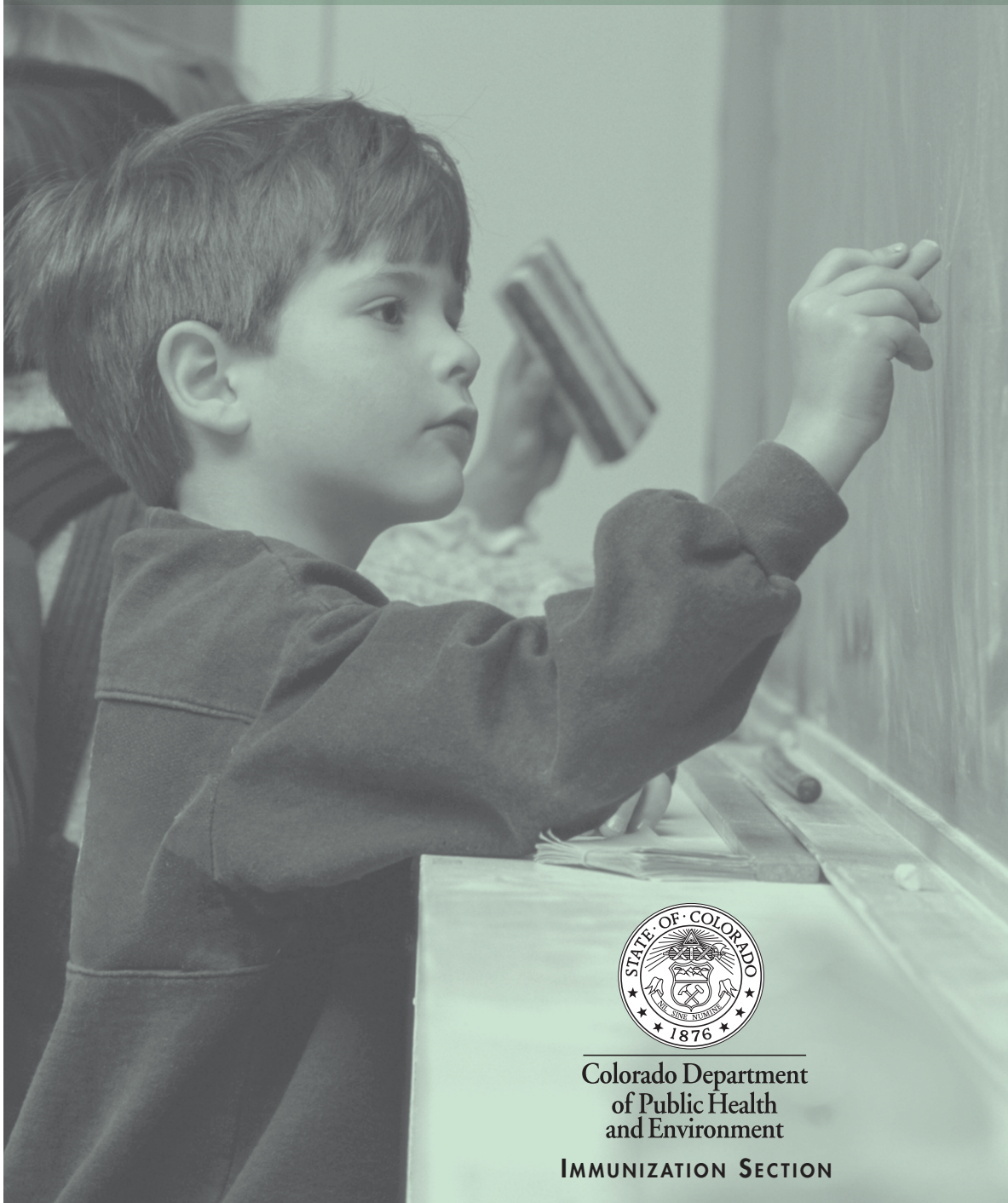


► Colorado Kindergarten School
Immunization Survey Results
2010–2011, 2011–2012, 2012–2013



Colorado Department
of Public Health
and Environment

IMMUNIZATION SECTION

Colorado Kindergarten School Immunization Survey Results—2010–2011, 2011–2012 and 2012–2013

► Introduction

The Colorado Board of Health sets the rules for student immunizations. The immunization rules have changed over the three school years covered in this report. To make the results comparable across the years, the data from each school year were analyzed using the 2012–2013 school immunization rules. To be in compliance with the Board of Health Rules, students attending school must either:

- Be appropriately immunized with the required vaccines. The doses of vaccine required for kindergartners in 2012–2013 are:
 - 5 Diphtheria, Tetanus, and Pertussis (DTaP) or 4 with the 4th dose on or after 4th birthday.
 - 2 Measles, Mumps and Rubella (MMR).
 - 4 Polio or 3 with the 3rd on or after the 4th birthday.
 - 3 Hepatitis B.
 - 2 Varicella.
- Be exempt from immunization. A parent or guardian is responsible to have their child immunized unless the child is exempted. In Colorado, parents may exempt from one or more vaccines. There are three types of exemptions allowed.
 - Medical exemption—a health practitioner indicates that the immunization would endanger the student’s health or cannot be immunized due to other medical conditions.
 - Religious exemption—the parent or guardian adheres to a religious belief whose teachings are opposed to immunizations.
 - Personal belief exemption—the parent or guardian is opposed to immunizations.
- Be in process of getting immunized. The parent or guardian has a written plan in place for obtaining any remaining required immunizations.

► Methods

The Colorado Immunization Section (CIS) conducts an annual survey to assess compliance with the school immunization rules. Each year, a random sample of 350 students is selected from over 60,000 kindergartners enrolled at public and private schools throughout Colorado. CIS provides training and support for school staff to identify and submit immunization information for the student(s) selected at their school.

The survey collects immunization information from a sample of students because it would be cost-prohibitive to collect data from all kindergartners in Colorado. For the 2010–2011 survey, data were collected for 350 students from 302 schools. The 2011–2012 survey included 318 students from 270 schools and the 2012–2013 survey included 350 students from 245 schools.

The information collected includes the number of days between birth and each required immunization; any medical, religious or personal exemptions claimed; and the student’s history of disease for varicella. CIS analyzes the data submitted to determine immunization coverage and how many kindergartners are in compliance with the school immunization rules.

The survey results are reported as a rate with a range or confidence interval (CI) where the true rate falls 95% of the time. If the confidence intervals overlap between years the rates are not statistically different.

► School Entry Immunization Coverage

Immunization coverage at school entry is reported through two measures: up to date and in compliance. Up to date is defined as being appropriately immunized for all required immunizations. In compliance includes the students who are up to date as well as any students that are exempted from immunizations or who are in process of getting immunized.

The percentage or rate of kindergartners that were up to date or in compliance with school

immunization requirements is shown in Table 1. Although the rate of students that were up to date varied from 70.8% in 2010–2011, 78.6% in 2011–2012, and 75.1% in 2012–2013 there is no statistical difference between years. The rates of students in compliance with school immunization requirements varied from 80.3% in 2010–2011, 84.6% in 2011–2012, and 80.3% in 2012–2013, but again there is no statistical difference across the three years.

Table 1. Kindergartners Up to Date and In Compliance, Colorado School Immunization Survey

School Immunization Status	Rates and Confidence Intervals		
	2010–2011	2011–2012	2012–2013
Up to Date at Kindergarten Entry Had received all required immunizations for school entry 5 DTaP or 4 with the 4 th dose on or after 4 th birthday 4 Polio or 3 with the 3 rd on or after the 4 th birthday 2 MMR 3 Hepatitis B 2 Varicella	70.8 (65.8–75.6)	78.6 (73.7–83.0)	75.1 (70.3–79.6)
In Compliance at Kindergarten Entry Received all required immunizations or took a medical, religious or personal exemption or are in the process of being immunized	80.3 (75.7–84.3)	84.6 (80.1–88.4)	80.3 (75.7–84.3)

► Rates by Required Vaccine

For the 2012–2013 school year, the coverage rate for hepatitis B was statistically higher than the rates for DTaP, MMR and varicella. But

across the three years, there were no significant differences in the rates for individual vaccines (Table 2).

Table 2. Kindergartners Up to Date for Required Vaccines, Colorado School Immunization Survey

Vaccine	Rates and 95% Confidence Intervals		
	2010–2011	2011–2012	2012–2013
DTaP	81.4 (76.9–85.4)	85.5 (81.2–89.2)	82.9 (78.5–86.7)
Polio	82.6 (78.2–86.4)	87.4 (83.3–90.9)	88.6 (84.8–91.7)
MMR	79.1 (74.5–83.3)	86.8 (82.6–90.3)	85.4 (81.3–89.0)
Hepatitis B	90.6 (87.0–93.4)	93.1 (89.7–95.6)	94.3 (91.3–96.5)
Varicella	79.1 (74.5–83.3)	84.0 (79.5–87.8)	84.6 (80.4–88.2)

► Exemptions

The percentage of kindergartners exempting from one or more vaccines was 7.5% in 2010–2011, 5.7% in 2011–2012 and 4.0% in 2012–2013 (Table 3). Although this appears to

be a downward trend, further analysis showed no statistically significant decrease in students claiming exemptions.

Table 3. Kindergartners Claiming Exemptions, Colorado School Immunization Survey

School Year	Exemption Rates and 95% Confidence Intervals
2010–2011	7.5 (4.9–10.7)
2011–2012	5.7 (3.4–8.8)
2012–2013	4.0 (2.2–6.6)

The majority of exemptions claimed are for personal beliefs (Table 4). While some students took an exemption for every vaccine, others selectively took an exemption for one or more vaccines. For example, a student may have had a personal exemption for MMR but have been up to date on all other vaccines. In 2011–2012 and 2012–2013 there were no students surveyed that claimed a medical or religious exemption.

Table 4. Kindergartners Immunization Status, Colorado School Immunization Survey

Immunization Status at School Entry	Rate		
	2010–2011	2011–2012	2012–2013
Up to Date	70.8	78.6	75.1
Personal Exemption for all of the Required Vaccines	3.7	3.8	2.3
Personal Exemption for One or More of the Required Vaccines	2.9	1.9	1.7
Medical Exemption for all of the Required Vaccines	0*	0*	0*
Medical Exemption for One or More of the Required Vaccines	0.6	0*	0*
Religious Exemption for all of the Required Vaccines	0**	0**	0**
Religious Exemption for One or More of the Required Vaccines	0.3	0**	0**
In Process	2.0	0.3	0.6
Nothing noted in school immunization record	18.0	14.1	18.9
No school immunization record	1.7	1.3	1.4

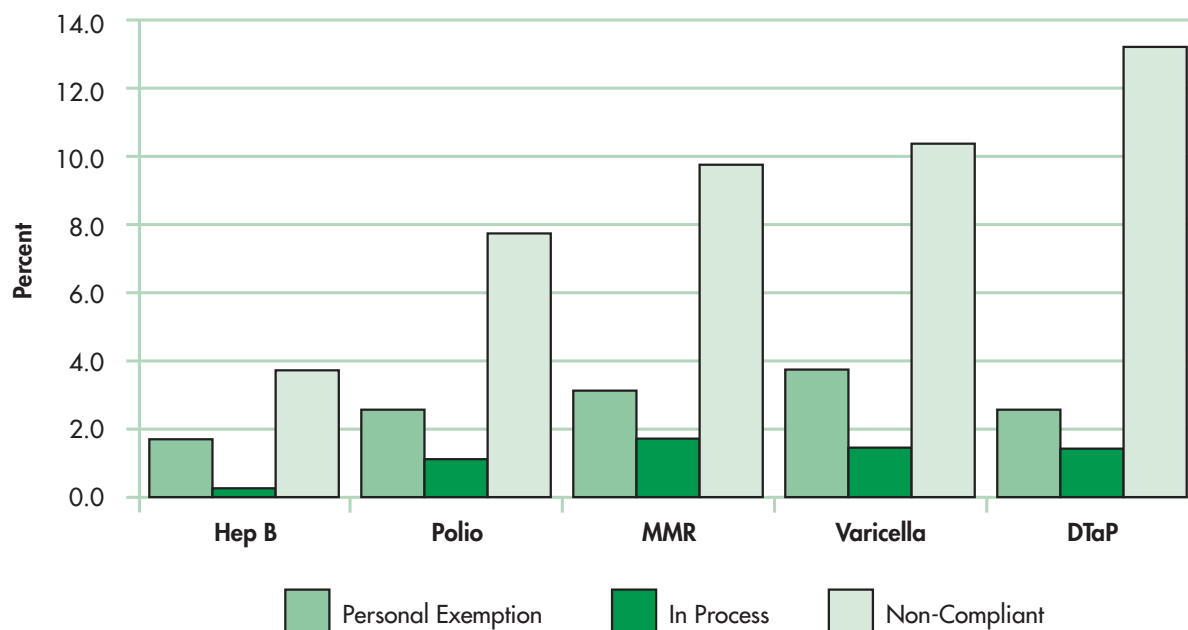
* no students in the sample claimed a medical exemption

** no students in the sample claimed a religious exemption

Of interest are students who are not in compliance with the Board of Health regulations that are a requirement for attending school. This includes students who were not up to date on the required immunizations, had not exempted, were not in process, or had no school immunization record. Figure 1 compares the kindergartners that are in compliance but not up to date (those exempting or in process) to those

that were not in compliance. For each required vaccine, there are more students that are not in compliance than students exempting or in process. For DTaP the percentage of non-compliant students was over three times higher than those exempting or in process. For polio, MMR and varicella the percentage of non-compliant students was over two times higher.

Figure 1. Why Kindergartners are Not Up to Date by Vaccine, 2012–2013 Colorado School Immunization Survey



► Conclusions

The national goals for school immunization coverage are outlined in the Healthy People 2020 (HP2020) objectives. The HP2020 goals are for 95% of kindergartners to be appropriately immunized for DTaP, polio, MMR, hepatitis B and varicella. To determine Colorado’s progress towards the HP2020 goals, it’s important to look at the range of the confidence intervals reported for each vaccine.

In 2012–2013 Colorado did not meet the HP2020 goal for DTaP, polio, MMR or varicella because the confidence intervals for those vaccines were all below the 95% target. The rate for hepatitis B in 2012–2013 falls between 91.3–96.5%. Although the range of this interval includes the 95% target, the rate could be as low as 91.3%, so it is inconclusive whether Colorado met the HP2020 goal for hepatitis B. Colorado did not conclusively meet the HP2020 goal for any vaccine, so there is clearly a need to increase the number of kindergartners who have received the required immunizations as they enter school.

The 2012–2013 results indicate that up to 29.7% of kindergartners starting school in 2012–2013 did not have one or more of the

required immunizations as indicated by the school immunization record (Table 1). These students are not protected from vaccine preventable diseases and put other students at risk for disease outbreaks at school. Also, up to 24.3% of kindergartners were not in compliance with the Board of Health regulations required for attending school. This indicates that when these students registered either they were not identified as non-compliant or efforts by school staff to ensure the child received the required immunizations were not effective.

It is possible that non-compliant students could be up to date in their medical record and that the school record does not accurately represent their immunization status. Continuing to encourage school staff to access the Colorado Immunization Information System (CIIS) may aid in correcting this issue as school staff can look up their student’s immunization records in CIIS to determine if they are up to date at school entry. Currently, 89% of school districts have access to CIIS; which has been offered to 100% of school districts.

Colorado's 2012–2013 exemption rate was the 9th highest in the nation. During 2013, Colorado's school immunization exemption policies were the focus of a six-month intensive stakeholder process. There were 57 representatives from 25 groups representing public health, primary care, health advocates, legislators and schools that were asked to provide recommendations for changes to Colorado's personal belief exemption policy. The process and final recommendations are documented in the report, *Colorado's Personal Belief Exemption Policy for Immunizations: Stakeholder Engagement Process*. Proposed changes to Colorado's current exemption policies may require legislation or changes to the Board of Health rules. The full report can be accessed at www.coloradoimmunizations.com.

In 2012, Colorado experienced more than 1,500 cases of pertussis, the highest number of cases since the 1950s. Also, in 2012 Colorado had the first measles cases reported since 2006. The current immunization coverage rates for school immunizations fall short of the levels needed to prevent disease as outlined in the HP2020 goals. Improving immunization coverage is crucial to protect Colorado's school children.

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