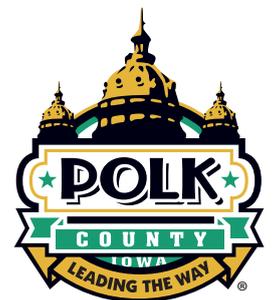




Polk County Immunization Report

School Year 2013

March 2014

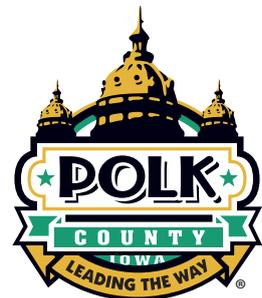


★ HEALTH DEPARTMENT ★

This report was prepared by the Polk County Health Department.
Special thanks to Carole McClanahan (MD, MPH Candidate) for her assistance.

March 2014

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★ HEALTH DEPARTMENT ★

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INTRODUCTION

STUDENT IMMUNIZATION IN POLK COUNTY, 2008-2013

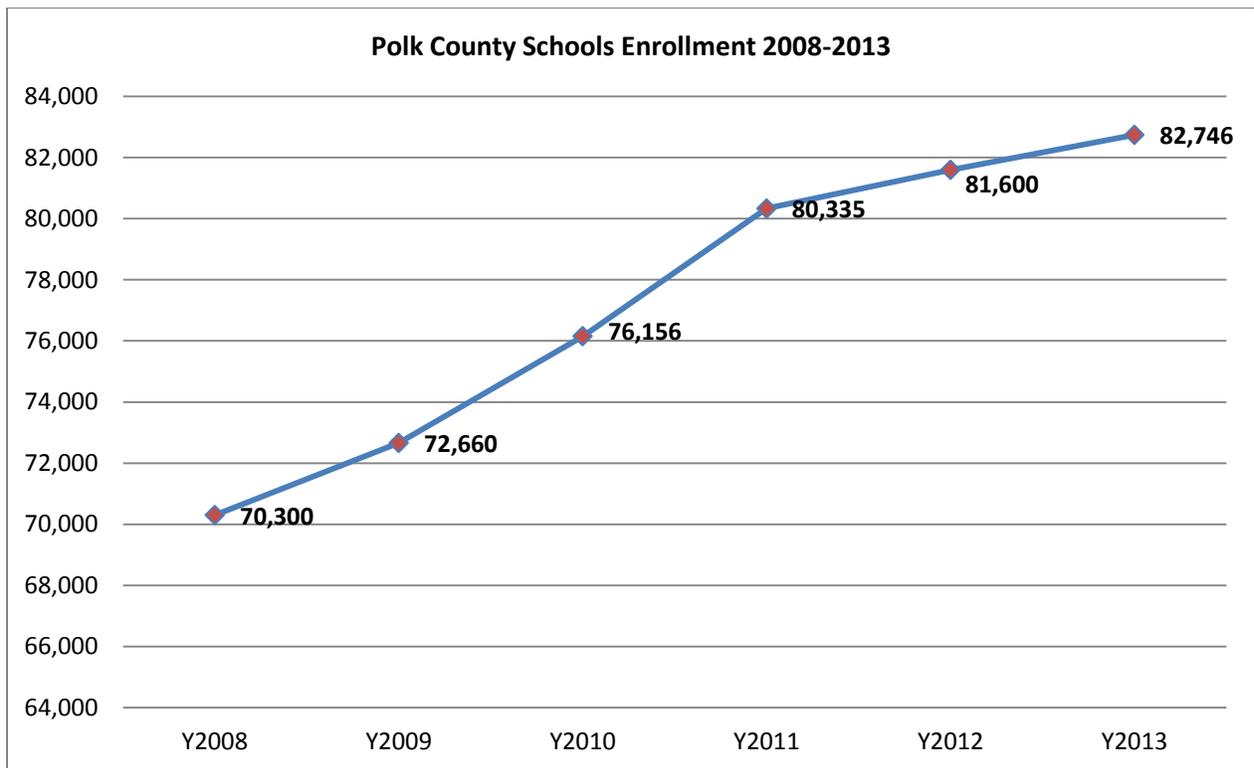
The following report analyzes the results of Polk County Health Department's annual vaccination audits for the past five years, from 2008 to 2013. Each year, nurses employed by the Polk County Health Department perform an audit of the vaccination certificates of the students in each school, as mandated by the Iowa Department of Public Health. Using data collected from these audits, we identify trends in student enrollment, exemptions and certificates, and vaccination rates. We also present district-specific information about vaccination rates, certificates, and exemptions. We conclude with a summary of the trends seen over the past five years, risks for disease outbreaks in specific districts, recommendations given to superintendants, and directions for future audits.

STUDENT ENROLLMENT

The number of students enrolled in the district is based on data reported by school employees at the time of the audit each fall.

- In 2013, **82,746** students were enrolled in Polk County public and non-public schools.
- The number of students enrolled in Polk County schools **increased 17.7%** in comparison with 2008 school year (n=70,300).
- Number of enrolled students in Polk County schools:

Y2008	Y2009	Y2010	Y2011	Y2012	Y2013
70,300	72,660	76,156	80,335	81,600	82,746

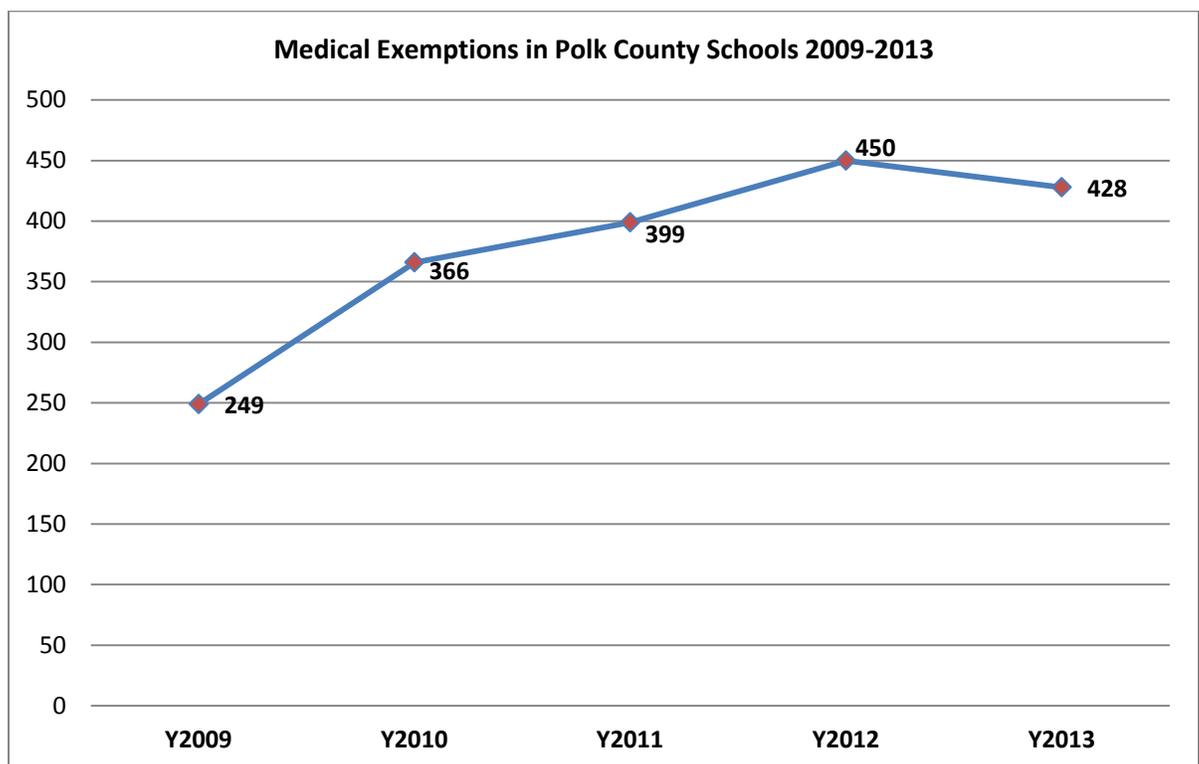


MEDICAL EXEMPTIONS (*)

Medical exemptions are issued if a physician, nurse practitioner, or physician's assistant deems the administration of the vaccine injurious to the health of the student or a member of the student's family or household, or if minimum spacing requirements for the vaccine have not been met. In the latter case, the student may receive the vaccine after minimum spacing requirements have been met.

- In 2013, **428** students in Polk County schools were under the category of Medical Exemption.
- The number of students under this category **increased 71.9%** in comparison with the year 2009 school year (n=249).
- Number of enrolled students under Medical Exemption and percent of variation in comparison with previous school year:

Y2009	Y2010	Y2011	Y2012	Y2013
249	366	399	450	428



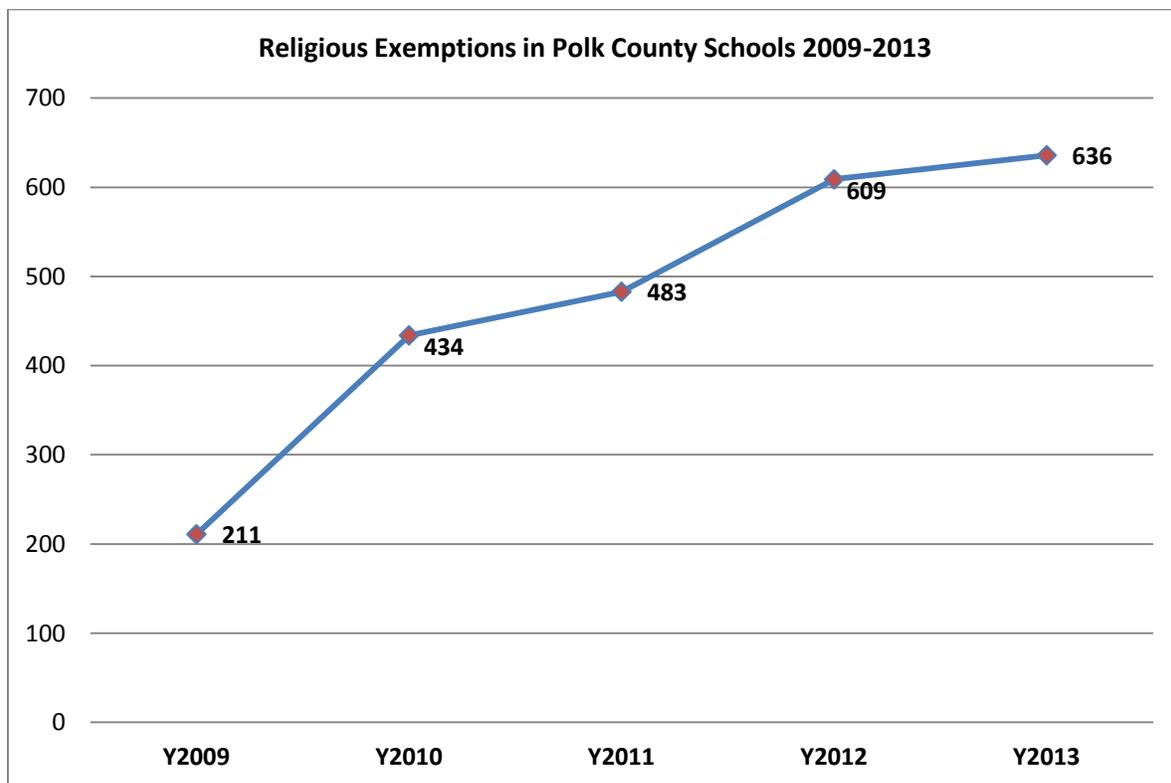
(*) The 2008 school year is not included because during that year Medical Exemptions were not counted as a separate category.

RELIGIOUS EXEMPTIONS (*)

Religious exemptions are granted to students for whom vaccination conflicts with a religious belief. To be granted a religious exemption, parents or legal guardians must sign a waiver certifying that immunization would violate a religious belief and not simply a philosophical, moral, personal, or scientific viewpoint.

- In 2013, **636** students enrolled in Polk County Schools under the category of Religious Exemption.
- The number of enrolled students under this category **increased 201.4%** in comparison with the 2009 school year (n=211).
- In **6** of the 10 **districts**, the number of religious exemptions **increased** between the 2012 and 2013 school years. At 38.5%, **non-public** schools experienced the **largest** percentage increase.
- Number of enrolled students under Religious Exemption:

Y2009	Y2010	Y2011	Y2012	Y2013
211	434	483	609	636



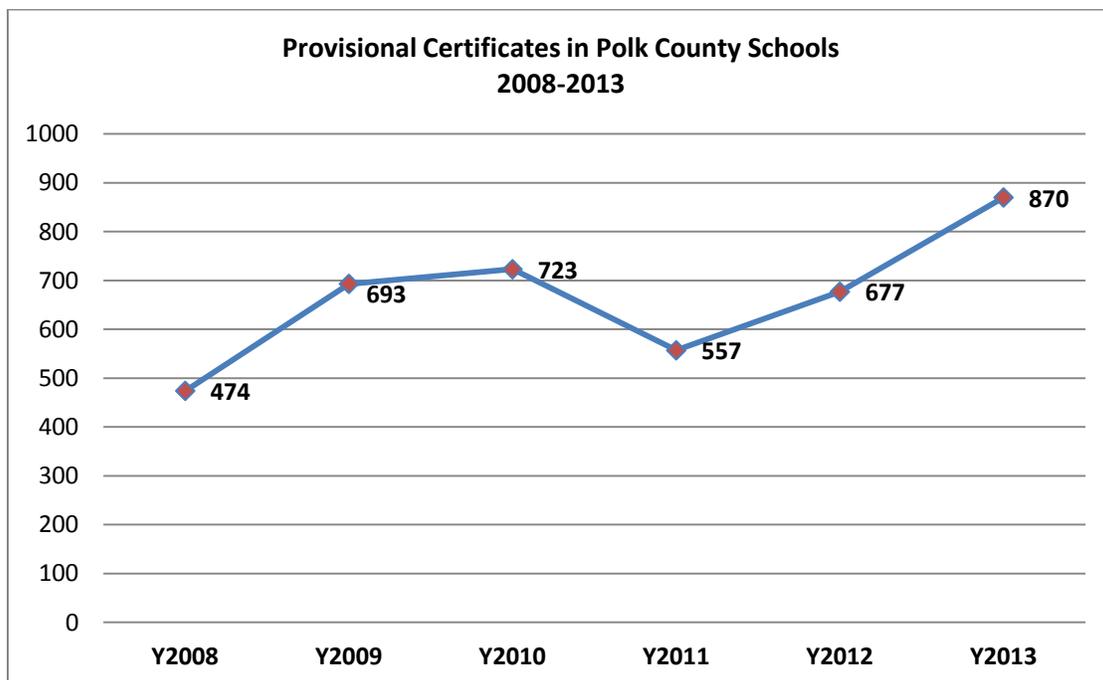
(*) The 2008 school year is not included because during that year Religious Exemptions were not counted as a separate category.

PROVISIONAL CERTIFICATES

Provisional certificates are issued to students for two reasons: if the student is a transfer student, or if the student has received at least one dose of each required vaccine but has not completed all of the required immunization series. Students under provisional enrollment are given up to 60 days to show proof of vaccination or to proceed with the next vaccines in the required series. Since provisional certificates are issued temporarily, the number of students in this category is always in flux; a portion of students issued provisional certificates become fully immunized, while others do not receive further vaccines and are later issued medical or religious exemptions or are excluded from school until they present a valid certificate or exemption. Therefore, the risk posed by unvaccinated students under provisional certificates most accurately captures short-term risk to the school and may lead to an overestimation of students who are not fully vaccinated during the entire school year.

- In 2013, **870** students enrolled in Polk County schools were under the category of Provisional Certificate.
- The number of students under this category **increased 83.5%** in comparison with the 2008 school year (n=474).
- In comparison with the 2012 school year (n=677), the number of provisional certificates **increased 28.5%**.
- The **largest increases of provisional certificates from 2012 to 2013** among school districts were reported in Saydel (111%), Ankeny (48.6%), and Des Moines (43.6%).
- Number of enrolled students under Provisional Certificate:

Y2008	Y2009	Y2010	Y2011	Y2012	Y2013
474	693	723	557	677	870

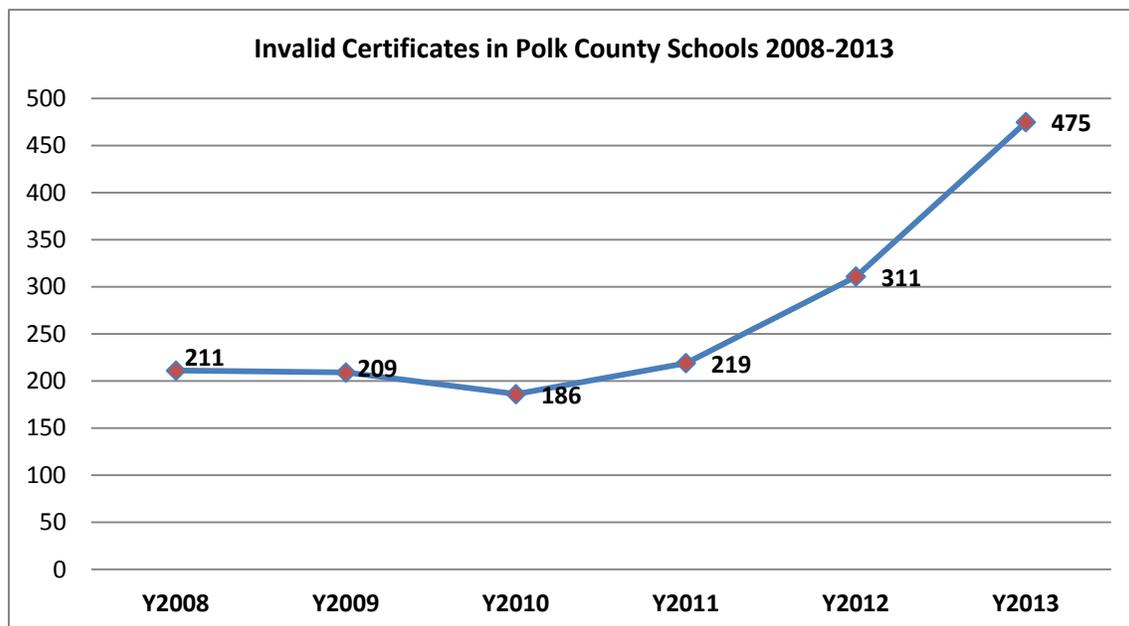


INVALID CERTIFICATES

A certificate is considered invalid and **does** by law require exclusion of the student from school if there is no immunization information at all on the student, if any Certificate or Exemption has expired with no updated immunization records, or if the student is missing an immunization that is a state-required immunization to enter school. Excluded students may re-enter school once they provide an up-to-date certificate or exemption. A certificate is considered invalid, but does **not** require exclusion of the student from school, if it has been filled out improperly, if the student is missing a required immunization that is not the first in the series of state-required immunizations to enter school (in other words, the student has one of each required vaccine series), or if the immunizations have not been recorded on an Iowa Department of Public Health Certificate of Immunization.

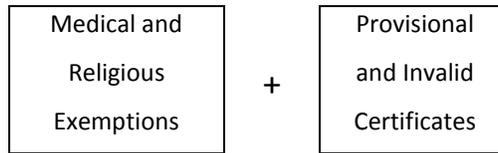
- In 2013, **745** students enrolled in Polk County schools were under the category of Invalid Certificate.
- The number of students under this category **increased 125.1%** in comparison with the 2008 school year (n=211).
- In comparison with the 2012 school year (n=311), the number of invalid certificates **increased 52.7%**.
- The **largest increases of invalid certificates from 2012 to 2013** among school districts were reported in Johnston (300%), SE Polk (128%), Des Moines (105%), Ankeny (72%), and Non Public (68.5%).
- Number of enrolled students under Invalid Certificate:

Y2008	Y2009	Y2010	Y2011	Y2012	Y2013
211	209	186	219	311	475



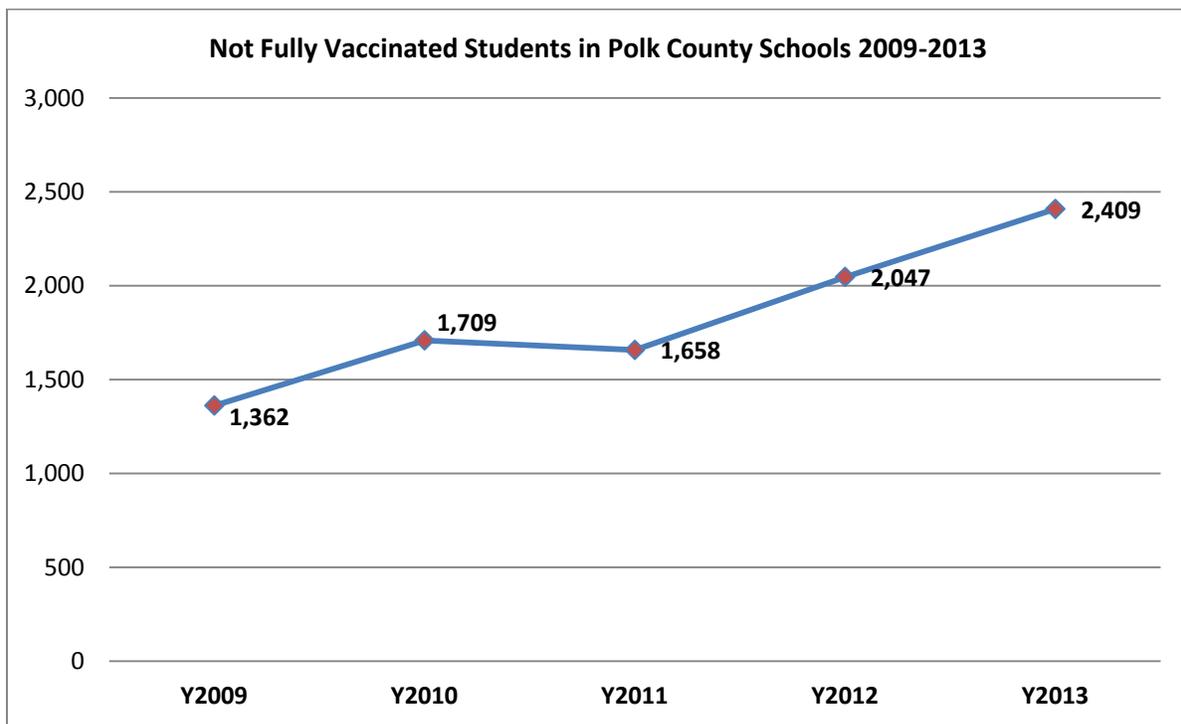
NOT FULLY VACCINATED STUDENTS

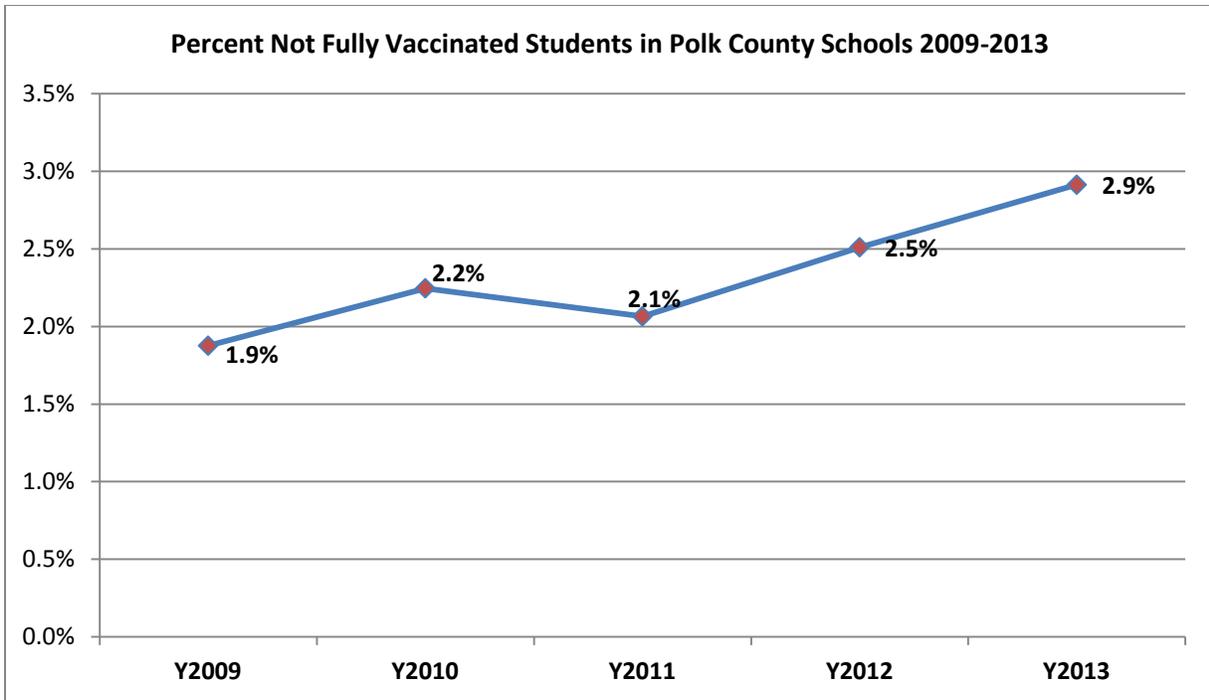
- This category is the summary of all type of exemptions and certificates.



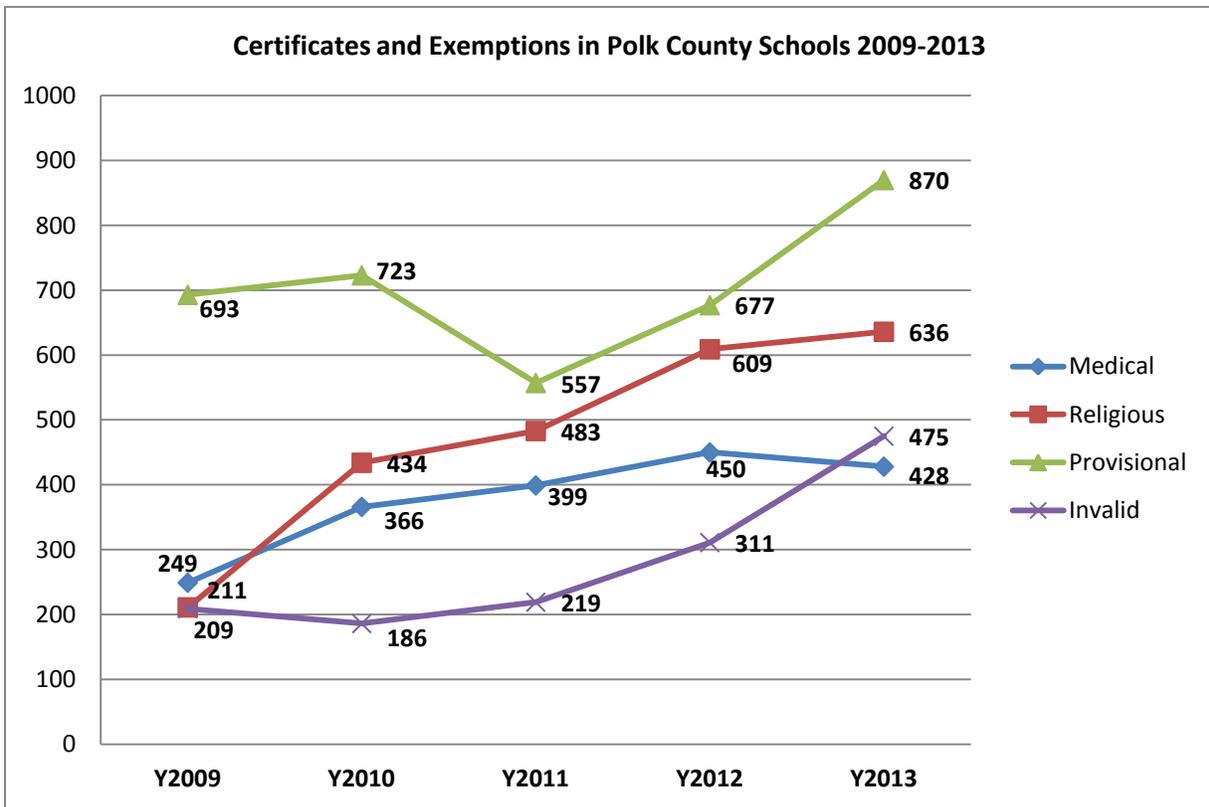
- In 2013, **2,409 students** in Polk County schools fit this category. Approximately **1 in 34 students** in Polk County schools is therefore **not fully vaccinated** at the time of the audit.
- The number of students who were not fully vaccinated **increased 76.9%** in comparison with the 2009 school year.
- The **Non-Public Schools** had the **highest percentage of students not fully vaccinated (4.68%)**, followed by **Des Moines (3.36%)** and **Dallas Center-Grimes (3.17%)**.
- Number of Not Fully Vaccinated students:

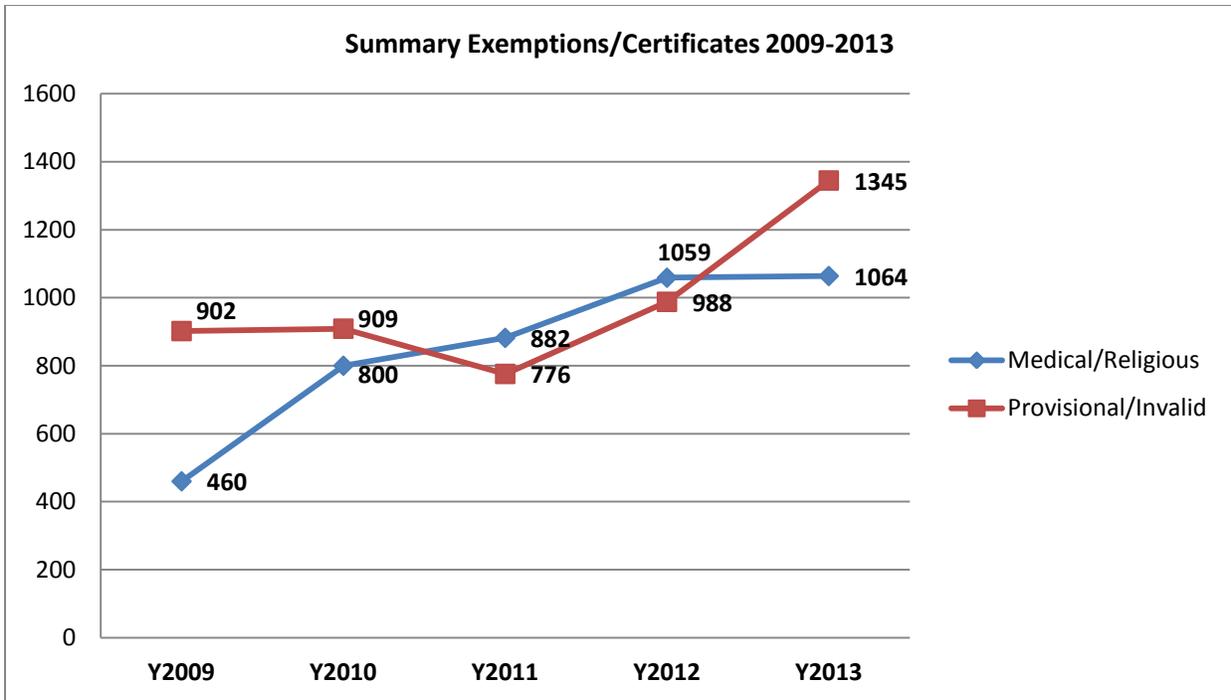
Y2009	Y2010	Y2011	Y2012	Y2013
1,362	1,709	1,658	2,047	2,409



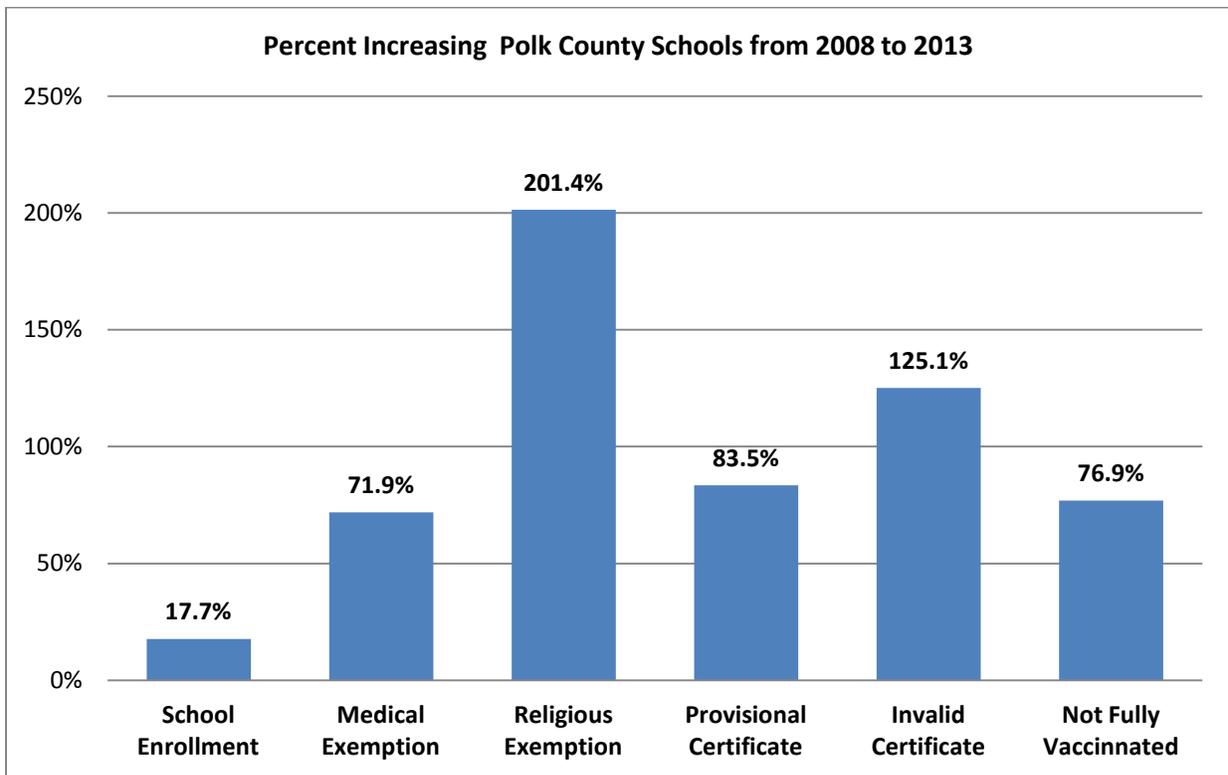


TOTAL OF CERTIFICATES AND EXEMPTIONS





INCREASING RATES FROM 2008 TO 2013 (*):



(*) Medical and Religious Exemptions rates from years 2009 to 2013.

STUDENTS NOT FULLY VACCINATED BY SCHOOL DISTRICT, 2009-2013

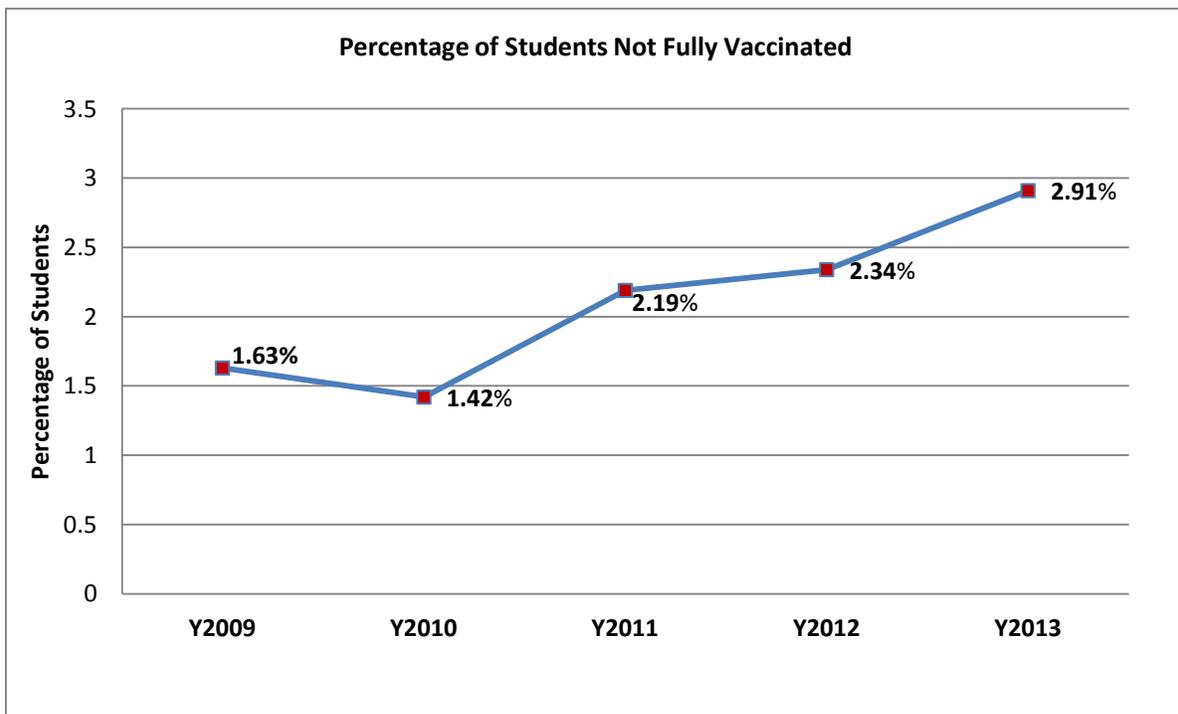
School	Y2009	Y2010	Y2011	Y2012	Y2013
Ankeny	1.63%	1.42%	2.19%	2.34%	2.91%
Bondurant-Farrar	0.81%	0.94%	0.90%	0.74%	0.86%
Dallas Center-Grimes	1.95%	4.70%	2.48%	4.00%	3.17%
Des Moines	2.97%	2.99%	2.32%	2.83%	3.36%
Johnston	1.58%	1.01%	1.17%	1.21%	1.55%
North Polk	1.69%	1.44%	2.53%	2.44%	2.94%
Saydel	1.73%	0.67%	1.02%	1.01%	2.13%
Southeast Polk	1.81%	1.75%	2.45%	2.44%	2.68%
Urbandale	1.39%	1.01%	1.40%	2.22%	1.94%
West Des Moines	1.51%	N/A*	1.44%	2.43%	2.09%
Non-Public	2.53%	2.06%	2.91%	3.38%	4.68%

*2010 data has not been included for the West Des Moines district because data is missing for two schools.

ANKENY

- In 2013, **297 students** in Ankeny schools were not fully vaccinated.
- This number represents **2.91%** of the total population of enrolled students (n=10,193).
- **Enrollment increased 4.6%** from 2012-2013 and **5.0%** between 2011 and 2012.
- The percentage of students who were **not fully vaccinated** has **increased every year since 2009 (1.63%)** and **increased from 2.34% in 2012 to 2.91% in 2013:**

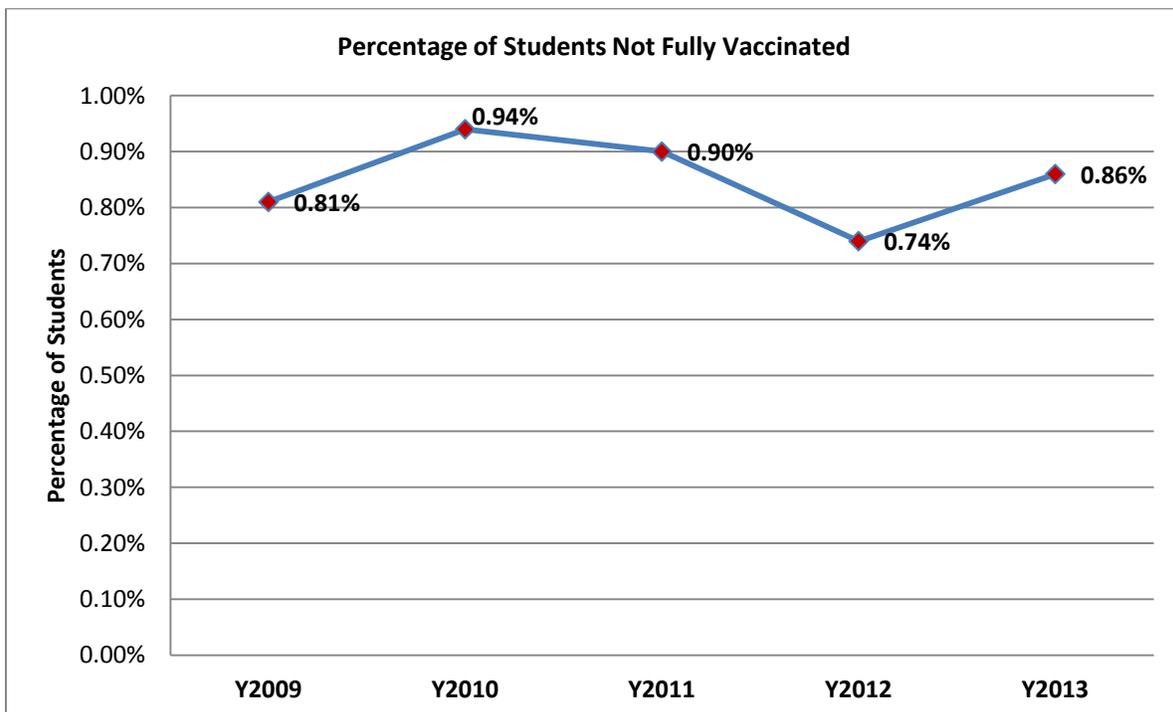
Category	Y2009	Y2010	Y2011	Y2012	Y2013
Medical	39	8	52	49	60
Religious	41	45	55	85	84
Provisional	7	58	22	37	55
Invalid	55	17	74	57	98
Total	142	128	203	228	297
% of Students Not Fully Vaccinated	1.63%	1.42%	2.19%	2.34%	2.91%



BONDURANT- FARRAR

- In 2013, **15 students** in Bondurant-Farrar schools were not fully vaccinated.
- This number represents **0.86%** of the total population of enrolled students (n=1743).
- **Enrollment increased 2.1%** between 2012 and 2013 and **decreased 3.0%** between 2011 and 2012.
- **Since 2009**, the percentage of students **not fully vaccinated** has remained **below 1%**. Between 2012 and 2013, the number of students not fully vaccinated increased by 3, resulting in a percentage rise from 0.74% in 2012 to 0.86% in 2013.

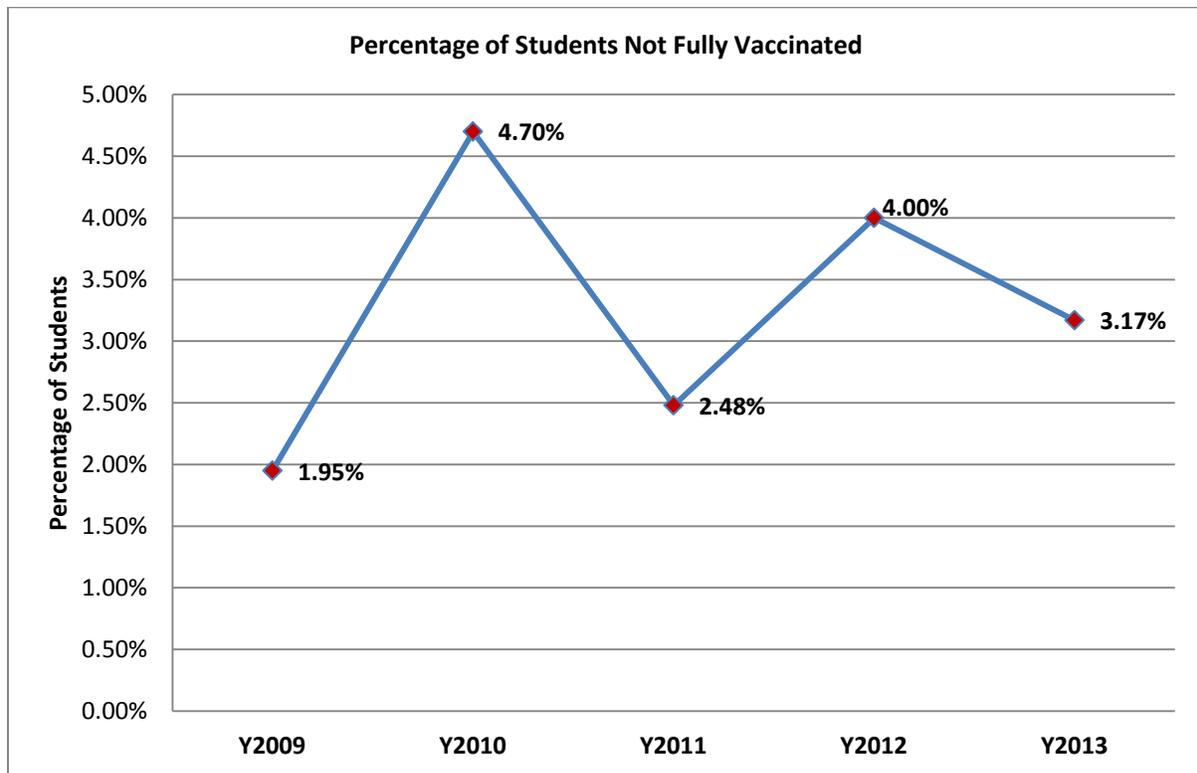
Category	Y2009	Y2010	Y2011	Y2012	Y2013
Medical	3	2	6	2	3
Religious	2	5	4	7	6
Provisional	0	3	5	2	0
Invalid	6	4	0	1	6
Total	11	14	15	12	15
% of Students Not Fully Vaccinated	0.81%	0.94%	0.90%	0.74%	0.86%



DALLAS CENTER-GRIMES

- In 2013, **31 students** in Dallas Center-Grimes schools were not fully vaccinated.
- This number represents **3.17%** of the total population of enrolled students (n=977).
- **Enrollment increased 2.1%** between 2012 and 2013 and **1.7%** between 2011 and 2012.
- After an **increase** in the percentage of students **not fully vaccinated** between **2011 (2.48%)** and **2012 (4.0%)**, the percentage **decreased** in **2013 to 3.17%**.

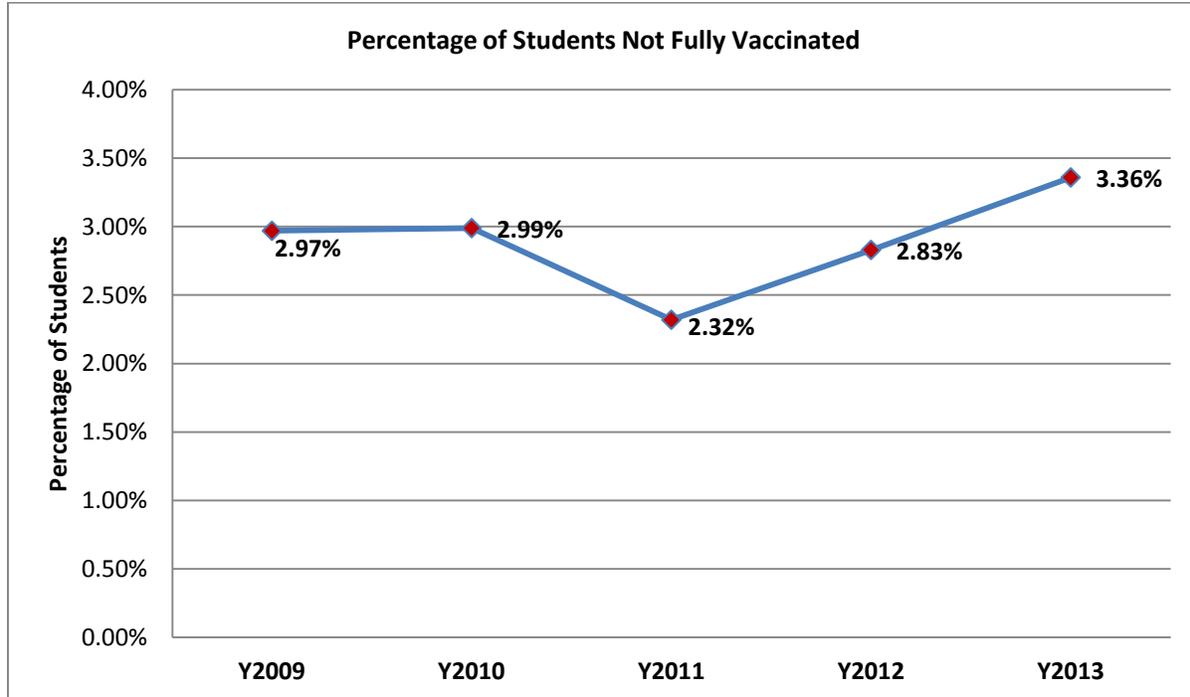
Category	Y2009	Y2010	Y2011	Y2012	Y2013
Medical	10	1	3	2	7
Religious	5	8	6	9	12
Provisional	0	14	14	1	3
Invalid	0	21	0	27	9
Total	15	44	23	39	31
% of Students Not Fully Vaccinated	1.95%	4.70%	2.48%	4.00%	3.17%



DES MOINES

- In 2013, **1,118 students** in Des Moines schools were not fully vaccinated.
- This number represents **3.36%** of the total population of enrolled students (n=33,238).
- **Enrollment increased 0.4%** between 2012 and 2013, and **0.9%** between 2011 and 2012.
- The percentage of students **not fully vaccinated** has **risen since 2011 (2.32%)**, at **2.83% in 2012** and **3.36% in 2013**:

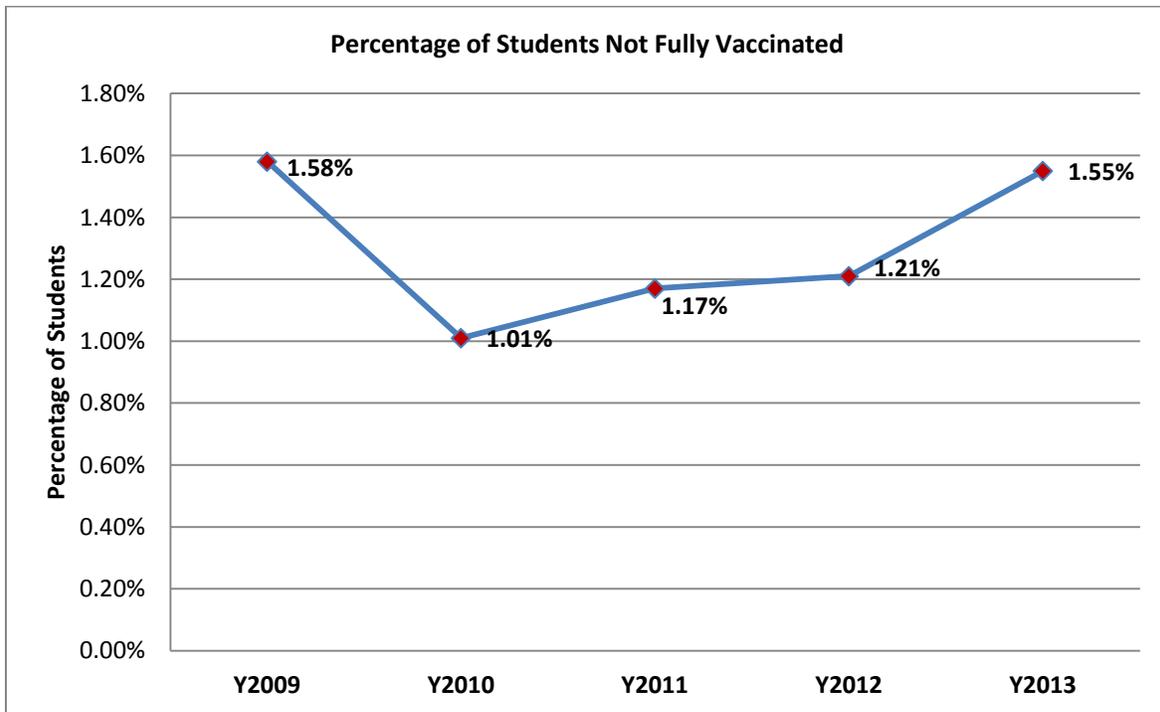
Category	Y2009	Y2010	Y2011	Y2012	Y2013
Medical	160	520	198	198	160
Religious	79	178	198	225	192
Provisional	630	165	306	472	678
Invalid	93	98	49	43	88
Total	962	961	751	938	1,118
% of Students Not Fully Vaccinated	2.97%	2.99%	2.32%	2.83%	3.36%



JOHNSTON

- In 2013, **105 students** in Des Moines schools were not fully vaccinated.
- This number represents **1.55%** of the total population of enrolled students (n=6,771).
- **Enrollment increased 2.1%** between 2012 and 2013, and **2.4%** between 2011 and 2012.
- The percentage of students not fully vaccinated has **increased since 2010 (1.01%)**. **Between 2012 and 2013**, the rates rose from **1.21% to 1.55%**.

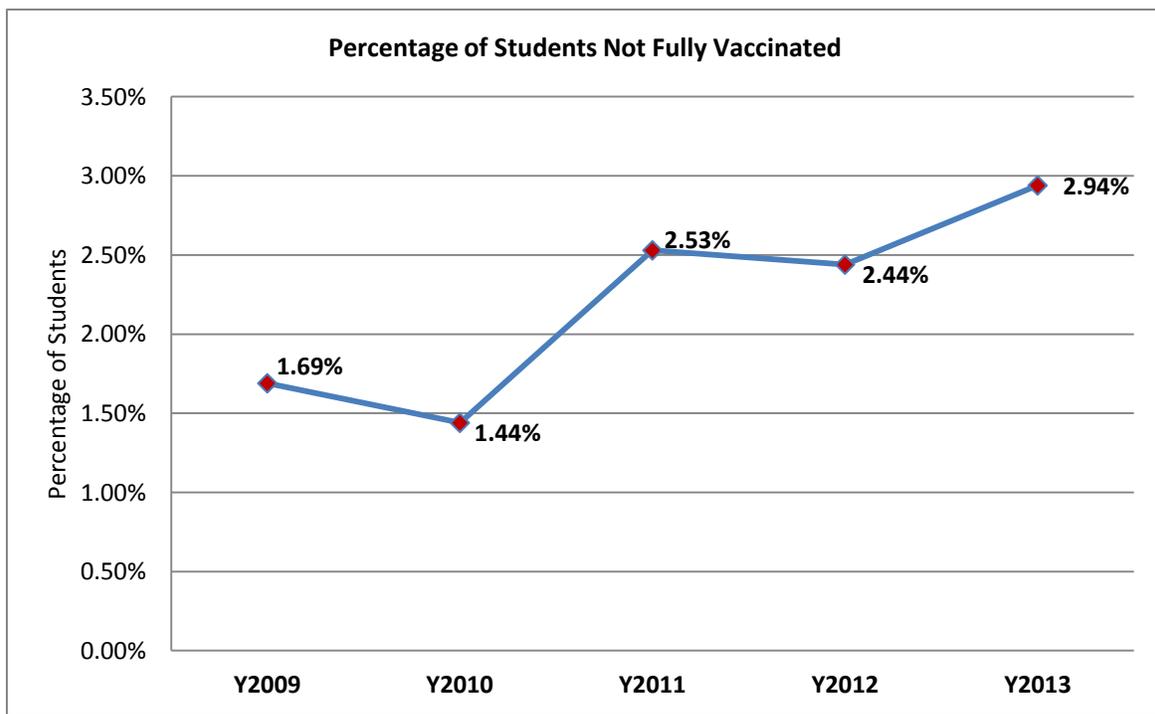
Category	Y2009	Y2010	Y2011	Y2012	Y2013
Medical	13	24	18	24	18
Religious	28	18	23	25	29
Provisional	15	16	28	19	10
Invalid	55	6	7	12	48
Total	111	64	76	80	105
% of Students Not Fully Vaccinated	1.58%	1.01%	1.17%	1.21%	1.55%



NORTH POLK

- In 2013, **45 students** in North Polk schools were not fully vaccinated.
- This number represents **2.94%** of the total population of enrolled students (n=1,533).
- **Enrollment increased 3.7%** between 2012 and 2013, and **3.7%** between 2011 and 2012.
- The number of students **not fully vaccinated decreased** between **2011 (2.53%) and 2012 (2.44%)**, and **increased in 2013 (2.94%)**:

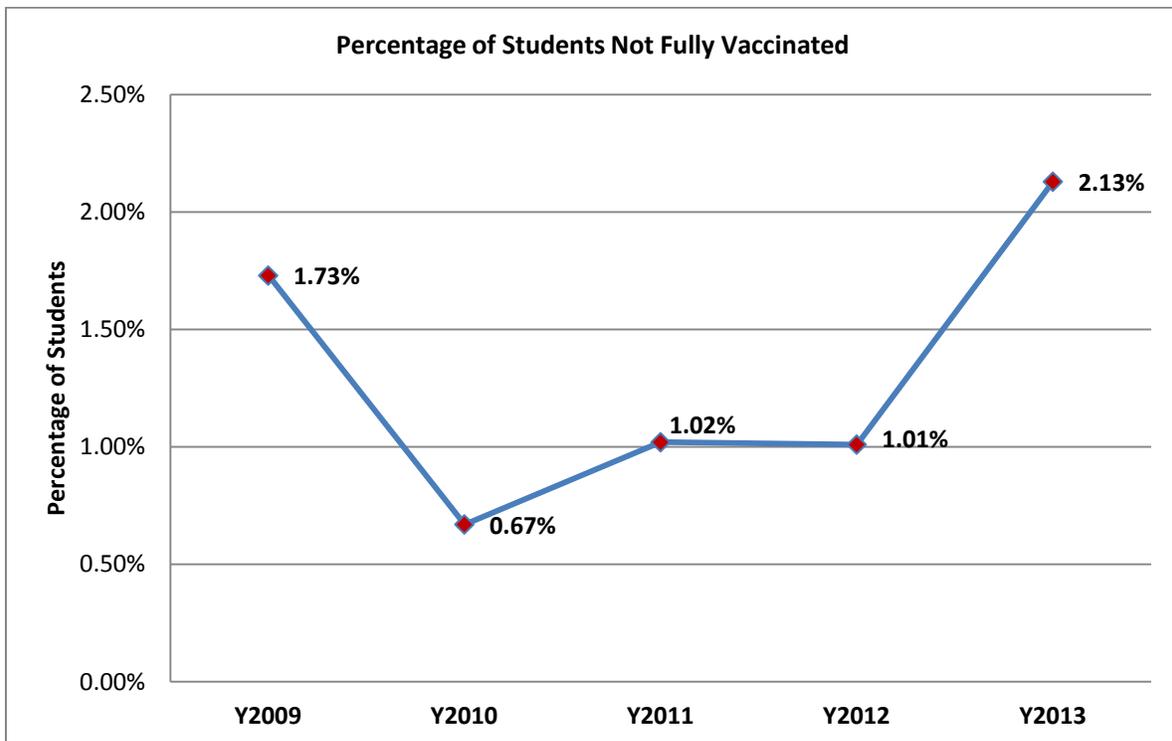
Category	Y2009	Y2010	Y2011	Y2012	Y2013
Medical	8	0	11	11	13
Religious	11	6	19	19	25
Provisional	1	13	1	1	3
Invalid	2	1	5	5	4
Total	22	20	36	36	45
% of Students Not Fully Vaccinated	1.69%	1.44%	2.53%	2.44%	2.94%



SAYDEL

- In 2013, **29 students** in Saydel schools were not fully vaccinated.
- This number represents **2.13%** of the total population of enrolled students (n=1,361).
- **Enrollment decreased 1.4%** between 2012 and 2013 and **increased 0.1%** between 2011 and 2012.
- The number of students who were not fully vaccinated **increased** from **1.01% in 2012** to **2.13% in 2013**:

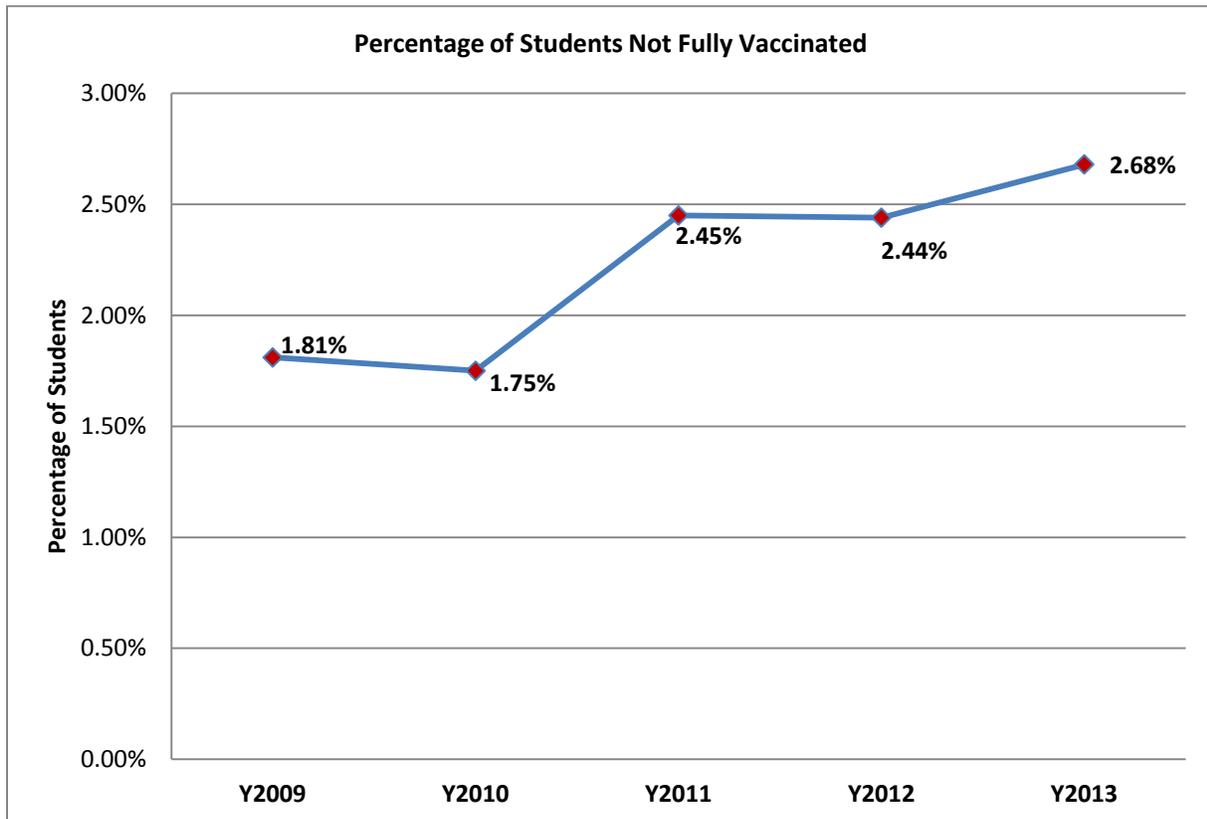
Category	Y2009	Y2010	Y2011	Y2012	Y2013
Medical	2	0	3	3	4
Religious	2	4	2	0	0
Provisional	5	0	3	9	19
Invalid	15	5	6	2	6
Total	22	9	14	14	29
% of Students Not Fully Vaccinated	1.73%	0.67%	1.02%	1.01%	2.13%



SOUTHEAST POLK

- In 2013, **189 students** in SE Polk schools were not fully vaccinated.
- This number represents **2.68%** of the total population of enrolled students (n=7,052).
- **Enrollment increased 1.2%** between 2012 and 2013 and **2.4%** between 2011 and 2012.
- The **number of students not fully vaccinated has increased each year since 2009**. Between 2012 and 2013, the percentage of students not fully vaccinated **increased from 2.44% to 2.68%**:

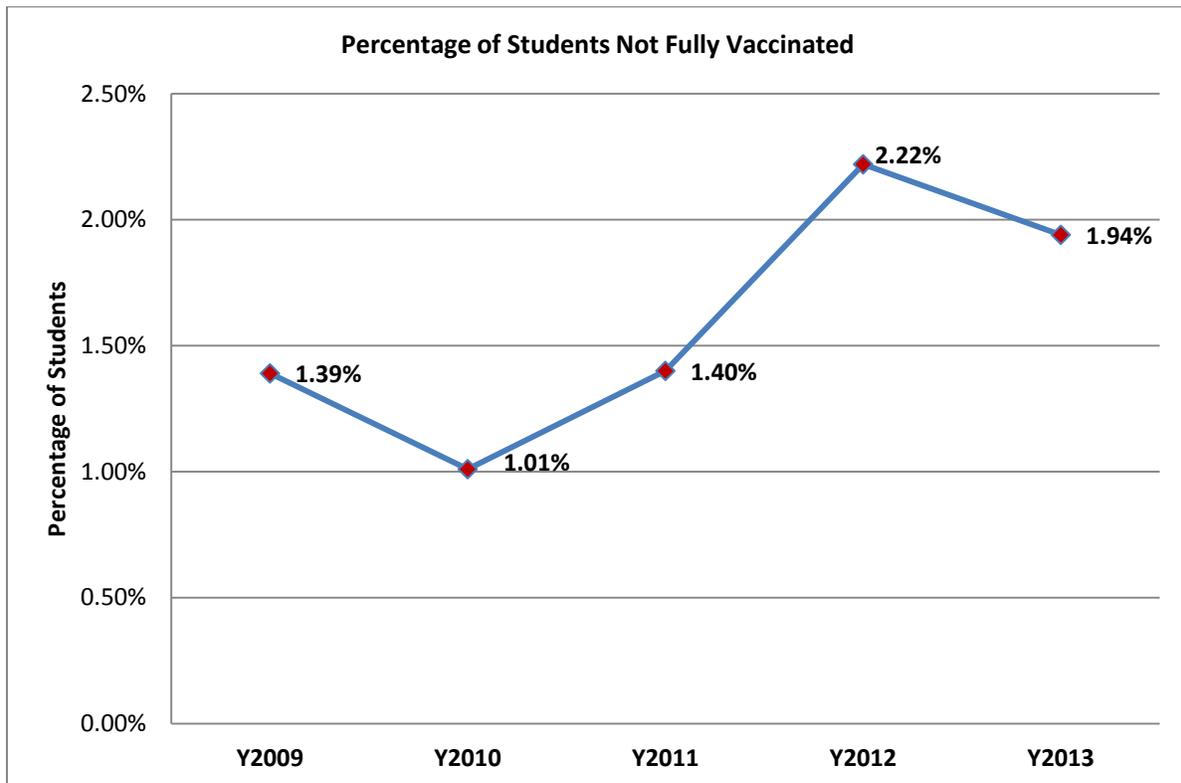
Category	Y2009	Y2010	Y2011	Y2012	Y2013
Medical	25	32	41	53	50
Religious	26	28	67	65	71
Provisional	30	55	56	34	27
Invalid	13	0	3	18	41
Total	94	115	167	170	189
% of Students Not Fully Vaccinated	1.81%	1.75%	2.45%	2.44%	2.68%



URBANDALE

- In 2013, **81 students** in Urbandale schools were not fully vaccinated.
- This number represents **1.94%** of the total population of enrolled students (n=4,183).
- **Enrollment increased 1.9%** between 2012 and 2013 and **2.7%** between 2011 and 2012.
- The percentage of students **not fully vaccinated increased** between **2011 (1.4%)** and **2012 (2.2%)**, and **decreased in 2013 (1.94%)**:

Category	Y2009	Y2010	Y2011	Y2012	Y2013
Medical	14	12	16	22	32
Religious	11	14	17	19	18
Provisional	12	12	15	24	20
Invalid	1	1	8	26	11
Total	38	39	56	91	81
% of Students Not Fully Vaccinated	1.39%	1.01%	1.40%	2.22%	1.94%

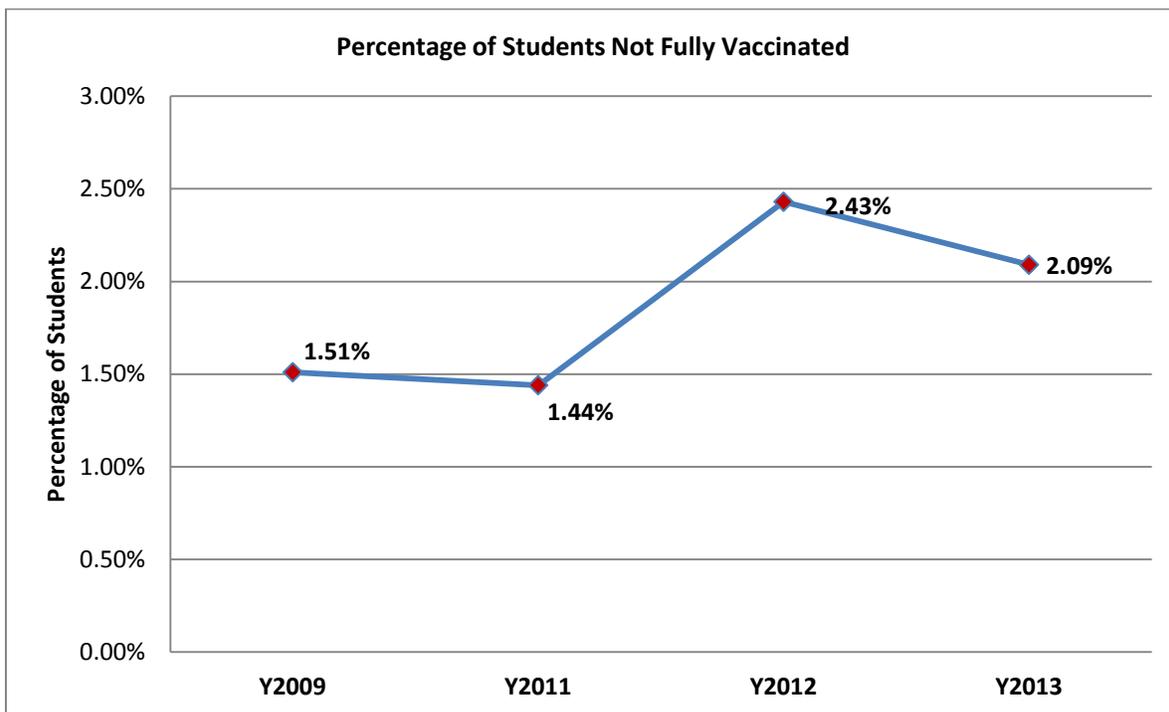


WEST DES MOINES

- In 2013, **194 students** in West Des Moines schools were not fully vaccinated.
- This number represents **2.09%** of the total population of enrolled students (n=9,290).
- **Enrollment decreased 0.5%** between 2012 and 2013 and **increased 1.2%** between 2011 and 2012.
- The percentage of students **not fully vaccinated increased between 2011 (1.44%) and 2012 (2.43%)** and **decreased in 2013 (2.09%)**:

Category	Y2009	Y2010	Y2011	Y2012	Y2013
Medical	34	N/A	27	47	37
Religious	46	N/A	47	90	105
Provisional	54	N/A	52	59	34
Invalid	4	N/A	7	31	18
Total	138	N/A	133	227	194
% of Students Not Fully Vaccinated	1.51%	N/A	1.44%	2.43%	2.09%

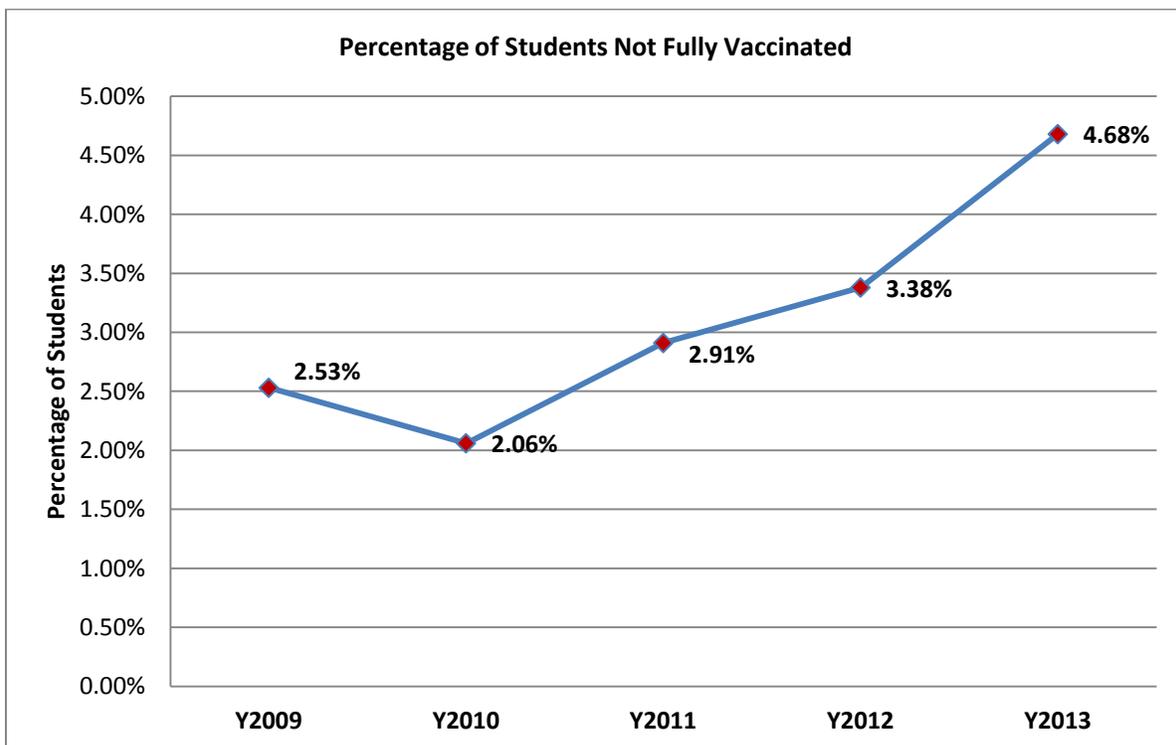
*2010 data has not been included for the West Des Moines district because data is missing for two schools.



NON-PUBLIC

- In 2013, **300 students** in Non-Public schools were not fully vaccinated.
- This number represents **4.68%** of the total population of enrolled students (n=6,405).
- **Enrollment increased 2.1%** between 2012 and 2013 and **decreased 0.8%** between 2011 and 2012.
- The percentage of students **not fully vaccinated** has **increased steadily since 2009 (2.53%)** and rose from **2.91% in 2011**, to **3.38% in 2012**, to **4.68% in 2013**:

Category	Y2009	Y2010	Y2011	Y2012	Y2013
Medical	26	26	24	39	44
Religious	38	38	45	65	90
Provisional	13	13	55	19	16
Invalid	79	79	60	89	150
Total	156	156	184	212	300
% of Students Not Fully Vaccinated	2.53%	2.06%	2.91%	3.38%	4.68%



SUMMARY

Polk County School Immunization Rates, 2008-2013

Community Immunity

To assess the risk of a disease outbreak, the concept of “**community immunity**”, or herd immunity, must be invoked. Community immunity refers to the number of individuals in a community who must be vaccinated in order for that community to be better protected from a disease outbreak. When this is attained, the disease cannot easily spread through the community, and the entire population is safer. The vaccination rate at which community immunity is achieved varies by disease and by community, but according to the CDC, community immunity is generally attained with a vaccination rate of **95%**¹. Calculations of community immunity have not been performed in the school setting, and since diseases can spread more easily in schools than in other areas of society (due to close contact of individuals and sharing of supplies), this threshold may be even **higher in schools**. State-level data indicates that a vaccination rate of **98%** or higher is a “good” vaccination rate².

Polk County Schools, 2009-2013

Student enrollment has steadily increased since 2009, but rates of medical exemptions, religious exemptions, provisional certificates, and invalid certificates have all outpaced the rise in student enrollment. This has resulted in an **increasing rate of students who are not fully vaccinated**, with one in thirty-four students in our schools missing at least one vaccine in 2013. Consequently, many districts have fallen below recommended immunization rates and could be at risk for a vaccine-preventable disease outbreak.

In 2013, only **three school districts achieved** a vaccination rate above **98%**: Bondurant-Farrar, Johnston, and Urbandale. **All other districts fell below 98%** and could therefore be at greater risk for an outbreak with a vaccine preventable disease. The non-public school district had the lowest immunization rate, with just over 95% of students being fully vaccinated. Additionally, all but three districts (Dallas Center-Grimes, Southeast Polk, and West Des Moines) saw a decrease in student immunization rates between 2012 and 2013, and all districts except for one (Johnston) had lower immunization rates in 2013 than in 2008.

Recommendations to Superintendents

In response to the worrisome trends described above, the following recommendations were given to district superintendents to prevent disease outbreaks:

1. Encourage Principals to:
 - **Promote vaccination** amongst **employees** through newsletters and e-mails
 - **Encourage families to vaccinate their children** through information provided in newsletters, on school websites, in registration packets, and at orientation
 - Promote methods to **decrease disease transmission**
 - **Intercom announcements and newsletters:**
 - Hand hygiene, Respiratory etiquette
 - Provide adequate **tissue paper, respiratory masks, hand sanitizer**, and soap and paper towels in classrooms and restrooms
 - Ensure frequent and thorough **cleaning and disinfecting of classroom areas**
 - Promote the following for action amongst school nurses for **provisional certificates:**
 - Send home **information about diseases** for which student lacks vaccination with letter **to parents**
 - Issue **reminder calls** or e-mails to parents
2. Promote **monitoring** for disease **outbreaks** in your schools by promoting the following with the principals:
 - When students or employees call in sick, having the secretary **record diagnosis** (if one exists) and **symptoms**
 - Having nurses log student and employee absences in the **Polk County Online Illness Reporting System**

FUTURE DIRECTIONS

Audit by Type of Vaccine

This year, an extended audit was performed for several of the non-public schools in addition to two school districts, Dallas Center-Grimes and Urbandale. For the first time, the specific vaccines that students lacked were documented in order to generate **disease-specific vaccination rates**. In previous years, the number of students who were fully vaccinated was recorded, in addition to the number of students who missing at least one of the required vaccines. For students missing one or more vaccine, the certificate or exemption that they held was also documented. This is the first year that the missing vaccines were recorded for each student who was not fully vaccinated. With this information, we could **better characterize risk** of disease outbreaks from specific vaccine-preventable diseases. We are considering collecting this information for all districts in future years.

Employee Vaccination

Additionally, **employee vaccination** may warrant increased consideration in the future for three reasons. First, like students, employees are at risk for contracting vaccine-preventable diseases. Secondly, as part of the school population, employees contribute to community immunity, either protectively by being vaccinated or harmfully by lacking vaccination. Thirdly, if employees contract diseases and are absent from school, students' learning suffers. In the future, it could be useful to examine ways to incorporate employee vaccination rates into district analyses.

Improvements in Certificates & Exemptions

Finally, the categories of certificates and exemptions that have increased the most since 2009 have been religious exemptions and invalid certificates. Examination into the **reasons behind this trend** could provide a basis for future interventions to improve vaccination rates. Additionally, the categories of certificates and exemptions that appear the most amenable to change are **provisional and invalid**; exploring ways to decrease these certificates could also provide improvement to overall immunization rates.

REFERENCES

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2. Bryson D and McKay B. A booster shot for vaccines. *Wall Street Journal*. January 5, 2014.