

Reporting vaccination rates in Colorado: Impact on school and child care choice

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Colorado HB 14-1288

Directs Board of Health to establish rules to make “immunization information, including exemption rates... available to the public through the department”

Effective July 1, 2014

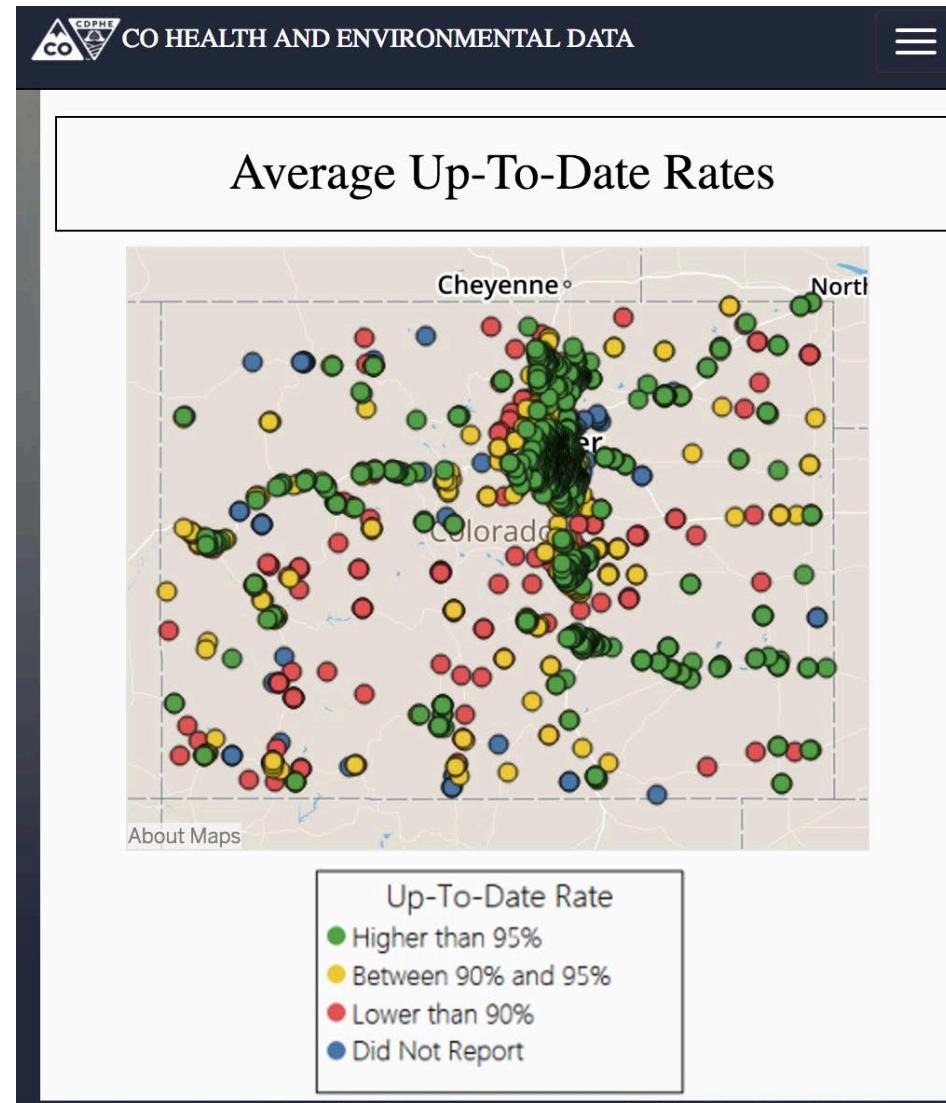


Reporting vaccination rates in CO

Summer/Fall 2016: ACCORDS and CCIC conducted two surveys: one of parents, one of child cares

Fall/Winter 2016: first round of schools and child cares reporting to CDPHE

Spring 2017: online publication of rates on CDPHE website



School Choice: Factors in Parental Decisions

- Common themes from education and school policy research:
 - Academic quality
 - Social networks
 - Safety
 - Distance / convenience
 - Racial / ethnic composition
 - School environment
- Role of vaccination rates and school choice not explored

Objectives of parental survey

Among mothers of children under 12 years old:

- 1. Measure value of higher vaccination rates in context of school and child care choice**
2. Describe predicted parental behavior in response to public reporting of school and child care vaccination rates

METHODS

Study Setting and Population

- Cross-sectional email survey August-October 2016
- Invited women from 9 OBGYN practices from Denver, Fort Collins, and Front Range who participated in prior project, provided emails and agreed to future contact
- Inclusion criteria
 - Have a child under 12 years of age
 - Child will attend school or child care outside of the home

Survey Design

- **Objective 1, part a:** Measure value of higher vaccination rates in context of school and child care choice.
- Health economics:
 - Measure of preference for health status is a **utility measure**
 - Preference-based utility measures used in cost-utility analysis and then to inform policy
- Policy for public reporting of vaccination rates has been made based on predicted preferences.
 - We construct a **utility measure** related to the 'health states' of sending a child to schools / child cares with different vaccination rates.

Survey Design: willingness to pay

- **Utility measure:** willingness to pay
 - Ask raters what amount they would pay to be free of a certain undesired condition.
 - Compare amounts they are willing to pay to avoid alternative conditions to assess preference between conditions.
- Instead of money, assessed time tradeoff: 'willingness to drive'



Willingness to pay

aka
Willingness to
Drive



“Many parents have several options when choosing a child care for their child. For the following questions, imagine you are choosing a child care and are deciding between two different options.

You have heard good things about both places and they are the same when it comes to classroom size, number of teachers or care providers, teaching and test scores, cleanliness, books, toys, supplies and all other factors.

We would like to know how information about immunizations might effect your choice.”

For the following question, consider this information about immunizations:

There is a risk of certain infectious diseases spreading when people are not vaccinated.

High risk: More than 10% of children are not vaccinated

Medium risk: 3 to 9.9% of children are not vaccinated

Low risk: 0 to 2.9% of children are not vaccinated

You have two options for your child's child care:

Child Care C:

- 1% of children are NOT vaccinated
- Low risk
- Farther from your home

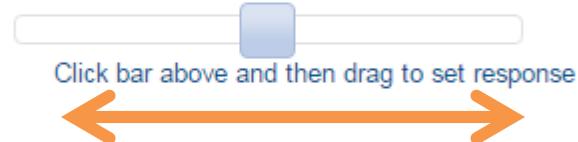
Child Care D:

- 80% of children are NOT vaccinated
- High risk
- Closer to your home

Would not accept any longer travel time

30 minutes longer or more

Click bar above and then drag to set response



How much longer of a commute or drive would you be willing to take for your child to attend location C?





Results

Value of school and child care exemption rates measured by willingness-to-pay framework using commute time

Unvaccinated rate of comparator school or child care	Median commute time parents would accept for their child to attend a school or child care with 1% of children unvaccinated [Interquartile range (IQR)]			Proportion of parents who would accept commute increased ≥ 30 minutes, % (n) [95% CI] N=390
	Hesitant N=45	Non-hesitant N=345	All respondents N=390	
5%	6 minutes ^{a, b} [2-17]	15 minutes ^{a, b} [8-21]	14 minutes ^a [7-21]	5.6% (22) [3.3-7.9%]
11%	15 minutes ^{a, b} [5-21]	19 minutes ^{a, b} [13-24]	19 minutes ^a [12-24]	6.2% (24) [3.8-8.5%]
80%	20 minutes ^{a, b} [8-27]	26 minutes ^{a, b} [20-30]	26 minutes ^a [20-30]	22.3% (87) ^c [18.2-26.5%]

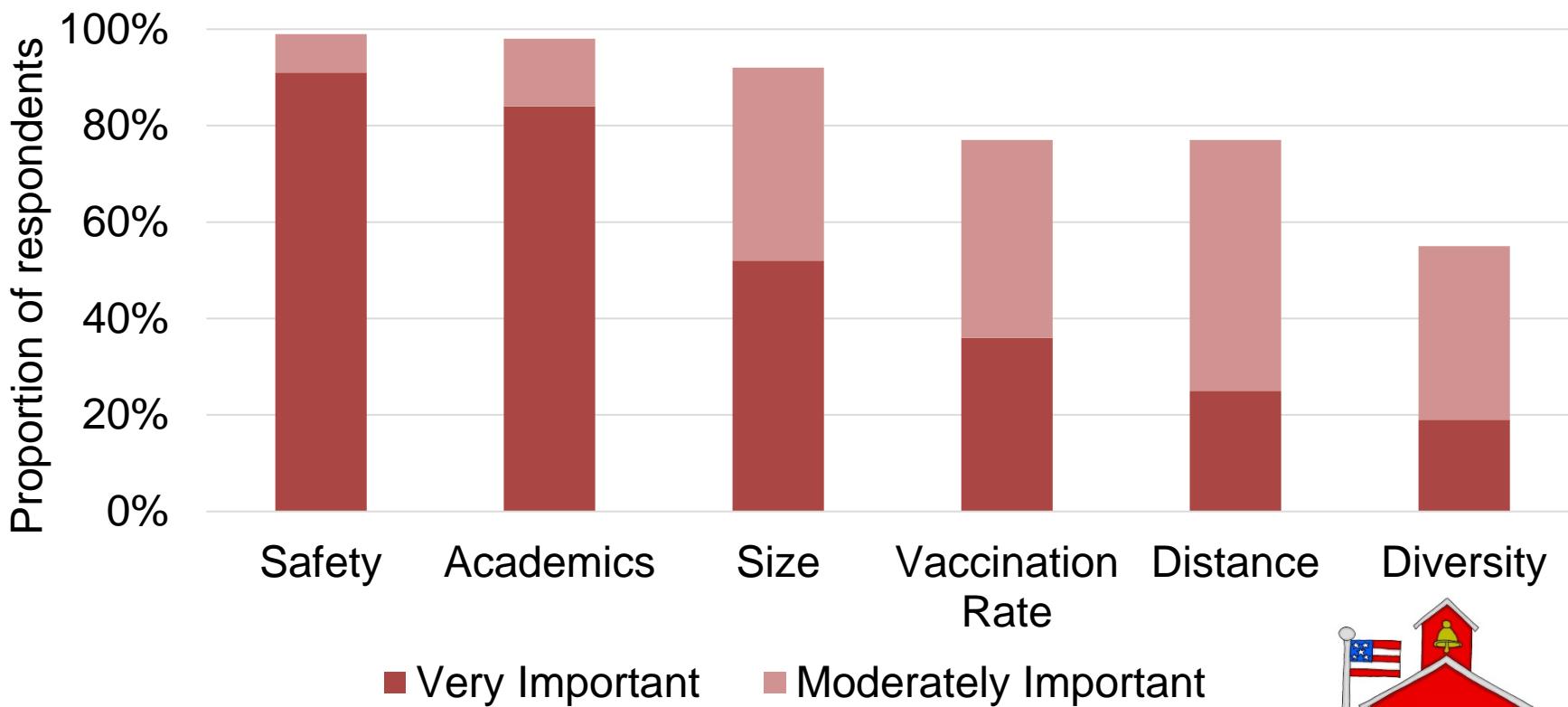
Survey Design

- **Objective 1, part b:** Measure value of higher vaccination rates in context of school choice.
- Parents rated importance of:
 - Academics
 - Distance
 - Diversity
 - Safety
 - Size (classroom / child care)
 - Vaccination rates



Results

Importance of vaccination rate and other factors in context of school / child care choice



Results

Importance of vaccination rate and other factors in context of school / child care choice

- Vaccination rates described as moderately or very important by:
 - 82% of non-hesitant parents vs 40% of hesitant parents
- Vaccination rates described as very important by
 - 44% of parents with child care age children vs 25% of those with school age children



Survey Design

- **Objective 2:** Describe predicted parental behavior in response to public reporting of school and child care vaccination rates



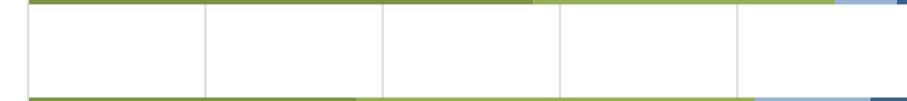
Results

Predicted behavior in response to public reporting of school and child care vaccination rates, n=399

Influence how concerned I would be about my child getting sick from school or child care



Influence where I would choose to send my child for school / child care



Encourage me to talk with my child's school / child care about vaccines



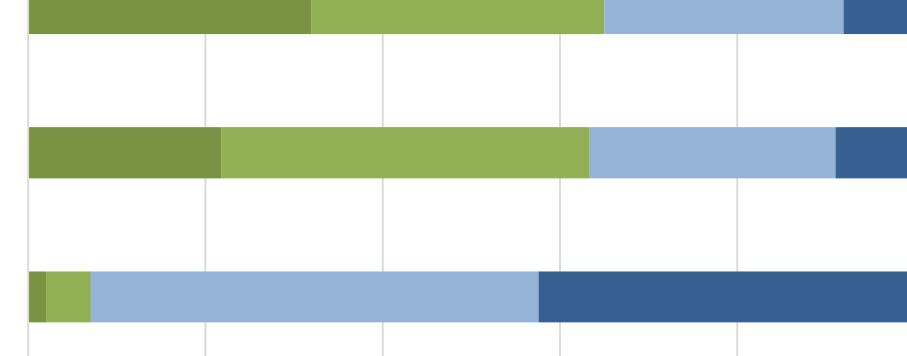
Make me MORE likely to have my child get vaccines



Encourage me to talk with other parents about vaccines



Make me LESS likely to have my child get vaccines



■ Strongly agree ■ Agree ■ Disagree ■ Strongly Disagree



Results

Predicted behavior in response to reporting vaccination rates by age of child

Influence where I would choose to send my child for school / child care

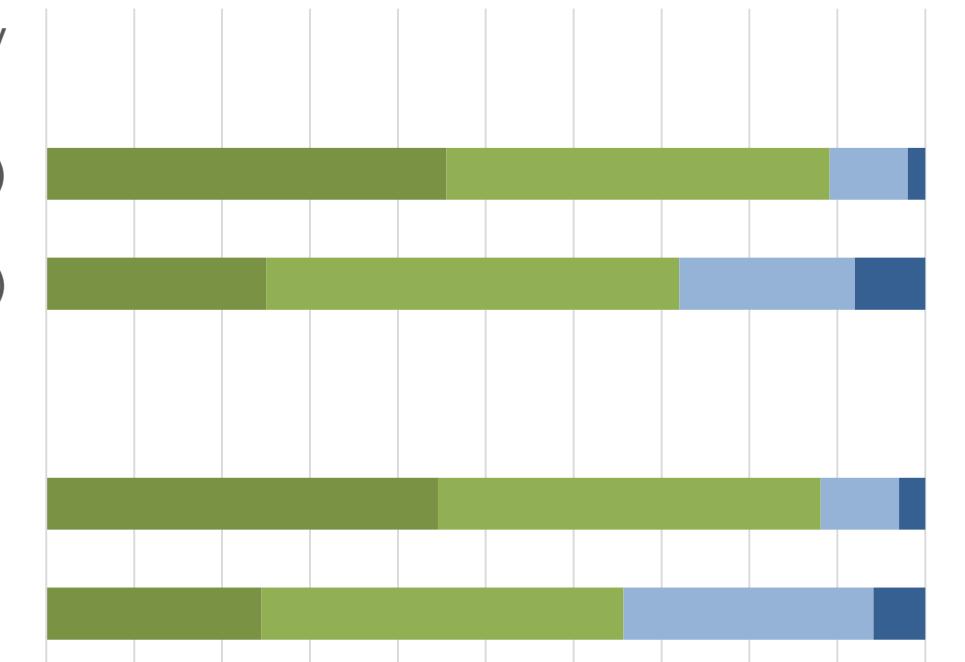
Child care (n=232)

School (n=167)

Encourage me to talk with my child's school / child care about vaccines

Child care

School



■ Strongly Agree ■ Agree ■ Disagree ■ Strongly Disagree

Parents of child-care-age children more likely to engage in some pro-vaccine behaviors (other comparisons not significant)



Survey Design

- **Objective 3:** Measure parental attitudes toward policies to support vaccination



Results

Parental attitudes toward child care worker vaccination by hesitancy, n=237 parents of child-care-age children

	Not at all important	Slightly important	Moderately important	Very important	p value, χ^2 test
How important is it to you that workers at your child's child care program are vaccinated	3%	5%	13%	79%	
Hesitant, n=28	25%	21%	21%	32%	<0.0005
Non-hesitant, n=209	0%	2%	12%	86%	



CONCLUSIONS

Conclusions: Value of vaccination rates

- Parents value school / child care vaccination rates when measured in terms of willingness-to-commute
- Hesitant parents value vaccination rates, although less so than non-hesitant parents
- Vaccination rates are less important than other factors in school choice, but are still considered important by many parents.
- Vaccination rates may be more important for child care than school choice

Conclusions: Predicted behavior

- Over 60% of parents state reporting of vaccination rates would encourage them to talk with other parents or their school / child care about vaccines
- Encouraging conversation strengthens concept of vaccination as social norm
- Pro-vaccine behaviors may be more frequent for parents of child care aged children

Conclusions: Policy support

- >90%, including most hesitant parents, think child and worker vaccination is important
 - Currently no Colorado legislation about this issue

QUESTIONS?

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EXTRA SLIDES

Recruitment

Modified CONSORT Flow Diagram

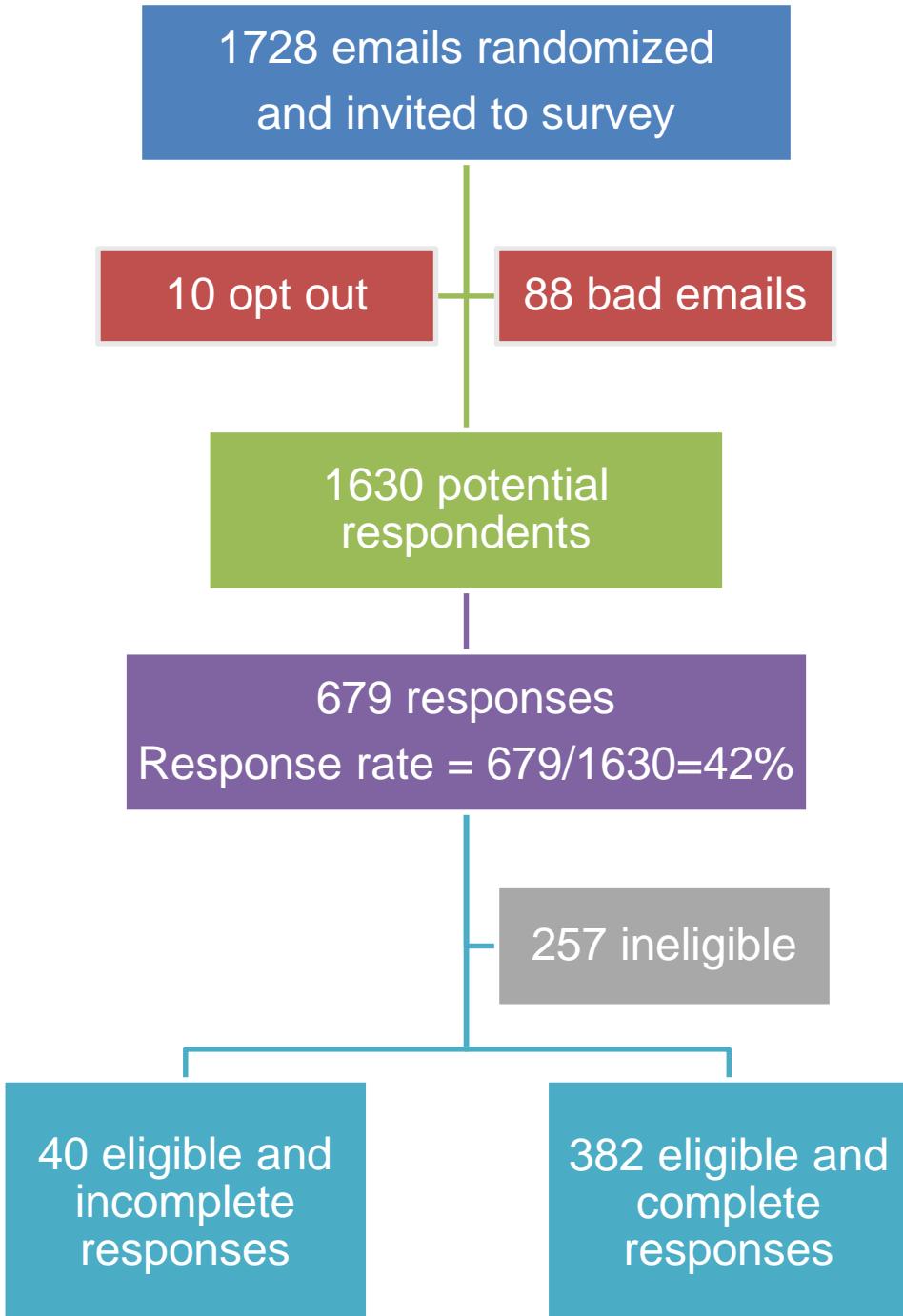


Table 1: Respondent characteristics

N=382

	Variable	% (n) unless otherwise noted
Maternal age [mean (SD)]		36 years (6)
Race/ethnicity	White	86% (327)
	Hispanic	8% (32)
	Asian	2% (8)
	Black	1% (2)
	American Indian / Alaska Native, Native Hawaiian / Pacific Islander, Other	3% (10)
Education	College grad /advanced degree	78% (297)
Income	<\$50k/yr	13% (49)
	\$50-100k/yr	33% (126)
	>\$100k/yr	50% (189)
Insurance	Private	87% (332)
	Medicaid or CHP+	10% (39)
Type of School (n=164 parents w school-age children)	Public	72% (118)
	Private	10% (17)
	Charter	15% (25)
Primary language	English	97% (371)

Table 2: Vaccine hesitancy and vaccination behavior

Hesitancy N=418		
Hesitancy score (5=most hesitant)	Mean [SD]	1.7 [1.0]
Proportion hesitant (hesitancy score ≥ 3)	Estimate [95% CI] (n)	12.2% [9.2-15.7%] (51)
Vaccination behavior N=421		
All recommended vaccines on recommended schedule		88% (371)
Non-recommended plans		12% (50)
	All vaccines but on different schedule	9% (37)
	Some vaccines	2% (10)
	No vaccines	1% (3)

Limitations

- Somewhat small sample size ($n \approx 400$ for most analyses)
- Local Colorado sample; white, wealthy, well-educated, privately-insured
 - May not be generalizable
- Pro-vaccine individuals may have been more likely to respond to survey
- Did not measure vaccination or school choice behavior directly



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