



Indiana State Department of Health

**Indiana State Department of Health
Immunization Division**

County Immunization Rate Assessment 2016

**Immunization Division
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Data Dictionary

CHIRP	Children and Hoosiers Immunization Registry Program, also referred to as the “Indiana Immunization Registry”; the software application used by the Indiana State Department of Health Immunization Division for providers to report immunization data for patients. (Version 5.16.1.2)
Registered in CHIRP	A record exists for the patient, regardless of data contained within that record. Many records are imported through Vital Records data, established in 2005, and contain only the patient’s name and address, with no immunization data.
Active Immunization Record	A patient record that is marked as “active” in CHIRP, and contains two or more vaccinations, excluding influenza.
CDC	Centers for Disease Control and Prevention
CoCASA	Comprehensive Clinic Assessment Software Application, developed by the CDC for use in assessments. (Version 11.0)
VTckS	Vaccine Tracking System, maintained by the CDC for use in managing vaccine ordering.
19-35 months of age	Patients born between 04/30/2013 and 08/31/2014.
4:3:1:3:3:1:4	Vaccine series assessed for 19-35 months of age: 4 DTaP, 3 Polio, 1 MMR, 3 Hib, 3 HepB, 1 Var, and 4 PCV.
DTaP	Vaccine to prevent diphtheria, tetanus, and acellular pertussis.
Polio	Vaccine to prevent poliomyelitis.
MMR	Vaccine to prevent measles, mumps, and rubella.
Hib	Vaccine to prevent Haemophilus influenzae type B.
HepB	Vaccine to prevent hepatitis B.
Var	Vaccine to prevent varicella (chicken pox).
PCV	Vaccine to prevent pneumococcal disease.
Fully Insured	A patient that has health insurance coverage that covers vaccine.
VFC	Vaccines for Children program, funded through the CDC that provides free vaccine for eligible children in the state of Indiana.
VFC Provider	An immunization provider who is enrolled in the VFC program, and therefore granted permission to order and administer vaccines covered under the VFC program to eligible persons.
VFC Eligible	A child age 0-18 is eligible to receive free vaccine under the VFC program if they are Medicaid eligible, uninsured, or have health insurance that does not cover vaccines. Also, any child who identifies as an American Indian or Alaskan Native, regardless of insurance status. (NOTE: Some of the children who are classified as “underinsured” can be funded with VFC vaccine at approved facilities*)
Not VFC Eligible	A child age 0-18 who has health insurance that covers vaccines or adults over the age of 18.

Underinsured* (Insurance Does Not Cover Vaccines)	Children who were recorded as “underinsured” by a provider in CHIRP. This should include children who have commercial (private) health insurance but the coverage does not include vaccines, children whose insurance covers only selected vaccines (these children are categorized as underinsured for non-covered vaccines only), or children whose insurance caps vaccine coverage at a certain amount (once that coverage amount is reached, these children are categorized as underinsured).
Eligible for Publicly Funded Vaccines	A child age 0-18 who is eligible for VFC vaccines, or any state-funded vaccines through 317 funds; those who are underinsured and receive non-VFC funded vaccine.
Not Eligible for Publicly Funded Vaccines	A child age 0-18 who is fully insured and therefore not eligible for any publicly funded vaccines or adults over the age of 18.
Valid Dose	A dose of vaccine that was given at the appropriate age and interval from any previous doses of vaccine according to manufacturer and ACIP guidelines.
Invalid Dose	A dose of vaccine that was not given at the appropriate age and interval from any previous doses of vaccine or at a minimum age. A patient is not considered to have immunity to the disease that the vaccine was for unless it was administered as a “valid dose”.

*Please refer to the ISDH Immunization Division Eligibility Policy for a detailed definition of underinsured.

Background

Each year, the Advisory Committee for Immunization Practices (ACIP) releases a recommended immunization schedule for childhood vaccination. These recommendations are supported by the Centers for Disease Control and Prevention (CDC). For each vaccine-preventable disease, there are particular rules and guidelines in the administration of the vaccine that, if followed, result in the optimal immune response in the patient. If these guidelines are not adhered to, in some cases, a child may be left unprotected. This can include scenarios where the child was administered a dose of vaccine incorrectly (invalid dose), or those who never receive the vaccine at all.

ACIP recommends children age 19 to 35 months to complete the 4:3:1:3:3:1:4 immunization series comprised of, at least four doses of diphtheria-tetanus-acellular pertussis (DTaP), at least three doses of polio, at least one dose of measles-mumps-rubella (MMR), at least three of Haemophilus influenzae B (Hib) depending on the brand used, at least three doses of hepatitis B, at least one dose of varicella antigens, and at least 4 doses of pneumococcal conjugate vaccine (PCV).

County level vaccination coverage estimates are important, both because public health issues often originate in small geographic areas and because certain public health actions are most effective at the local level. Previously in Indiana, it has not been possible to assess childhood vaccination series completion by county with the data available to the program. However with the use of the state immunization registry, Children and Hoosier Immunization Registry Program (CHIRP), more information is now available and a methodology has been developed for assessing children by county for completion of the complete ACIP recommended childhood immunization series (4:3:1:3:3:1:4).

It is increasingly important to measure children for completion of the entire series of childhood vaccines, rather than focusing on one antigen. In assessing the complete series, we can assist in improving immunization rates for at least 10 different vaccine-preventable diseases in

one measure. Improving the rate of completion for the entire series of childhood vaccines in those age 19-35 months can protect children from disease such as; diphtheria, pertussis, tetanus, polio, measles, mumps, rubella, varicella, pneumococcal disease, and *Haemophilus influenzae*.

Providing a measure of how well protected children are in specific communities assists immunization programs throughout the state to identify areas of greatest need, and allow targeting of resources. This may result in improving immunization rates in Indiana, which ultimately will help reduce the incidence of morbidity and mortality due to vaccine-preventable diseases.

Methods

Immunization data by county was obtained by extracting raw data for the birth cohort from CHIRP. This data was filtered to include only those children who had an active immunization record, as defined by this assessment (see Data Dictionary). Additionally, access queries were used to correct any children's records that were missing a county, populating the county based on other fields, such as the city or zip code. When a child's city or zip code could not be used, the facility that administered the most recent vaccine was used to populate the county of residence for the child.

After completing this data "clean-up", the remaining children were assessed in CHIRP using a report that has been embedded in the application to measure the number of records complete for the 4:3:1:3:3:1:4 immunization series for each county. Data exported from CHIRP included the number of patients assessed defined as only those that had an active immunization record and were born within the birth cohort for the corresponding age range (19-35 months as of 3/31/2016). Exported data from CHIRP was then imported into a database and analyzed using a software program provided by the CDC, Comprehensive Clinic Assessment Software Application (CoCASA).

Immunizations were assessed for completion of series based on age range using an algorithm embedded in CoCASA for determining which patients had completed the series with

valid doses of each vaccine. The 19-35 month age range was assessed for completion of the 4:3:1:3:3:1:4 series as of 03/31/2016.

Assessment reports for each county were run using a template in CoCASA based on the imported data from CHIRP that contained the total number of patients assessed and the total number of patients complete for the corresponding vaccine series as of 03/31/2016.

Immunization rates by county were calculated by dividing the total number of patients that were complete for the series by the total number of patients assessed. The number of patients assessed includes only those that have an active immunization record and were born within the birth cohort for the corresponding age range.

Each county's cohort was assessed by VFC eligibility category, being either "VFC-Eligible", "Not VFC-Eligible", or "Underinsured" (see Data Dictionary for definitions of each category). Any child that was missing a VFC eligibility category code from CHIRP was included in the overall rate for the county, but was not included in a VFC eligibility category assessment.

The 4:3:1:3:3:1:4 immunization completion rate for the state of Indiana was calculated as a weighted average of the county rates, based on each county's cohort of children assessed (see Appendix C for a detailed standard operating procedure for conducting this assessment).

The total number of VFC providers by county (enrolled as of June 10, 2016) was determined by exporting all provider data out of the Vaccine Tracking System (VTrckS), which is an application provided by CDC used to manage vaccine ordering and accountability.

Limitations

Provider's participation in the use of CHIRP for reporting immunizations was mandated in Indiana as of July 1, 2015, which means all medical providers in the State of Indiana who are authorized to administer immunizations must submit complete information to CHIRP within seven business days of administering an immunization to any patient 18 years of age and younger. However we have been notified that all providers are not compliant with entering data into CHIRP for various reasons. The data analyzed from CHIRP are considered to be

representative of the entire state; however, the true number of immunizations administered in Indiana remains unknown. Nonetheless, this assessment showed an increase from 2015 to 2016 among the number of providers assessed as well as an approximate increase of 11,000 immunization records assessed. Increasing these two factors will allow for better assessment of the number of immunizations administered in Indiana. See Table 3 for a detailed comparison between 2015 and 2016.

Many immunization providers in the state of Indiana use CHIRP to record their patient's immunization records. However, when a child transfers from one provider who uses CHIRP to another who does not use CHIRP, this child may appear to have an active immunization record that remains incomplete, even if the child did receive the remaining immunizations from the new provider. While this scenario contributes to the limitations of this analysis, the impact is thought to be minimal overall.

Upon breaking out the VFC eligibility categories among the cohort assessed, many were missing a VFC eligibility code from CHIRP. When missing, these children were still included in the county rate, but were not included in any eligibility category. Therefore, the rate among each VFC eligibility category is only representative of those children who had appropriate documentation of their VFC eligibility status in CHIRP at the time of the most recent vaccination. In the secondary methodology used, any child with a missing VFC eligibility code was included in the analysis for "Not Eligible for Publicly Funded Vaccines" category.

In the most recent NIS (National Immunization Survey) data from 2014, the overall immunization rate for the 4:3:1:3:3:1:4 series completion is 66.3% \pm 7.1 among 19-35 month old children. The birth cohort for this data is January 2011 through May 2013. This estimate is higher than that provided in this report for Indiana, 60%. The methodology used to generate the data contained in this report differs greatly from that used for the NIS determination of the immunization rate. NIS uses a random digit dialing survey, and contains a total sample size of approximately 400 surveys. Subjects are only selected to be included in the survey if they permit

the surveyor to obtain medical records and information to verify the survey responses. This presents a selection bias, as many individuals who are not up to date with vaccinations may refuse to give permission, as these records would then be excluded from the analysis.

Additionally, any child whose immunization history cannot be verified is excluded from the analysis.

Results

The full results of this assessment can be found in the data table in Appendix A. A comparison between 2015 and 2016 immunization completion rates by county, number assessed and population represented can be found in Appendix B. Table 1 below summarizes the state average, weighted by county population assessed and lists the 10 counties with lowest rates. A summary of the number of VFC providers by county is also provided. Table 2 below displays the state average with the counties with the 10 highest rates. A summary of the number of VFC providers by county is also provided. Table 3 below summarizes 2015 and 2016 Indiana assessment overall.

Table 1: Ten Lowest Rates by County

COUNTY	COMPLETION RATE FOR 4:3:1:3:3:1:4	NUMBER OF VFC PROVIDERS ENROLLED
~INDIANA	60%	780
ST. JOSEPH	42%	37
LAGRANGE	46%	7
DAVIESS	47%	9
HANCOCK	48%	8
GRANT	48%	11
MARSHALL	49%	12
ELKHART	49%	33
WELLS	50%	3
LAKE	52%	60
CLARK	52%	10

Table 2: Ten Highest Rates by County

COUNTY	COMPLETION RATE FOR 4:3:1:3:3:1:4	NUMBER OF VFC PROVIDERS ENROLLED
INDIANA	60%	780
LAWRENCE	80%	8
CASS	79%	4
KNOX	77%	3
WHITE	77%	4
MONROE	76%	5
PIKE	76%	2
BOONE	75%	9
SPENCER	75%	2
UNION	75%	1
SHELBY	74%	3

Table 3: Summary 2013 and 2015 Indiana Assessment

	2015	2016
Indiana completion rate for 4:3:1:3:3:1:4 series	56%	60%
Number assessed 19-35 months of age	96,602	107,157
Percentage of population represented	77%	85.3%
Number of Providers	779	780
Number/ rate assessed by Not VFC-Eligible	48,148/ 57%	44,495/ 64%
Number/ rate assessed by Underinsured	1,042/ 54%	726/ 62%
Number/ rate assessed by VFC-Eligible	43,766/ 57%	51,901/ 60%

The average immunization rate in Indiana counties is 60%, and the median (or midpoint) is 64.5%. There were 59 out of 92 counties that fell above the average of 60%, 4 that were equal to the average, and 29 that were below the average of 60%.

Discussion

The result for Indiana's immunization rate for 2016 is 60% coverage among children age 19-35 months which increased 4% relative to the 2015 rate of 56%. The increase in the number of children assessed and the percent of population represented could account for the increase in the overall rate.

According to 2015 US Census data by age, Indiana's population of 19-35 month old children should be approximately 12,686. After excluding any immunization records that were not considered to be "active", there were only 107,157 records assessed in this analysis. This represents 85.3% of the estimated population. The percentage of the population represented in Clay, Hendricks, Martin, Morgan, Ohio, Pike and Warren counties all exceed 100%. This is thought to be attributable to an increase in children age 19-35 months whom relocated to these counties after 2015 as well as the one year difference between the census data and the data extracted from CHIRP for analysis of the rates.

Recommendations

Achieving high vaccination rates is attainable and progress among the 19-35 months age group series completion, has been seen among many counties. Additional efforts are needed to ensure that health-care providers administer recommended vaccinations and use each visit as an opportunity to ensure each child is fully vaccinated on time with every recommended vaccine. Also, rather than targeting efforts towards children already past due, health departments need to implement targeted provider education to confirm kids are vaccinated before they fall within 19-35 months of age. Reducing the number of missed opportunities, and vaccinating at the 15 month appointment would greatly improve vaccination rates as well as number of children who are behind.

Conclusions

The results of this analysis demonstrate the need for further investigation into identifying contributing factors which might explain why children are not completing the childhood vaccination series by 19 months of age. Further details of each county's data should be assessed on a case by case basis to find pockets of need.

It can be observed that the counties with the highest immunization rates also have some of the lowest numbers of VFC providers in the county. One reason for this may be that a fewer number of providers have more control over maintaining patient records and performing activities to increase the number of children who complete the immunization series. It should be noted, however, that there may be many disadvantages to limiting immunization services to few providers in an isolated area as this could create potential barriers to accessing healthcare.

Evidence-based approaches to increasing immunization should be utilized, such as targeting populations in need, and reminder-recall activities, which prompt the guardians of children missing immunizations to contact their medical providers.

APPENDIX A: 2016 Data Summary. Completion rate of 4:3:1:3:3:1:4 immunization series among children 19-35 month with an active immunization record in CHIRP

COUNTY	NUMBER OF VFC PROVIDERS ENROLLED	2015 (Census) POPULATION 19-35 MONTHS OF AGE	NUMBER ASSESSED 19-35 MONTHS OF AGE	PERCENTAGE OF POPULATION REPRESENTED	COMPLETION RATE FOR 4:3:1:3:3:1:4	NUMBER NOT VFC Eligible	RATE AMONG NOT VFC-ELIGIBLE	NUMBER UNDERINSURED	RATE AMONG UNDERINSURED	NUMBER VFC Eligible	RATE AMONG VFC-ELIGIBLE
-INDIANA	780	125686	107157	85.3%	60%	44495	64%	726	62%	51901	60%
ADAMS	4	1015	647	63.7%	56%	181	55%	3	33%	412	56%
ALLEN	24	7857	6626	84.3%	56%	2204	61%	95	65%	3203	54%
BARTHOLOMEW	8	1599	1437	89.9%	73%	824	77%	6	67%	435	74%
BENTON	1	175	131	74.9%	68%	52	75%	1	0%	54	69%
BLACKFORD	3	236	186	78.8%	62%	50	56%	1	0%	114	68%
BOONE	9	1237	1126	91.0%	75%	719	76%	24	71%	257	76%
BROWN	2	193	165	85.5%	69%	70	73%	2	50%	84	69%
CARROLL	3	307	289	94.1%	71%	116	82%	4	75%	125	64%
CASS	4	731	595	81.4%	79%	159	84%	8	100%	388	79%
CLARK	10	2213	1902	85.9%	52%	800	56%	7	57%	948	52%
CLAY	5	465	477	102.6%	68%	177	79%	3	67%	287	63%
CLINTON	5	675	589	87.3%	66%	219	74%	0	N/A	314	65%
CRAWFORD	2	145	115	79.3%	57%	32	63%	2	50%	74	58%
DAVISS	9	801	649	81.0%	47%	156	58%	15	27%	437	44%
DEARBORN	12	768	556	72.4%	55%	234	59%	2	100%	231	62%
DECATUR	7	517	441	85.3%	73%	211	83%	9	78%	202	64%
DEKALB	9	765	641	83.8%	62%	259	69%	4	75%	320	55%
DELAWARE	11	1871	1608	85.9%	64%	729	66%	6	50%	679	62%
DUBOIS	4	833	713	85.6%	68%	320	74%	34	65%	236	65%
ELKHART	33	4530	3712	81.9%	49%	1442	55%	13	54%	2034	48%
FAYETTE	4	391	301	77.0%	70%	67	84%	12	42%	213	69%
FLOYD	8	1313	1173	89.3%	56%	540	59%	6	50%	556	55%
FOUNTAIN	2	311	275	88.4%	60%	113	70%	5	40%	125	53%
FRANKLIN	1	392	211	53.8%	70%	82	68%	2	50%	122	72%
FULTON	2	377	338	89.7%	64%	138	71%	13	77%	168	60%
GIBSON	8	629	548	87.1%	73%	288	80%	6	83%	229	66%

COUNTY	NUMBER OF VFC PROVIDERS ENROLLED	2015 (Census) POPULATION 19-35 MONTHS OF AGE	NUMBER ASSESSED 19-35 MONTHS OF AGE	PERCENTAGE OF POPULATION REPRESENTED	COMPLETION RATE FOR 4:3:1:3:3:1:4	NUMBER NOT VFC Eligible	RATE AMONG NOT VFC-ELIGIBLE	NUMBER UNDERINSURED	RATE AMONG UNDERINSURED	NUMBER VFC Eligible	RATE AMONG VFC-ELIGIBLE
GRANT	11	1163	1025	88.1%	48%	299	54%	1	0%	678	45%
GREENE	4	493	374	75.9%	71%	162	76%	2	0%	200	69%
HAMILTON	21	6107	5117	83.8%	57%	3735	60%	16	63%	618	69%
HANCOCK	8	1161	1143	98.4%	48%	686	48%	12	67%	256	68%
HARRISON	5	645	554	85.9%	56%	262	58%	2	50%	239	58%
HENDRICKS	10	2719	2722	100.1%	54%	1420	55%	4	50%	605	63%
HENRY	6	760	643	84.6%	73%	247	71%	7	71%	353	80%
HOWARD	6	1529	1293	84.6%	70%	548	68%	9	89%	559	75%
HUNTINGTON	5	643	558	86.8%	61%	232	62%	7	71%	271	62%
JACKSON	3	991	752	75.9%	62%	289	66%	3	67%	385	67%
JASPER	3	572	499	87.2%	67%	240	74%	12	75%	219	61%
JAY	4	438	353	80.6%	68%	126	73%	11	64%	194	66%
JEFFERSON	3	500	496	99.2%	68%	87	61%	2	100%	324	72%
JENNINGS	2	530	449	84.7%	71%	189	74%	3	33%	222	73%
JOHNSON	20	2821	2599	92.1%	61%	1455	62%	17	53%	904	63%
KNOX	3	722	633	87.7%	77%	270	87%	10	80%	342	71%
KOSCIUSKO	7	1560	1217	78.0%	59%	520	59%	3	100%	579	62%
LAGRANGE	7	1151	621	54.0%	46%	148	68%	1	0%	451	39%
LAKE	60	9113	7748	85.0%	52%	2843	60%	46	52%	4414	49%
LAPORTE	11	1983	1808	91.2%	58%	670	65%	2	0%	1106	54%
LAWRENCE	8	759	613	80.8%	80%	274	84%	0	N/A	333	78%
MADISON	21	2190	1933	88.3%	66%	760	66%	4	75%	1029	70%
MARION	112	21149	17895	84.6%	60%	5624	58%	26	42%	10708	64%
MARSHALL	12	850	682	80.2%	49%	315	55%	10	70%	283	47%
MARTIN	1	196	215	109.7%	60%	39	74%	14	57%	135	57%
MIAMI	3	526	498	94.7%	71%	156	63%	9	67%	299	76%
MONROE	5	1909	1651	86.5%	76%	888	83%	4	75%	746	69%
MONTGOMERY	7	736	600	81.5%	69%	225	70%	5	40%	304	70%

COUNTY	NUMBER OF VFC PROVIDERS ENROLLED	2015 (Census) POPULATION 19-35 MONTHS OF AGE	NUMBER ASSESSED 19-35 MONTHS OF AGE	PERCENTAGE OF POPULATION REPRESENTED	COMPLETION RATE FOR 4:3:1:3:3:1:4	NUMBER NOT VFC Eligible	RATE AMONG NOT VFC-ELIGIBLE	NUMBER UNDERINSURED	RATE AMONG UNDERINSURED	NUMBER VFC Eligible	RATE AMONG VFC-ELIGIBLE
MORGAN	8	1133	1140	100.6%	70%	504	71%	2	0%	531	68%
NEWTON	2	192	166	86.5%	65%	60	78%	3	67%	94	57%
NOBLE	3	908	794	87.4%	66%	333	70%	9	89%	394	63%
OHIO	2	84	109	129.8%	54%	31	48%	0	N/A	56	63%
ORANGE	5	360	342	95.0%	63%	90	67%	5	100%	209	63%
OWEN	3	301	239	79.4%	73%	91	76%	2	0%	144	73%
PARKE	3	317	189	59.6%	61%	70	66%	1	100%	108	61%
PERRY	2	303	206	68.0%	72%	98	80%	1	0%	95	69%
PIKE	2	211	232	110.0%	76%	97	79%	5	60%	111	79%
PORTER	12	2718	2436	89.6%	63%	1441	66%	10	60%	925	60%
POSEY	5	429	355	82.8%	70%	203	75%	12	50%	127	64%
PULASKI	2	230	206	89.6%	62%	63	65%	4	100%	129	59%
PUTNAM	5	566	475	83.9%	60%	161	60%	2	50%	215	63%
RANDOLPH	3	445	393	88.3%	62%	196	57%	4	75%	174	68%
RIPLEY	5	520	400	76.9%	71%	185	77%	2	100%	191	66%
RUSH	5	272	237	87.1%	65%	86	67%	4	50%	129	71%
SCOTT	4	428	347	81.1%	56%	101	61%	4	75%	228	54%
SHELBY	3	756	707	93.5%	74%	252	67%	7	57%	379	81%
SPENCER	2	334	228	68.3%	75%	114	78%	1	100%	90	73%
STARKE	7	376	310	82.4%	54%	113	65%	2	50%	173	51%
STEBEN	2	548	480	87.6%	56%	173	64%	2	0%	281	51%
STJOSEPH	37	5269	4386	83.2%	42%	1738	42%	31	58%	2078	46%
SULLIVAN	4	334	301	90.1%	57%	152	66%	0	N/A	135	52%
SWITZERLAND	1	195	121	62.1%	57%	19	63%	1	100%	79	61%
TIPPECANOE	17	3428	3045	88.8%	73%	1175	78%	29	69%	1262	73%
TIPTON	1	192	192	100.0%	59%	62	65%	2	50%	78	69%
UNION	1	88	48	54.5%	75%	10	80%	0	N/A	36	78%
VANDEBURGH	20	3438	2886	83.9%	71%	1387	75%	9	67%	1391	67%

COUNTY	NUMBER OF VFC PROVIDERS ENROLLED	2015 (Census) POPULATION 19-35 MONTHS OF AGE	NUMBER ASSESSED 19-35 MONTHS OF AGE	PERCENTAGE OF POPULATION REPRESENTED	COMPLETION RATE FOR 4:3:1:3:1:4	NUMBER NOT VFC Eligible	RATE AMONG NOT VFC-ELIGIBLE	NUMBER UNDERINSURED	RATE AMONG UNDERINSURED	NUMBER VFC Eligible	RATE AMONG VFC-ELIGIBLE
VERMILLION	4	263	206	78.3%	66%	88	72%	1	100%	110	65%
VIGO	21	1899	1631	85.9%	58%	684	63%	5	40%	899	57%
WABASH	2	495	441	89.1%	55%	165	62%	10	50%	238	52%
WARREN	1	131	149	113.7%	72%	68	79%	3	33%	61	69%
WARRICK	7	1020	945	92.6%	71%	617	74%	2	100%	286	66%
WASHINGTON	4	503	362	72.0%	62%	149	63%	3	67%	200	63%
WAYNE	5	1194	953	79.8%	71%	281	74%	3	67%	627	72%
WELLS	3	536	440	82.1%	50%	183	44%	9	56%	186	56%
WHITE	4	449	397	88.4%	77%	133	86%	4	75%	222	74%
WHITLEY	5	559	521	93.2%	70%	231	73%	7	71%	227	70%

APPENDIX B. Immunization series completion rate for 4:3:1:3:3:1:4 among children aged 19-35 months, by county, number assessed, population represented, 2015 & 2016

COUNTY	(2015 Census) POPULATION 19-35 MONTHS OF AGE	Number Assessed 19-35 Months of Age		Percentage of Population Represented		Completion Rate for 4:3:1:3:3:1:4	
		2015	2016	2015	2016	2015	2016
-INDIANA	125686	96602	107157	77%	85%	56%	60%
ADAMS	1015	613	647	60%	64%	48%	56%
ALLEN	7857	5528	6626	70%	84%	39%	56%
BARTHOLOMEW	1599	1421	1437	89%	90%	66%	73%
BENTON	175	115	131	66%	75%	73%	68%
BLACKFORD	236	186	186	79%	79%	63%	62%
BOONE	1237	918	1126	74%	91%	69%	75%
BROWN	193	166	165	86%	85%	69%	69%
CARROLL	307	268	289	87%	94%	71%	71%
CASS	731	602	595	82%	81%	79%	79%
CLARK	2213	1706	1902	77%	86%	52%	52%
CLAY	465	398	477	86%	103%	57%	68%
CLINTON	675	561	589	83%	87%	72%	66%
CRAWFORD	145	106	115	73%	79%	54%	57%
DAVISS	801	588	649	73%	81%	47%	47%
DEARBORN	768	429	556	56%	72%	64%	55%
DECATUR	517	446	441	86%	85%	67%	73%
DEKALB	765	546	641	71%	84%	55%	62%
DELAWARE	1871	1583	1608	85%	86%	60%	64%
DUBOIS	833	633	713	76%	86%	71%	68%
ELKHART	4530	2995	3712	66%	82%	50%	49%
FAYETTE	391	294	301	75%	77%	69%	70%
FLOYD	1313	980	1173	75%	89%	61%	56%
FOUNTAIN	311	220	275	71%	88%	63%	60%

COUNTY	(2015 Census) POPULATION 19-35 MONTHS OF AGE	Number Assessed 19-35 Months of Age		Percentage of Population Represented		Completion Rate for 4:3:1:3:3:1:4	
		2015	2016	2015	2016	2015	2016
FRANKLIN	392	228	211	58%	54%	64%	70%
FULTON	377	291	338	77%	90%	57%	64%
GIBSON	629	470	548	75%	87%	71%	73%
GRANT	1163	991	1025	85%	88%	39%	48%
GREENE	493	369	374	75%	76%	68%	71%
HAMILTON	6107	3263	5117	53%	84%	52%	57%
HANCOCK	1161	937	1143	81%	98%	40%	48%
HARRISON	645	516	554	80%	86%	47%	56%
HENDRICKS	2719	2250	2722	83%	100%	51%	54%
HENRY	760	587	643	77%	85%	71%	73%
HOWARD	1529	1345	1293	88%	85%	58%	70%
HUNTINGTON	643	535	558	83%	87%	52%	61%
JACKSON	991	785	752	79%	76%	61%	62%
JASPER	572	476	499	83%	87%	58%	67%
JAY	438	314	353	72%	81%	62%	68%
JEFFERSON	500	432	496	86%	99%	66%	68%
JENNINGS	530	436	449	82%	85%	66%	71%
JOHNSON	2821	2339	2599	83%	92%	57%	61%
KNOX	722	631	633	87%	88%	81%	77%
KOSCIUSKO	1560	1236	1217	79%	78%	56%	59%
LAGRANGE	1151	569	621	49%	54%	46%	46%
LAKE	9113	6827	7748	75%	85%	50%	52%
LAPORTE	1983	1510	1808	76%	91%	61%	58%
LAWRENCE	759	617	613	81%	81%	76%	80%
MADISON	2190	1864	1933	85%	88%	63%	66%
MARION	21149	16794	17895	79%	85%	54%	60%
MARSHALL	850	688	682	81%	80%	53%	49%

COUNTY	(2015 Census) POPULATION 19-35 MONTHS OF AGE	Number Assessed 19-35 Months of Age		Percentage of Population Represented		Completion Rate for 4:3:1:3:3:1:4	
		2015	2016	2015	2016	2015	2016
MARTIN	196	219	215	112%	110%	58%	60%
MIAMI	526	491	498	93%	95%	66%	71%
MONROE	1909	1637	1651	86%	86%	76%	76%
MONTGOMERY	736	539	600	73%	82%	65%	69%
MORGAN	1133	1064	1140	94%	101%	64%	70%
NEWTON	192	176	166	92%	86%	60%	65%
NOBLE	908	675	794	74%	87%	61%	66%
OHIO	84	79	109	94%	130%	66%	54%
ORANGE	360	343	342	95%	95%	58%	63%
OWEN	301	230	239	76%	79%	71%	73%
PARKE	317	184	189	58%	60%	48%	61%
PERRY	303	233	206	77%	68%	70%	72%
PIKE	211	221	232	105%	110%	80%	76%
PORTER	2718	2338	2436	86%	90%	66%	63%
POSEY	429	358	355	83%	83%	71%	70%
PULASKI	230	172	206	75%	90%	72%	62%
PUTNAM	566	431	475	76%	84%	47%	60%
RANDOLPH	445	388	393	87%	88%	57%	62%
RIPLEY	520	371	400	71%	77%	56%	71%
RUSH	272	226	237	83%	87%	69%	65%
SCOTT	428	324	347	76%	81%	62%	56%
SHELBY	756	684	707	90%	94%	72%	74%
SPENCER	334	205	228	61%	68%	71%	75%
STARKE	376	301	310	80%	82%	58%	54%
STEUBEN	548	430	480	78%	88%	56%	56%
STJOSEPH	5269	3870	4386	73%	83%	45%	42%
SULLIVAN	334	279	301	84%	90%	36%	57%

COUNTY	(2015 Census) POPULATION 19-35 MONTHS OF AGE	Number Assessed 19- 35 Months of Age		Percentage of Population Represented		Completion Rate for 4:3:1:3:3:1:4	
		2015	2016	2015	2016	2015	2016
SWITZERLAND	195	89	121	46%	62%	54%	57%
TIPPECANOE	3428	2966	3045	87%	89%	72%	73%
TIPTON	192	134	192	70%	100%	54%	59%
UNION	88	57	48	65%	55%	72%	75%
VANDEBURGH	3438	2794	2886	81%	84%	70%	71%
VERMILLION	263	193	206	73%	78%	50%	66%
VIGO	1899	1270	1631	67%	86%	44%	58%
WABASH	495	457	441	92%	89%	45%	55%
WARREN	131	122	149	93%	114%	76%	72%
WARRICK	1020	930	945	91%	93%	69%	71%
WASHINGTON	503	341	362	68%	72%	62%	62%
WAYNE	1194	990	953	83%	80%	76%	71%
WELLS	536	340	440	63%	82%	43%	50%
WHITE	449	402	397	90%	88%	78%	77%
WHITLEY	559	447	521	80%	93%	59%	70%

APPENDIX C: Standard Operating Procedure (SOP) for Performing County Rate Assessment

1. Create and save a 'CoCASA Export File' from CHIRP for each county.
 - a. Login to CHIRP, click "CASA Export" from the left sidebar.
 - b. Enter the patient date of birth range.
 - c. Select the county.
 - d. Leave all other settings at their default state, and click "Create Export File".
 - i. The default settings should be:
 1. CoCASA Version: CoCASA v2.1 and up,
 2. Export by: CPT code,
 3. Output Type: Text File (Download)
 - e. After export file has generated, save the file named for the county exported.

Figure 1

Export to CASA

Patient Status: Active Only Inactive Only All

Patient Birth Date Range: **From:** 04/30/2012 **Through:** 08/31/2013

Limit Export by

Organization (IRMS) --select--

Facility --select--

Facility Group --select--

Do Not Limit

VFC PIN --select--

Primary Care Physician --select--

Vaccinator --select--

Program --select--

Health Plan --select--

County/Parish ADAMS

Zip Code

District/Region

CASA Version: CoCASA v1.3 - v2 CoCASA v2.1 and up

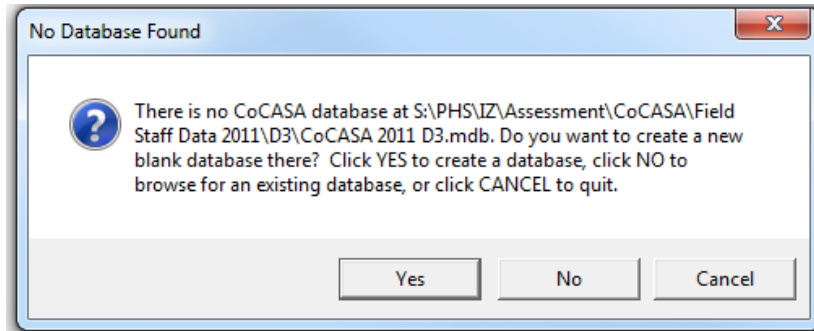
Export by: CPT Code CVX Code

Output Type: Text File (Download) Text File (Server Job) HTML (Text Area)

Clear Create Export File View Export Log

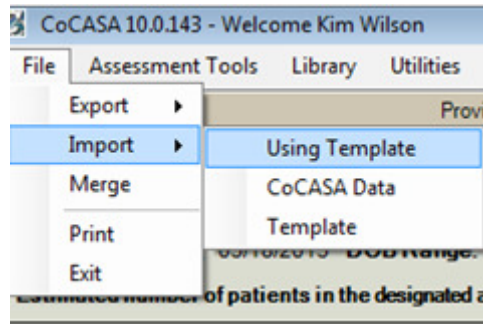
2. Import each export file into a new, blank CoCASA database.
 - a. Rename an existing CoCASA database. Then, open CoCASA. A message will appear as shown below:

Figure 2



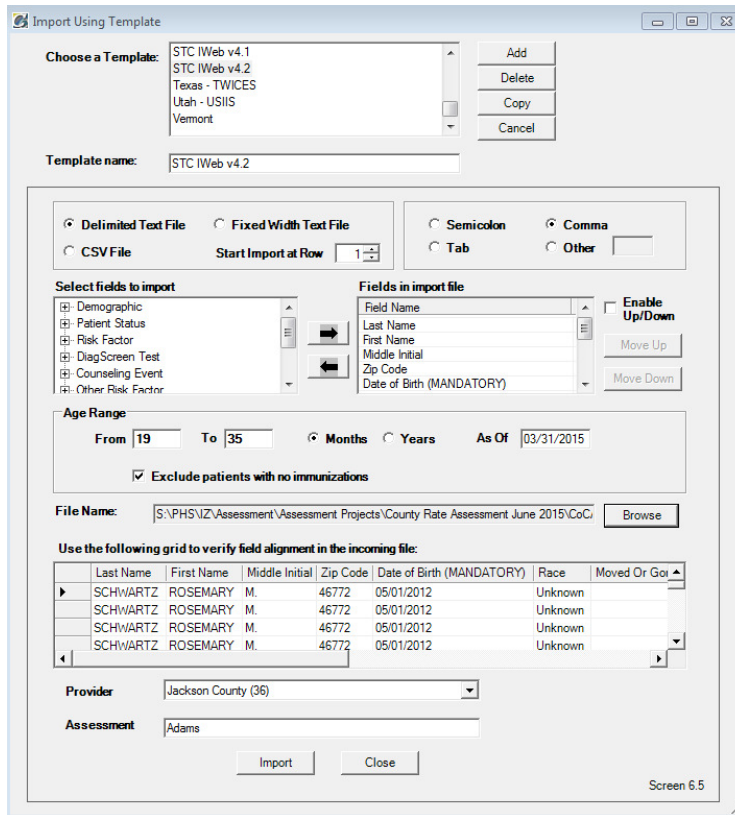
- b. Click “Yes” on the dialog box to create a new blank database. Name the new database for the assessment it is being created for.
- c. Open CoCASA, directing it toward the new database created for the assessment.
- d. Set up a provider named “County Rate Assessment” with the address and phone number for ISDH.
- e. Click on File, Import, Using Template.

Figure 3



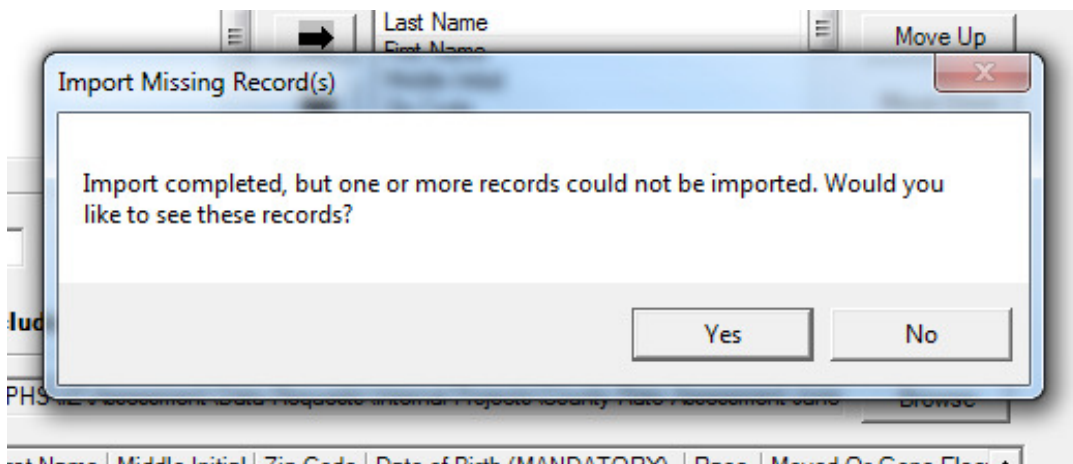
- f. Choose the template to import from, STC IWeb v4.2.
- g. Enter the date of birth range for the cohort, including the “as of” date, indicating what age the subjects should be at the time of assessment.
- h. Click on “Exclude patients with no immunizations”.
- i. Click “Browse” and select the file saved for the county being imported.
- j. Choose the provider “County Rate Assessment”, and enter the county name for “Assessment”.
- k. Click “Import”.

Figure 4



1. After the records have finished importing, if there was at least one record excluded, the following message will display:

Figure 4



- m. Click Yes, then save the text file for later reference. This can be used in working with CHIRP staff to “clean up” the data.
 - n. Complete all steps for each county in the state.
3. Make a copy of the complete database after importing all county export files.
4. Open the Access database that contains the county assessment data.
 - a. Double click the file in Windows Explorer.

- b. Upon opening, you will be prompted to enter a password, enter “COCASAnip”. This is case-sensitive.
- 5. Exclude patients from the patient table that do not have 2 or more vaccines excluding influenza.
 - a. First, run a query to create a new “tblDoses” table containing all doses excluding influenza. (copy and paste the SQL script shown in Figure 6)
 - i. The vaccine code for the influenza family is “11”.
 - ii. Run the query, naming the table “tblDosesNoFlu”.

Figure 6

```
SELECT tblDoses.AntigenID, tblDoses.DateGiven, tblDoses.DoseNumber, tblDoses.Location,
tblDoses.LotNumber, tblDoses.ManufacturerID, tblDoses.PatientID, tblDoses.TradeNameID INTO
tblDosesNoFlu
FROM tblDoses
GROUP BY tblDoses.AntigenID, tblDoses.DateGiven, tblDoses.DoseNumber, tblDoses.Location,
tblDoses.LotNumber, tblDoses.ManufacturerID, tblDoses.PatientID, tblDoses.TradeNameID
HAVING (((tblDoses.AntigenID) Not Like "11"));
```

- b. Next, run another query to create a new “tblDoses” table containing all doses excluding those for patients with fewer than 2 vaccines (excluding flu). (copy and paste the SQL script shown in Figure 7)
- c. Run the query, naming the table “tblDosesNoFlu2ormore”

NOTE: THIS QUERY WILL TAKE APPROXIMATELY 48 HOURS TO RUN

Figure 7

```
SELECT tblDosesNoFlu.AntigenID, tblDosesNoFlu.DateGiven, tblDosesNoFlu.DoseNumber,
tblDosesNoFlu.Location, tblDosesNoFlu.LotNumber, tblDosesNoFlu.ManufacturerID,
tblDosesNoFlu.PatientID, tblDosesNoFlu.TradeNameID INTO tblDosesNoFlu2ormore
FROM tblDosesNoFlu
GROUP BY tblDosesNoFlu.AntigenID, tblDosesNoFlu.DateGiven, tblDosesNoFlu.DoseNumber,
tblDosesNoFlu.Location, tblDosesNoFlu.LotNumber, tblDosesNoFlu.ManufacturerID,
tblDosesNoFlu.PatientID, tblDosesNoFlu.TradeNameID
HAVING (((tblDosesNoFlu.PatientID) In (SELECT [PatientID] FROM [tblDoses] As Tmp GROUP
BY [PatientID] HAVING Count(*)>1 )));
```

- d. Now create a new table for unique patient IDs contained in the “tblDosesNoFlu2ormore” table.
 - i. Copy and paste the SQL script shown in Figure 8.
 - ii. Run the query, naming the table “tblUniquePatients”

Figure 8

```
SELECT DISTINCTROW tblDosesNoFlu2ormore.PatientID INTO tblUniquePatients
FROM tblDosesNoFlu2ormore
GROUP BY tblDosesNoFlu2ormore.PatientID;
```

- e. Finally, run a delete query to delete the patient records from the “tblPatients” table that are not contained in the unique patients table.
 - i. Copy and paste the SQL script shown in Figure 9.
 - ii. Run the query, this will update the “tblPatients” table by deleting those not contained in tblUniquePatients.

Figure 9

```
DELETE Delete AS Expr1, tblPatients.[PatientID]
FROM tblPatients
WHERE (((tblPatients.[PatientID]) Not In (Select PatientID from tblUniquePatients)));
```

- 6. Create a variable for “VFC-Eligible” in the “tblVFCEligibilityCatCodes” table
 - a. Click underneath the record for 5-Uninsured to create a new record
 - b. Enter 6 for Sort Order, 6 for VFCEligibilityCatID, and “VFC-Eligible” under VFCEligibilityCatName. (see Figure 10)

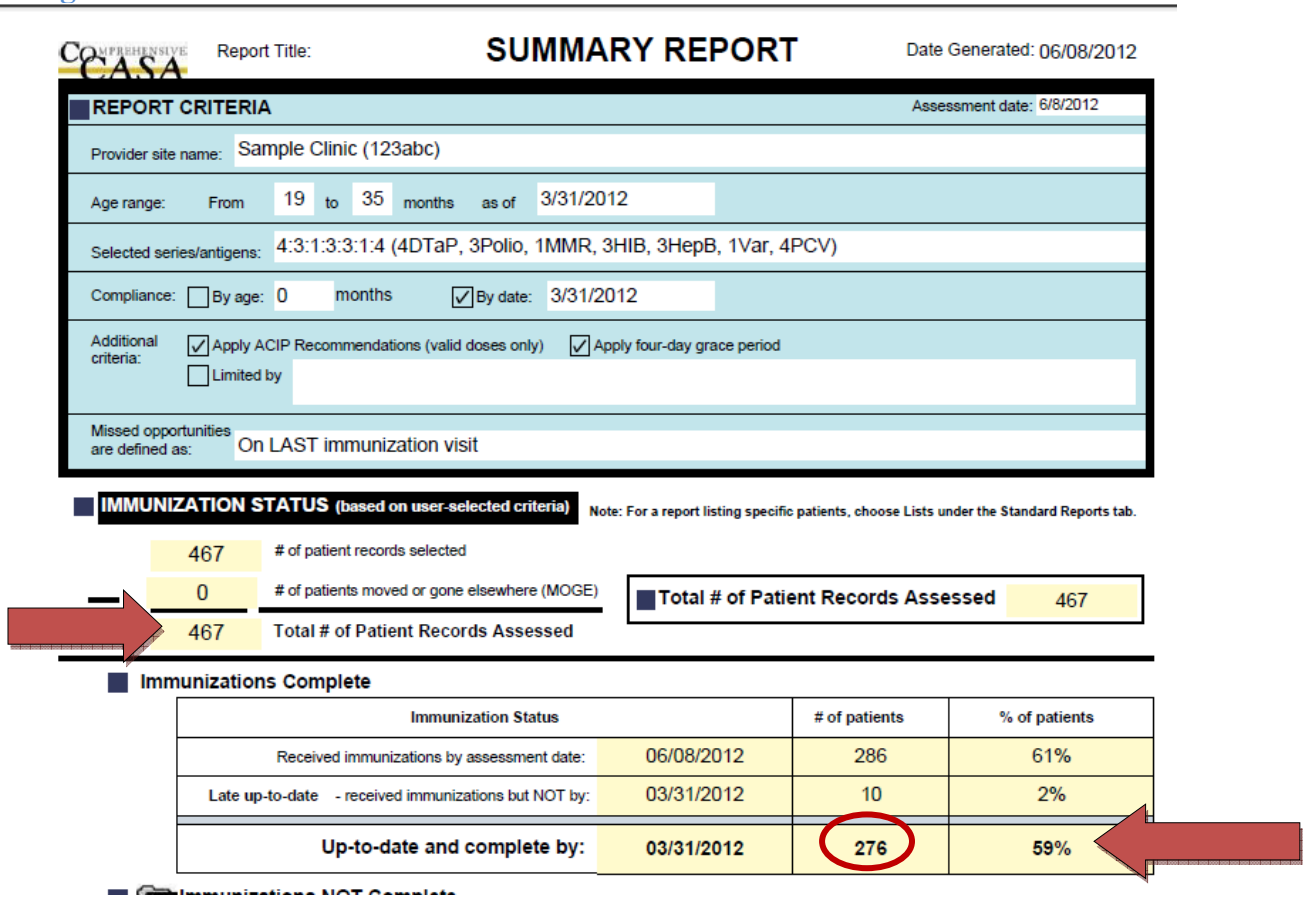
Figure 10

SortOrder	VFCEligibilit	VFCEligibilityCatName	Add New Field
0			
1	1	Medicaid	
2	2	American Indian or Alaska Native	
3	3	Not VFC-Eligible	
4	4	Underinsured	
5	5	Uninsured	
6	6	VFC-Eligible	
*			

- 7. Update patient eligibility codes in the “tblPatientsPatientStatuses” to VFC-Eligible for all relevant categories.
 - a. Find all values in the “VFCEligibilityCatID” field that are “1”, “2”, or “5” and replace with “6”. This will put all VFC-Eligible categories into one category.
 - b. Be sure to save the database after making these changes, then close it.
- 8. Open CoCASA and begin running a “Summary Report” (see Figure 11) for each county, for each VFC eligibility category to be assessed.
 - a. Click on the “Reports” tab. Select the assessment to run the report for; these should be named for the county the data came from.
 - b. Select “Summary Report” from the left sidebar, then enter the report criteria.
 - i. Age Range: 19-35 Months as of 03/31/2015
 - ii. Antigens-Series: 4:3:1:3:3:1:4
 - iii. Compliance: by date: 03/31/2015

- iv. Limit by a user-selected variable: after checking this box, click the button to open up the choices of variables. Choose the VFC Eligibility category you are running the report for.
 - v. Click “Run Report”. When report is complete, click on “Export” and save the report.
- c. In most cases, you will run 4 different reports for each county. One without choosing the user selected variable (to capture all children), one with “VFC-Eligible” as a choice, one with “Not VFC-Eligible”, and one with “Underinsured”.
9. Use the data provided on the county reports to manually populate a spreadsheet of values for each county (shown in Figure 11). Key fields to include are:
- a. Number of children included in the assessment
 - b. Number of children who were up to date
 - c. Percentage of children who are up to date
10. These fields should be populated for each eligibility category assessed.

Figure 11



References

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