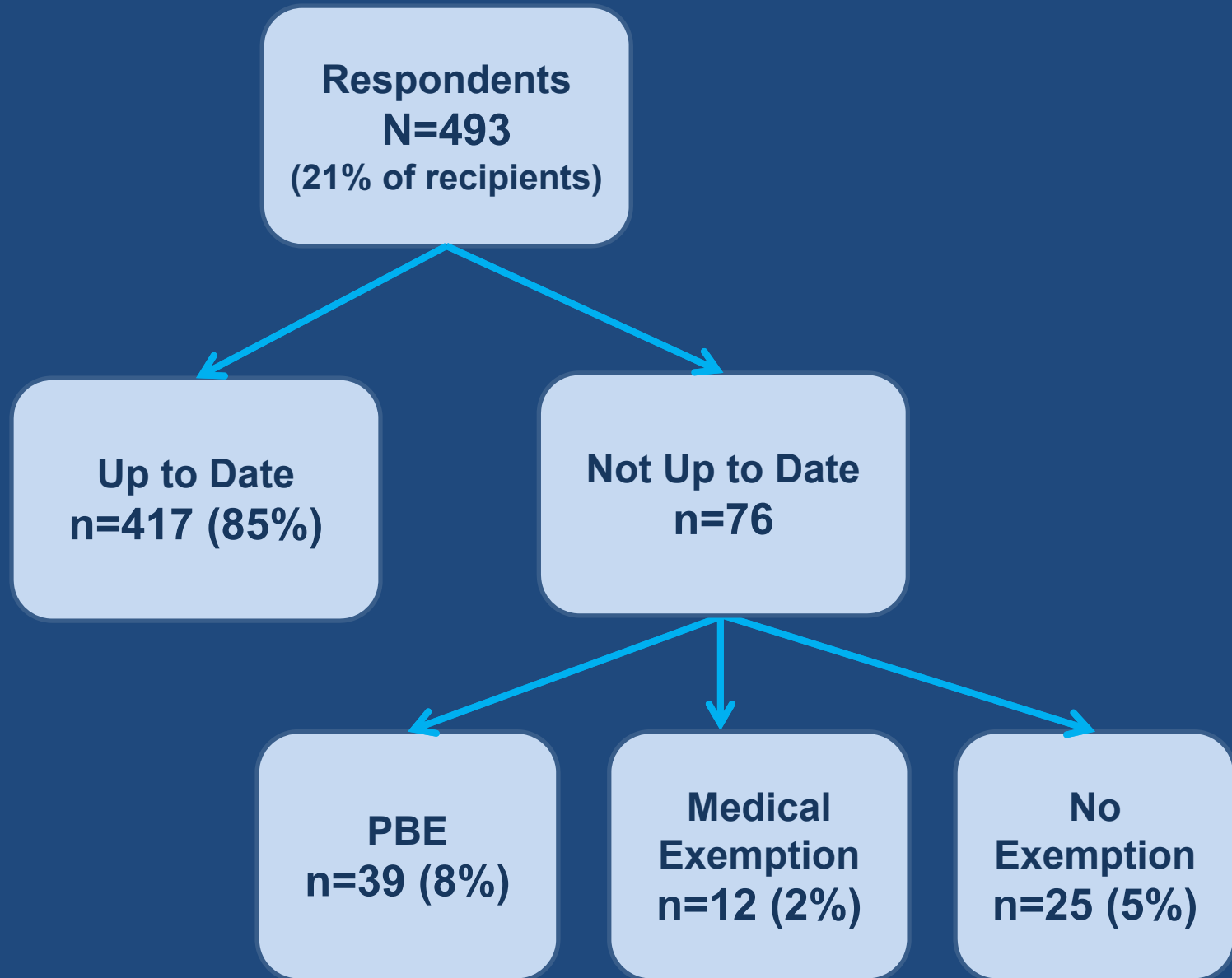
- Stratified study population by immunization status
- Compared those with and without PBEs
 - Pearson's chi-squared tests, Fisher's exact tests, and Student's t-test
- Among parents of kindergartners with PBEs:
 - Calculated proportions and means to describe children's vaccinations and common reasons for requesting PBEs
- Analyzed data with Stata version 12

Uses and Dissemination of Findings

- Presented findings to stakeholders
- Developed talking points addressing vaccination concerns to share with practitioners in the community
- Shared resources with public health professionals interested in reproducing the study

Results

Study Population



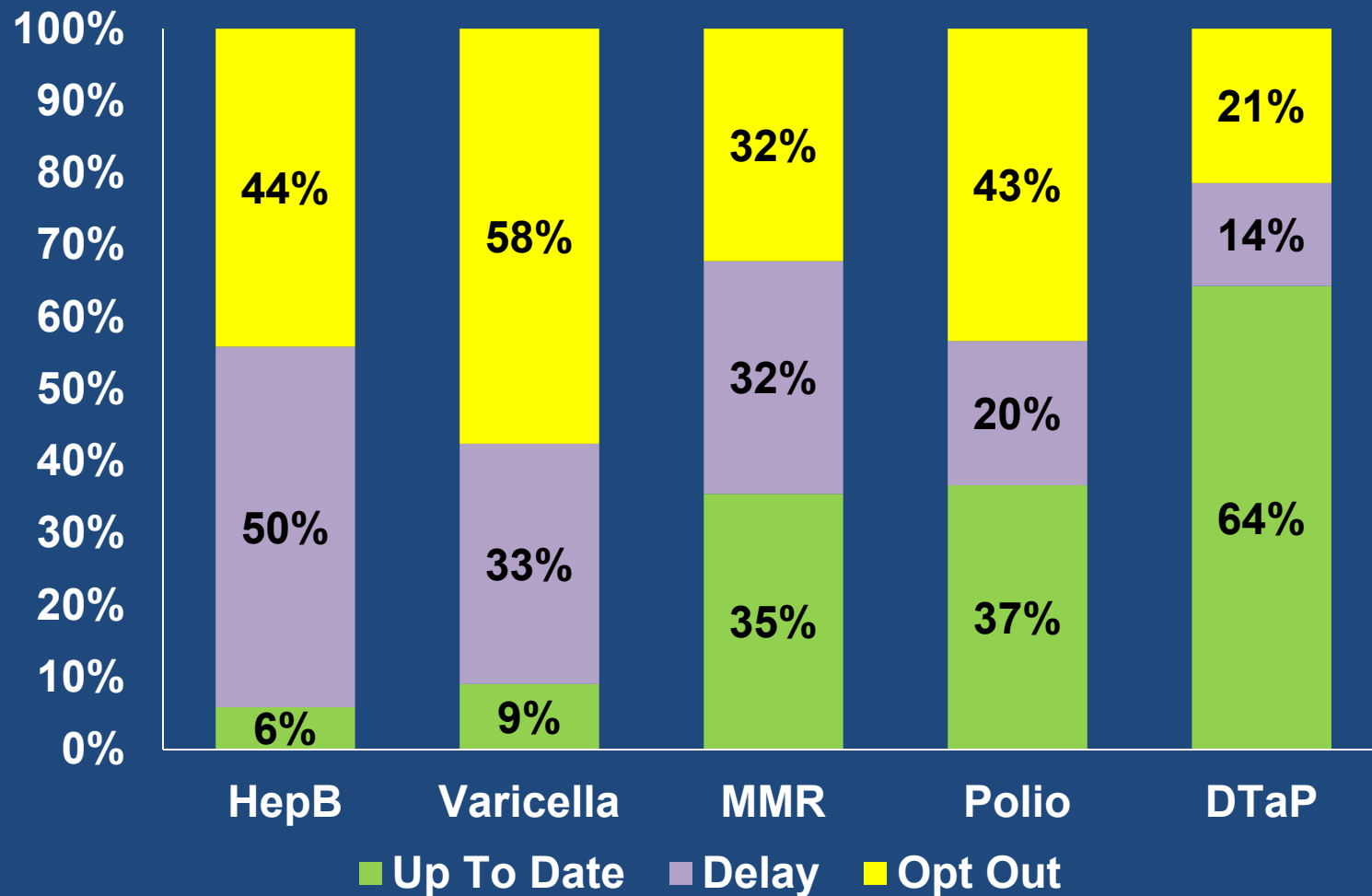
Parent Characteristics by PBE Status

	PBE (n=39)	No PBE (n=429)	P-value
Age	39.8	41.1	0.15
Bachelor Degree or Higher	97%	89%	0.11
Fully Vaccinated as a Child	95%	99%	0.08

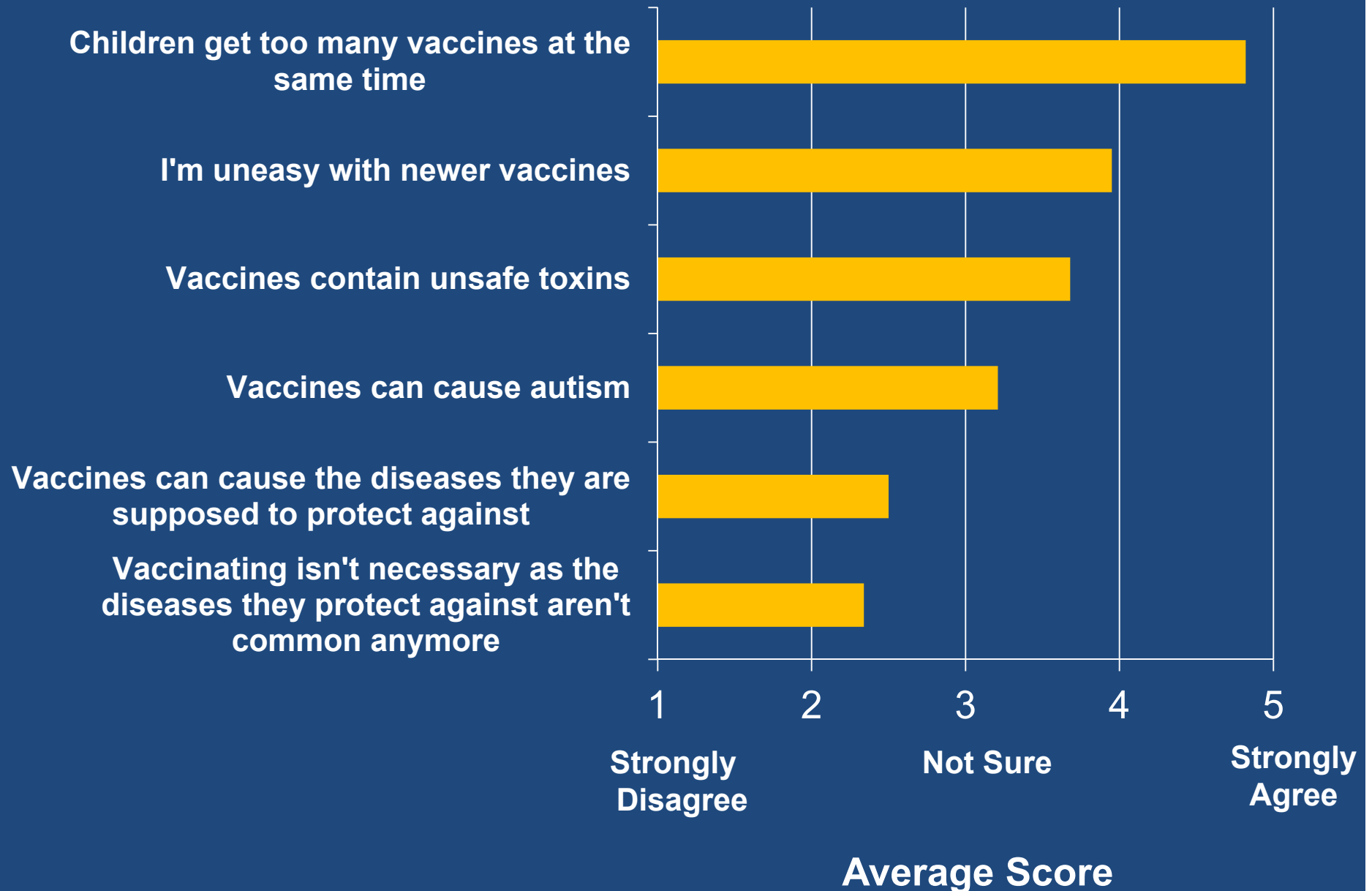
Sources of Vaccine Information

Source	PBE (n=35)	No PBE (n=430)	P-value
Physician or other healthcare provider	87%	99%	<0.01
Complementary and alternative medical providers	54%	4%	<0.01
Family	0%	12%	0.02
Health-related website	46%	29%	0.02
Social media website	5%	2%	0.18
Friends	10%	10%	0.96

Vaccine-Specific Uptake among Parents with PBEs



Reasons for PBEs



Additional Reasons for Requesting PBE

- Preference for natural immunity over immunity conferred by vaccines
- Children perceived as low risk of some vaccine-preventable diseases
- Lack of trust of the healthcare system and pharmaceutical industry

Preference for natural immunity

“I would prefer for my child to get the chickenpox but if she does not contract it by age 10, I will choose to vaccinate her.”

“It’s simply not logical that a beautiful newborn baby can miraculously develop from one egg and one sperm... and yet nature somehow forgot to include the artificial chemical mixtures that a group of paid scientists believe ‘all’ babies/children require to protect themselves.”

Perception of low risk

“Hep B is not something young children get. My five year old is not using IV drug needles or having unprotected sex- she is not at risk.”

“Every decision I make as a parent is based on risk vs. reward. E.g., If there is a possibility that autism is related to preservative metals in vaccine, yet there haven't been many cases of Polio in the last 50 years I will opt out.”

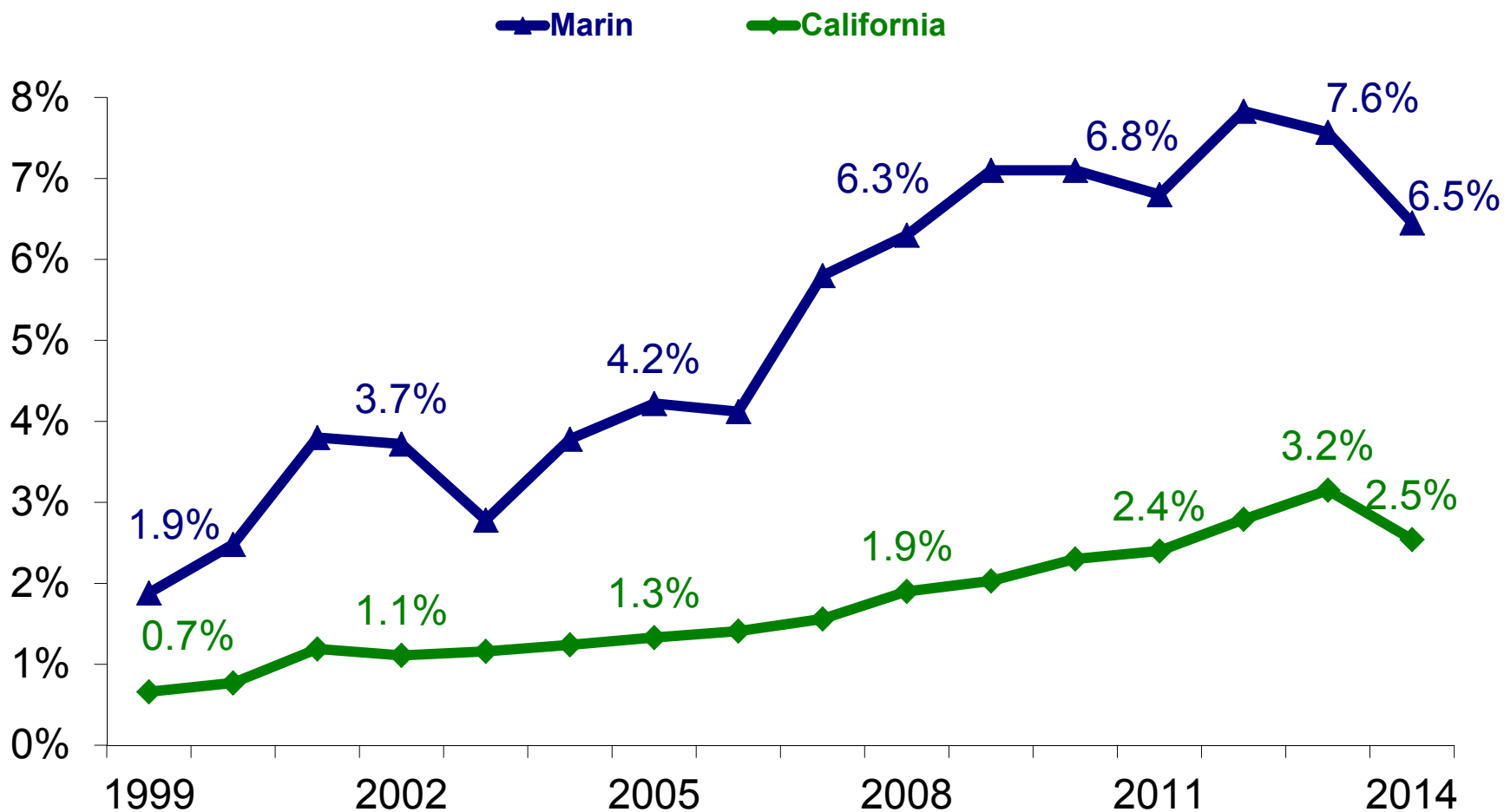
Lack of trust

“I would trust vaccinations more if it was not a for profit industry.”

“Why give 2 MMR vaccinations when a titer can be given to check antibodies? No pediatrician mentions this option because they make zero dollars on the safer alternative... Big Pharma-Big Business. Period.”

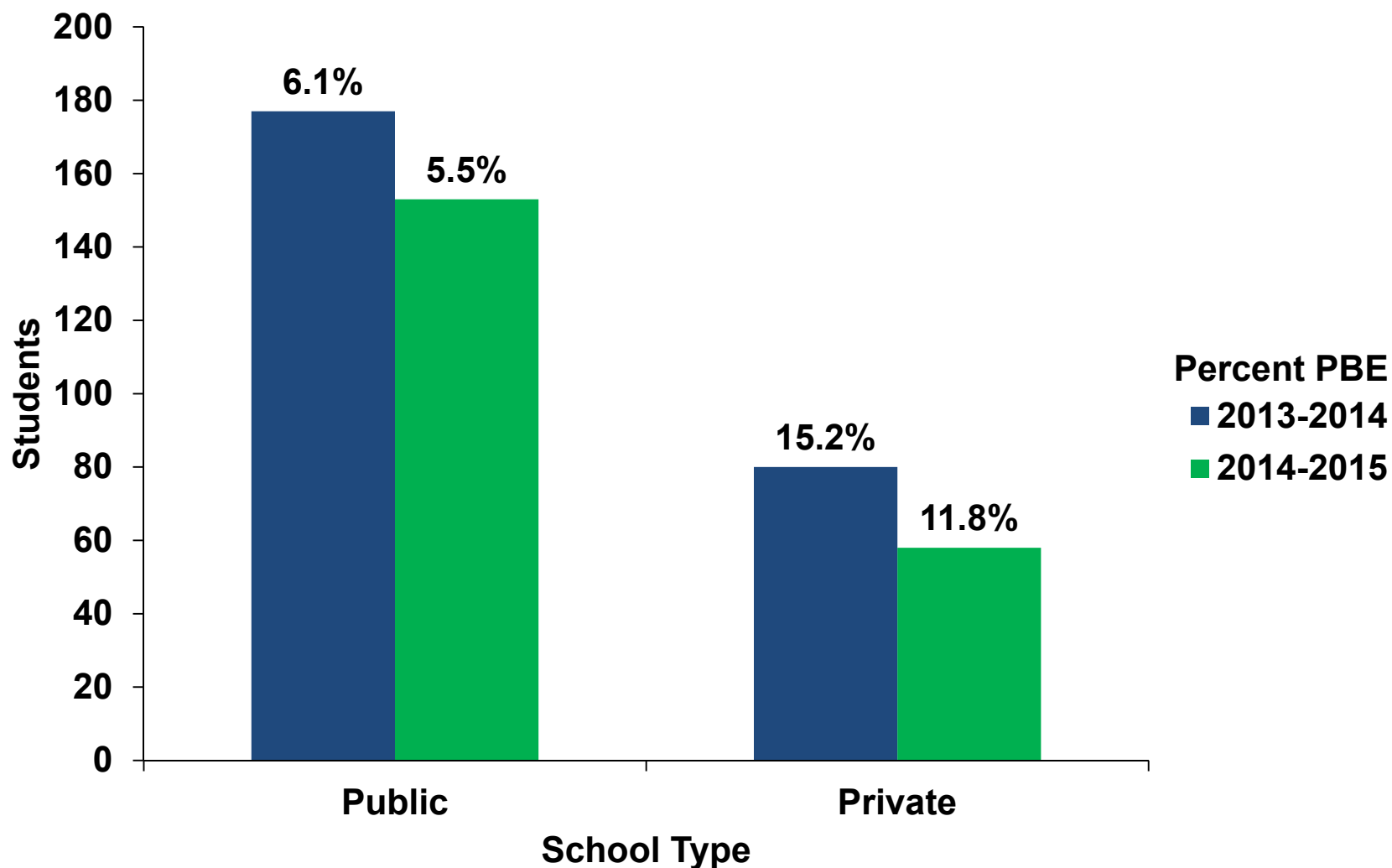
After Implementation of the Law

Kindergarten PBE Rates in Marin County and California, 1999-2014



Source: California Department of Public Health Immunization Branch, Statewide Kindergarten Assessment

Kindergarten Personal Belief Exemption Rates in Marin County by School Type, 2013-2015



Limitations

- Due to the response rate, findings may not be representative of all kindergarten parents in Marin County
- We may have missed common concerns that would have been informative to measure
- Reasons that kindergartners who were not up to date and did not have exemptions were not explored in the survey, and therefore unexplained

Conclusions

- Most parents who request PBEs are making decisions to opt out of or delay specific vaccines
- Parents with PBEs are more likely to receive information from:
 - Complementary and alternative providers
 - Health-related websites
- Parents with PBEs are less likely to receive vaccine information from:
 - Physicians and other healthcare providers
 - Family members
- Diverse reasons parents request PBEs including:
 - Safety concerns
 - Lack of perceived risk
 - Lack of trust

Implications

- Not all Marin parents were receiving vaccine information from providers
 - Likely changed with the 2014 legislation
- Providers were able to use these findings in conversations under law
 - Anticipate themes of parents' concerns
 - Recognize the diversity of vaccine decision-making
 - Tailor conversations to the high education level of parents



Acknowledgements

- Marin County Office of Education
- School Immunization Coordinators
- Marin County Department of Health & Human Services
- Marin County Pediatricians
- Supported in part by an appointment to the Applied Epidemiology Fellowship Program administered by the Council of State and Territorial Epidemiologists (CSTE) and funded by the Centers for Disease Control and Prevention (CDC) Cooperative Agreement Number 1U38OT000143-02

Thank you very much!



Vaccine Messaging Resources

Talking with Parents about Vaccines for Infants

<http://www.cdc.gov/vaccines/hcp/patient-ed/conversations/downloads/talk-infants-color-office.pdf>

Vaccine Safety: Responding to Parents' Top 10 Concerns

<http://www.cdph.ca.gov/programs/immunize/Documents/IMM-917.pdf>

Alternative Vaccine Schedules

<http://eziz.org/assets/docs/IMM-988.pdf>

The Facts about Childhood Vaccines

<http://www.chop.edu/export/download/pdfs/articles/vaccine-education-center/vaccines-fact.pdf>

Recommended Immunization Schedule: What You Should Know

<http://www.chop.edu/export/download/pdfs/articles/vaccine-education-center/recomm-immuniz-sched-eng.pdf>

Too Many Vaccines? What You Should Know

<http://www.chop.edu/export/download/pdfs/articles/vaccine-education-center/too-many-vaccines.pdf>

Links for Health Care Providers and Parents

<http://eziz.org/resources/parented/>

Message: Too Many Vaccines

A common belief among parents who request PBEs is that children get too many vaccines at one time (100% agreed).

- Vaccines are a small drop in the bucket compared to what an infant's immune systems face every day.
- In addition, vaccines have been refined over time and are now more effective while containing fewer antigens.

Message: Vaccine Additives

One reason parents cited for requesting PBEs is that vaccines contain unsafe toxins (64% agreed).

- Everything that's in a vaccine is there for a very good reason, is in a minute amount, and is not harmful.
- Aluminum enhances our immune response to the vaccine. Aluminum is also found in formula and breast milk.
- Thimerosal was removed from pediatric vaccines in 2001.

Message: Autism

One-third of parents with PBEs (34%) believe vaccines can cause autism.

- Over 20 scientific studies have researched hundreds of thousands of children and found no connection between vaccines and autism.
- Autism rates are the same in vaccinated and unvaccinated children.
- The study that first suggested the link in 1998 was retracted by the journal and 10 of its authors.

Message: Natural Immunity

Only 9% of children with PBEs had the varicella vaccine. Many parents with PBEs prefer that their children get the chicken pox than to receive the chicken pox vaccine.

- Vaccine immunity is natural immunity. Building immunity from getting diseases can be dangerous.
- Before the chicken pox vaccine, almost 11,000 Americans were hospitalized and over 100 died each year from chickenpox.
- Vaccinating your child protects all members of the community, including those too young and vulnerable to be vaccinated themselves.

Message: Low Perceived Risk

A reason for refusing or delaying vaccines is the perception of low risk of some vaccine-preventable diseases.

- In the age of globalization, even diseases that are rare in the U.S., like measles, Hepatitis B and Polio, are just a plane ride away.
- U.S. rates of many vaccine-preventable diseases are low because immunization rates are high.

Message: Alternative Schedule

We see that most Marin parents with PBEs are not refusing all vaccines but rather choosing an alternative vaccine schedule (84%).

- 32% of parents with PBEs are delaying MMR, while we have seen measles outbreaks in California in the past decade.
- The recommended schedule is fully supported by research. However, alternative vaccine schedules are not rigorously tested and may unnecessarily leave children susceptible to vaccine-preventable diseases.

Message: Big Pharma

Several vaccine-hesitant parents express concern that doctors and pharmaceutical companies are making a profit on immunizations.

- The vaccine recommendations are set by a transparent process supported by scientific evidence.
- The recommended schedule is not influenced by pharmaceutical companies. Vaccines only represent a small fraction of the pharmaceutical industry.
- Healthcare practitioners encourage vaccination because it is the best way to prevent infectious diseases. It may be comforting to know that most doctors do not profit from administering vaccines.