

Characterization of Parents and Schools with High Levels of Exemptions

ADHS Contract: Deliverable 4

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Summary of Findings:

We identified high exemption rates across the state of Arizona. These foci were identified in Maricopa and Yavapai Counties. Schools with high exemption rates were characterized by being predominantly white and higher income/middle class. Follow-up in these clusters of high exemption rates determined that, in some schools, higher exemption rates are being presented to the state than what may actually be occurring. Issues of record keeping led to some fully immunized students being classified as exempt and other students who were considered to be fully immunized were, in fact, not up-to-date on their immunizations. This discrepancy must be resolved in order to allow for appropriate school exclusion by unprotected individuals in the event of an outbreak. Additionally, the reasons for exemption appear to vary by school. While in some schools it was reported by administrators and nurses that there was a genuine personal belief that led to the exemption, others reported that they felt it may have been a matter of convenience because the parent was either unable to obtain appropriate medical care for the student or did not have the time or patience to update their child's immunizations. Individuals who did exempt their children for personal beliefs were more likely to fear side effects of the vaccine and were less likely to trust their family doctor. Furthermore, parents of exempted children had greater personal contact with both individuals who had suffered side effects from a vaccine, as well as individuals who had suffered from vaccine preventable diseases. The majority of parents of exemptors who indicated that they know someone who had suffered from a VPD indicated that the individual was not hospitalized, which may have led them to feel that the VPD is/was not serious. Of great concern to parents was the number of vaccines being administered overall, as well as the number administered in one clinic setting.

Recommendations:

- Schools guidance on reporting vaccination history should be updated, training and webcasts on how to report and maintain vaccination records should be made available to school administrators and professionals.
- Close monitoring of schools that do not have school nurses should be put in place with record review and in-person training by county officials, as needed.
- Clusters of high immunization schools should be regularly assessed to allow increased vigilance to identify high risk areas for outbreaks.
- In-county immunization coordinators should be notified of high exemption areas on an annual basis so that they can focus efforts in detection and review of these schools and coordination with school officials to determine how best to improve coverage.
- Educational programs and flyers about vaccination should be developed and tested with those individuals who have vaccine hesitancy but have chosen to vaccinate. This will allow the

development of arguments that may allow other vaccine hesitant parents to get their children vaccinated. These should include personal stories of severe outcomes associated with VPD.

- Schools should be provided with these educational materials regarding vaccination and school health to distribute with the vaccine record forms.
- Educational modules that could be administered in high exemption schools could be developed. Forums for parents should be held at schools before children enter both Kindergarten and 6th grade to ensure proper and timely education is being delivered regarding the importance of vaccinations (both primary and boosters).
- An exemption form that asks the parent to initial acknowledgements of the risks of not vaccinating should replace the standard form that simply requires a signature. The form in Appendix C could be modified to include an initial by each risk acknowledgement.

Background and Rationale:

Historically, children who did not receive vaccinations were more likely to be part of an underserved population [1-4]. However, parental refusal to vaccinate is emerging as a major contributor to under-vaccination [5-9]. The reasons behind vaccination exemptions likely fall into two broad categories: 1) convenience; and 2) parental beliefs regarding perceived susceptibility to VPD and concerns about vaccine safety [10-25]. In states such as Arizona, where the exemption process is straightforward, it may be simpler for parents to sign a waiver than to obtain records or updated vaccinations from their physician. In the other category, parents who have intentionally chosen not to vaccinate their children have supplied various reasons for doing so. These include concerns surrounding the notion that children receive too many immunizations [25, 26] or that they are at risk for adverse events from vaccines [11, 20, 23, 24]. Parents may also question the importance of the vaccines themselves [23, 25], and/or believe VPDs can be prevented through, “natural” lifestyles, thus precluding the need for immunizations altogether [7, 23]. Previous work has indicated that there may be clusters of individuals whom adhere to these beliefs, or others, and thus refuse to vaccinate [5, 7, 27, 28]--making regional differences in vaccine coverage a major public health concern.

Methods:

Analysis of State-wide school data:

Personal belief exemption rates: Data for PBE were obtained from Arizona’s 2010-2011 kindergarten Immunization Data Report (IDR). The permanent PBE rate for kindergarteners in the reporting Arizona schools was derived by dividing the number of children with permanent exemptions by the total number of children enrolled in kindergarten.

Defining school characteristics: Data for school characteristics were collected from publicly-available query data on the National Center of Education Statistics (NCES) website, including race/ethnicity of students; district type; classification of urban, suburban, town and rural; and proportion of students who receive free or reduced lunch (FRL).

Statistical analysis: Frequencies of permanent PBEs were calculated and stratified by each explanatory variable. To compare characteristics, the Arizona schools with high rates of permanent PBEs among kindergarteners, negative binomial regression was employed to account for over-dispersed nature of the outcome. Bivariate associations were first calculated between each exposure and outcome. The IRR represented the relative increase or decrease in the number of permanent PBEs per enrolled kindergartener. All statistical analyses were carried out using SAS 9.2 (Cary, NC) and STATA 12.0 (College Station, TX).

For geospatial analysis and geographical presentation, ArcMap version 10.0 (Redlands, CA) was used. The geospatial analysis was conducted using Getis-Ord G_i^* statistic in ArcMap 10. Getis-Ord G_i^* identifies pockets of high and low clusters (or hot spots) by comparing a school’s rate to neighboring rates. This statistic was calculated for the state overall, then separately by region, to examine localized hot spots that the statewide analysis could not detect. The output was presented using inverse distance

weighting. All analyses described in this paper was deemed exempt from human subjects review by the Institutional Review Board at the Mel and Enid Zuckerman College of Public Health as the data used were publically available and non-identifiable.

School Records Review:

School selection: Elementary schools with high rates of exemption (>10%) for the kindergarten class from 2010-2011 school year located in the exemption cluster identified from the school-wide data analysis were approached for participation in the project. Of the ten schools that originally agreed, nine of these actually participated—seven from Maricopa and two from Yavapai.

Data extraction: Students with exemptions in any grade were marked and their data were extracted using a standard data extraction sheet (Appendix A). A random selection of non-exempting students from the school was reviewed and extracted at a ratio of 2:1 .

Data Analysis: Data were aggregated to determine the overall school exemption rates. Exemptors were classified as, “complete exemptors” (no vaccination records on-file), “partial exemptors” (some vaccines exempted) and, “falsely exempted” (up-to-date on vaccinations). Controls were also classified as being up-to date on all vaccinations or having incomplete records/ incomplete vaccination history.

Parent Survey:

Survey distribution: Surveys were distributed to schools participating in the data extraction process. As the schools felt that they would be, “singling-out” exemptors if only exemptors and controls were selected for participation, the surveys were administered school-wide to parents. Most schools preferred to disseminate through electronic surveys through their school listservs, two distributed these via paper-based surveys which were later entered into the database.

Data Analysis:

Quantitative: Responses were categorized as either, “exempting parents” or, “vaccinating parents” based on self-report of exemption status in the survey. Differences in proportions were calculated for dichotomous variables between the two groups. For categorical ranked variables, the average score for exempting vs. vaccinating parents was calculated and the 95% confidence intervals were calculated to determine differences between groups.

Qualitative: An open comment box was provided for respondents who wanted to express their opinions about vaccination. Open comments were coded by themes identified by two separate individuals into categories; pro-vaccination, anti-vaccination, spacing, number of shots given, parental choice and general comments.

Results:

Analysis of State-wide school data:

A total of 2,050 (2.7%) of 75,788 kindergarteners in Arizona had a permanent PBE; these students were enrolled in 1,018 kindergartens across the state. Table 1 presents the characteristics of the kindergartens included in the analysis. The PBE rate ranged from 0% to 68% with a median of 1.4%. Of our sample, 215 schools (21%) had PBE rates > 5%, 77 schools (8%) had PBE rates > 10%, and 30 schools (3%) had PBE rates >20%.

Table 1. Kindergarten Demographics With Permanent PBE

	No.	(%)	Permanent PBE	Count of Students	PBE per 1,000 Children
Overall	1018	(100)	2050	75788	27.05
Urban Category					
City	448	(44.0)	880	34792	25.29
Suburb	197	(19.4)	436	16211	26.90
Town	101	(9.9)	148	7588	19.50
Rural	272	(26.7)	586	17197	34.08
Statewide Region					
Central	650	(63.9)	1576	53883	29.25
North	93	(9.1)	219	4579	47.83
South	211	(20.7)	169	13003	13.00
West	64	(6.3)	86	4323	19.89
Agency Type					
Public school	838	(82.3)	1530	67206	22.77
Charter school	176	(17.3)	518	8411	61.59
Other	4	(0.4)	2	171	11.70
Free and Reduced Lunch %					
Under 25	245	(24.7)	842	20001	42.10
25-50	198	(20.0)	533	14566	36.59
50-75	265	(26.8)	432	18290	23.62
75+	282	(28.4)	147	21758	6.76
White % Quintile					
1st Quintile (0-9%)	203	(19.9)	50	17615	2.84
2nd Quintile (9-35%)	204	(20.0)	208	15568	13.36
3rd Quintile (35-59%)	204	(20.0)	376	14131	26.61
4th Quintile (59-75%)	204	(20.0)	612	15121	40.47
5th Quintile (75%+)	203	(19.9)	804	13353	60.21
PBE Rate in Ranked Groups (range)	430	(42.2)	0	29222	

1st and 2nd (0%)					0.00
3rd (0-2%)	181	(17.8)	248	17641	14.06
4th (3-5%)	204	(20.0)	576	16310	35.32
5th (5-68%)	203	(19.9)	1226	12615	97.19

Table 2. Incidence Rate Ratios and 95% Confidence Intervals From Negative Binomial Regression Among 1018 Kindergartens in Arizona

		Crude IRR	95% CI	Adjusted IRR	95% CI
Urban					
	City	Ref:	--	Ref:	--
	Suburb	0.99	0.77,1.27	0.85	0.70,1.03
	Town	0.79	0.56,1.12	0.71	0.52,0.95
	Rural	1.27	1.00,1.61	0.96	0.79,1.16
White Quintile	%				
	1st Quintile (0-9%)	Ref:	--	Ref:	--
	2nd Quintile (9-35%)	4.86	3.39,6.97	4.22	2.94,6.06
	3rd Quintile (35-59%)	10.4	7.34,14.75	7.62	5.20,11.16
	4th Quintile (59-75%)	15.13	10.74,21.32	10.52	7.11,15.56
	5th Quintile (75%+)	24.97	17.74,35.14	14.11	9.47,21.03
Region					
	Center	Ref:	--	Ref:	--
	North	1.74	1.27,2.40	1.38	1.06,1.81
	South	0.46	0.36,0.61	0.64	0.51,0.80
	West	0.78	0.52,1.16	0.92	0.64,1.33
Agency Type					
	Public school	Ref:	--	Ref:	--
	Charter school	3.07	2.43,3.86	2.04	1.68,2.48
	Other	0.38	0.05,3.04	0.64	0.11,3.59
Fee/Reduced Lunch					
	0-25%	Ref:	--	Ref:	--
	25-50%	0.87	0.69,1.11	1.05	0.85,1.30
	50-75%	0.6	0.48,0.75	1.03	0.82,1.29
	75+%	0.15	0.12,0.20	0.68	0.50,0.93

In the fully adjusted model, kindergartens in towns had a 29% lower rate of PBE (95% confidence interval (CI) =0.52, 0.95) compared to cities. The schools with the highest proportion of students reporting white race/ethnicity were over 14 times more likely, than those with the lowest proportion, to have permanent PBE (IRR=14.11; 95% CI=9.47, 21.03). Charter schools had a significantly greater rate of vaccine exemptions compared to public schools, with over a two-fold increase (IRR=2.04; 95% CI=1.68, 2.48). Comparing schools with over 75% of students enrolled in FRL to those with under 25% FRL, a 32% decrease in PBE was observed (IRR=0.68 ; 95% CI=0.46-0.84).

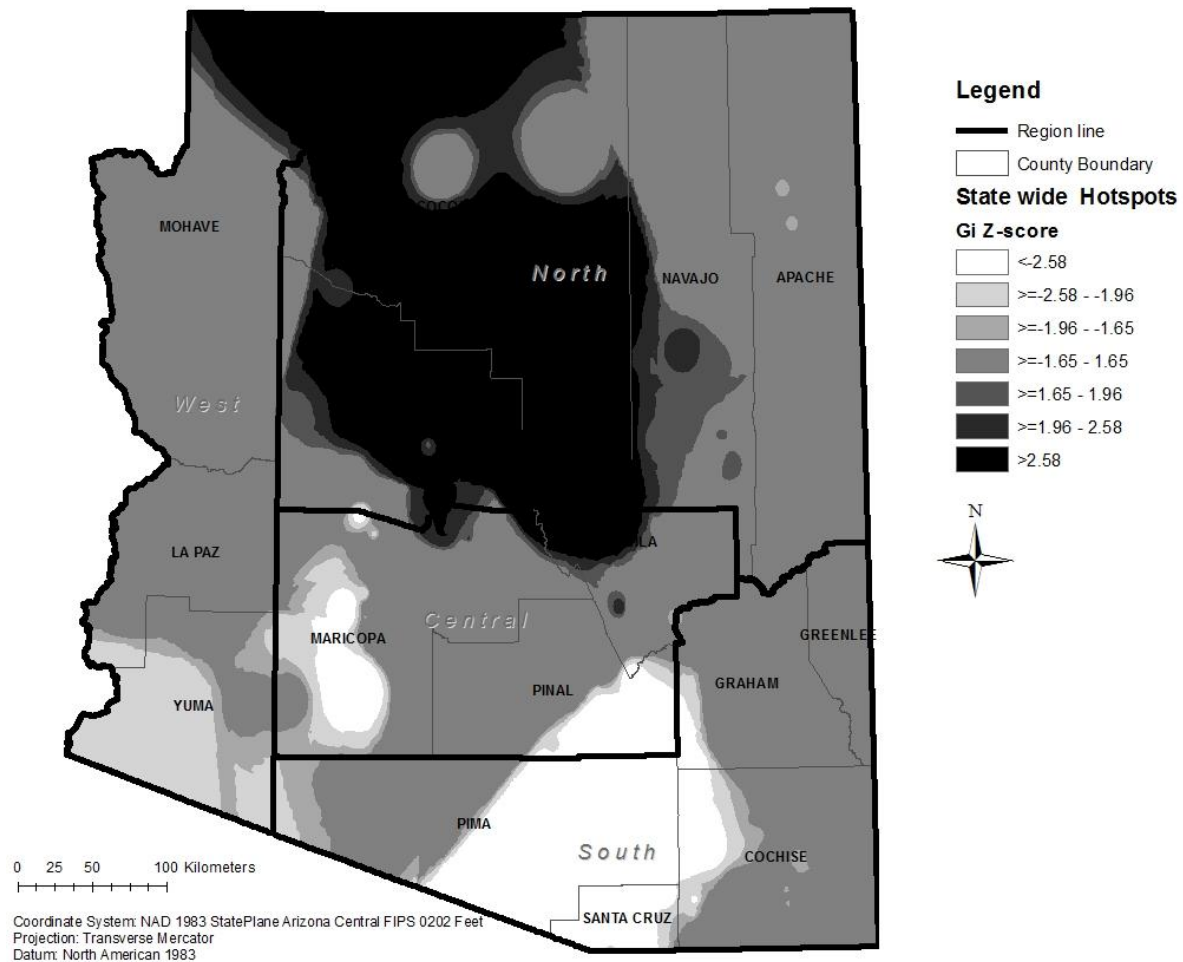


Figure 1. Cluster analysis using Getis-Ord G_i^* on PBE rate throughout Arizona. Darker colors indicate clusters of schools with higher than expected rates of PBE and lighter colors indicate clusters of lower than expected rates of PBE.

The result for the statewide Getis-Ord G_i^* statistic is presented in Figure 2. Statewide, 77 of 1,018 schools (7.5%) were included in statistically significant clusters of high PBE rates and 210 (20.6%) were included in statistically significant clusters of low PBE rates. There appeared to be a geographical gradient throughout the state, with PBE rates decreasing from north to south.

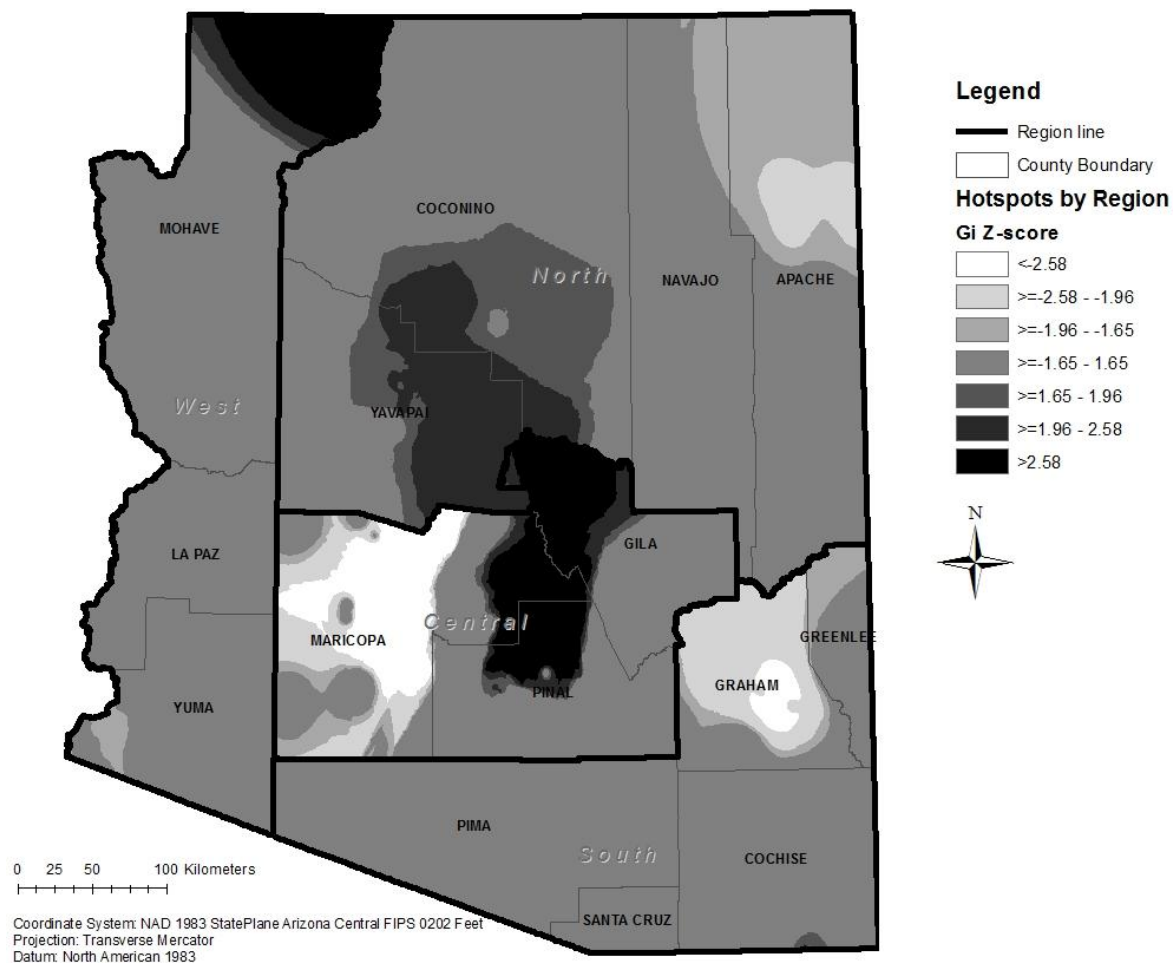


Figure 2. Cluster analysis using Getis-Ord G_i^* on PBE rate by Region. Darker colors indicate clusters of schools with higher than expected rates of PBE and lighter colors indicate clusters of lower than expected rates of PBE.

The result for the same statistic calculated per region is presented in Figure 3. The identification of PBE clusters by region was somewhat limited in northern Arizona, because PBE rates were relatively and uniformly high throughout the region. However, clusters of high PBE rates were detected in the area of Northeast Yavapai County, the city of Sedona, and in Colorado City. In Central Arizona, a pattern was identified in the regional analysis--where PBE clusters occurred more often in the east than the west.

High Exemption Rate School Record Review:

Table 3. High Exemption School Profile of Exempting Students and Controls

School Name	Total Enrollment	Exempted School-wide	Record on File?	Exemptors with complete vaccination	Exemptors With Vaccinations	Exemptors with no vaccinations	Controls Current on Vaccinations?
School 11	192	39 (20%)	39 (100%)	none	10 (24%) exempted from only several vaccines	29 (75%)	Controls indicate more students who are not officially exempt but do require more vaccinations to be up to date.
School 8	132	18 (13.6%)	11 (61%)	none	1 has most until 2007	17 (94%)	<ul style="list-style-type: none"> • 25% (9/36) of controls are missing MMR doses (7 missing final dose, 2 missing both doses); • 1/36 missing final Polio booster; • 1/36 missing several vaccines [this may reflect an actual exemption rate (36/132; 27.3%) that is even higher than what is documented] • 18 are current on vaccines

School 2	<ul style="list-style-type: none"> • 333 students total (K-12); • 161 (K-6); • 135 (K-5) 	<ul style="list-style-type: none"> • 33 (K-12; 10%); • 13 (K-6; 8.1%); • 12 (K-5; 8.9%); • 2011-12 data 25% of kindergartners were exempt 	33 (100%)	none	<ul style="list-style-type: none"> • 8/13 (61.5%) have record of vaccinations but later decided to exempt (some just from specific vaccines such as: MMR, Varicella) 	5/13 (38.5%)	66 (100%)
School 1 (home-schooled children; on-site twice a week)	498	101 (20.3%) vs 39% exempt in 2010	32 (32%)	Of 32 (32%) with records, 7 are up to date	<ul style="list-style-type: none"> • Of 32 (32%) with record: • 13 are missing just their 2nd dose of MMR • 2 are missing the 3rd dose of HBV • remainder vary widely 	69 (68%)	<ul style="list-style-type: none"> • 202 controls • 9 (4.5%) have no record at all of vaccinations • 29/202 (14.4%) are non-compliant and require boosters • 164/202 (81.1%) are completely current
School 4	876	59 (6.7%) vs 11% Kindergartners exempt in 2010		3 (11%)	<ul style="list-style-type: none"> • 59 exemptors • 5 exempted from just the 3rd HBV dose, • 2 exempted from just the 4th DTP/DTaP/DT dose, • 2 exempted from a Tdap dose, • 9 exempted from the 2nd MMR dose • 1 exempted from 2 MMR doses. • 8/59 exemptors would need several doses of a variety of vaccines 	29 (50%)	<ul style="list-style-type: none"> • 118 controls • 1 (<1%) had no record of any vaccinations • 9/118 (7.6%) are non-compliant and require various boosters to catch- • 108 were current on their vaccines (92%)

School 6	715	38 (5.3%) vs 11% of Kindergartners in 2010	38 (100%)	1	<ul style="list-style-type: none"> • 38 exemptors, • 3 exempted their 3rd dose of HBV and • 3 their 2nd dose of MMR; • 10 exempted from several doses of a variety of vaccines 	21 (55%)	76 (100%)
School 3	538	23 (4.3%) vs 14% of Kindergartners in 2010	Not determined	none	<ul style="list-style-type: none"> • 23 exemptors, • 3 (13%) of these exempted from the 2nd dose of • 1 (4.3%) exempted from varicella, and • 1 (4.3%) exempted from the 2nd-4th doses of DTP/DTaP/DT • 4 from a variety of vaccines 	13 (56%)	<ul style="list-style-type: none"> • 46 controls • 1 had no vaccination record • 45 (98%) current on their vaccines
School 7	899	59 (6.6%)	54 (75%)	4 (6.8%)	<ul style="list-style-type: none"> • 9 (15.3%) exempted just from the 2nd dose of MMR • 2 (3.4%) exempted just from both doses of MMR • 2 (3.4%) exempted just from Tdap • 1 (1.7%) exempted just from the 3rd dose of HBV • 1 (1.7%) exempted from the last two doses of HBV 	15 (25%)	118 (100%) current

Particular School Notes and Observations

- School 9I (not in table): Data have been extracted from paper records from School. Data were collected early enough in the year that there were no useable data from the current school year's kindergarten students. However, data from 1st through 6th grade students were present and revealed 4 exemptions. Of all the exemptions, 3 were permanent personal belief exemptions; the remaining exemption was a temporary personal belief exemption. These exemption rates were considered surprising as past data reflected that 28% of a 25-student class size had exemptions in 2011. For each exemption, two students who had not exempted from vaccinations were randomly chosen. From these 8 non-exemptors, 2 (25%) were not up-to-date with their vaccines as required.
- School 1: District nurse believes that the majority of these exemptions are taken due to personal beliefs and not due to convenience. These students are home-schooled and are only on-campus 1-2/5 days. Interestingly, vaccination clinics are on-site once a month.
- School 3: The District nurse believes that the exemptions taken here may be due to convenience as there are limited resources of free clinics in this area. Of the 23 exemptors, 3 groups (total 8 children; 35%) of the exemptors that have absolutely no record of vaccinations are siblings (Family A: 2 children; Family B: 3 children; Family C: 3 children); the remaining 5 children (21.7%), with no record at all of vaccinations, are not siblings.
- School 2: School administrator believes that PBEs are 50/50 due to true personal beliefs vs. reasons of convenience. Several students do not have updated records included in the pool for review.
- School 8: Older exemption forms on-file for many students (v.2008); these do not have a box to indicate a PBE, only medical and religious (school administrator states that all of these are most likely PBEs and are due to true personal beliefs rather than for reasons of convenience). Several of the exemptors are siblings.

Record reviews indicate that there is wide variability by school as to the quality of data that is being collected. The two charter schools included had the most incomplete records and the rates of exemption reported to the state are not accurately reflected with the same number of exemptions on-file. There were instances where students who had exemptions on file were actually 100% up to date on vaccinations. There were also instances in the randomly drawn controls where data was missing from their files or where there were children who were not actually up-to-date on vaccinations. This occurred, again, primarily in the charter schools where data extraction took place. When exempting students had only several vaccinations (as opposed to exemption from all vaccines) that were missing, they were more likely to be for MMR, DTap and Hepatitis B. This holds true with past research findings on the subject--which also indicate these are high exemption vaccines. [29] Informal conversations with the school nurses also indicated that the reasons for vaccination exemption likely varied by school. Some were primarily due to convenience while in most schools it was definitely due to a personal belief about vaccinations.

Parent Survey

Quantitative

Table 4. Respondents indicating actions regarding vaccination delay and exemption

Have you ever delayed having your child get a shot for reasons other than illness or allergy?		
Yes	37.1%	150
No	62.4%	252
Have you ever decided not to have your child get a shot for reasons other than illness or allergy?		
Yes	33.2%	134
No	66.4%	269
Have you ever taken a non-medical exemption for any or all of your children's shots?		
Yes	23.9%	95
No	76.1%	302
If you had another infant today, would you want him/her to get all the recommended shots?		
Yes	63.8%	257
No	28.6%	115

* Not all responses total to 100% due to responses of "Don't know"

More parents have delayed shots for reasons other than illness than took permanent exemptions from the shots. Interestingly, more parents have chosen not to get at least one childhood vaccination than say that they would not want to have a fully immunized child in the future.

Table 5. Demographic differences between individuals responding as exemptors vs vaccinators.

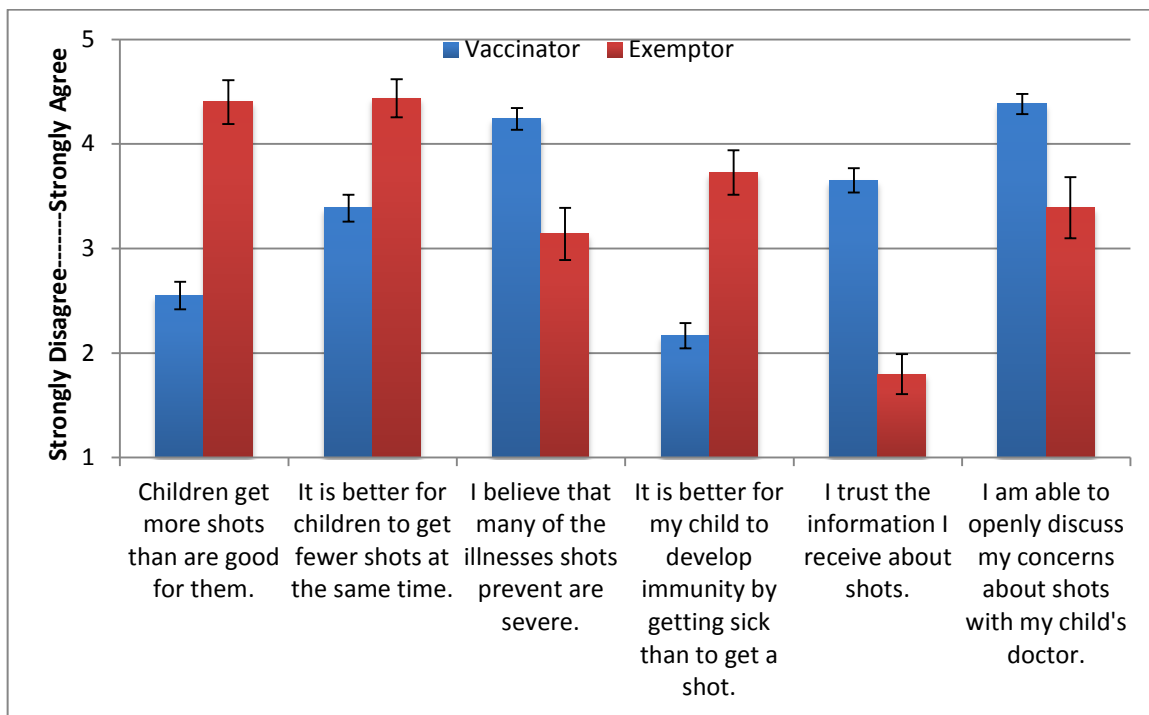
Demographics	Vaccinator (n = 302)	Exemptor (n = 95)
Female	255 (85%)	80 (88%)
Race Ethnicity		
White	265 (89%)	85 (96%)
Other	32 (11%)	4 (4%)
Age (average in years)	37.1 years	35.8 years
Average number of children	2.7 children	2.8 children
Education		
Didn't graduate high school	5 (2%)	0
High School	14 (5%)	3 (3%)
Some college, no degree	71 (24%)	23 (25%)
Associates	42 (14%)	21 (23%)
Bachelors	101 (34%)	26 (28%)
Graduate degree	68 (23%)	19 (21%)
Income		
< \$35,000	36 (13%)	8 (9%)
\$35,000 – 49,999	34 (12%)	16 (18%)
\$50,000 – 74,999	74 (26%)	30 (33%)
\$75,000- \$99,999	69 (24%)	16 (18%)
>\$100,000	74 (26%)	20 (22%)

Marital Status		
Married/ living with partner	257 (87%)	78 (84%)
Never married/ divorced	40 (13%)	15 (16%)

No statistically significant differences noted, though p -value for race being White or non-White between groups is borderline significant, $p=0.074$, Chi-square test.

Few differences were noted among the demographics of exemptors and vaccinators. Exemptors were marginally less likely to be of a race other than white compared with those who did not take an exemption, indicating that perhaps white individuals in these respondents are more likely to have an exempted child. However, respondents were generally similar in their demographic background.

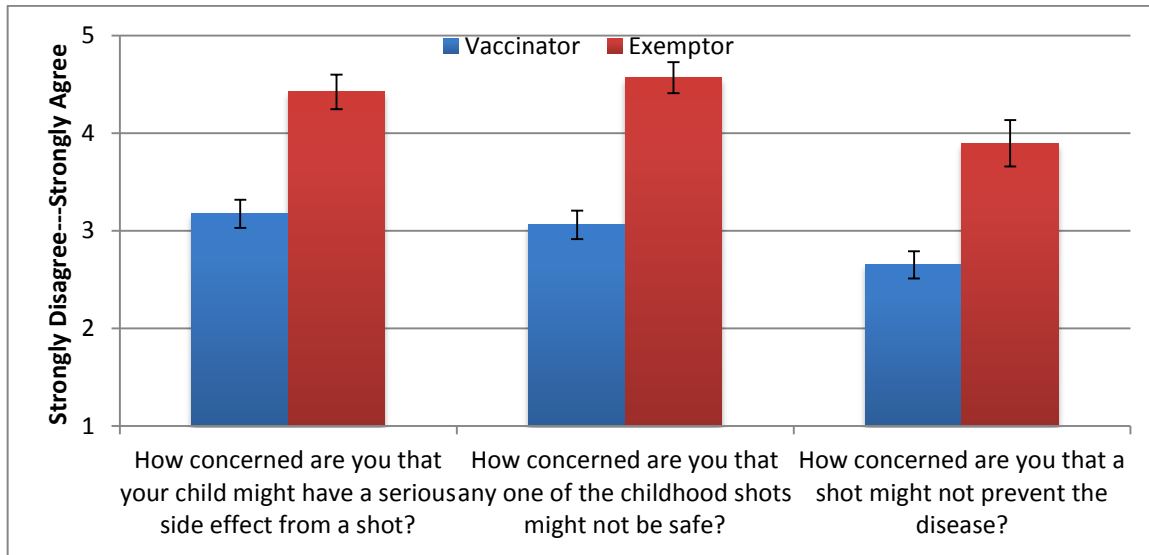
Figure 3. Attitudes towards vaccines by parent responding as vaccinator vs. exemptor (1 is strongly disagree and 5 is strongly agree)*



*Error bars indicate 95% confidence interval of the mean.

There were distinct differences in attitudes towards vaccinations between the vaccinator and exemptor groups (Figure 3). Vaccinators were less likely to agree that children were getting too many shots or that children should get fewer shots at one time. Vaccinators were also less likely to agree that it was better for children to develop immunity from disease rather than a shot. Vaccinators were more likely to agree that the illnesses prevented by shots are severe and that they are able to discuss their concerns about vaccination with their family doctor. Vaccinators were less likely to feel that they could trust the information they received about shots. This may possibly be a reflection of the types of information that exemptors are seeking to reinforce their opinions on vaccination or it could be a lack of trust in governmental or pharmaceutical sources of information.

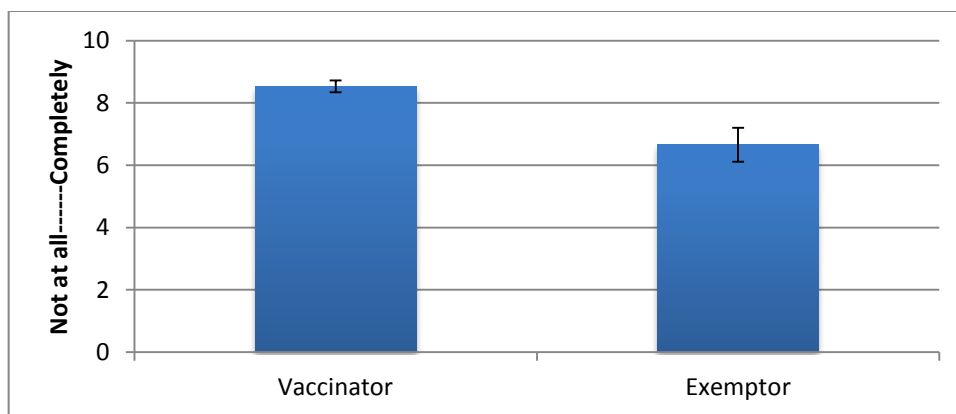
Figure 4. Concerns about the side effects of shots by exempting vs vaccinating groups*



*Error bars indicate 95% confidence interval of the mean.

Vaccinators expressed lower levels of concern toward the possibility of serious side effects of vaccinations and the possibility that the shot will not protect the child against disease (Figure 4). Exemptors were less concerned that the shot might not protect the child from disease than the belief that the vaccine could cause a serious side effect.

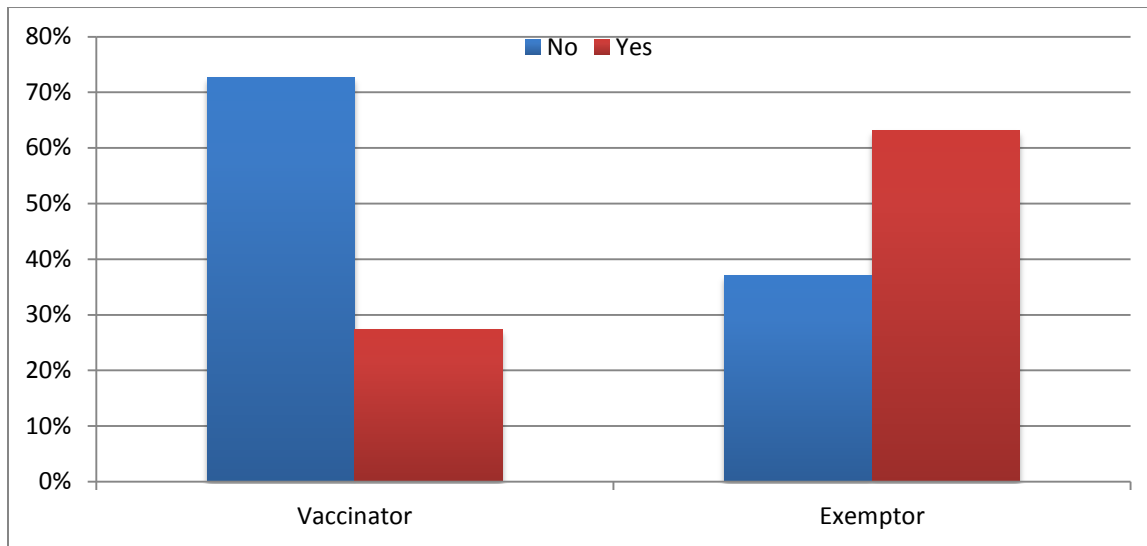
Figure 5. Rating of trust level of respondents' family doctor by group (1 is not at all trusting of their family doctor and 10 is completely trusting of family doctor)



Error bars indicate 95% confidence interval of the mean.

While vaccinators were, on average, more trusting of their family doctor, the difference was not great between vaccinators and exemptors (Figure 5). This may reflect selection of family doctors who are more empathetic to the respondents' points of view.

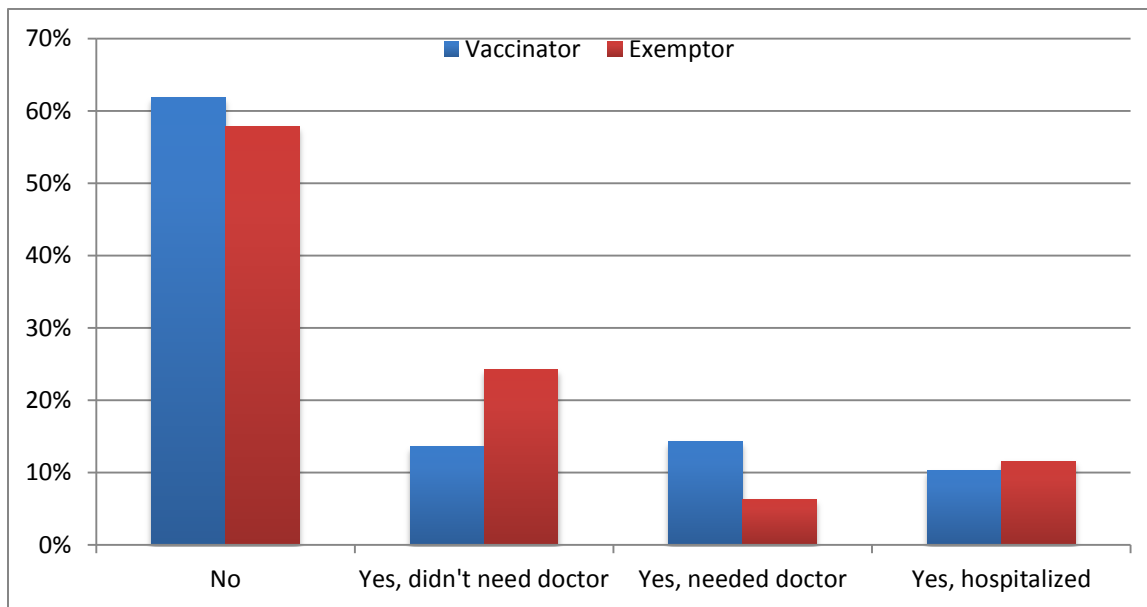
Figure 6. Proportion of respondents who indicated that they have known someone who had an adverse reaction to a vaccination that required medical attention*



* $p < 0.001$, Chi-square test.

Exempting parents had a much higher proportion of reports that they knew someone personally who had a severe reaction to a vaccination (62% vs. 28%) (Figure 6).

Figure 7. Proportion of respondents who indicated that they personally knew someone who had suffered from a vaccine preventable disease*

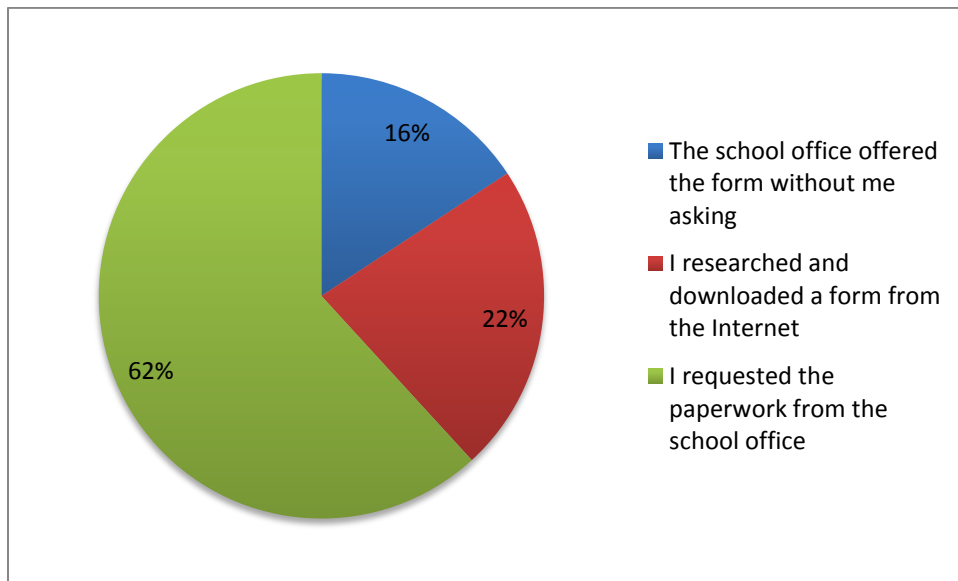


* $p = 0.029$, Chi-square test.

Exempting parents reported more frequently that they personally knew someone who had developed a vaccine preventable disease than those non-exempting parents (Figure 7). However, they also reported that most of these individuals that they knew, who had developed a vaccine preventable disease, did not need to seek

medical care. It is possible that this disconnect, between seeking treatment and the severity of illness, may be associated with parents who perceive that the vaccine preventable diseases are not that severe.

Figure 8. Location where exemption paperwork was obtained by exempting parents



The majority of exemptors obtained their vaccination exemption forms after requesting them from the school office (Figure 8). Of concern, however, is that in several cases administrators in the school office were offering the form without the parent having requested it. Among respondents who took an exemption for their child, 90% indicated it was due to personal beliefs and not due to convenience. However, 7% indicated that the exemption was due to a lack of time to visit a doctor and 3% reported that the exemption was due to losing their child’s vaccination records.

Appendix B also presents the comments from the open field question in the survey asking parents to provide more information about their thoughts on childhood vaccinations. While one individual expressed very strong concerns about vaccination, which cannot possibly be overcome by alternative vaccination schedules or education, most comments were somewhat, “middle of the road” or supportive of vaccination for children.

Qualitative

Individuals were more likely to express their opinions against vaccinations (n = 23) rather than in support of vaccinations (n=20) (Appendix B – Unedited Comments from Participants) and comments were more detailed in the anti-vaccination respondents.

Overall, anti-vaccinators were extremely concerned with the side-effects of vaccination citing personal experience with individuals who in their opinion had developed poor health outcomes due to vaccinations.

“My nephew was diagnosed with Autism immediately following his MMR shot. I delayed immunizations for my children following my nephew’s diagnosis. Also, a colleague of mine died at 30 from complications related to Guillain-Barre Syndrome which he contracted shortly after getting a flu shot.”

Other individuals expressed great distrust in the government and pharmaceutical industries and felt that the information provided was not to be trusted.

“There is enough research to show how harmful so many vaccinations are to the people who get them - and the greater percentage of children who fall ill with “preventable diseases” at school tend to be those who have been vaccinated. The child I knew who needed to be hospitalized because of a “preventable disease” was vaccinated for that particular disease. There are just too many questions with unsatisfactory answers given for me to trust what I am being told by the medical community, especially when their info packets and TV spots are sponsored by pharmaceutical companies with no true interest in the common welfare of the people.”

More “middle of the road” views were expressed by individuals who felt that vaccinations were important but that they wanted to either delay or space vaccinations more than what they were recommended to be.

“We delayed our new born infants getting their Hep B shots as we didn't think the risk of our new born becoming or being exposed to an IV drug user was very high. This allowed us to have things like the Pertussis shot given without assaulting the child at such a young age with so many shots. While I trust my Dr. to treat me and my family he is only allowed to with input and council with me and their mother. As our children got older they were given their shots in a timely and spaced out regiment to allow the body to adjust to one disease at a time....”

Still others were highly supportive of vaccinations and felt that individuals who did not vaccinate were misinformed and putting other individuals at risk.

“If a child isn't vaccinated they should not be allowed to attend [school]. It is not fair my child is put at risk because someone isn't vaccinated.”

Discussion:

Our finding of higher PBE rates among higher-income schools is in agreement with other studies that have identified associations between higher income socioeconomic groups and higher rates of children who were unvaccinated [30], had lower vaccine completion rates [31], or selectively vaccinated [31]. In contrast, a study conducted in Oregon found that parents obtaining vaccination exemptions were more likely to be living below the poverty line and more likely to be unemployed or looking for work [26]. A national survey has also indicated that parents of lower socioeconomic status may have greater concerns about mandatory vaccination [25] however, parental concerns may not translate directly into refusal of vaccines. Therefore, it appears that the characteristics associated with vaccine exemptions may vary by region. Our findings support results from prior studies where parents reporting white race have more doubts concerning vaccines [14] and are, in general, less likely to follow vaccine requirements for school entry [30-32]. This finding was supported by the data collected from both the statewide school exemption analysis as well as the parent survey administered to schools. However, this may suggest homogeneity of the demographic of parents in schools that agreed to participate.

The variability in maintenance of school records for exemptions is of concern in particular for charter schools that were included in the data extraction portion of the study. Poor record keeping can make things very difficult when responding to outbreaks. In particular, students who do not have an exemption and are recorded as compliant with school entry requirements may not get excluded during an outbreak for a disease that they

have not actually been vaccinated against. There appear to be remaining concerns with particular vaccines including the MMR , DTaP and Hepatitis B vaccines. This is likely due to remaining fears about the unfounded link between autism and the MMR vaccine, in particular. It is also possible that DTaP is of concern due to the history of adverse events that were related to the *pertussis* vaccine. [33, 34]

The parental survey revealed several interesting differences between parents that chose to exempt their children from vaccinations and parents who fully vaccinated their children. It appears that while parents who are exempting do indeed have a fairly high level of education, the median was an associate's degree. The vaccinator respondents in the selected population were actually more likely to have earned graduate degrees. It is possible that there is an inverse curve when it comes to vaccinations. Further studies with greater sample sizes are needed to determine if this trend holds in a larger population. The parents who exempted their children also self-reported a mid-range income level. The lack of difference between demographic characteristics between vaccinators and exemptors may be due to the fact that the source populations for these surveys were relatively homogenous. Schools were specifically targeted because of high exemption rates and there may be little difference within the schools sampled. Furthermore, there may be a limited difference between groups as there appears to be significant participation bias; the exemption rate within respondents was nearly 24% - a high rate even compared with the overall exemption rate of the included schools.

The question with the largest discrepancy in agreement between vaccinators and exemptors was the question regarding trusting the information that these parents receive about vaccinations. Further information should be gathered to determine what sources of information exempting parents actually do trust when making these decisions. If more information from these trustworthy sources can be generated, it is possible that they would be more comfortable having their children immunized. There also seems to be a strong concern with the number of shots being administered both at one time and in general, as well as the belief that some healthcare providers are not aware of the true risks of vaccinations and/or try to, "bully" them into compliance.

Not surprisingly, individuals who chose to exempt their children from vaccinations expressed a higher level of concern about the safety of the vaccinations. One free field commentator indicated that they actually felt that most of the VPDs were actually caused by the vaccines. This is incredibly difficult misinformation to overcome and it is likely more productive to focus on those individuals who have concerns and who are open to obtaining vaccinations for their children (either through the traditional schedule or through a schedule that perhaps has more frequent but fewer vaccines administered at each clinic session). This may allow them to achieve the childhood entry requirements in a way that meets their belief system.

There is a surprisingly small discrepancy in the amount that the parents trust their family doctor. It is possible that this is because individuals who are exemptors seek out medical doctors that share their beliefs in vaccinations (i.e. naturopaths/complementary medicine practitioners) or who are more tolerant of vaccine hesitant parents and offer an alternative immunization schedule. This appeared to be confirmed by some of the open-ended statements of exemptors who indicate that they visit a naturopath.

Individuals who exempted their children were more likely to report knowing someone who had both had an adverse reaction to a vaccination, as well as knowing someone who had suffered from a VPD. The most striking result revealed was that those individuals who exempted their children had a very high proportion of people who they knew that got a VPD that did not require medical care. It is possible that this association with mild disease and VPD helps to solidify their choice to not vaccinate their child.

Conclusion:

It appears that in Arizona there are multiple reasons for vaccination exemptions being reported to the state. In some schools it appears that it may be data collection error that results in higher reported rates however, in other schools the majority of parents are exempting due to a personal belief. These personal beliefs tend to be primarily due to fear regarding the safety of vaccinations, especially the administration of multiple, concurrent, and/or “unnecessary” vaccinations, as well as the belief that the VPDs are not severe. Targeted education for individuals who are still open to vaccination but have not had their children immunized with all recommended vaccines would be suggested. Individuals who are extremely, adamantly opposed to vaccination are unlikely to change their beliefs. Finding a balance for parents whose main concern is the number of vaccinations administered at one time could be a solution that would improve immunization coverage statewide. Parents could be reached prior to school entry at various grade levels (e.g. kindergarten, 6th grade, etc.) through educational efforts provided by a variety of sources deemed trustworthy by these parents.

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Appendix A. Data Extraction Form

Age: _____

Sex: M / F

Date of immunization certification: _____

Data source:

- Arizona Lifetime Record
- Foreign country: _____
- Out of state record: _____
- Other: _____

Grade: _____

Enrollment date: ____/____/____

Immunization status:

- All immunizations complete: Date - __/__/__
- Up-to-date; Needs further immunizations in future
- Laboratory evidence of immunity to: _____

Exemptions – Note on last page

Immunization dates (MM/DD/YY):

Immunization	1st	2nd	3rd	4th	5th	6th
(DTaP/DTP) Diphtheria, Tetanus & Pertussis						
(DT) Diphtheria & Tetanus						
(Td) Tetanus & Diphtheria						
(Tdap) Tetanus, Diphtheria, acellular Pertussis						
(IPV/OPV) Polio Vaccine						
(MMR) Measles, Mumps & Rubella						
(Hib) Haemophilus Influenzae b						
(Hep B) Hepatitis B						
(Hep A) Hepatitis A						
Varicella (Chickenpox) Check box if history of disease. <input type="checkbox"/>						
Meningococcal						
HPV (Human Papilloma Virus)						
Other (Including Influenza Vaccine)						
TB Skin Test: (optional) List most recent test						

Appendix B: Unedited Comments from Parent Survey Regarding Vaccinations

Do you have any comments about shots that are needed for your child to go to school?	
Anti-vaccination	I'm an herbalist, Holistic nutritionist and I have done the research on immunizations. I do not agree with the increase in immunizations since the 1980s.
	I am an herbalist and holistic nutritionist. My family goes to a naturopathic doctor and I have personally researched immunizations, I only utilize the ones I feel are beneficial and not dangerous.
	I refer further shots as he had a severe reaction in the past.
	This survey makes alot of assumptions instead of gathering open ended information. My nephew was diagnosed with Autism immediately following his MMR shot. I delayed immunizations for my children following my nephew's diagnosis. Also, a colleague of mine died at 30 from complications related to Guillain-Barre Syndrome which he contracted shortly after getting a flu shot. Legislation has been buried in the Patriot Act protecting medical professionals from law suits related to immunizations, so I am entitled to being skeptical of the immunization push. My children have most of their shots now, however I did delay them. Fortunately, we have a wonderful pediatrician who does not feel compelled to judge my decision but rather accepts it and moves on.
	It is important that enough of our children get immunized so that serious diseases can be prevented/controlled.
	I think it is more important to teach our kids to eat healthy and wash hands. I cannot trust the chemicals and things in the shots especially for newborns. could be side effects
	I have easily obtained an exemption form from one school, but was denied exemption without doctor's medical release. I felt this violated my rights as a parent. Immunizations for some diseases are likely more necessary than other diseases. My main concern is not the immunization (except in the case of the flu shot) but the mercury levels in the shot. They are too high to be injected directly into the bloodstream. My doctor is very insistent and pro-immunizations. I do not feel that doctors offer unbiased information. I do not think schools should require immunization records when there are so many dangers. I think the schools should offer unbiased information and make parents aware that not every parent chooses to immunize their child. After all, this is what happens anyway, so let parents choose and stop bullying by snooping into someone's medical records.
	The current schedule does not take into consideration stay at home children, children that were breastfed past 1 year and children that may have had a mild reaction to a previous shot. Spacing them out so that a parent can watch for reactions and KNOW which one caused the reaction is a prudent approach to vaccinations, versus giving multiple vax in one visit, a parent is unable to determine which one cause the reaction. There are also some shots that require 4-5 doses to be effective, however once a child reaches a certain age, no shots are required.
	Shots actually aren't needed, since there is an exemption form, so I assume you mean "recommended". There is enough research to show how harmful so many vaccinations are to the people who get them - and the greater percentage of children who fall ill with "preventable diseases" at school tend to be those who have been vaccinated. The child I knew who needed to be hospitalized because of a "preventable disease" was vaccinated for that particular disease. There are just too many questions with unsatisfactory answers given for me to trust what I am being told by the medical community, especially when their info packets and TV spots are sponsored by pharmaceutical companies with no true interest in the common welfare of the people.
	Read www.nvic.org Severe side effects and death are very real in immunizations. However profit motivates our current health care system far more than safety. I see several different doctors for my family's health but the one I have the longest trusted relationship with in my naturopath.
Shots should never be required. Auto-immune disease is on the rise and so are the shots being given to children today compared to decades ago. "Immunization" shots = Auto "Immune" disease!! Shots confuse the immune system. It is known that shots cause HIGH fever. It is known that High fever can cause Type 1 Diabetes and other auto-immune disease. It doesn't take a genius to see that makers of the shots have a hand in pushing them to be required so they will make more money, It's sickening! These poor UN-knowing parents and school nurses think that kids should get all shots to be healthy. They love the kids and have no idea that they are in fact hurting them with multiple injections. These kids are going to become adults and figure out what has been done to	

	<p>them not given a choice. I think kids should be at least 8 years old and be completely educated on the risks before they are allowed to opt in to being injected.</p> <p>There are no shots needed for my child to go to school. If that ever changes my child will not go to public school.</p> <p>Don't think kids need flu or pneumonia shots</p> <p>They are harmful for children</p> <p>I do not believe all of the shots that the schools state that my kid needs, they should not have to receive. I am just fine and everyone in my generation is just fine. No one is sick or has had anything that a shot would of made better!!!!</p> <p>Shots should not be mandatory, the schedule of shots overloads a child while they have an underdeveloped liver and body.</p> <p>They are not necessary</p> <p>Some shots contain mercury which can never be good for a child's body.</p> <p>Hep B shouldn't be required. My own Doctor doesn't think it's that important to get.</p> <p>I have two incredibly healthy, unvaccinated children and have zero doubts about this decision. The package insert warnings about seizures, death etc are enough for me to rely on nutrition and common sense to keep my precious babes healthy. There is zero evidence that vaccine ingredients such as formaldehyde, aluminum, animal DNA, aborted fetal cells, etc do good, and in every other aspect we are warned to avoid them. I believe that autism is only a drop in the bucket of health concerns regarding vaccines, yet is the only concern ever discussed because it is the only one that might be refutable. I believe diseases are not made out to be scary until there is a vaccine on the market, then scare tactics are used to push them. There are very few "vaccine preventable" diseases I find scary, and in my hours and hours of research I have learned that these diseases are more often than not caused by the vaccine itself. So I choose healthy, toxin-free methods of keeping my children and myself safe and healthy, and thus far have been very successful.</p> <p>The pharmaceutical industry is corrupt and cannot be trusted. This is proven time an time again. What are parents to do when we cannot trust ADHS because ADHS relies so heavily on information they receive from the pharmaceutical industry?</p>
Spacing and Delay	<p>Not sure if shots at an EARLY age contribute to long term adverse reaction conditions</p> <p>I feel there are some shots that are given too early and should be held off a couple years.</p> <p>I think we need to do more research. I believe many children are asked by their doctors to give shots too early and the shots have possibly caused conditions such as autism.</p> <p>We chose to wait with the Hep B vaccine at the hospital birth with both boys until they were 7 days old and had them vaccinated at the pediatrician's office. We felt that the infants would be a little stronger by waiting a few days. It was just our decision, no real medical evidence, it just seemed like a lot of shots for a newborn.</p> <p>I wish that they would not give so many shots as the children are infants. I wish that they would spread them out and not group so many together.</p> <p>Children receive to many shots before they start school. There body needs time to grown to be able to handle the shot. I have 2 kids 13 months apart that got there shots on time at the same time. They both have a form of autism. I have 2 others that I have spaced out there shots and they both are doing great with no problems and are rarely sick.</p> <p>Vaccines linked to autism... Asperger's syndrome runs in my family. We got all of his required vaccines but slowed down the pace a bit.</p> <p>My only problem with shots is the amount they get at 1 time when they are very little. I would rather have several visits (and pay for the visits) over a few months that all at 1 time.</p> <p>While I believe vaccinations are a positive thing, I do question the wisdom behind giving so many together at one time.</p> <p>I believe that though shots work there is a risk. We delayed our new born infants getting their Hep B shots as we didn't think the risk of our new born becoming or being exposed to an IV drug user was very high. This allowed us to have things like the Pertussis shot given without assaulting the child at such a young age with so many shots. While I trust my Dr. to treat me and my family he is only allowed to with input and council with me and their mother. As our children got older they were given their shots in a timely and spaced out regiment to allow the body to adjust to one disease at a time.... Not having a general comment section in this survey leads me to believe you already have a desired outcome and your directing your questions to get that outcome...Just my opinion</p>

Number of shots given	The number of shots are getting to be too much; some children may be able to handel this, others immune systems may not.
	I think that way too many shots are being given. I think that when a baby is born, a Hep B shot is out of line. Unless they are doing IV drugs or sleeping with prostitutes, why are they giving these shots to infants? There are many, many more concerns that I have.
	They just keep adding more. I don't necessarily have a problem with all shots, but I think they get them too young and recommend them getting way more at one time than are safe.
	There are too many required shots, I only think that immunizations for deadly illnesses that are prevelant should be required. HPV shot for young girls and HepB is going too far. I as a parent should assess the risk and make that decision.
	There are too many. A few of which I can not choose to opt out of like varicella and rotavirus. If it's all or none I choose to sign the personal beliefs form as having none, even though my children do have most of the recommended vaccinations. I do not trust my doctor anymore after being coerced into more and more shots for their gain. It feels like it's a game and they have to win, not in the interest of my child.
	I feel that there are too many immunization a required. There might be some of the immunization a that really are needed but since there are so many I am not sure which ones are the most life saving if there really is a risk.
	Too many shots are required and it is too difficult to just say no. These shots don't even work all the time ex. whooping cough, measles.
	There are too many child hood vaccines pushed by the medical community. That is, we can safely separate vaccines to make them safer for the children.
Pro-parental choice	The choice should always be with the parents.
	Should be optional based on personal beliefs
	It is not necessary and should be a personal right. Instead of a 'drill' session of why your children have not received all of their shots.
	it is important for their to be a choice in the matter. as a parent of a grade schooler, i would not have a problem with another student going to school who does not have shot requirements.
	As long as there are exemption options for anybody who wants them, I am fine with the system. If that right was taken away from me, I would homeschool.
	I really hope that this survey is not some government group who is trying to take our rights of choice a way. The world of drugs legal or illegal is big money for the drug companies and immunization has become a way for them to make big money on both ends of the spectrum. One of the things I appreciate about Arizona is that we have the right as a parent to choose and I pray that never changes. Just so you know my children have never been sick except for an occasional cold, this with no shots.
	I believe that the choice to vaccinate or not vaccinate a child is a decision that should be made between the child's parents and physician. I do not believe that the state has the right to interfere with personal medical decisions.
	They should not be mandatory.
	All vaccinations should be voluntary no matter what. It is an infringement of rights to mandate vaccinations.
	My children do not have shots and still attend public school, it is my right to decide what is best for my children, not the government. The moment the government tries to take over that right is the moment I will remove them from the public school system. The lunches provided by my children's school is a prime example of why I can't rely on the school to decide what is healthy or right or good for my children- that is my job.
Pro-vaccine	Thankful for the encouragement to keep immunizations up to date.
	My concern is with families that don't immunize!
	No - I only wish it was MANDATORY that ALL children are FULLY immunized before attending public school. Families who choose not to immunize should be required to home school or attend charter schools.
	All students should receive immunizations. We will see a recurrence of diseases of the past especially with the people coming from other countries to our south that didn't have proper immunizations and medical care.
	I think they should be mandatory for all children. Why should my child be exposed by someone that

	hasn't been immunized?
	I wish they would get them!
	I believe that children should be immunized to help prevent the spread of the horrible diseases.
	I think it is vital especially with other children that have illness' that make them susceptible to illness
	I think they should be mandatory
	Parents who choose not to have their children immunized are endangering the health not only of their children but everyone. Diseases that were nearly wiped out are now returning at higher levels due to irrational fear.
	I've been concerned about the safety of shot for young children, but believe the benefits outweigh the risks.
	While they say the shots are safe I am not 100% sure. Our understanding of the human body and its reaction to certain elements is still rather limited. However, I would rather my children risk the possible side effects from a vaccine than get the actual illness it is intended to prevent.
	If a child isn't vaccinated they should not be allowed to attend [school]. It is not fair my child is put at risk because someone isn't vaccinated
	I think they reduce health risks for all students. Flu shots should be administered to all school age kids in public school to reduce illness and time off due to flu related illnesses. This also affects the staff and teachers.
	None, I feel they are needed
	I feel there is a valid medical reason that children need to get shots.
	Prevention is better than cure!!
	I support children receiving shots to prevent, preventable illnesses...too much information to ill informed people can be a danger to the public. Lastly, securing a good doctor is paramount.
	Immunizations is still the way to go. Benefits outweigh the risks.
	Yes...other parents I know are most worried about a side effect of shots being autism. There seems to be a lot of mis-information and speculation circulating about this one. 2nd- I used to work at a preschool/certified ADHS day care facility...parent's who did not know they could request a waiver for their shots for personal belief reasons were informed of this when they didn't have their shot records... this bugs me when this happens because it puts children at risk. I also grew up in a home that was a certified day care group home...my mom used to not allow people to come who didn't get their shots even if it was against there personal beliefs. She had a private business so this was possible for her, but I wish it were also possible for other facilities that are not privately run. Perhaps this would increase the immunization rate. Thank you for doing this research...it's important. Go Wildcats! (from a fellow alum)
General comments	I have mixed emotions. Because I have known at least 2 families that were extremely impacted by negative affect of vaccine. I did a lot of research before deciding to vaccinate my children. I did decide that too many outdoors of opportunities might close; to go to foreign countries or other schools that they wanted to attend. therefore, I reluctantly vaccinated my children
	I just hope that all the research done on these shots are accurate and help our children. But, I do believe that there are mistakes made and hope medications and medical research has a great team of dedicated people to ensure our safety of us and our children.
	No, there are federal laws in place to support my decisions and my military occupation has reinforced my beliefs
	No. However, I will not be vaccinating against HPV when that time comes. I believe that vaccine is an adult choice and will support my child's decision to get it if they choose to when they are an adult.
	Remembering the dang booklet...
	I opted out of an oral vaccine not a shot. I guess it may not be required for school but it is recommended on the vaccine schedule. Also, we see a Nurse Practitioner, but that is not an option.
	I am always a bit skeptical about new vaccines, thus, my varied responses above. When the HPV vaccine I was very skeptical, since the FDA is not capable of mitigating the large influence that the pharmaceutical/biomedical industry has in terms of making money. My skepticism comes mostly from the poor ethical choices that companies have made in rushing products to market to make a buck (phen-phen, etc.) without having clear understanding of the side effects.
	It would be nice if they were more convenient, scheduling an appointment and availability are larger

<p>factors in keeping vaccinations current. It is difficult to ask for all the time off to make all the separate appointments for wellness checks.</p>
<p>I would like to know at the beginning of the school year if they will be able to offer them at school.</p>
<p>I find it difficult to know whether all shots are necessary- there is not enough information to back up both sides.</p>
<p>1. I am offended that the survey ignored NPs as a provider choice. 2. Schools need to be able to recognize combination vaccines (i.e. proquad) 3. Need updated research on disease frequency and risk profiles (eg tetanus) if they are to be required still</p>
<p>#10 should include Nurse Practitioner. There seems to be a conflict of interest between pharmaceutical special interest in Washington and the required immunizations for school children.</p>
<p>I am an RN and I do not feel that the medical community encourages open debate about childhood immunizations. Instead fear, "strong encouragement" and professional peer pressure are used. Most parents have no idea what vaccinations their children receive, what is included in each vaccination, and what the risks and benefits are. As a parent, or an RN, if I attempt to discuss my concerns about vaccinations, or the concerns I have heard from other parents - this is usually brushed off, met with ridicule or even contempt. The amount of CDC recommended vaccinations children receive has greatly increased in the last few decades and continues to grow. Yet, there is no open discussion about legitimate concerns regarding vaccinations - instead those who question them are thought to be less than intelligent and I am regularly accused of "putting everyone else at risk." As a profession we need to encourage questions and open debate about this topic, and empower families to make healthy and informed choices - not badger or guilt them into doing what "the professionals" think is best.</p>
<p>Do not add anymore to the list of required shots</p>
<p>Don't trust our government</p>

Decision to Not Vaccinate My Child

I am the parent/guardian of the child named at the bottom of this form. My healthcare provider has recommended that my child be vaccinated against the diseases indicated below. I have been given a copy of the Vaccine Information Statement (VIS) that explains the benefits and risks of receiving each of the vaccines recommended for my child. I have carefully reviewed and considered all of the information given to me. However, I have decided not to have my child vaccinated at this time. I have read and acknowledge the following:

- I understand that some vaccine-preventable diseases (e.g., measles, mumps, pertussis [whooping cough]) are infecting unvaccinated U.S. children, resulting in many hospitalizations and even deaths.
- I understand that though vaccination has led to a dramatic decline in the number of U.S. cases of the diseases listed below, some of these diseases are quite common in other countries and can be brought to the U.S. by international travelers. My child, if unvaccinated, could easily get one of these diseases while traveling or from a traveler.
- I understand that my unvaccinated child could spread disease to another child who is too young to be vaccinated or whose medical condition (e.g., leukemia, other forms of cancer, immune system problems) prevents them from being vaccinated. This could result in long-term complications and even death for the other child.
- I understand that if *every* parent exempted their child from vaccination, these diseases would return to our community in full force.
- I understand that my child may not be protected by “herd” or “community” immunity (i.e., the degree of protection that is the result of having most people in a population vaccinated against a disease).
- I understand that some vaccine-preventable diseases such as measles and pertussis are extremely infectious and have been known to infect even the very few unvaccinated people living in highly vaccinated populations.
- I understand that if my child is not vaccinated and consequently becomes infected, he or she could experience serious consequences, such as amputation, pneumonia, hospitalization, brain damage, paralysis, meningitis, seizures, deafness, and death. Many children left intentionally unvaccinated have suffered severe health consequences from their parents’ decision not to vaccinate them.
- I understand that my child may be excluded from his or her child care facility, school, sports events, or other organized activities during disease outbreaks. This means that I could miss many days of work to stay home with my child.
- I understand that the American Academy of Pediatrics, the American Academy of Family Physicians, and the Centers for Disease Control and Prevention all clearly support preventing diseases through vaccination.

Vaccine / Disease	VIS given (✓)	Vaccine recommended by doctor or nurse (Dr./Nurse initials)	I decline this vaccine (Initials of parent/guardian)
Diphtheria-tetanus-pertussis (DTaP)			
<i>Haemophilus influenzae</i> type b (Hib)			
Hepatitis A (HepA)			
Hepatitis B (HepB)			
Human papillomavirus (HPV)			
Influenza			
Measles-mumps-rubella (MMR)			

Vaccine / Disease	VIS given (✓)	Vaccine recommended by doctor or nurse (Dr./Nurse initials)	I decline this vaccine (Initials of parent/guardian)
Meningococcal (MCV)			
Varicella (Var)			
Pneumococcal conjugate (PCV)			
Polio, inactivated (IPV)			
Rotavirus (RV)			
Tetanus-diphtheria (Td)			
Tetanus-diphtheria-pertussis (Tdap)			

In signing this form, I acknowledge I am refusing to have my child vaccinated against one or more diseases listed above; I have placed my initials in the column titled “I decline this vaccine” to indicate the vaccine(s) I am declining. I understand that at any time in the future, I can change my mind and vaccinate my child.

Child’s name: _____ Date of birth: _____

Parent/guardian signature: _____ Date: _____

Doctor/nurse signature: _____ Date: _____

Additional information for healthcare professionals about IAC's "Decision to Not Vaccinate My Child" form

Unfortunately, some parents will decide not to give their child some or all vaccines. For healthcare providers who want to assure that these parents fully understand the consequences of their decision, the Immunization Action Coalition (IAC) has produced a new form titled "Decision to Not Vaccinate My Child." IAC's form, which accompanies this page of additional information, facilitates and documents the discussion that a healthcare professional can have with parents about the risks of not having their child immunized before the child leaves the medical setting. Your use of IAC's form demonstrates the importance you place on timely and complete vaccination, focuses the parents' attention on the unnecessary risk for which they are accepting responsibility, and may encourage a vaccine-hesitant parent to accept your recommendations. According to an American Academy of Pediatrics (AAP) survey on immunization practices, almost all pediatricians reported that when faced with parents who refuse vaccination they attempt to educate parents regarding the importance of immunization and document the refusal in the patient's medical record.¹

Recommendations from the child's healthcare provider about a vaccine can strongly influence parents' final vaccination decision.² Most parents trust their children's doctor for vaccine-safety information (76% endorsed "a lot of trust"), according to researchers from the University of Michigan.³ Simi-

larly, analyses of the 2009 HealthStyles Survey found that the vast majority of parents (81.7%) name their child's doctor or nurse as the most important source that helped them make decisions about vaccinating their child.⁴ Gust and colleagues found that the advice of their children's healthcare provider was the main factor in changing the minds of parents who had been reluctant to vaccinate their children or who had delayed their children's vaccinations.⁵ Vaccine-hesitant parents who felt satisfied with their pediatricians' discussion of vaccination most often chose vaccination for their child.⁶

All parents and patients should be informed about the risks and benefits of vaccination. This can be facilitated by providing the appropriate Vaccine Information Statement (VIS) for each vaccine to the parent or legal representative, which is a requirement under federal law when vaccines are to be given. When parents refuse one or more recommended immunizations, document that you provided the VIS(s), and have the parent initial and sign the vaccine refusal form. Keep the form in the patient's medical record. Revisit the immunization discussion at each subsequent appointment. Some healthcare providers may want to flag the charts of unimmunized or partially immunized children to be reminded to revisit the immunization discussion. Flagging also alerts the provider about missed immunizations when evaluating illness in children, especially in young children with fever of unknown origin.

What do others say about documentation of parental refusal to vaccinate?

American Academy of Pediatrics (AAP): "Pediatricians need to explain the risks of not vaccinating and should have (parents) sign an informed refusal document at each visit during which vaccination is declined. A sample AAP Refusal to Vaccinate form is available at www.aap.org/immunization."⁷

Association of State and Territorial Health Officials (ASTHO): "To address the risk of VPD, states should consider adopting more rigorous standards for non-medical vaccine exemptions that require parents to demonstrate that they have made a conscious, concerted, and informed decision in requesting these exemptions for their children. An example of such a standard might include a requirement for parents to complete a form that explicitly states the grounds for the exemption and requires them to acknowledge awareness of the disease-specific risks associated with not vaccinating their child(ren)."⁸

National Association of County & City Health Officials (NACCHO): "School systems and childcare facilities (where appropriate) should use an exemption application form that requires a parental signature acknowledging their understanding that their decision not to immunize places their child and other children at risk for diseases and ensuing complications. The form should also state that in the event of an exposure to a vaccine-preventable illness, their child would be removed from school and all school-related activities for the appropriate two incubation periods beyond the date of onset of the last case, which is standard public health practice."⁹

Pediatric Infectious Diseases Society (PIDS): PIDS "opposes any legislation or regulation that would allow children to be exempted from mandatory immunizations based simply on their parents', or, in the case of adolescents, their own, secular personal beliefs." PIDS further recognizes that many states have or are considering adopting legislation or regulation that would allow for personal belief exemptions and outlines specific provisions to minimize use of exemptions as the "path of least resistance." One of the provisions reads as follows: "Before a child is granted an exemption,

the parents or guardians must sign a statement that delineates the basis, strength, and duration of their belief; their understanding of the risks that refusal to immunize has on their child's health and the health of others (including the potential for serious illness or death); and their acknowledgement that they are making the decision not to vaccinate on behalf of their child."¹⁰

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