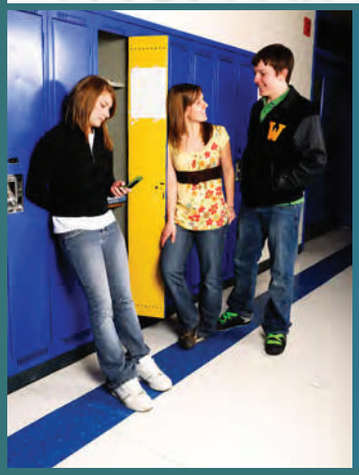

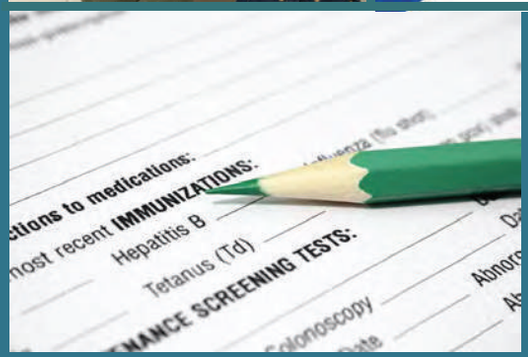

Polk County Immunization Report

School Year 2015

February 2016

POLK COUNTY IOWA LEADING THE WAY

HEALTH DEPARTMENT

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POLK COUNTY IOWA LEADING THE WAY

HEALTH DEPARTMENT

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INTRODUCTION

STUDENT IMMUNIZATION IN POLK COUNTY, 2009-2015

In the following report are detailed results of the annual vaccination audits conducted by the Polk County Health Department (PCHD) from 2009 to 2015. Each year, nurses employed by PCHD perform an audit of the vaccination certificates of the students in each public and non public school, as mandated by the Iowa Department of Public Health. Using data collected from these audits, trends were identified in student enrollment, exemptions and certificates, and vaccination rates in the county.

In Polk County, the number of children who were not fully vaccinated has been steadily increasing every year. This category represents the summary of certificates and exemptions reported at the time of the school audit. Since 2009, the number of students under this category has increased close to 108% in Polk County schools. Examination into the reasons behind this trend could provide a basis for future interventions to improve overall immunization rates.

Also, present in this report, are also school-specific information about vaccination rates, certificates, and exemptions and a summary of the trends seen over the years.

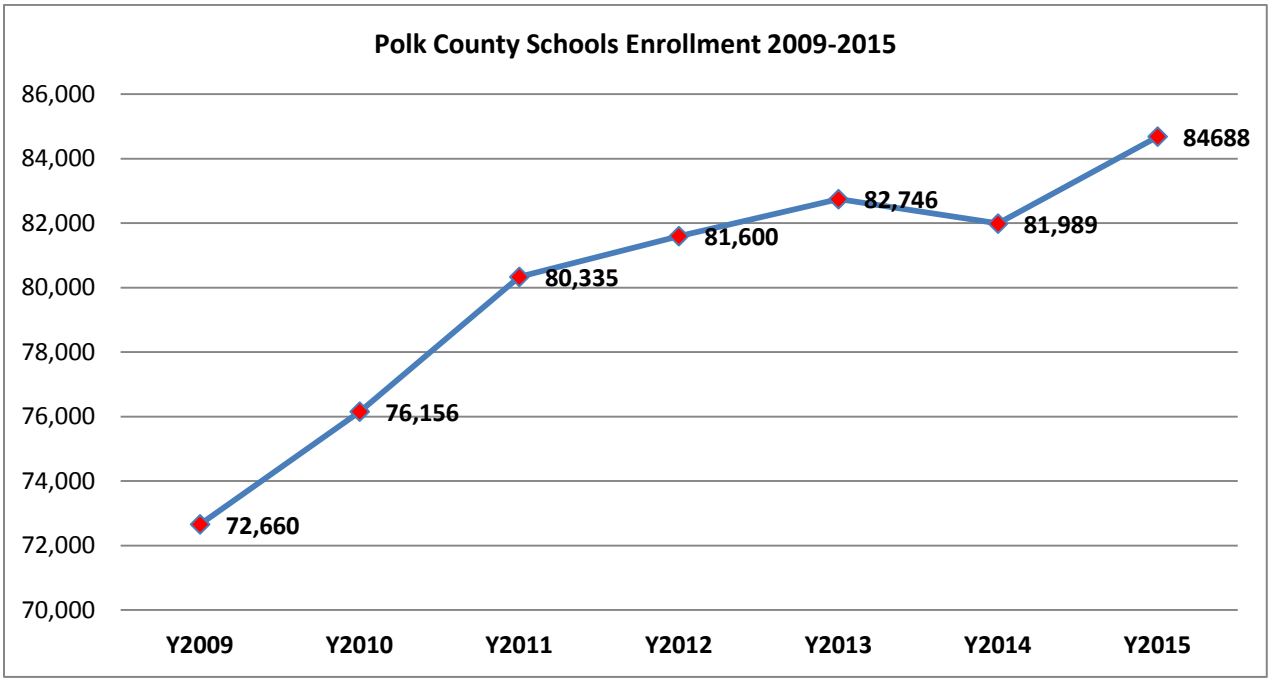
Note: In the year 2014, the school immunization report was conducted using a different methodology than the one used for analysis of previous years. This changed created a variation in the trends observed during the time frame 2009-2013. The current report is using the methodology used prior to 2014.

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 2015, **84,688** students were enrolled in Polk County public and non-public schools.
- The number of students enrolled in Polk County schools **increased 3.3%** in comparison with 2014 school year (n=81,989) and **16.6%** in comparison with 2009.
- Number of enrolled students in Polk County schools:

Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
72,660	**76,156**	**80,335**	**81,600**	**82,746**	**81,989**	**84,688**

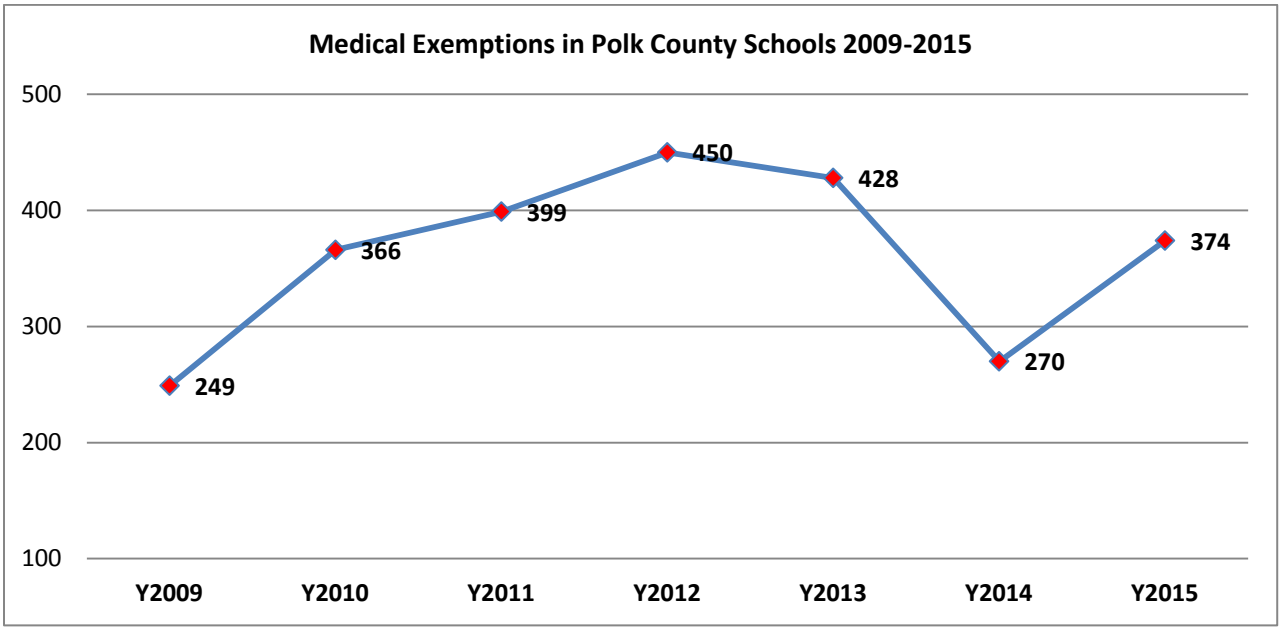


MEDICAL EXEMPTIONS

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 2015, **374** students in Polk County schools were under the category of Medical Exemption.
- The number of students under this category **increased 38.5%** in comparison with the year 2014 school year (n=270) and **50.2%** in comparison with 2009.
- Number of enrolled students under Medical Exemption and percent of variation in comparison with previous school year:

Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
249	366	399	450	428	270	374

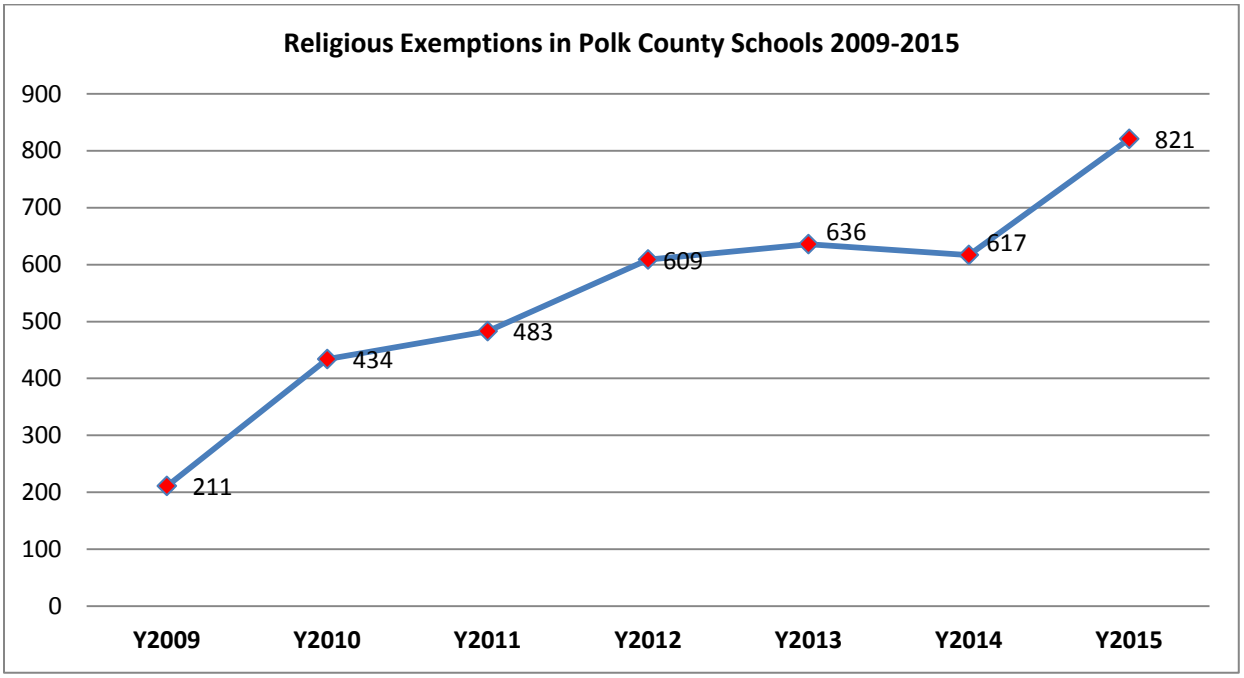


RELIGIOUS EXEMPTIONS

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 2015, **821** students were enrolled in Polk County Schools under the category of Religious Exemptions.
- The number of enrolled students under this category **increased 33.1%** in comparison with the 2014 school year (n=617) and **289.1%** in comparison with 2009.
- Number of enrolled students under Religious Exemptions:

Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
211	**434**	**483**	**609**	**636**	**617**	**821**

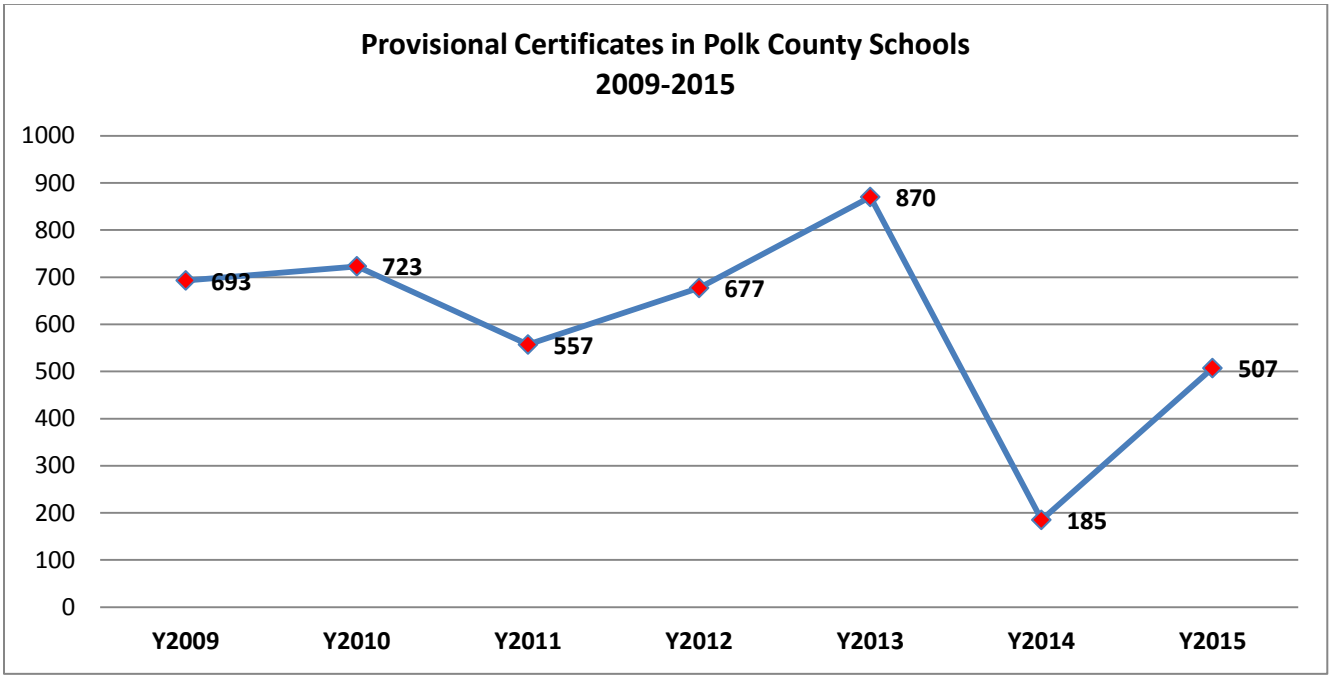


PROVISIONAL CERTIFICATES

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.
Note: 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 2015, **507** students enrolled in Polk County schools were under the category of Provisional Certificates.
- The number of students under this category **increased 174.1%** in comparison with the 2014 school year (n=185) and **decreased 26.8%** in comparison with 2009.
- Number of enrolled students under Provisional Certificates:

Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
693	723	557	677	870	185	507

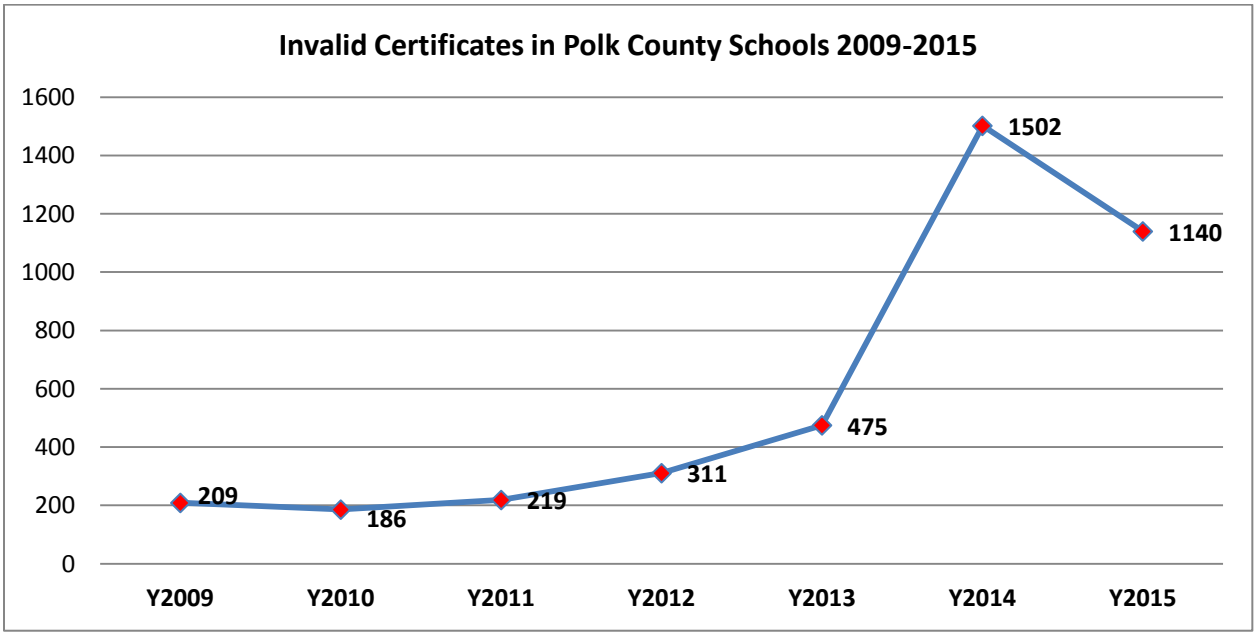


INVALID CERTIFICATES

*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. Note: Most issues that make a certificate invalid are addressed quickly. The corrections are made or the proper certificate is issued. Therefore, the risk posed by unvaccinated students with invalid certificates captures a 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 2015, **1,140** students enrolled in Polk County schools were under the category of Invalid Certificates.
- The number of students under this category **decreased 24.1%** in comparison with the 2014 school year (n=1,502) and **increased 445.5%** in comparison with 2009.
- Number of enrolled students under Invalid Certificates:

Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
209	186	219	311	475	1,502	1,140



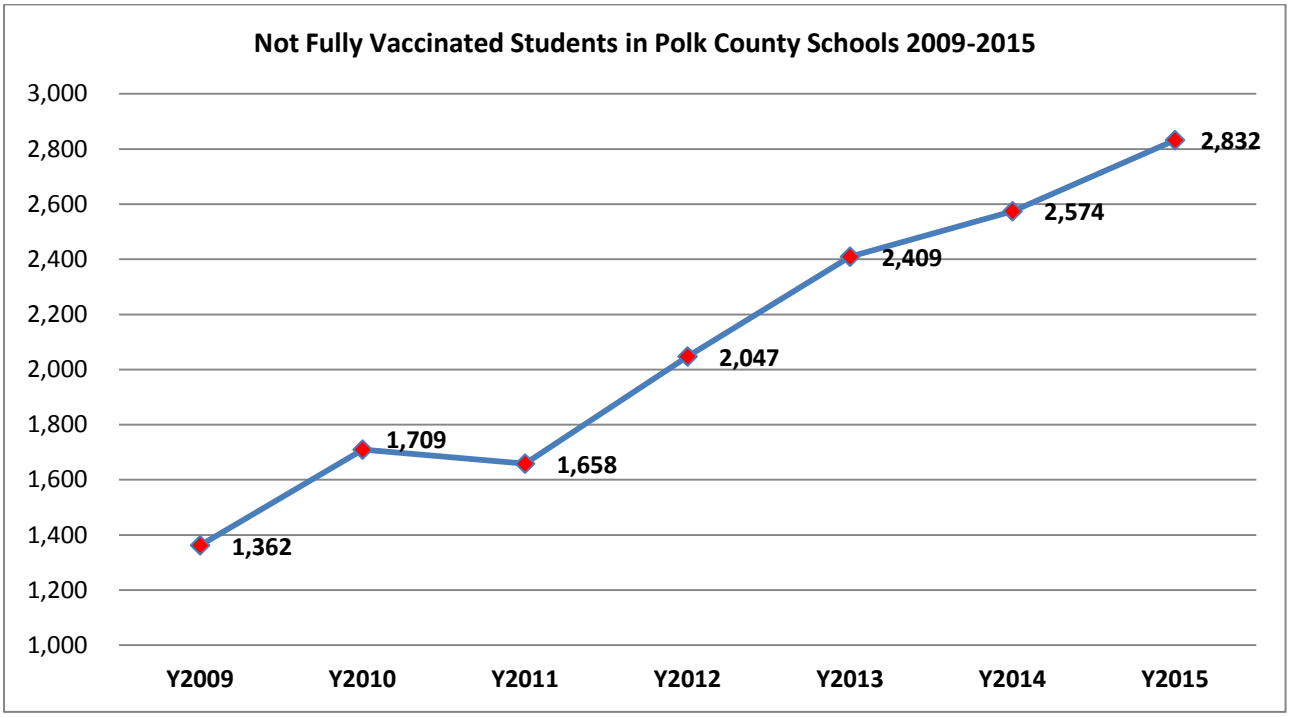
NOT FULLY VACCINATED STUDENTS

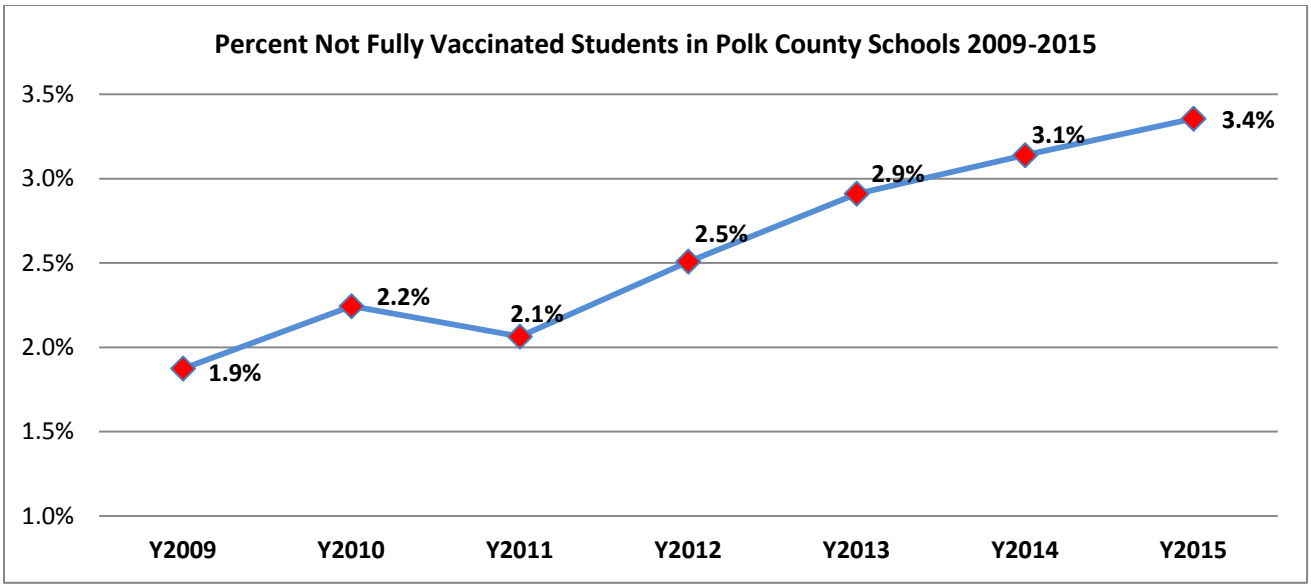
- This category is the summary of all type of exemptions and certificates.

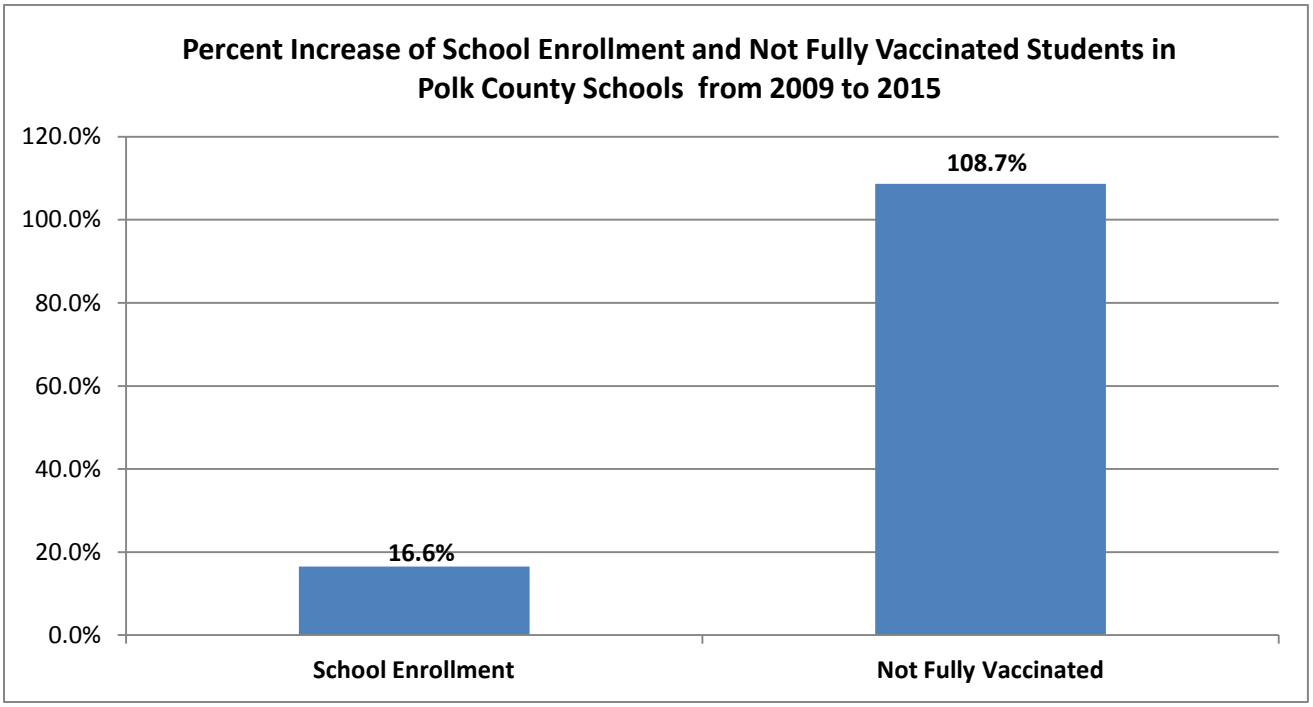
Medical and Religious Exemptions	+	Provisional and Invalid Certificates

- In 2015, **2,842 students** in Polk County schools were not fully vaccinated. Therefore, approximately **1 in 33 students** in Polk County schools **was not fully vaccinated** at the time of the audit.
- The number of students who were not fully vaccinated **increased 10.0%** in comparison with the 2014 school year (n=2,574) and **108.7%** in comparison with 2009.
- Number of Not Fully Vaccinated students:

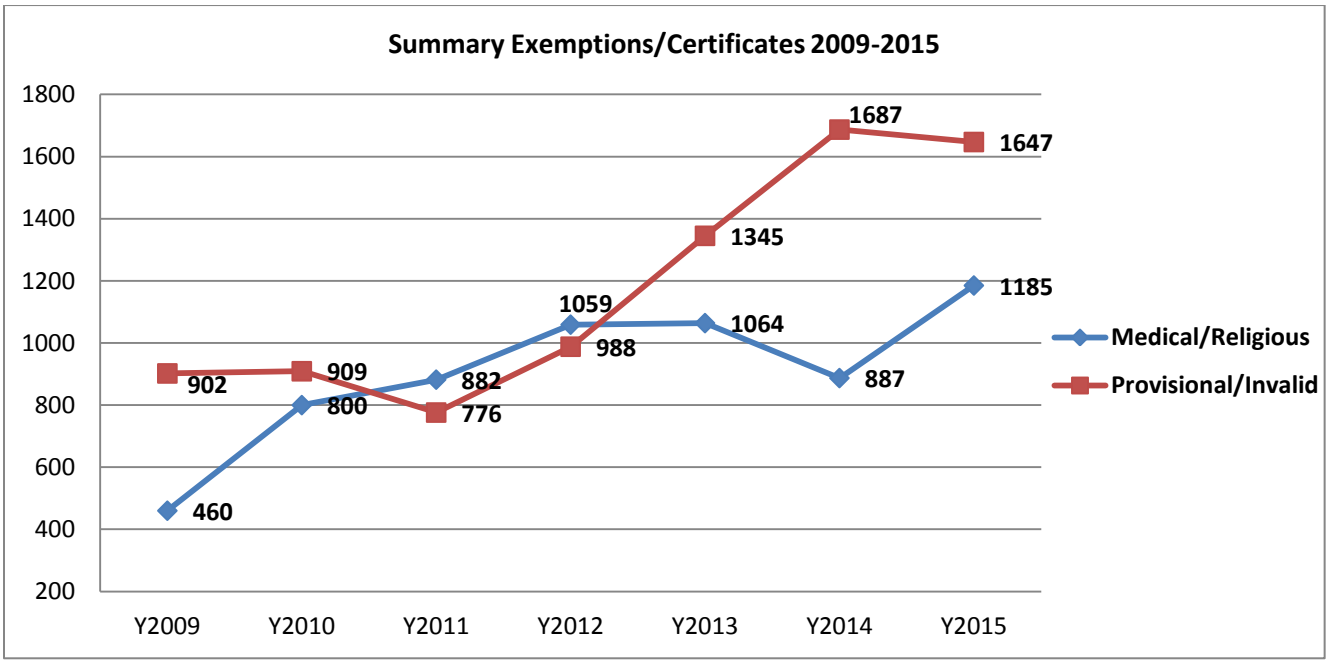
Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
1,362	**1,709**	**1,658**	**2,047**	**2,409**	**2,574**	**2,842**




Percent Not Fully Vaccinated Students in Polk County Schools 2009-2015
3.5%
3.0%
2.5%
2.0%
1.5%
1.0%
1.9%
2.2%
2.1%
2.5%
2.9%
3.1%
3.4%
Y2009
Y2010
Y2011
Y2012
Y2013
Y2014
Y2015


Percent Increase of School Enrollment and Not Fully Vaccinated Students in Polk County Schools from 2009 to 2015
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
16.6%
108.7%
School Enrollment
Not Fully Vaccinated

TOTAL OF CERTIFICATES AND EXEMPTIONS



STUDENTS NOT FULLY VACCINATED BY SCHOOL DISTRICT, 2009-2015

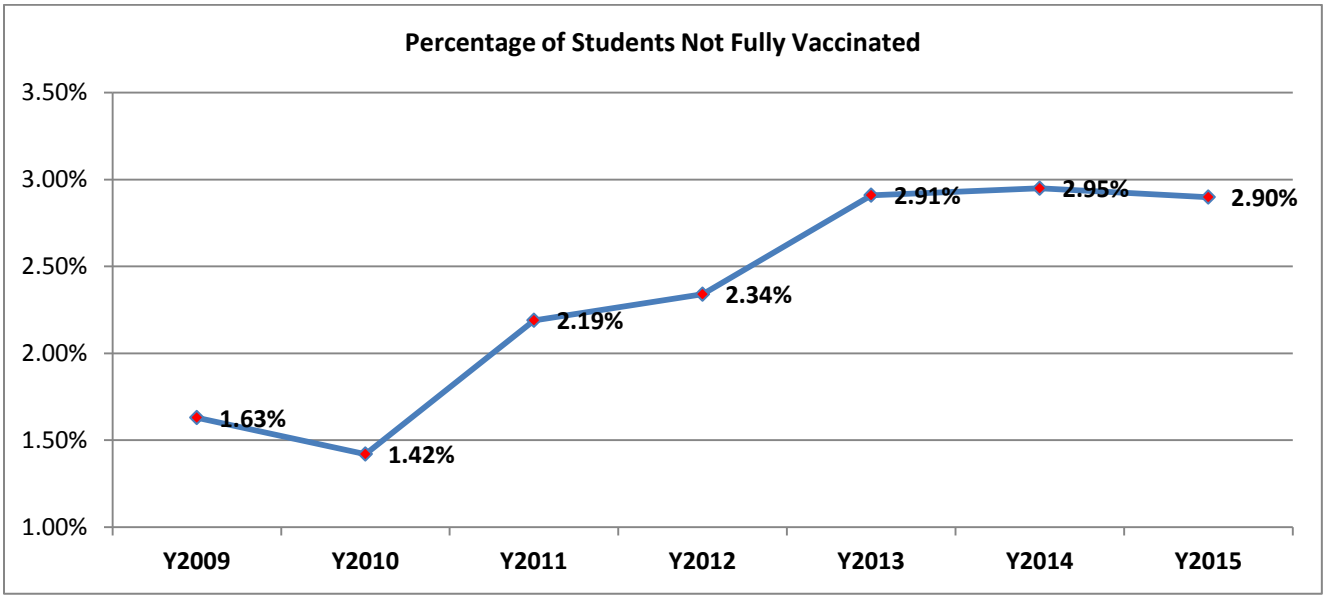
- Districts that reported a percentage increase of not fully vaccinated students in 2015 in comparison with 2014 are highlighted in red.

School	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
Ankeny	1.63%	1.42%	2.19%	2.34%	2.91%	2.95%	2.90%
Bondurant-Farrar	0.81%	0.94%	0.90%	0.74%	0.86%	2.53%	**3.42%**
Dallas Center-Grimes	1.95%	4.70%	2.48%	4.00%	3.17%	6.65%	4.45%
Des Moines	2.97%	2.99%	2.32%	2.83%	3.36%	3.00%	2.38%
Johnston	1.58%	1.01%	1.17%	1.21%	1.55%	3.31%	**3.87%**
North Polk	1.69%	1.44%	2.53%	2.44%	2.94%	2.59%	**3.54%**
Saydel	1.73%	0.67%	1.02%	1.01%	2.13%	5.50%	3.95%
Southeast Polk	1.81%	1.75%	2.45%	2.44%	2.68%	2.48%	**3.41%**
Urbandale	1.39%	1.01%	1.40%	2.22%	1.94%	2.45%	**3.48%**
West Des Moines	1.51%	N/A*	1.44%	2.43%	2.09%	2.81%	**4.43%**
Non-Public	2.53%	2.06%	2.91%	3.38%	4.68%	4.91%	**6.33%**

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

ANKENY

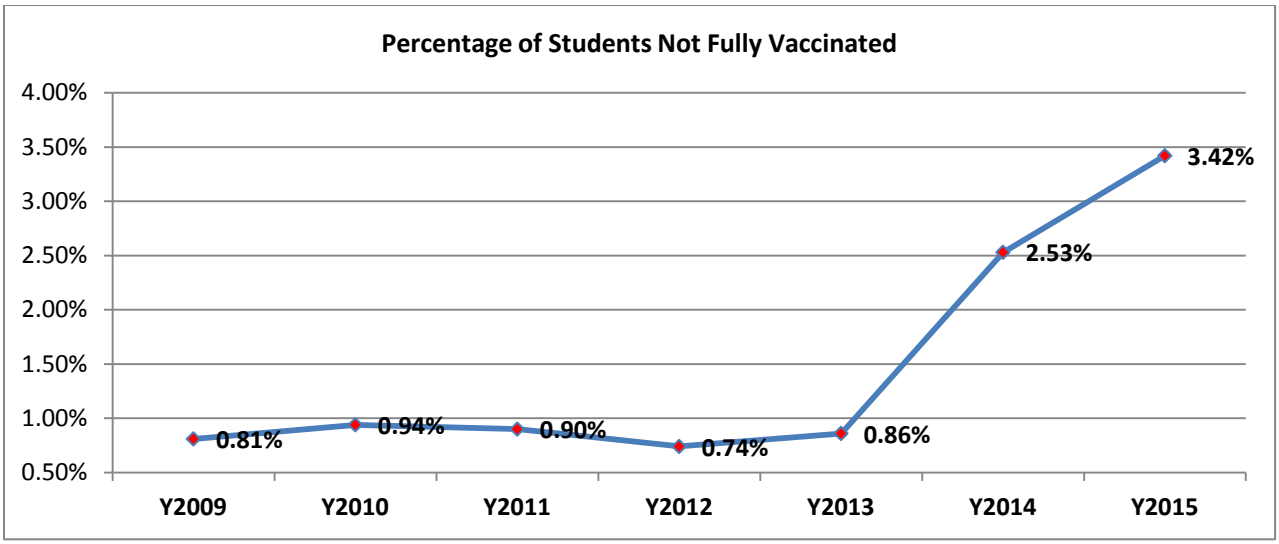
- In 2015, **323 students** or **2.90%** of the total population of enrolled students (n=11,141) in Ankeny schools were **not fully vaccinated**.
- The number of **students who were not fully vaccinated increased by 3.5% in 2015** in comparison with 2014 (n=312)**.**
- **Student enrollment increased 5.2%** during the same time period.



Category	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
Medical	39	8	52	49	60	44	53
Religious	41	45	55	85	84	103	133
Provisional	7	58	22	37	55	2	37
Invalid	55	17	74	57	98	163	100
Total Under-Immunized	142	128	203	228	297	312	323
% of Under-Immunized Students	**1.63%**	**1.42%**	**2.19%**	**2.34%**	**2.91%**	**2.95%**	**2.90%**
Change # Under-Immunized		-9.9%	58.6%	12.3%	30.3%	5.1%	3.5%
Student Enrollment	8,705	8,962	9,281	9,745	10,193	10,592	11,141
Change in Student Enrollment		3.0%	3.6%	5.0%	4.6%	3.9%	5.2%

BONDURANT- FARRAR

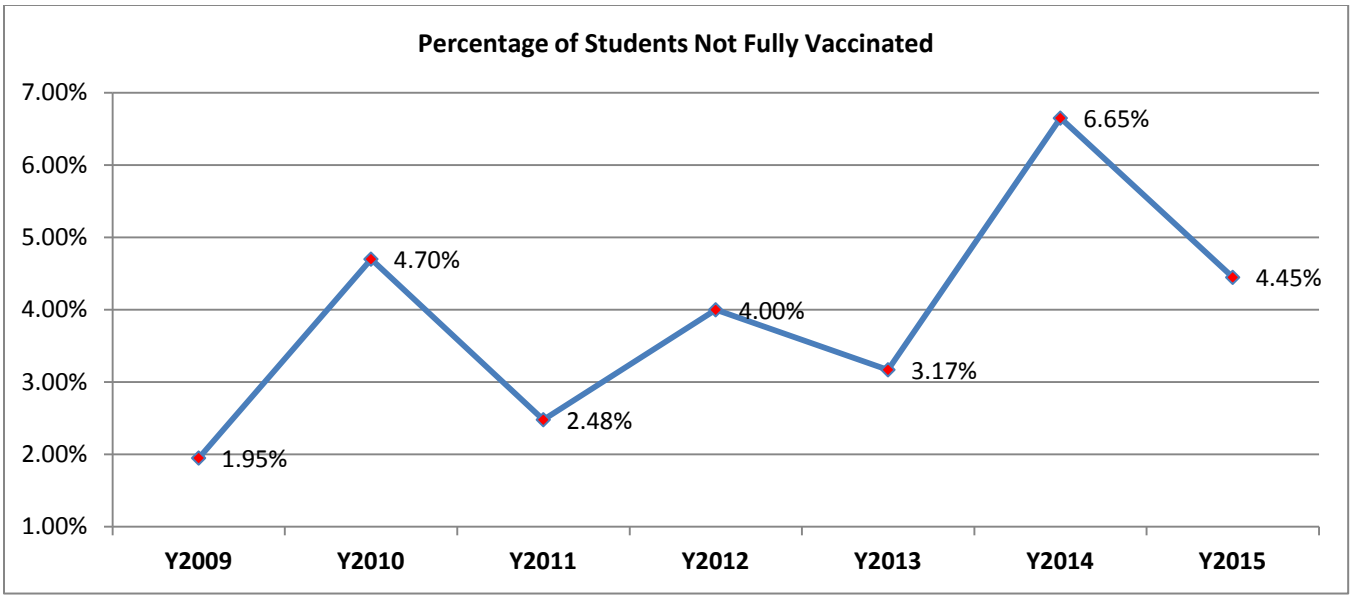
- In 2015, **68 students or 3.42%** of the total population of enrolled students (n=1,988) in Bondurant-Farrar schools were **not fully vaccinated.**
- The number of **students who were not fully vaccinated increased by 44.7% in 2015** in comparison with 2014 (n=47)**.**
- **Student enrollment increased 6.9%** during the same time period.



Category	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
Medical	3	2	6	2	3	1	3
Religious	2	5	4	7	6	13	16
Provisional	0	3	5	2	0	0	6
Invalid	6	4	0	1	6	33	43
Total Under-Immunized	11	14	15	12	15	47	68
% of Under-Immunized Students	**0.81%**	**0.94%**	**0.90%**	**0.74%**	**0.86%**	**2.53%**	**3.42%**
Change # Under-Immunized		27.3%	7.1%	-20.0%	25.0%	213.3%	44.7%
Student Enrollment	1,365	1,494	1,667	1,626	1,743	1,860	1,988
Change in Student Enrollment		9.5%	11.6%	-2.5%	7.2%	6.7%	6.9%

DALLAS CENTER-GRIMES

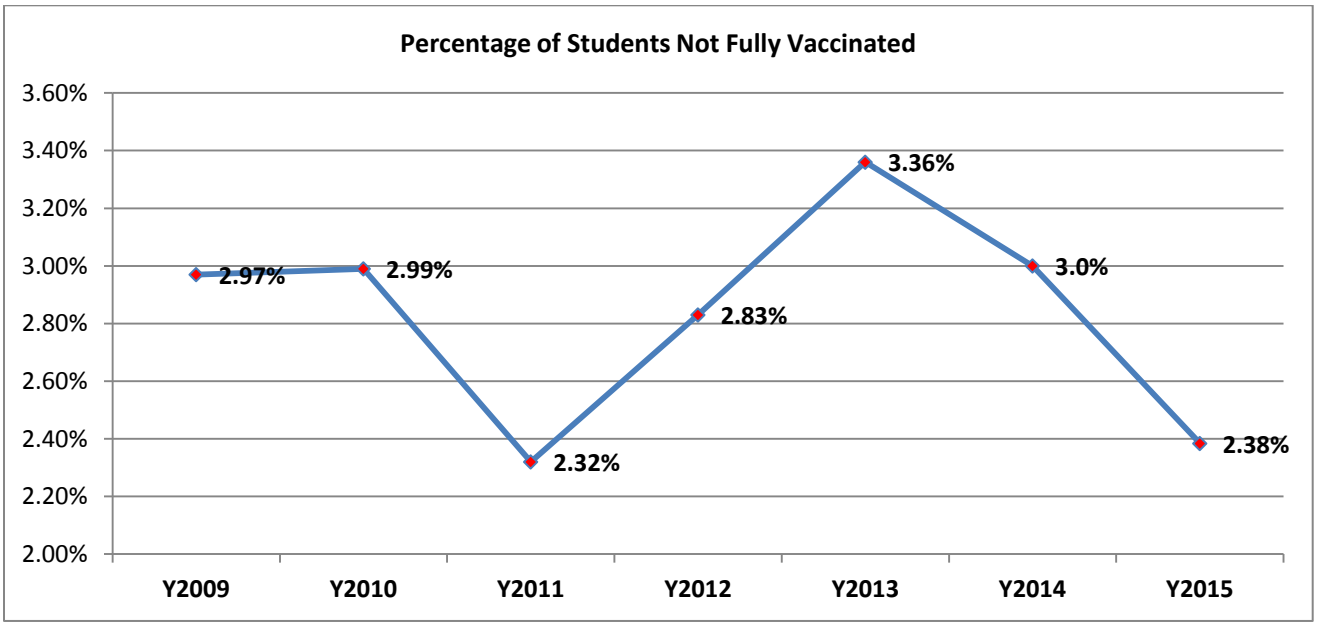
- In 2015, **52 students** or **4.45%** of the total population of enrolled students (n=1,169) in Dallas Center-Grimes schools located within Polk County limits were not fully vaccinated.
- The number of **not fully vaccinated students decreased by 24.6% in 2015** in comparison with 2014 (n=69)**.**
- **Student enrollment increased 12.7%** during the same time period.



Category	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
Medical	10	1	3	2	7	13	10
Religious	5	8	6	9	12	15	19
Provisional	0	14	14	1	3	3	1
Invalid	0	21	0	27	9	38	22
Total Under-Immunized	15	44	23	39	31	69	52
% of Under-Immunized Students	**1.95%**	**4.70%**	**2.48%**	**4.00%**	**3.17%**	**6.65%**	**4.45%**
Change # Under-Immunized		193.3%	-47.7%	69.6%	-20.5%	122.6%	-24.6%
Student Enrollment	770	936	941	957	977	1,037	1,169
Change in Student Enrollment		21.6%	0.5%	1.7%	2.1%	6.1%	12.7%

DES MOINES

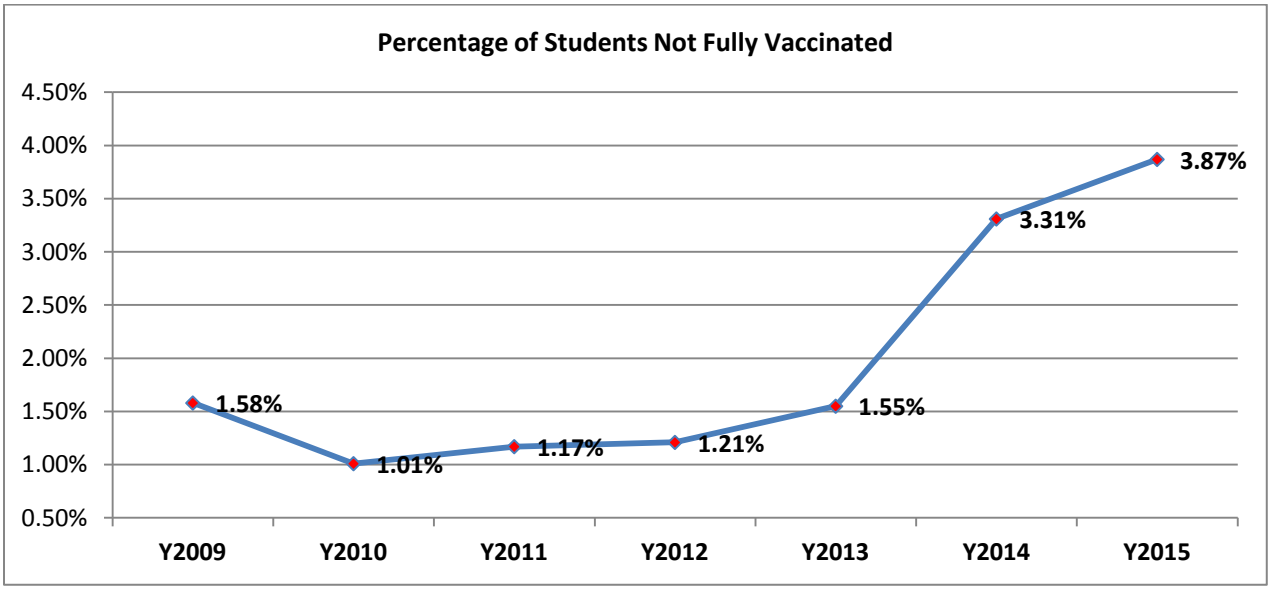
- In 2015, **807 students** or **2.38%** of the total population of enrolled students (n=33,433) in Des Moines schools were **not fully vaccinated**.
- The number of **not fully vaccinated students decreased by 15.5% in 2015** in comparison with 2014 (n=955)**.**
- **Student enrollment increased 4.7%** during the same time period**.**



Category	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
Medical	160	520	198	198	160	61	129
Religious	79	178	198	225	192	159	250
Provisional	630	165	306	472	678	141	375
Invalid	93	98	49	43	88	594	53
Total Under-Immunized	962	961	751	938	1,118	955	807
% of Under-Immunized Students	**2.97%**	**2.99%**	**2.32%**	**2.83%**	**3.36%**	**3.0%**	**2.38%**
Change # Under-Immunized		-0.1%	-21.9%	24.9%	19.2%	-14.6%	-15.5%
Student Enrollment	30,123	32,156	32,918	33,104	33,238	31,924	33,433
Change in Student Enrollment		6.7%	2.4%	0.6%	0.4%	-4.0%	4.7%

JOHNSTON

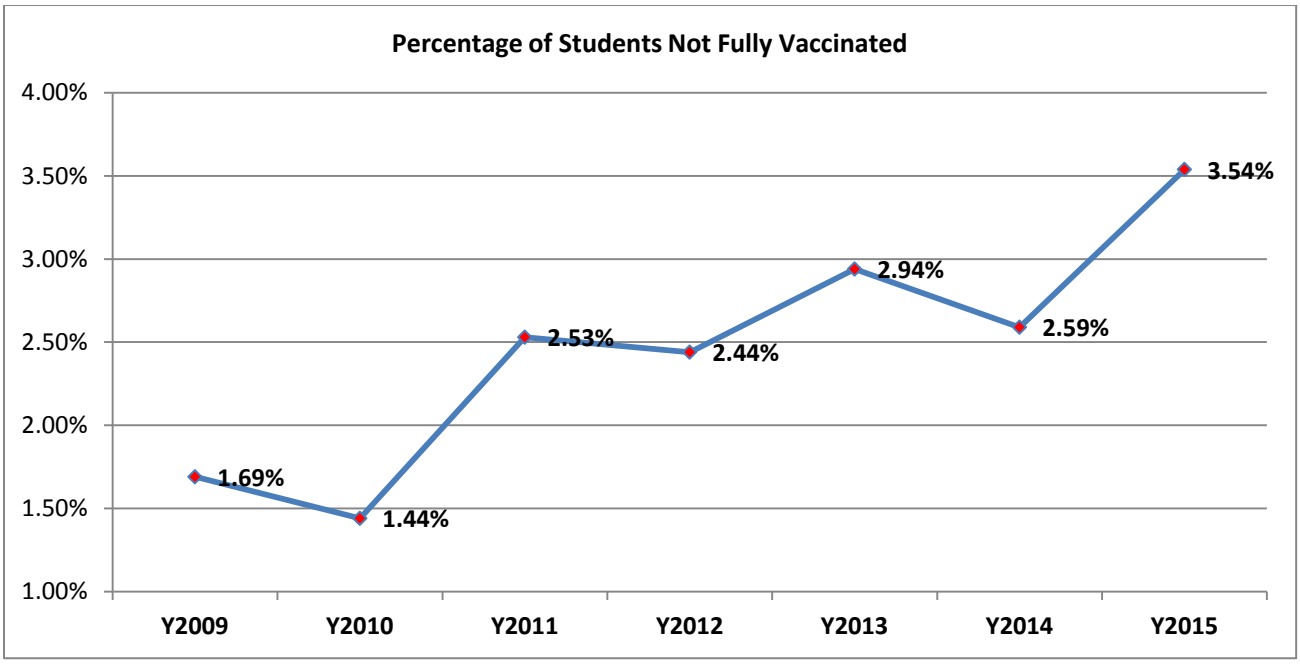
- In 2015, **272 students or 3.87%** of the total population of enrolled students (n=7,029) in Des Moines schools were **not fully vaccinated**.
- The number of **students who were not fully vaccinated increased by 18.8% in 2015** in comparison with 2014 (n=229)**.**
- **Enrollment increased 1.7%** during the same time period.



Category	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
Medical	13	24	18	24	18	17	24
Religious	28	18	23	25	29	29	36
Provisional	15	16	28	19	10	3	14
Invalid	55	6	7	12	48	180	198
Total Under-Immunized	111	64	76	80	105	229	272
% of Under-Immunized Students	**1.58%**	**1.01%**	**1.17%**	**1.21%**	**1.55%**	**3.31%**	**3.87%**
Change # Under-Immunized		-42.3%	18.8%	5.3%	31.3%	118.1%	18.8%
Student Enrollment	6,211	6,314	6,473	6,629	6,771	6,912	7,029
Change in Student Enrollment		1.7%	2.5%	2.4%	2.1%	2.1%	1.7%

NORTH POLK

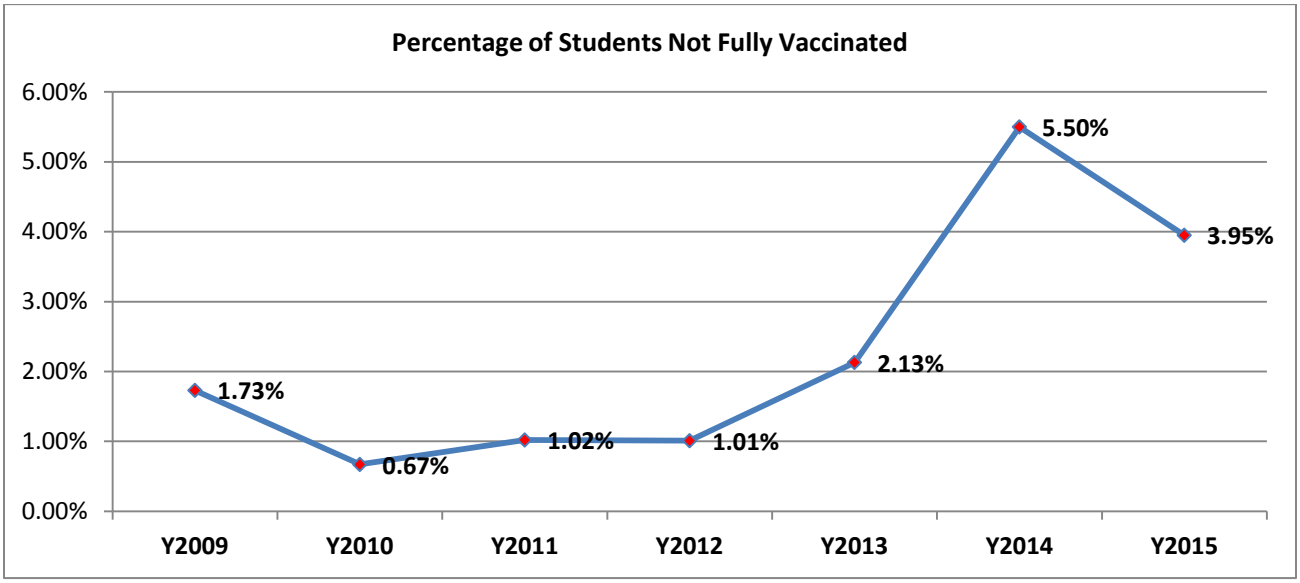
- In 2015, **59 students** or **3.54%** of the total population of enrolled students (n=1,667) in North Polk schools were **not fully vaccinated**.
- The number of **students who were not fully vaccinated increased by 47.5% in 2015** in comparison with 2014 (n=40)**.**
- **Student enrollment increased 7.8%** during the same time period.



Category	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
Medical	8	0	11	11	13	6	10
Religious	11	6	19	19	25	11	21
Provisional	1	13	1	1	3	4	1
Invalid	2	1	5	5	4	19	27
Total Under-Immunized	22	20	36	36	45	40	59
% of Under-Immunized Students	**1.69%**	**1.44%**	**2.53%**	**2.44%**	**2.94%**	**2.59%**	3.54%
Change # Under-Immunized		-9.1%	80.0%	0.0%	25.0%	-11.1%	47.5%
Student Enrollment	1,300	1,392	1,425	1,478	1,533	1,547	1,667
Change in Student Enrollment		7.1%	2.4%	3.7%	3.7%	0.9%	7.8%

SAYDEL

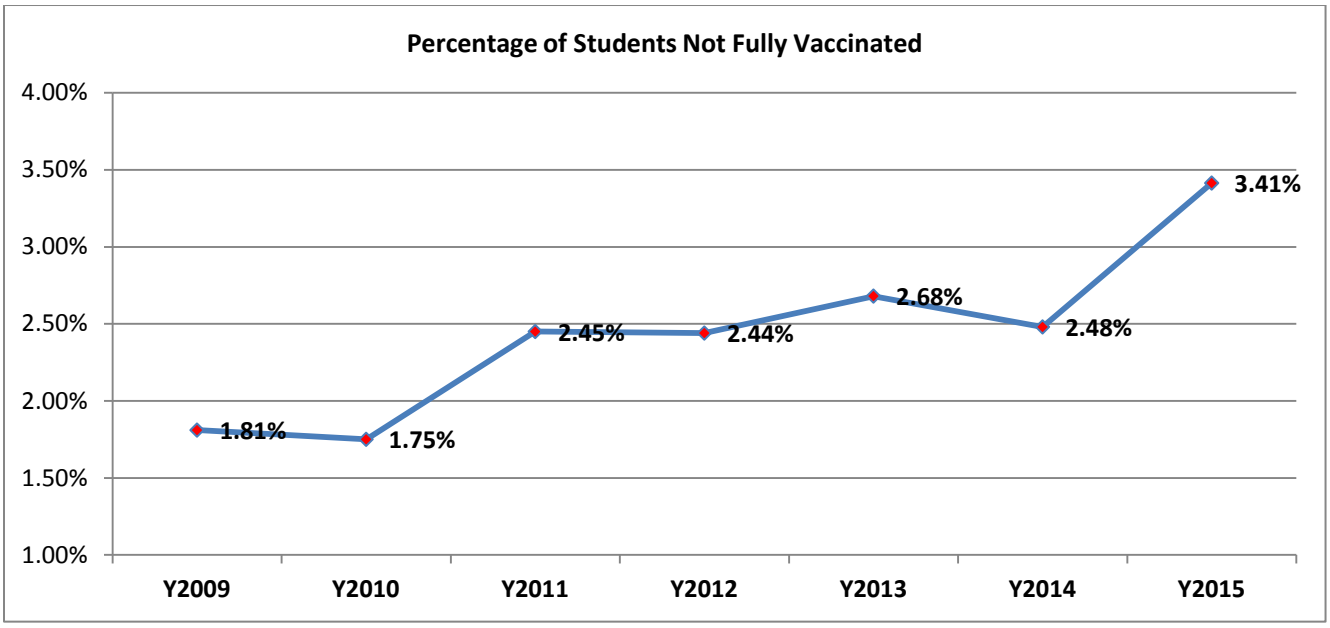
- In 2015, **53 students** or **3.95%** of the total population of enrolled students (n=1,342) in Saydel schools were **not fully vaccinated**.
- The number of **students who were not fully vaccinated decreased by 29.3% in 2015** in comparison with 2014 (n=75)**.**
- This number represents **Student enrollment decreased 1.5%** during the same time period.



Category	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
Medical	2	0	3	3	4	5	7
Religious	2	4	2	0	0	6	9
Provisional	5	0	3	9	19	0	4
Invalid	15	5	6	2	6	64	33
Total Under-Immunized	22	9	14	14	29	75	53
% of Under-Immunized Students	**1.73%**	**0.67%**	**1.02%**	**1.01%**	**2.13%**	**5.50%**	**3.95%**
Change # Under-Immunized		-59.1%	55.6%	0.0%	107.1%	158.6%	-29.3%
Student Enrollment	1,390	1,340	1,379	1,380	1,361	1,363	1,342
Change in Student Enrollment		-3.6%	2.9%	0.1%	-1.4%	0.1%	-1.5%

SOUTHEAST POLK

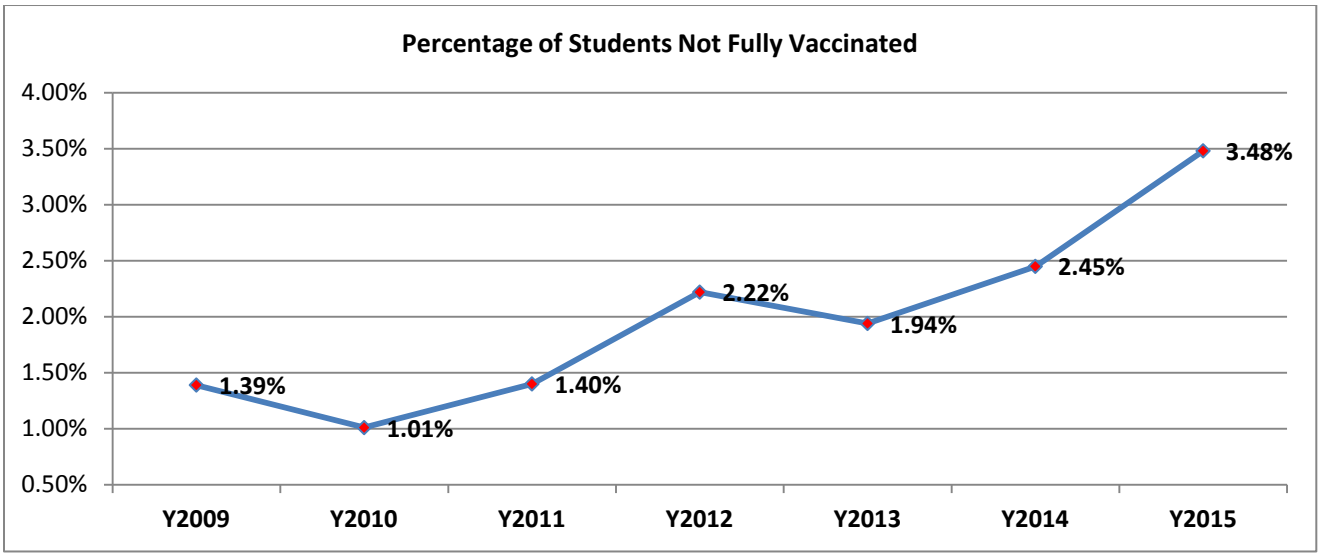
- In 2015, **238 students** or **3.41%** of the total population of enrolled students (n=6,971) in SE Polk schools were **not fully vaccinated**.
- The number of **students who were not fully vaccinated increased by 37.6% in 2015** in comparison with 2014 (n=173)**.**
- **Student enrollment decreased 0.1%** during the same time period.



Category	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
Medical	25	32	41	53	50	50	57
Religious	26	28	67	65	71	63	69
Provisional	30	55	56	34	27	9	11
Invalid	13	0	3	18	41	51	101
Total Under-Immunized	94	115	167	170	189	173	238
% of Under-Immunized Students	**1.81%**	**1.75%**	**2.45%**	**2.44%**	**2.68%**	**2.48%**	**3.41%**
Change # Under-Immunized		22.3%	45.2%	1.8%	11.2%	-8.5%	37.6%
Student Enrollment	6,301	6,590	6,803	6,966	7,052	6,977	6,971
Change in Student Enrollment		4.6%	3.2%	2.4%	1.2%	-1.1%	-0.1%

URBANDALE

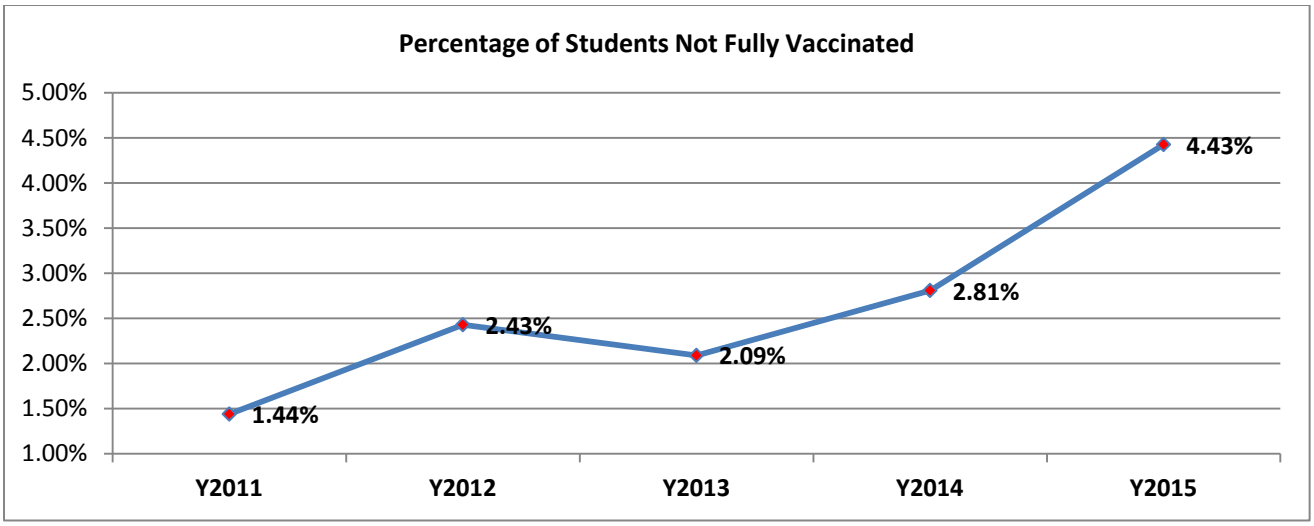
- In 2015, **146 students** or **3.48%** of the total population of enrolled students (n=4,193) in Urbandale schools were **not fully vaccinated**.
- The number of **students who were not fully vaccinated increased by 43.1% in 2015** in comparison with 2014 (n=102)**.**
- **Student enrollment increased 0.8%** during the same time period.



Category	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
Medical	14	12	16	22	32	27	24
Religious	11	14	17	19	18	28	47
Provisional	12	12	15	24	20	4	28
Invalid	1	1	8	26	11	43	47
Total Under-Immunized	38	39	56	91	81	102	146
% of Under-Immunized Students	**1.39%**	**1.01%**	**1.40%**	**2.22%**	**1.94%**	**2.45%**	**3.48%**
Change # Under-Immunized		2.6%	43.6%	62.5%	-11.0%	25.9%	43.1%
Student Enrollment	3,595	3,853	3,994	4,103	4,183	4,159	4,193
Change in Student Enrollment		7.2%	3.7%	2.7%	1.9%	-0.6%	0.8%

WEST DES MOINES

- In 2015, **404 students or 4.43%** of the total population of enrolled students (n=9,125) in West Des Moines schools were **not fully vaccinated**.
- The number of **students who were not fully vaccinated increased by 55.4% in 2015** in comparison with 2014 (n=260)**.**
- **Enrollment decreased 1.5%** during the same time period.

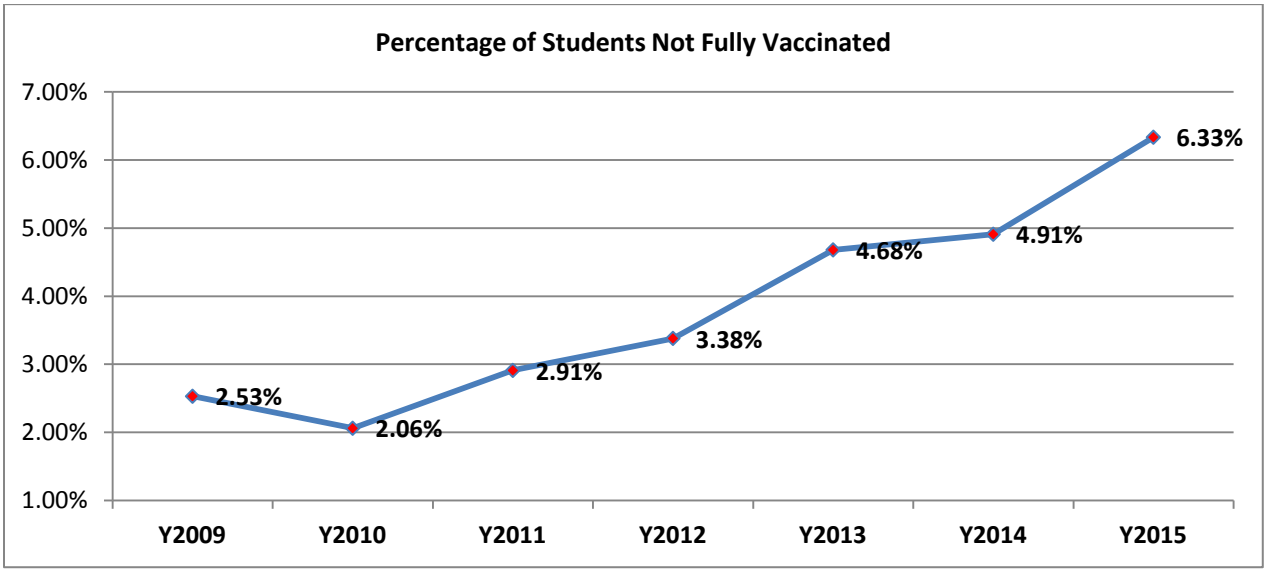


Category	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
Medical	34	N/A	27	47	37	28	33
Religious	46	N/A	47	90	105	87	100
Provisional	54	N/A	52	59	34	10	22
Invalid	4	N/A	7	31	18	135	249
Total Under-Immunized	138	N/A	133	227	194	260	404
% of Under-Immunized Students	**1.51%**	**N/A**	**1.44%**	**2.43%**	**2.09%**	**2.81%**	**4.43%**
Change # Under-Immunized				70.7%	-14.5%	34.0%	55.4%
Student Enrollment	9,136	NA	9,224	9,337	9,290	9,267	9,125
Change in Student Enrollment				1.2%	-0.5%	-0.2%	-1.5%

* Y2010 data has not been included for the West Des Moines district because data is missing for two schools.

NON-PUBLIC (PRIVATE)

- In 2015, **420 students or 6.33%** of the total population of enrolled students (n=6,630) in Non-Public schools were **not fully vaccinated**.
- The number of **students who were not fully vaccinated increased by 34.6% in 2015** in comparison with 2014 (n=312)**.**
- **Student enrollment increased 4.4%** during the same time period.



Category	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
Medical	26	26	24	39	44	18	24
Religious	38	38	45	65	90	103	121
Provisional	13	13	55	19	16	9	8
Invalid	79	79	60	89	150	182	267
Total Under-Immunized	156	156	184	212	300	312	420
% of Under-Immunized Students	**2.53%**	**2.06%**	**2.91%**	**3.38%**	**4.68%**	**4.91%**	**6.33%**
Change # Under-Immunized		0.0%	17.9%	15.2%	41.5%	4.0%	34.6%
Student Enrollment	4,534	6,225	6,329	6,275	6,405	6,351	6630
Change in Student Enrollment		37.3%	1.7%	-0.9%	2.1%	-0.8%	4.4%

SUMMARY

Polk County School Immunization Rates, 2009-2015

Community Immunity and Immunization Rates

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 rate[2].

Polk County Schools, 2009-2015

The number of not fully vaccinated students has steadily increased since 2009, with **1 in 33 students** in our schools missing at least one vaccine in the school year 2015. Consequently, many districts have fallen below recommended immunization rates and could be at risk for a vaccine-preventable disease outbreak.

In 2015, **all school districts fell below 98%** and could therefore be at greater risk for an outbreak with a vaccine preventable disease. Non-public has the lowest immunization rate, with just over 93% of students being fully vaccinated (93.7%) followed by West Des Moines and Dallas both with 95.6%. Additionally, all but three districts (Ankeny, Dallas, and Saydel) saw a decrease in student immunization rates from 2014-2015, and all districts except for one (Des Moines) had lower immunization rates in 2015 than in 2009.

District	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
Ankeny	98.4%	98.6%	97.8%	97.7%	97.1%	97.1%	97.1%
Bondurant-Farrar	99.2%	99.1%	99.1%	99.3%	99.1%	97.5%	96.6%
Dallas	98.1%	95.3%	97.5%	96.0%	96.8%	93.4%	**95.6%**
Des Moines	97.0%	97.0%	97.7%	97.2%	96.6%	98.4%	97.6%
Johnston	98.4%	99.0%	98.8%	98.8%	98.5%	96.7%	96.1%
North Polk	98.3%	98.6%	97.5%	97.6%	97.1%	97.4%	96.5%
Saydel	98.3%	99.3%	99.0%	99.0%	97.9%	94.5%	96.1%
Southeast Polk	98.2%	98.3%	97.6%	97.6%	97.3%	97.5%	96.6%
Urbandale	98.6%	99.0%	98.6%	97.8%	98.1%	97.6%	96.5%
West Des Moines	98.5%		98.6%	97.6%	97.9%	97.2%	**95.6%**
Non Public	97.5%	97.9%	97.1%	96.6%	95.3%	95.1%	**93.7%**

REFERENCES

1. Course: “Smallpox: Disease, Prevention, and Intervention", History and Epidemiology of Global Smallpox Eradication. Centers for Disease Control and Prevention website. 2013; slide 17. Available at: http://www.bt.cdc.gov/agent/smallpox/training/overview/. Accessed January 7, 2014.
2. Bryson D and McKay B. A booster shot for vaccines. *Wall Street Journal*. January 5, 2014.