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2016 National Immunization Survey Childhood Report

The National Immunization Surveys (NIS) are a group of phone surveys used to monitor vaccination coverage among children 19-35 months, teens 13-17 years, and flu vaccinations for children 6 months-17 years. The surveys are sponsored and conducted by the National Center for Immunization and Respiratory Diseases (NCIRD) of the Centers for Disease Control and Prevention (CDC). The National Immunization Surveys provide household, population-based, state and local area estimates of vaccination coverage among children and teens using a standard survey methodology. The surveys collect data through telephone interviews with parents or guardians in all 50 states, the District of Columbia, and some U.S. territories. With permission, a questionnaire is mailed to each child's vaccination provider(s) to collect the information on the types of vaccinations, number of doses and dates of administration. Estimates of vaccination coverage are determined for child and teen vaccinations recommended by the Advisory Committee on Immunization Practices (ACIP), and children and teens are classified as being up-to-date based on the ACIP recommended numbers of doses for each vaccine.

The NIS was first launched in 1994. The target population for the NIS is children who are or will be 19-35 months within a few weeks of being selected to participate in the survey and living in the United States. Data are used to monitor vaccination coverage among 2-year-old children for the following recommended vaccinations:

- Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP/DT/DTP)
- Poliovirus vaccine (Polio)
- Measles or Measles-Mumps-Rubella vaccine (MMR)
- Haemophilus influenzae type b vaccine (Hib)
- Hepatitis B vaccine (HepB)
- Varicella zoster (chickenpox) vaccine (VAR)
- Pneumococcal conjugate vaccine (PCV)
- Hepatitis A vaccine (HepA)
- Rotavirus vaccine (ROT)
- Vaccine Series – 4DTaP:3Polio:1MMR:3Hib:3HepB:1VAR:4PCV (4:3:1:3:3:1:4)

For 2016, national vaccination coverage estimates were based on a sample of 14,988 children (260 Maine children) with completed household interviews and adequate provider data. The NIS is best suited for estimating immunization coverage at a national level, where the standard for error for most estimates is less than 0.5 per cent. However, the NIS also provides coverage estimates on a sub-national basis, including individual states, at a much higher margin for error.

When state-level estimates are published, three potential errors can arise. A state's newest point estimate is often compared with last year's. Such comparisons must be made with awareness of sampling uncertainty. Maine's 2016 estimated coverage for the 4:3:1:3:3:1:4 vaccine series was $70.6 \pm 6.4\%$ compared to 2015's $71.8 \pm 7.9\%$. Factoring in the margins of error, Maine could have had a 14.8% decrease in coverage levels or as high as a 13.1% increase in immunization rates. Additionally, NIS results are often used to compare coverage levels between states. In the NIS, coverage differences between states are often smaller than the survey's margin of error for these states. It is impossible to compare a state like Maine whose margin of error is ± 6.4 to a more populated state such as Texas whose margin of error is only $\pm 4.0\%$. Finally, the third potential problem arises when lists of point estimates are translated into ranks. Ranking states from point estimates coverage introduces even more uncertainty than tracking a state's performance over time or comparing states' coverage.

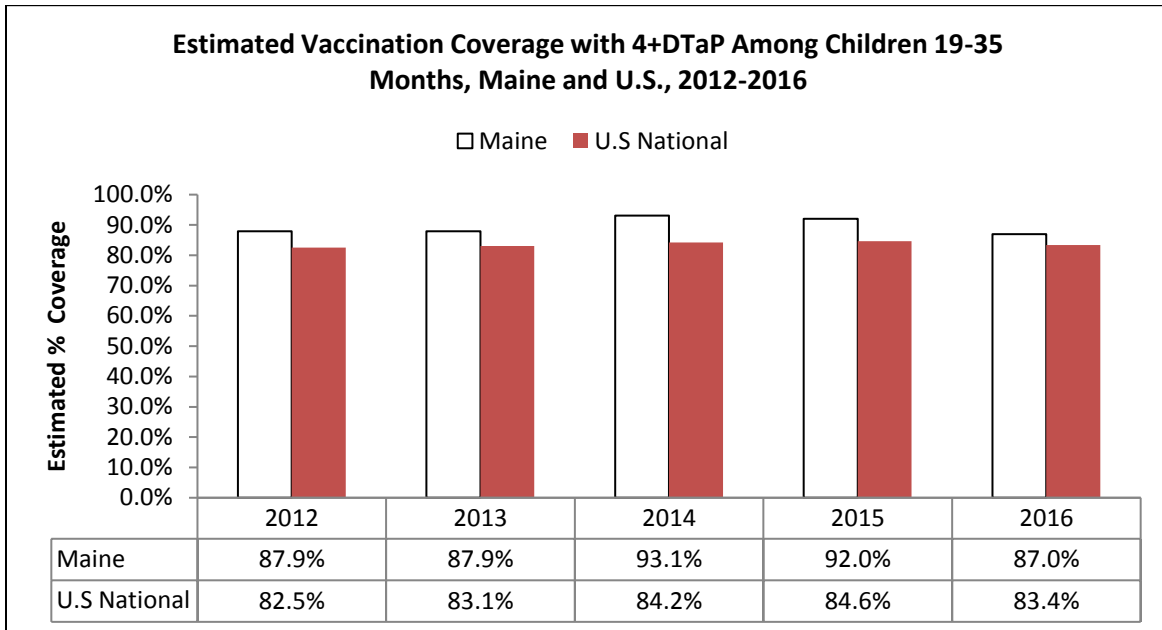
While the NIS continues to provide valuable national and state level data, the Maine Immunization Program (MIP) recognizes that the sampling size used for the survey is too small to accurately depict Maine's true vaccination coverage levels. MIP calculates immunization rates for children 19-35 months of age for the 4:3:1:3:3:1:4 antigen series using data directly from our immunization registry, ImmPact. Not only does the data give us a larger sample size with almost 10,000 Maine children of this age included (the NIS surveyed 260 Maine children), but the data is also up-to-date. It allows us to view what is happening in real time as opposed to relying on data from the previous year. MIP publishes the Maine Immunization Rate Assessment Reports on our website quarterly and these reports include both state and county level rates. The immunization coverage rate for the 2017 Third Quarter is 76.4%, a difference of almost 6% from the NIS estimate. The assessment reports can be found here: <http://www.maine.gov/dhhs/mecdc/infectious-disease/immunization/publications/index.shtml>

Vaccination is the most effective and efficient way to ensure these children, their family members and the community, particularly those who are immunocompromised, are protected against these vaccine preventable diseases. This is perhaps one of the most important reasons why MIP will continue to encourage parents and physicians to vaccinate their children and to help reach the goal of the Maine Immunization Program to bring the State vaccine coverage rate for each of these vaccines to 100%.

The NIS vaccination data reported was analyzed and graphical representations for each vaccine surveyed show immunization rates for the past 5 year for trending comparisons (Figures 1-11). Summary tables were generated (Tables 1 & 2) to show Maine's coverage ranking both nationally and in HHS Region 1 (the New England states). Additionally, a graphical representation has been generated to show the difference between NIS rates and Maine's IIS rates (Figure 12). A list of talking points is also included to highlight any areas of change from the previous year.

As always, thank you for your commitment to keeping Maine's children free of vaccine preventable disease.

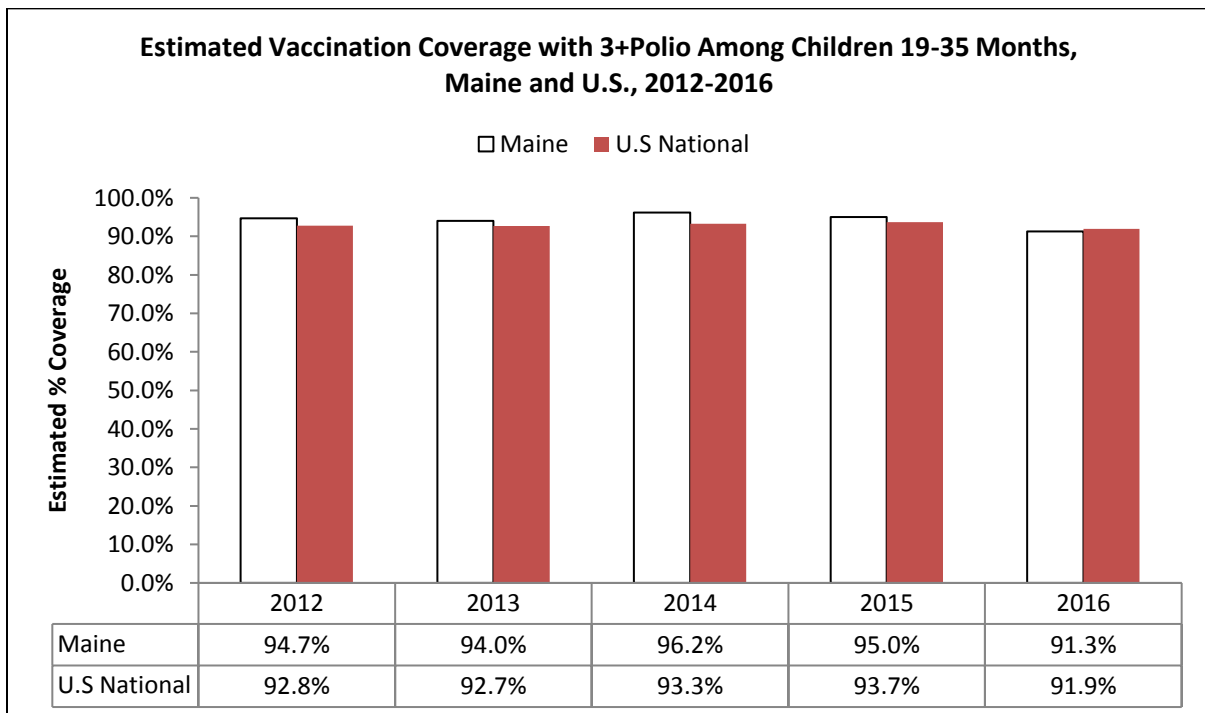
Figure 1: Children 19-35 Months 4+DTaP Vaccine Coverage Estimate, Maine and U.S., 2012-2016



4+ DTaP ~ ≥4 doses of diphtheria and tetanus toxoids and acellular pertussis (DTaP) vaccine.

Trend: Overall, DTaP coverage in Maine has remained relatively stable (above 87%) with a significant increase in 2014 and 2015.

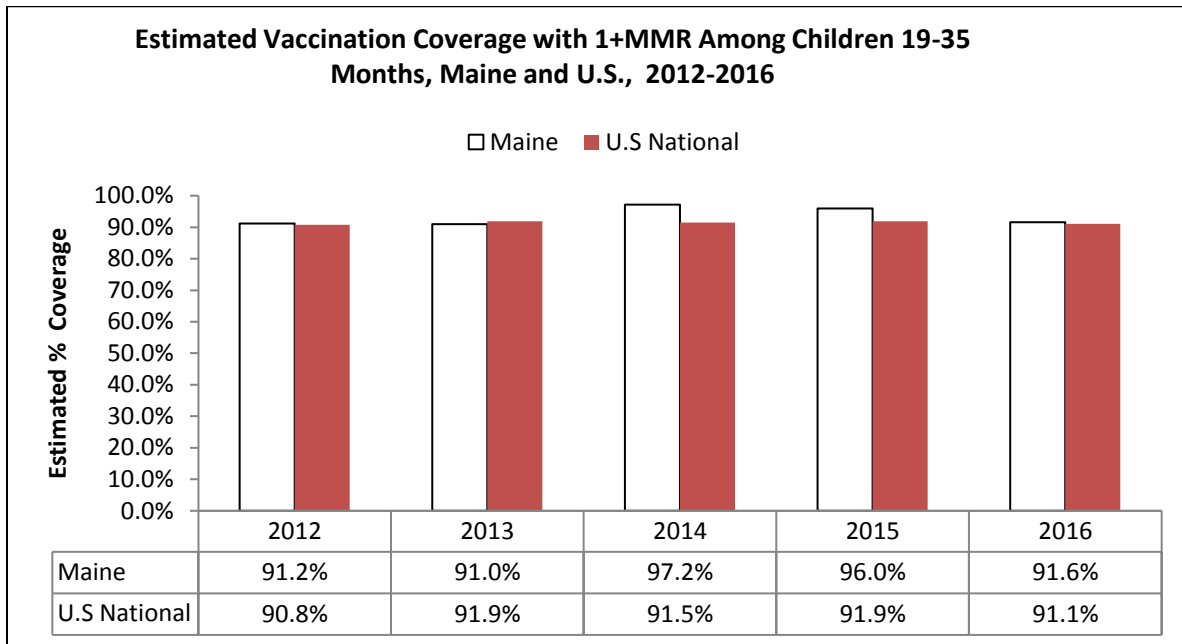
Figure 2: Children 19-35 Months 3+Polio Vaccine Coverage Estimate, Maine and U.S., 2012-2016



3+ Polio ~ ≥3 doses of any poliovirus (Polio) vaccine.

Trend: Overall, Polio coverage in Maine has remained relatively stable (above 94%) with a significant decrease in 2016.

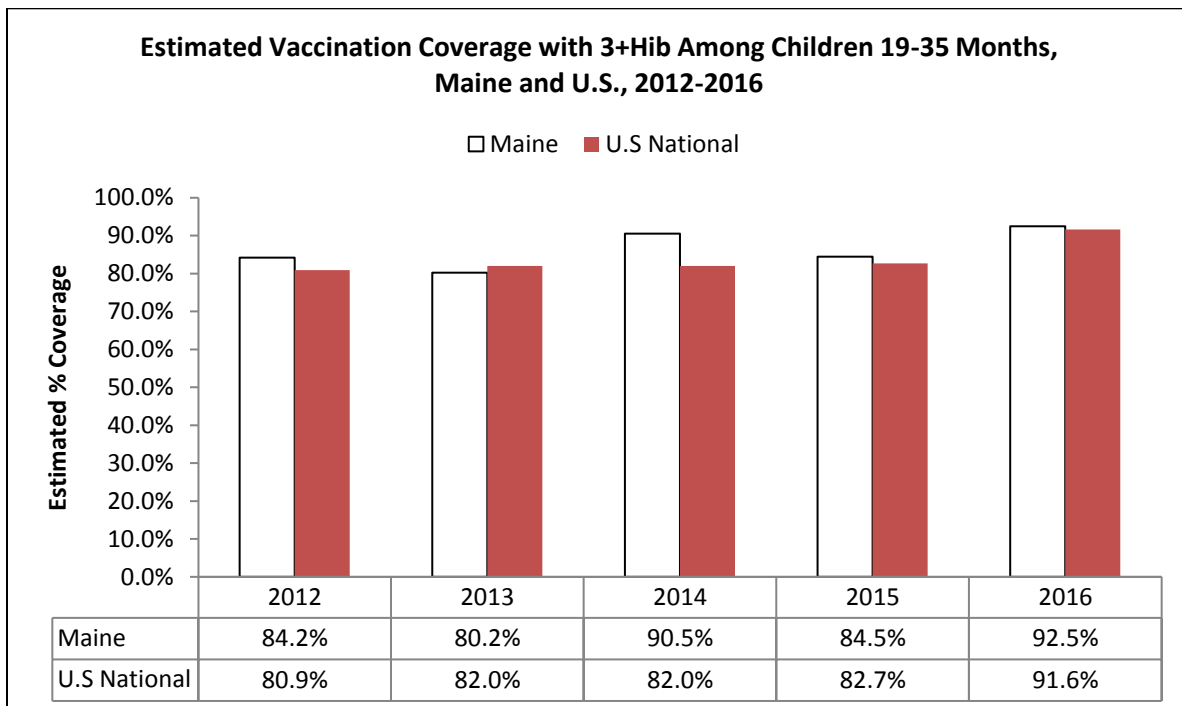
Figure 3: Children 19-35 Months 1+MMR Vaccine Coverage Estimate, Maine and U.S., 2012-2016



1+MMR~ ≥1 dose of measles-mumps-rubella (MMR) vaccine.

Trend: Overall, MMR coverage in Maine has remained relatively stable (above 91%) with a significant increase in 2014 and 2015.

Figure 4: Children 19-35 Months 3+Hib Vaccine Coverage Estimate, Maine and U.S., 2012-2016

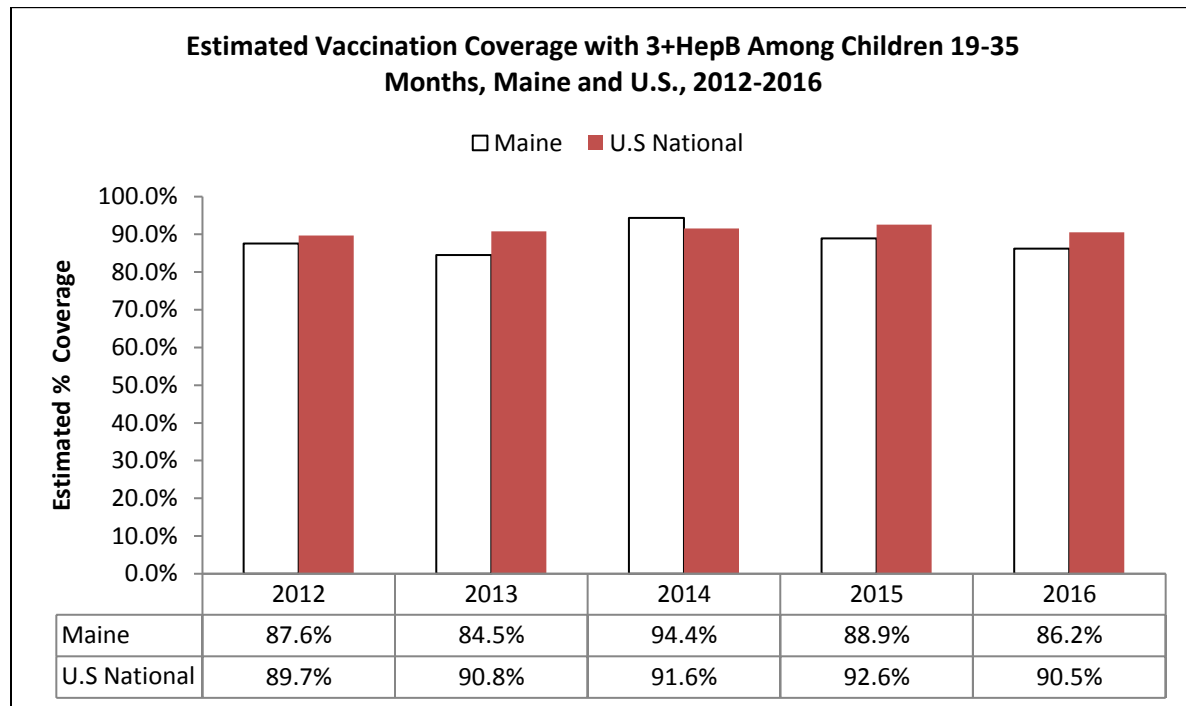


3+Hib ~≥3 doses of Haemophilus influenzae type b (Hib) vaccine.

Trend: Although not stable, Hib coverage in Maine has increased over the past 5 years.

Note: Hib vaccine is not part of the vaccine requirements for school children in Maine.

Figure 5: Children 19-35 Months 3+HepB Vaccine Coverage Estimate, Maine and U.S., 2012-2016

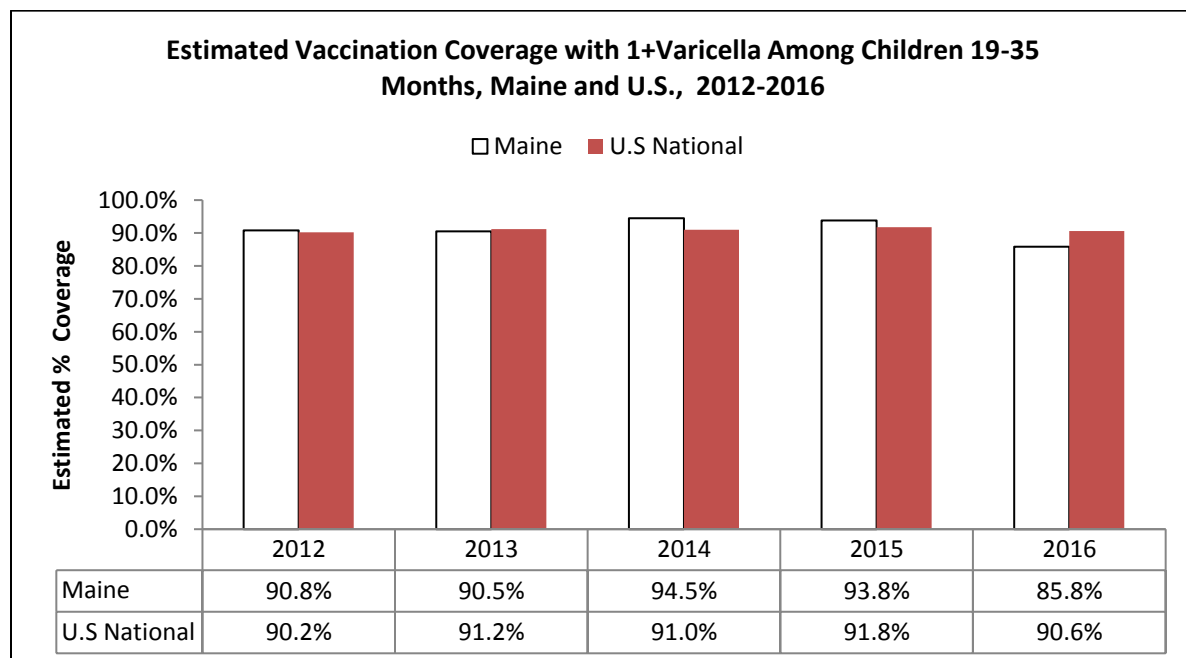


3+ HepB ~ ≥3 doses of hepatitis B (HepB) vaccine.

Trend: Overall, HepB vaccine coverage in Maine has remained relatively stable (above 84%) with a statistically significant increase in 2014.

Note: HepB vaccine is not part of the vaccine requirements for school children in Maine.

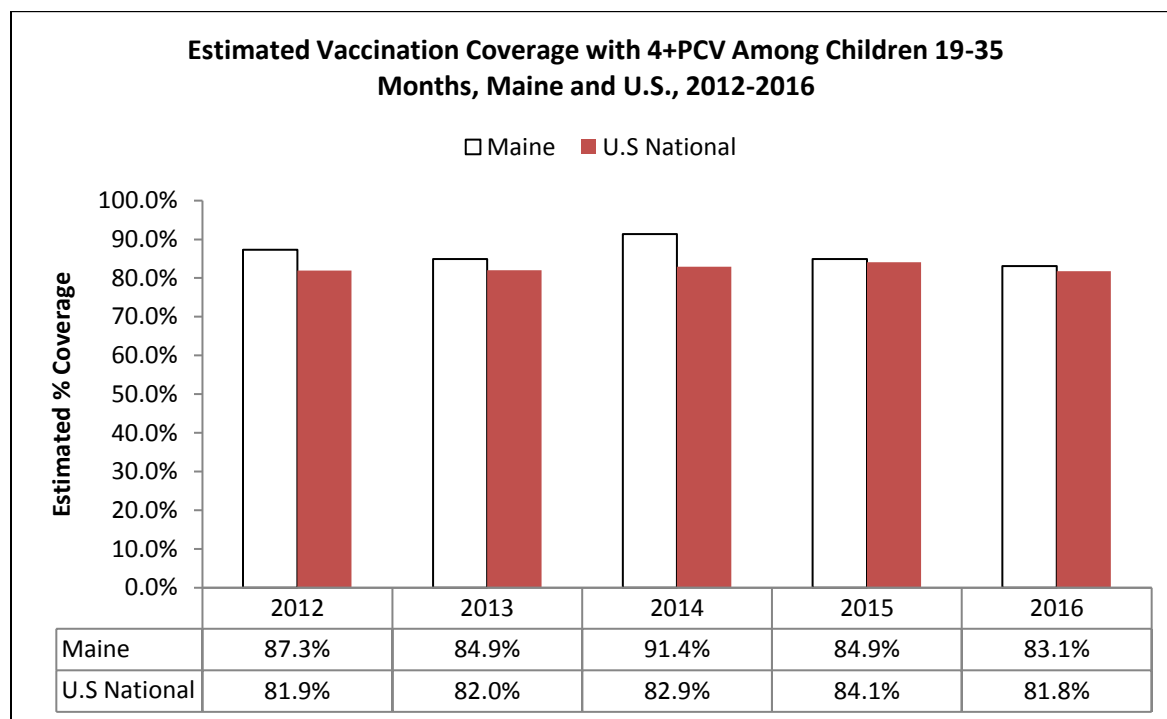
Figure 6: Children 19-35 Months 1+VAR Vaccine Coverage Estimate, Maine and U.S., 2012-2016



1+Varicella ~ ≥ 1 dose of varicella (VAR) vaccine at or after child's first birthday, unadjusted for history of varicella disease (by parent/guardian report or provider records).

Trend: Overall, varicella vaccine coverage in Maine has remained relatively stable (above 90%) with a significant decrease in 2016.

Figure 7: Children 19-35 Months 4+PCV Vaccine Coverage Estimate, Maine and U.S., 2012-2016

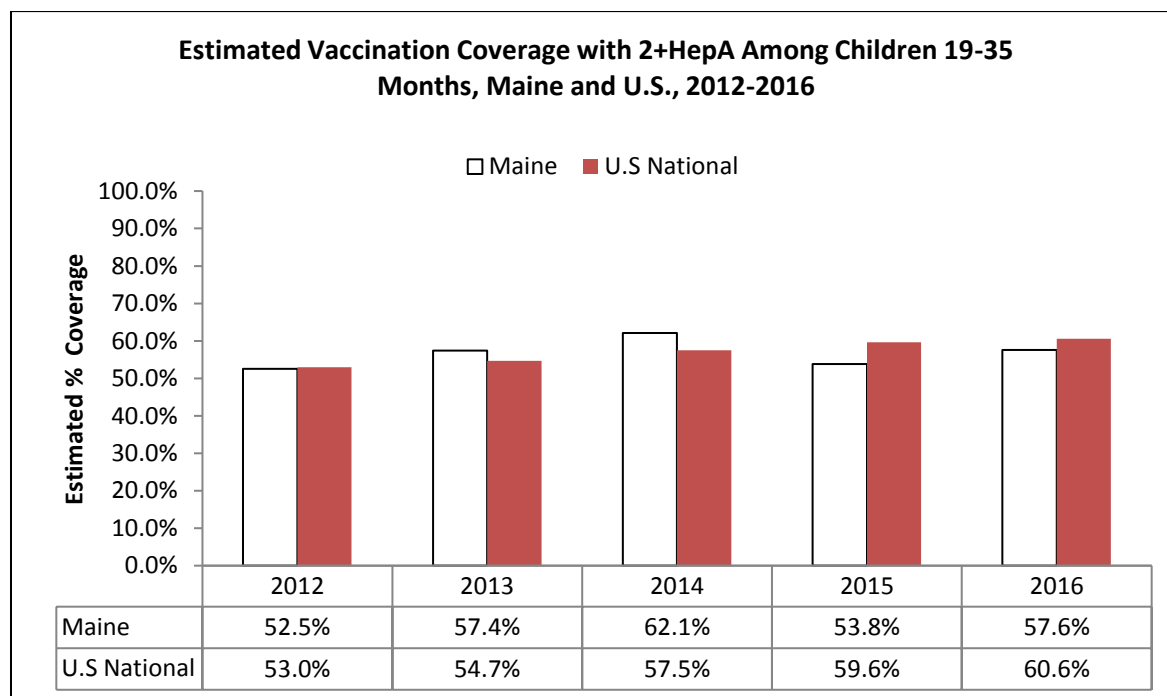


4+PCV ~ ≥ 4 doses of pneumococcal conjugate vaccine (PCV).

Trend: Overall PCV vaccine coverage in Maine has decreased over the past 5 years while continuing to be above national average.

Note: PCV vaccine is not part of the vaccine requirements for school children in Maine.

Figure 8: Children 19-35 Months 2+HepA Vaccine Coverage Estimate, Maine and U.S., 2012-2016

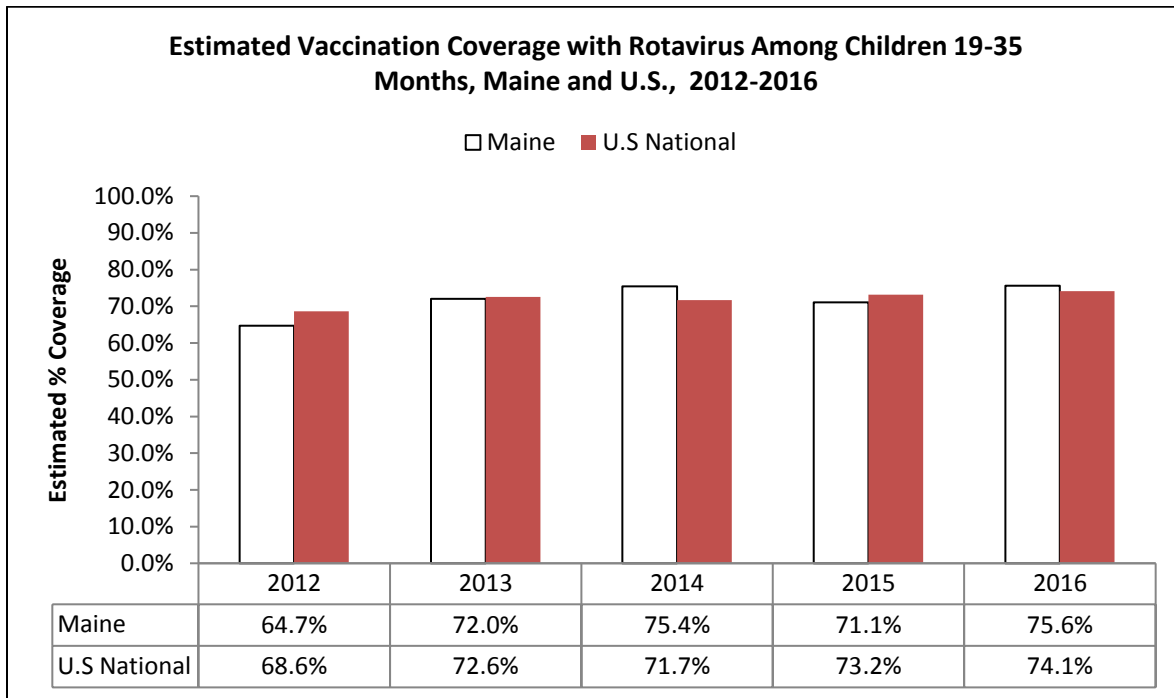


2+HepA ~ ≥ 2 doses of hepatitis A (HepA) vaccine.

Trend: Overall, HepA vaccine coverage has remained relatively stable (above 50%) with a statistically significant increase in 2014.

Note: HepA vaccine is not part of the vaccine requirements for school children in Maine.

Figure 9: Children 19-35 Months Rotavirus Vaccine Coverage Estimate, Maine and U.S., 2012-2016

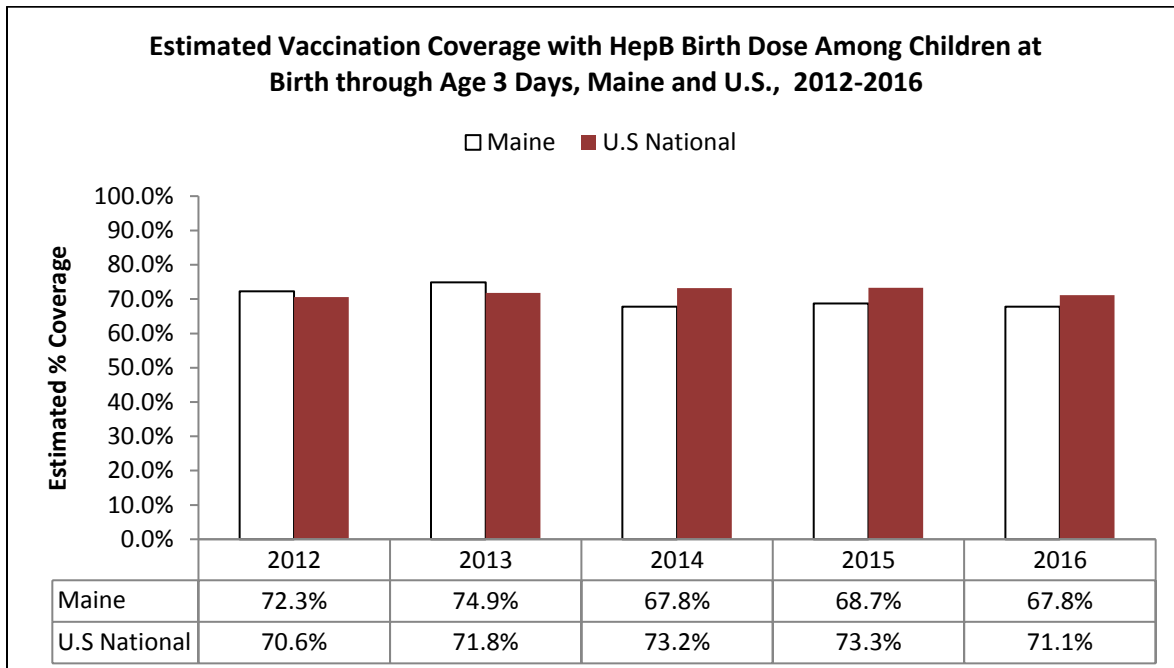


Rotavirus ~≥2 or ≥3 doses of Rotavirus vaccine, depending on product type received (≥2 doses for Rotarix® [RVI] or ≥3 doses for RotaTeq® [RV5]).

Trend: Overall, Rotavirus vaccine coverage has increased over the past 5 years. Rotavirus vaccine coverage in Maine is again above national coverage.

Note: Rotavirus vaccine is not part of the vaccine requirements for school children in Maine.

Figure 10: Hepatitis B Birth Dose Vaccine Coverage Estimate, Maine and U.S., 2012-2016

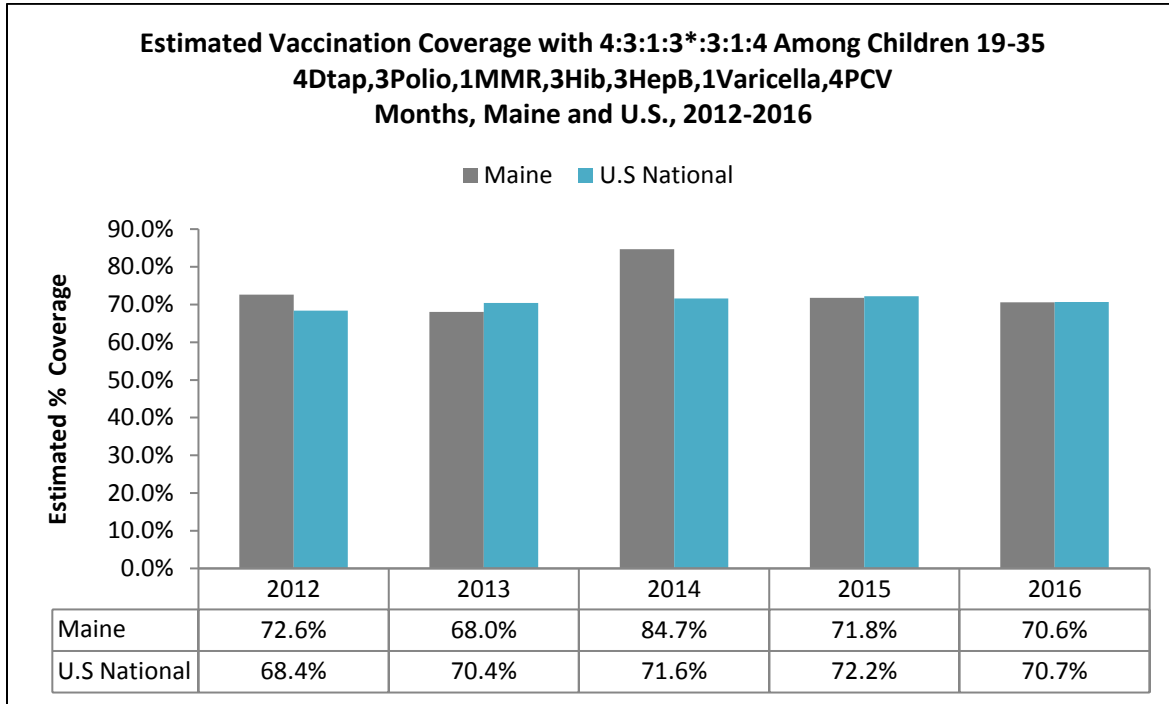


Hepatitis B Birth Dose ~≥1 dose of Hepatitis B vaccine, administered from birth through age 3 days.

Trend: Overall, Hepatitis B vaccine coverage has remained relatively stable (over 65%).

Note: Hepatitis B vaccine is not part of the vaccine requirements for school children in Maine.

Figure 11: Children 19-35 Months 4:3:1:3:3:1:4 Vaccine Series Vaccine Coverage Estimate, Maine and U.S., 2012-2016



4:3:1:3:3:1:4 antigen series – 4:3:1 plus ≥ 3 doses of Haemophilus influenzae (Hib) vaccine of any type, ≥ 3 doses of hepatitis B (HepB) vaccine, ≥ 1 dose of varicella (Var) vaccine, and ≥ 4 doses of pneumococcal conjugate vaccine (PCV).

Trend: Overall, 4:3:1:3:3:1:4 antigen series coverage in Maine decreased over the past 5 years with a statistically significant increase in 2014.

Note: Hib, HepB and PCV vaccines are not part of the vaccine requirements for school children in Maine.

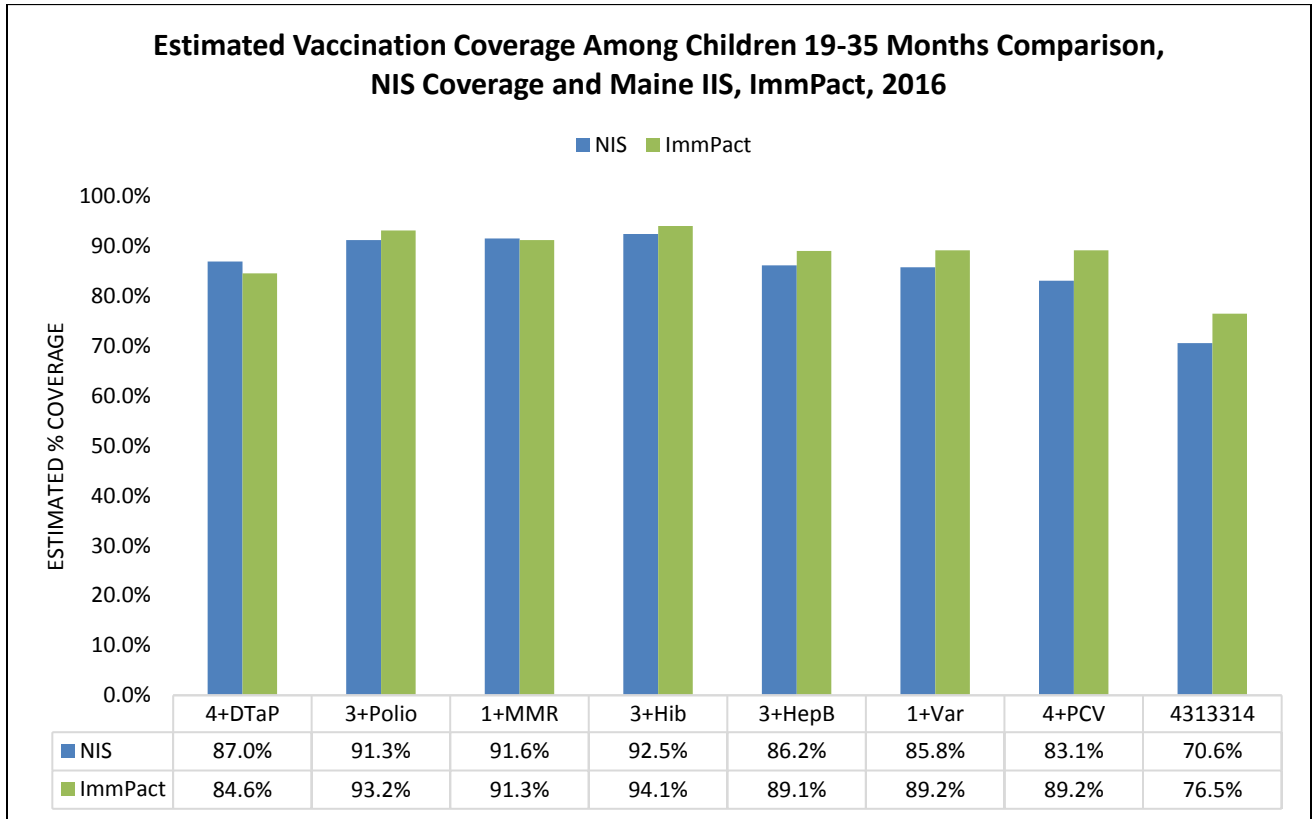
Table 1: Children 19-35 Months National Vaccine Coverage Estimate Ranking, Maine 2012-2016

National Vaccine Coverage Ranking for Maine Among Children 19-35 Months, 2012-2016					
Vaccine	2012	2013	2014	2015	2016
4+Dtap	8 th	10 th	1 st	1 st	9 th
3+Polio	15 th	20 th	8 th	12 th	34 th
1+MMR	27 th	30 th	1 st	3 rd	26 th
3+Hib	16 th	29 th	4 th	9 th	24 th
3+HepB	43 rd	51 st	15 th	49 th	48 th
1+Var	20 th	30 th	7 th	9 th	46 th
4+PCV	6 th	19 th	1 st	22 nd	24 th
2+HepA	27 th	20 th	12 th	43 rd	37 th
Rotavirus	37 th	30 th	20 th	38 th	24 th
HepB Birth Dose	25 th	40 th	35 th	41 st	45 th
4:3:1:3:3:1:4	12 th	28 th	1 st	29 th	26 th

Table 2: Children 19-35 Months New England Vaccine Coverage Estimate Ranking, Maine, 2016

New England Vaccine Coverage Ranking for Maine Among Children 19-35 Months, 2016						
Vaccine	Connecticut	Maine	Massachusetts	New Hampshire	Rhode Island	Vermont
4+Dtap	6 th	5 th	1 st	2 nd	3 rd	4 th
3+Polio	5 th	6 th	1 st	2 nd	4 th	3 rd
1+MMR	5 th	6 th	1 st	2 nd	3 rd	4 th
3+Hib	4 th	5 th	1 st	2 nd	6 th	3 rd
3+HepB	4 th	6 th	1 st	2 nd	5 th	3 rd
1+Var	2 nd	6 th	1 st	5 th	3 rd	4 th
4+PCV	4 th	6 th	1 st	5 th	2 nd	3 rd
2+HepA	1 st	5 th	3 rd	4 th	2 nd	6 th
Rotavirus	4 th	5 th	2 nd	6 th	1 st	3 rd
HepB Birth Dose	3 rd	5 th	1 st	4 th	2 nd	6 th
4:3:1:3:3:1:4	4 th	6 th	1 st	2 nd	5 th	3 rd

Figure 12: Children 19-35 Months Individual Antigen and 4:3:1:3:3:1:4 Vaccine Series Vaccine Coverage Estimate Comparison, NIS and Maine IIS, ImmPact, 2016



4+ DTaP ~ ≥4 doses of diphtheria and tetanus toxoids and acellular pertussis (DTaP) vaccine. ImmPact

3+ Polio ~ ≥3 doses of any poliovirus (Polio) vaccine.

1+MMR ~ ≥1 dose of measles-mumps-rubella (MMR) vaccine.

3+Hib ~ ≥3 doses of Haemophilus influenzae type b (Hib) vaccine.

3+ HepB ~ ≥3 doses of hepatitis B (HepB) vaccine.

1+Varicella ~ ≥ 1 dose of varicella (VAR) vaccine.

4+PCV ~ ≥ 4 doses of pneumococcal conjugate vaccine (PCV).

4:3:1:3:3:1:4 ~ A series comprised of all of the above individual antigens

Trend: Apart from DTaP and MMR, Maine's IIS rates are higher than NIS, considerably higher for the full series.

Note: Hib, HepB and PCV vaccines are not part of the vaccine requirements for school children in Maine.

The National Immunization Survey rates represent the 260 children randomly surveyed. ImmPact rates represent all fully integrated children in the Maine IIS 19-35 months of age, 9,530 total children.

2016 National Immunization Survey Childhood Talking Points

- Nationally, immunization rates dropped 1-4% for most antigens and overall vaccine series.
- Likewise, Maine saw a decline in vaccine rates (1-5%) for all antigens except Hib, Hepatitis A and Rotavirus.
- Our most significant decrease was in Varicella (93.8% to 85.8%)
- NIS has not determined the cause for such a drastic drop in rates and this was seen in most states surveyed.
- NIS stressed that when available, states should utilize their IIS (Maine Immunization Registry ImmPact) for immunization rates as these are up to date and more accurate than a random sampling.
- NIS surveyed only 260 Maine children, less than 3% of the same age cohort in ImmPact assessed on a quarterly basis (9560).