Indiana State Department of Health

Indiana State Department of Health

Immunization Division

County Immunization Rate Assessment

2015

Immunization Division

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Contents

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 5.15.2.0.1)
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 10.0.143)
VTrckS	Vaccine Tracking System, maintained by the CDC for use in managing vaccine ordering.
19-35 months of age	Patients born between 04/30/2012 and 08/31/2013.
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 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 3-31-2015). 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 03/31/2015.

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 03/31/2015.

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 April 23, 2015) 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

At the time of analysis, provider participation in the use of CHIRP for reporting immunizations was not mandated in Indiana, and therefore a number of providers had not begun reporting this data. Beginning, July 1, 2015, 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. 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 did show a decrease from 2013 to 2015 among the number of providers assessed as well as an approximate increase of 22,000 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 2013 and 2015.

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 2013, the overall immunization rate for the 4:3:1:3:3:1:4 series completion is 68.5% ± 6.7 among 19-35 month old children. The birth cohort for this data is January 2010 through May 2012. This estimate is higher than that provided in this report for Indiana, 56%. 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 2013 and 2015 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 2013 and 2015 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	**56%**	**779**
SULLIVAN	36%	4
ALLEN	39%	20
GRANT	39%	11
HANCOCK	40%	9
WELLS	43%	4
VIGO	44%	21
ST. JOSEPH	45%	38
WABASH	45%	2
LAGRANGE	46%	7
PUTNAM	47%	6

Table 2: Ten Highest Rates by County

COUNTY	COMPLETION RATE FOR 4:3:1:3:3:1:4	NUMBER OF VFC PROVIDERS ENROLLED
INDIANA	**56%**	**779**
KNOX	81%	3
PIKE	80%	1
CASS	79%	4
WHITE	78%	4
LAWRENCE	76%	8
MONROE	76%	5
WARREN	76%	1
WAYNE	76%	6
BENTON	73%	1
CLINTON	72%	5

Table 3: Summary 2013 and 2015 Indiana Assessment

	2015	2013
Indiana completion rate for 4:3:1:3:3:1:4 series	56%	47%
Number assessed 19-35 months of age	96,602	74,843
Percentage of population represented	77%	60%
Number of Providers	779	944
Number/ rate assessed by Not VFC-Eligible	48,148/ 57%	35,968/ 35%
Number/ rate assessed by Underinsured	1,042/ 54%	2,833/ 65%
Number/ rate assessed by VFC-Eligible	43,766/ 57%	30,855/ 56%

The average immunization rate in Indiana counties is 56%, and the median (or midpoint) is 61%. There were 62 out of 92 counties that fell above the average of 56%, 3 that were equal to the average, and 27 that were below the average of 56%.

Discussion

The result for Indiana's immunization rate for 2015 is 56% coverage among children age 19-35 months which increased 9% relative to the 2013 rate of 47%. 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 2013 US Census data by age, Indiana's population of 19-35 month old children should be approximately 125,664. After excluding any immunization records that were not considered to be "active", there were only 96,602 records assessed in this analysis. This represents 77% of the estimated population. The percentage of the population represented in Martin, Ohio, Orange and Pike 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 2013 as well as the two 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: 2015 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	2013 (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	779	125664	96602	77%	56%	48148	57%	1042	54%	43766	57%
ADAMS	4	962	613	64%	48%	188	38%	4	75%	392	51%
ALLEN	20	7890	5528	70%	39%	2360	31%	111	60%	2889	45%
BARTHOLOMEW	8	1509	1421	94%	66%	1009	70%	16	69%	345	61%
BENTON	1	165	115	70%	73%	71	82%	5	60%	36	58%
BLACKFORD	3	234	186	79%	63%	71	58%	1	0%	106	67%
BOONE	9	1180	918	78%	69%	668	71%	17	82%	186	67%
BROWN	2	185	166	90%	69%	71	76%	7	43%	78	63%
CARROLL	2	292	268	92%	71%	137	69%	5	60%	119	71%
CASS	4	761	602	79%	79%	184	73%	12	100%	374	82%
CLARK	11	2146	1706	79%	52%	752	52%	5	80%	881	53%
CLAY	5	497	398	80%	57%	157	52%	3	33%	222	61%
CLINTON	5	624	561	90%	72%	283	73%	1	100%	263	73%
CRAWFORD	3	152	106	70%	54%	17	65%	5	83%	76	49%
DAVIESS	9	810	588	73%	47%	111	57%	17	59%	417	43%
DEARBORN	9	827	429	52%	64%	184	65%	3	0%	200	65%
DECATUR	7	459	446	97%	67%	201	74%	18	61%	193	62%
DEKALB	7	769	546	71%	55%	185	61%	7	57%	317	54%
DELAWARE	10	1850	1583	86%	60%	862	60%	29	55%	668	61%
DUBOIS	4	797	633	79%	71%	256	73%	65	74%	205	64%
ELKHART	32	4509	2995	66%	50%	912	51%	18	56%	1927	51%
FAYETTE	4	376	294	78%	69%	87	70%	12	83%	185	70%
FLOYD	8	1336	980	73%	61%	417	67%	10	40%	502	57%
FOUNTAIN	3	291	220	76%	63%	86	66%	22	45%	106	64%
FRANKLIN	1	377	228	60%	64%	94	63%	5	80%	122	65%
FULTON	3	368	291	79%	57%	97	62%	15	80%	156	54%
GIBSON	9	651	470	72%	71%	263	74%	4	75%	183	68%

COUNTY	NUMBER OF VFC PROVIDERS ENROLLED	2013 (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	1145	991	87%	39%	265	40%	5	20%	669	38%
GREENE	4	524	369	70%	68%	174	71%	1	0%	176	64%
HAMILTON	21	6157	3263	53%	52%	2730	52%	19	63%	367	62%
HANCOCK	9	1188	937	79%	40%	726	37%	14	79%	144	64%
HARRISON	6	637	516	81%	47%	235	46%	5	40%	261	49%
HENDRICKS	10	2848	2250	79%	51%	1735	48%	3	67%	450	65%
HENRY	6	688	587	85%	71%	271	69%	5	20%	291	76%
HOWARD	6	1483	1345	91%	58%	768	50%	11	82%	541	70%
HUNTINGTON	5	616	535	87%	52%	215	50%	6	83%	300	55%
JACKSON	3	910	785	86%	61%	382	54%	4	75%	387	68%
JASPER	3	583	476	82%	58%	259	58%	15	87%	188	56%
JAY	4	473	314	66%	62%	136	62%	22	64%	141	60%
JEFFERSON	4	492	432	88%	66%	82	62%	5	60%	306	68%
JENNINGS	2	511	436	85%	66%	272	65%	3	33%	151	69%
JOHNSON	19	2849	2339	82%	57%	1438	56%	27	52%	753	61%
KNOX	3	712	631	89%	81%	219	89%	11	82%	327	77%
KOSCIUSKO	7	1489	1236	83%	56%	486	63%	16	63%	630	53%
LAGRANGE	7	1112	569	51%	46%	143	58%	3	67%	409	42%
LAKE	68	9314	6827	73%	50%	3042	49%	73	58%	3458	52%
LAPORTE	11	1989	1510	76%	61%	550	65%	10	50%	881	59%
LAWRENCE	8	746	617	83%	76%	252	83%	3	67%	324	71%
MADISON	21	2303	1864	81%	63%	1149	63%	4	75%	677	65%
MARION	106	21115	16794	80%	54%	8447	48%	23	48%	7909	62%
MARSHALL	9	876	688	79%	53%	424	55%	13	77%	232	47%
MARTIN	1	166	219	132% *	58%	39	67%	16	75%	141	55%
MIAMI	3	569	491	86%	66%	196	56%	12	67%	271	75%
MONROE	5	1906	1637	86%	76%	797	84%	9	89%	729	70%

COUNTY	NUMBER OF VFC PROVIDERS ENROLLED	2013 (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
MONTGOMERY	8	719	539	75%	65%	275	68%	6	50%	247	63%
MORGAN	9	1230	1064	87%	64%	576	61%	3	100%	464	68%
NEWTON	2	199	176	88%	60%	82	56%	6	67%	81	63%
NOBLE	3	905	675	75%	61%	270	61%	16	88%	366	60%
OHIO	2	73	79	108% *	66%	25	60%	0	N/A	46	67%
ORANGE	5	325	343	106% *	58%	83	63%	8	50%	220	55%
OWEN	3	291	230	79%	71%	78	78%	1	0%	146	68%
PARKE	3	300	184	61%	48%	88	43%	3	67%	90	54%
PERRY	2	330	233	71%	70%	91	78%	7	100%	105	66%
PIKE	1	208	221	106% *	80%	99	79%	7	71%	105	83%
PORTER	11	2716	2338	86%	66%	1415	72%	20	55%	861	59%
POSEY	5	431	358	83%	71%	216	76%	6	67%	116	64%
PULASKI	2	222	172	77%	72%	49	84%	2	100%	93	66%
PUTNAM	6	550	431	78%	47%	221	43%	3	67%	198	53%
RANDOLPH	3	438	388	89%	57%	244	52%	6	50%	134	65%
RIPLEY	5	534	371	69%	56%	187	56%	2	50%	162	58%
RUSH	6	258	226	88%	69%	92	68%	2	0%	118	69%
SCOTT	4	440	324	74%	62%	106	55%	5	80%	195	66%
SHELBY	3	839	684	82%	72%	370	65%	6	67%	292	83%
SPENCER	3	366	205	56%	71%	100	73%	3	67%	82	66%
STARKE	6	389	301	77%	58%	140	67%	6	17%	141	53%
STEUBEN	3	523	430	82%	56%	134	63%	3	33%	277	53%
STJOSEPH	38	5206	3870	74%	45%	2003	48%	38	53%	1696	42%
SULLIVAN	4	324	279	86%	36%	162	34%	1	0%	108	41%
SWITZERLAND	1	191	89	47%	54%	13	62%	4	25%	63	54%
TIPPECANOE	16	3305	2966	90%	72%	1591	72%	39	67%	1212	75%
TIPTON	1	221	134	61%	54%	70	40%	1	100%	53	79%

COUNTY	NUMBER OF VFC PROVIDERS ENROLLED	2013 (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
UNION	1	101	57	56%	72%	15	73%	2	50%	40	73%
VANDERBURGH	20	3381	2794	83%	70%	1478	74%	12	83%	1245	65%
VERMILLION	4	262	193	74%	50%	104	55%	0	N/A	87	45%
VIGO	21	1948	1270	65%	44%	687	42%	6	33%	553	46%
WABASH	2	525	457	87%	45%	171	45%	8	50%	262	43%
WARREN	1	153	122	80%	76%	68	82%	5	80%	46	65%
WARRICK	7	1045	930	89%	69%	660	70%	12	75%	235	67%
WASHINGTON	4	460	341	74%	62%	146	68%	3	33%	177	57%
WAYNE	6	1260	990	79%	76%	374	72%	6	50%	585	79%
WELLS	4	544	340	63%	43%	163	26%	9	78%	159	58%
WHITE	4	456	402	88%	78%	158	82%	6	83%	218	74%
WHITLEY	5	578	447	77%	59%	189	60%	14	86%	227	58%

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, 2013 & 2015

			Number Assessed 19-35 Months of Age			Percentage of Population Represented			Completion Rate for 4:3:1:3:3:1:4	
COUNTY	(2013 Census) POPULATION 19-35 MONTHS OF AGE		2015	2013		2015	2013		2015	2013
~INDIANA	125664		96602	74843		77%	60%		56%	47%
ADAMS	962		613	452		64%	47%		48%	63%
ALLEN	7890		5528	3717		70%	47%		39%	40%
BARTHOLOMEW	1509		1421	1256		94%	83%		66%	51%
BENTON	165		115	93		70%	56%		73%	68%
BLACKFORD	234		186	177		79%	76%		63%	65%
BOONE	1180		918	589		78%	50%		69%	45%
BROWN	185		166	123		90%	66%		69%	50%
CARROLL	292		268	183		92%	63%		71%	60%
CASS	761		602	504		79%	66%		79%	82%
CLARK	2146		1706	942		79%	44%		52%	43%
CLAY	497		398	357		80%	72%		57%	54%
CLINTON	624		561	449		90%	72%		72%	73%
CRAWFORD	152		106	81		70%	53%		54%	49%
DAVIESS	810		588	325		73%	40%		47%	47%
DEARBORN	827		429	254		52%	31%		64%	59%
DECATUR	459		446	333		97%	73%		67%	62%
DEKALB	769		546	354		71%	46%		55%	54%
DELAWARE	1850		1583	1488		86%	80%		60%	51%
DUBOIS	797		633	532		79%	67%		71%	77%
ELKHART	4509		2995	2439		66%	54%		50%	28%
FAYETTE	376		294	245		78%	65%		69%	70%
FLOYD	1336		980	827		73%	62%		61%	40%
FOUNTAIN	291		220	171		76%	59%		63%	62%

			Number Assessed 19-35 Months of Age			Percentage of Population Represented			Completion Rate for 4:3:1:3:3:1:4	
COUNTY	(2013 Census) POPULATION 19-35 MONTHS OF AGE		2015	2013		2015	2013		2015	2013
FRANKLIN	377		228	182		60%	48%		64%	62%
FULTON	368		291	194		79%	53%		57%	53%
GIBSON	651		470	320		72%	49%		71%	44%
GRANT	1145		991	930		87%	81%		39%	42%
GREENE	524		369	329		70%	63%		68%	70%
HAMILTON	6157		3263	2556		53%	42%		52%	36%
HANCOCK	1188		937	588		79%	49%		40%	30%
HARRISON	637		516	355		81%	56%		47%	45%
HENDRICKS	2848		2250	1666		79%	58%		51%	29%
HENRY	688		587	512		85%	74%		71%	74%
HOWARD	1483		1345	994		91%	67%		58%	54%
HUNTINGTON	616		535	283		87%	46%		52%	63%
JACKSON	910		785	580		86%	64%		61%	60%
JASPER	583		476	350		82%	60%		58%	57%
JAY	473		314	287		66%	61%		62%	68%
JEFFERSON	492		432	406		88%	83%		66%	59%
JENNINGS	511		436	396		85%	77%		66%	48%
JOHNSON	2849		2339	2012		82%	71%		57%	38%
KNOX	712		631	515		89%	72%		81%	81%
KOSCIUSKO	1489		1236	658		83%	44%		56%	58%
LAGRANGE	1112		569	519		51%	47%		46%	48%
LAKE	9314		6827	4595		73%	49%		50%	41%
LAPORTE	1989		1510	1098		76%	55%		61%	56%
LAWRENCE	746		617	417		83%	56%		76%	80%
MADISON	2303		1864	1560		81%	68%		63%	57%
MARION	21115		16794	14369		80%	68%		54%	38%
MARSHALL	876		688	516		79%	59%		53%	47%

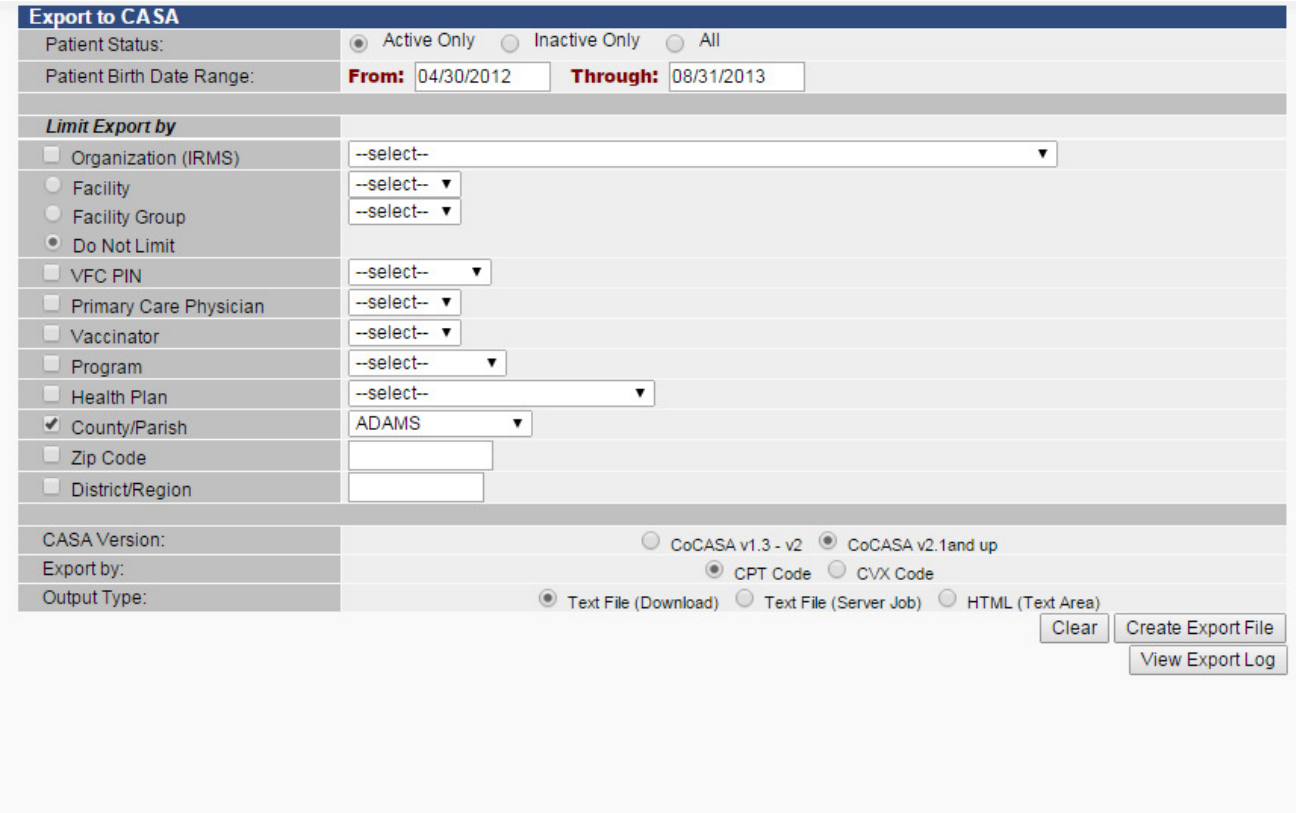
			Number Assessed 19-35 Months of Age			Percentage of Population Represented			Completion Rate for 4:3:1:3:3:1:4	
COUNTY	(2013 Census) POPULATION 19-35 MONTHS OF AGE		2015	2013		2015	2013		2015	2013
MARTIN	166		219	137		132%	83%		58%	58%
MIAMI	569		491	364		86%	64%		66%	69%
MONROE	1906		1637	1313		86%	69%		76%	77%
MONTGOMERY	719		539	334		75%	46%		65%	49%
MORGAN	1230		1064	813		87%	66%		64%	39%
NEWTON	199		176	105		88%	53%		60%	50%
NOBLE	905		675	480		75%	53%		61%	59%
OHIO	73		79	64		108%	88%		66%	66%
ORANGE	325		343	193		106%	59%		58%	67%
OWEN	291		230	219		79%	75%		71%	71%
PARKE	300		184	101		61%	34%		48%	32%
PERRY	330		233	188		71%	57%		70%	73%
PIKE	208		221	203		106%	98%		80%	75%
PORTER	2716		2338	1827		86%	67%		66%	63%
POSEY	431		358	275		83%	64%		71%	51%
PULASKI	222		172	156		77%	70%		72%	71%
PUTNAM	550		431	299		78%	54%		47%	42%
RANDOLPH	438		388	394		89%	90%		57%	39%
RIPLEY	534		371	361		69%	68%		56%	49%
RUSH	258		226	157		88%	61%		69%	67%
SCOTT	440		324	178		74%	40%		62%	59%
SHELBY	839		684	691		82%	82%		72%	65%
SPENCER	366		205	186		56%	51%		71%	67%
STARKE	389		301	232		77%	60%		58%	54%
STEUBEN	523		430	277		82%	53%		56%	60%
STJOSEPH	5206		3870	3473		74%	67%		45%	27%
SULLIVAN	324		279	225		86%	69%		36%	32%

			Number Assessed 19-35 Months of Age			Percentage of Population Represented			Completion Rate for 4:3:1:3:3:1:4	
COUNTY	(2013 Census) POPULATION 19-35 MONTHS OF AGE		2015	2013		2015	2013		2015	2013
SWITZERLAND	191		89	75		47%	39%		54%	37%
TIPPECANOE	3305		2966	2328		90%	70%		72%	70%
TIPTON	221		134	126		61%	57%		54%	68%
UNION	101		57	65		56%	64%		72%	68%
VANDERBURGH	3381		2794	1680		83%	50%		70%	52%
VERMILLION	262		193	126		74%	48%		50%	34%
VIGO	1948		1270	1122		65%	58%		44%	28%
WABASH	525		457	293		87%	56%		45%	52%
WARREN	153		122	102		80%	67%		76%	76%
WARRICK	1045		930	576		89%	55%		69%	40%
WASHINGTON	460		341	211		74%	46%		62%	52%
WAYNE	1260		990	913		79%	72%		76%	66%
WELLS	544		340	288		63%	53%		43%	68%
WHITE	456		402	322		88%	71%		78%	69%
WHITLEY	578		447	293		77%	51%		59%	53%

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

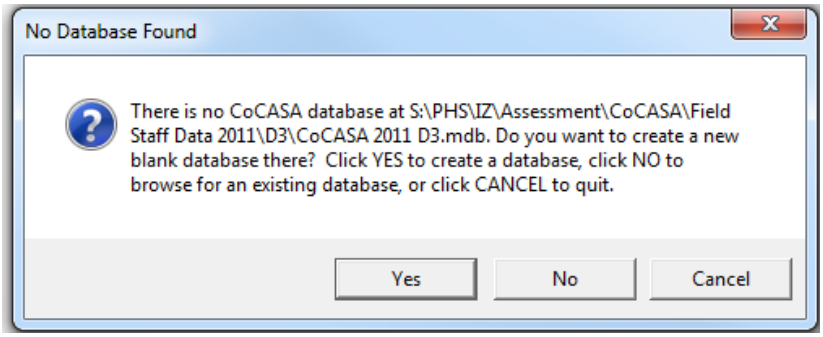
1. Create and save a 'CoCASA Export File' from CHIRP for each county.
    a. Login to CHIRP, click "CASA Export" from the left sidebar.
    b. Enter the patient date of birth range.
    c. Select the county.
    d. Leave all other settings at their default state, and click "Create Export File".
        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



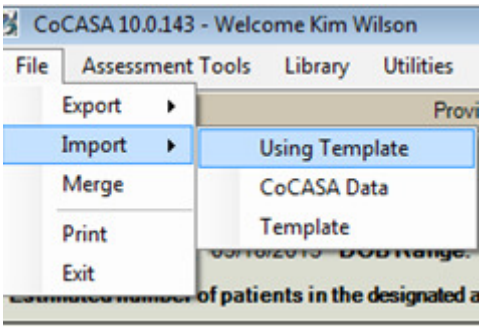
2. Import each export file into a new, blank CoCASA database.
    a. Rename an existing CoCASA database. Then, open CoCASA. A message will appear as shown below:

Figure 2



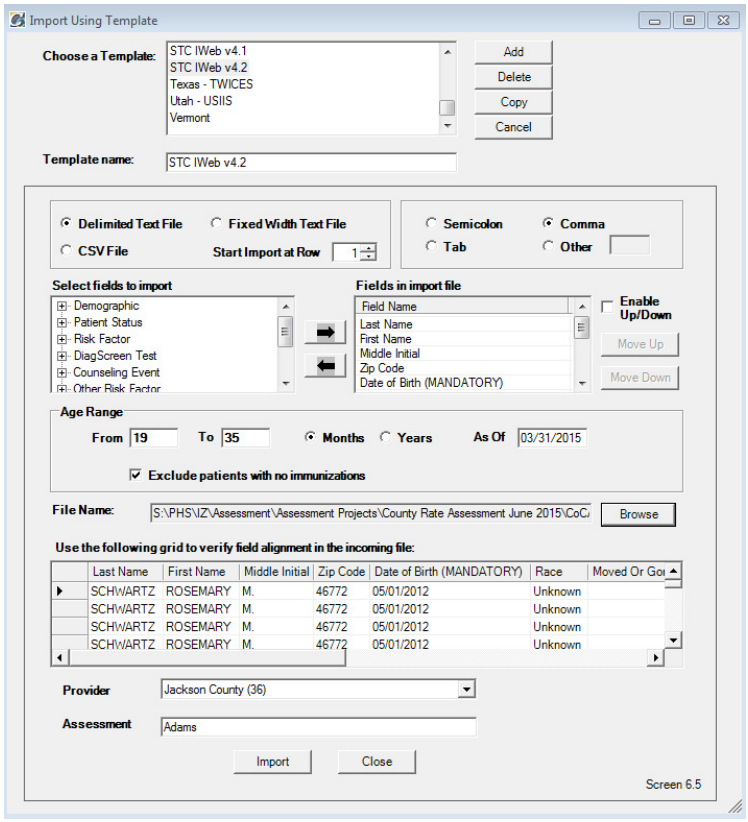
b. Click "Yes" on the dialog box to create a new blank database. Name the new database for the assessment it is being created for.
c. Open CoCASA, directing it toward the new database created for the assessment.
d. Set up a provider named "County Rate Assessment" with the address and phone number for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

Figure 3



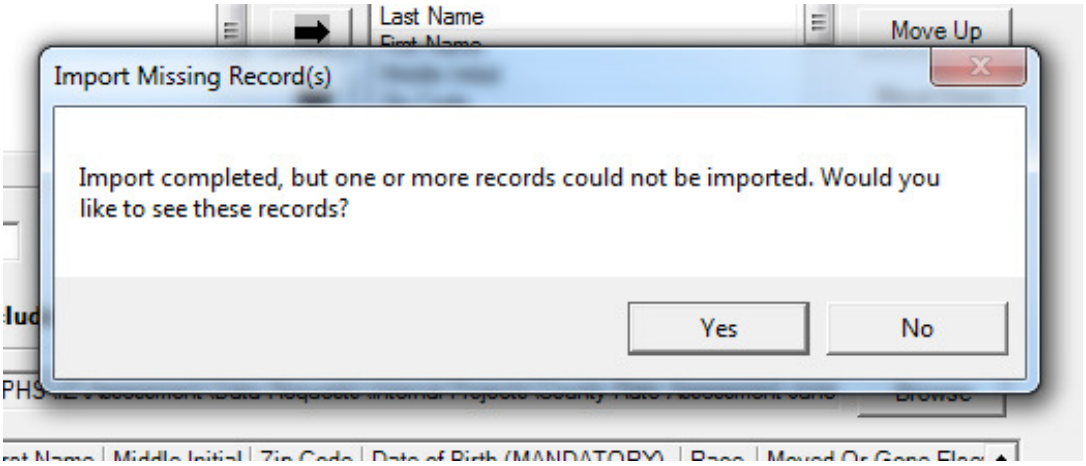
f. Choose the template to import from, STC IWeb v4.2.
g. Enter the date of birth range for the cohort, including the "as of" date, indicating what age the subjects should be at the time of assessment.
h. Click on "Exclude patients with no immunizations".
i. Click "Browse" and select the file saved for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

Figure 4



l. 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;
```

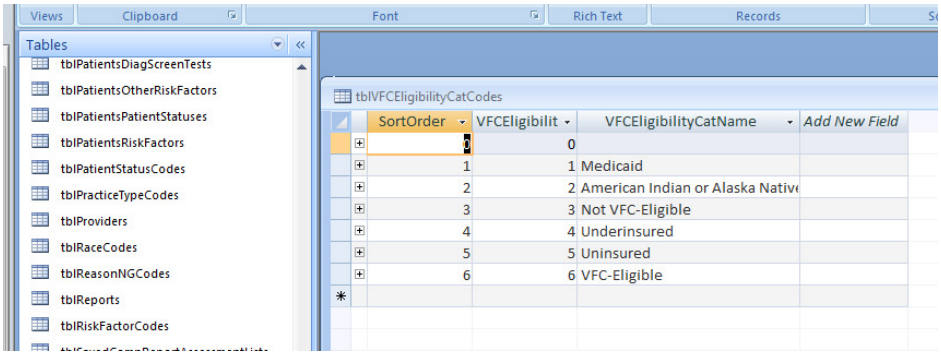
e. Finally, run a delete query to delete the patient records from the "tblPatients" table that are not contained in the unique patients table.
   i. Copy and paste the SQL script shown in Figure 9.
   ii. Run the query, this will update the "tblPatients" table by deleting those not contained in tblUniquePatients.

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



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

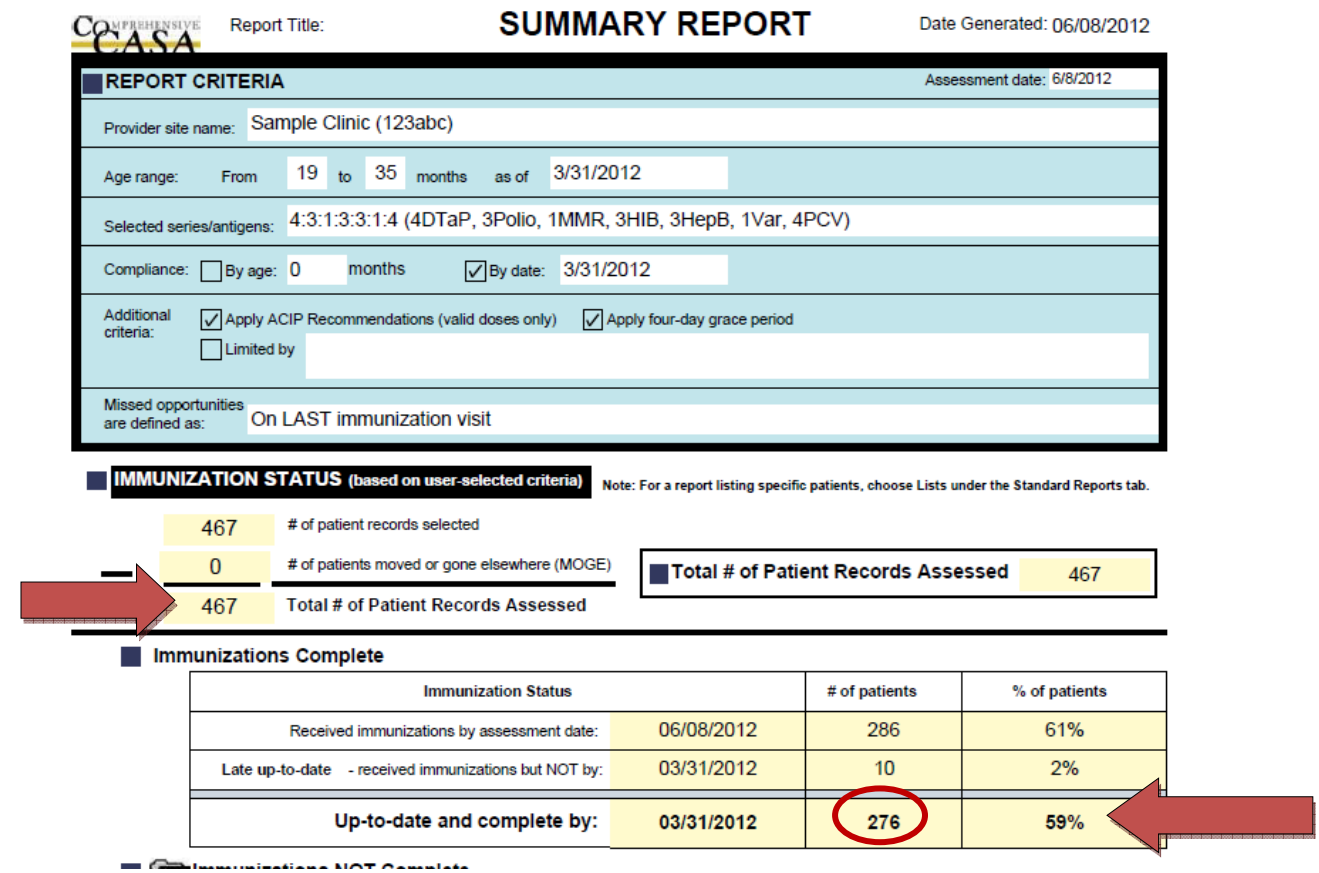
iv. Limit by a user-selected variable: after checking this box, click the button to open up the choices of variables. Choose the VFC Eligibility category you are running the report for.
v. Click "Run Report". When report is complete, click on "Export" and save the report.

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



COMPREHENSIVE CASA

Report Title: **SUMMARY REPORT** Date Generated: 06/08/2012

REPORT CRITERIA Assessment date: 6/8/2012

Provider site name: Sample Clinic (123abc)

Age range: From 19 to 35 months as of 3/31/2012

Selected series/antigens: 4:3:1:3:3:1:4 (4DTaP, 3Polio, 1MMR, 3HIB, 3HepB, 1Var, 4PCV)

Compliance: ☐ By age: 0 months ☑ By date: 3/31/2012

Additional criteria: ☑ Apply ACIP Recommendations (valid doses only) ☑ Apply four-day grace period ☐ Limited by

Missed opportunities are defined as: On LAST immunization visit

IMMUNIZATION STATUS (based on user-selected criteria) Note: For a report listing specific patients, choose Lists under the Standard Reports tab.

467 # of patient records selected

0 # of patients moved or gone elsewhere (MOGE)

467 Total # of Patient Records Assessed

Total # of Patient Records Assessed 467

Immunizations Complete

Immunization Status		# of patients	% of patients
Received immunizations by assessment date:	06/08/2012	286	61%
Late up-to-date - received immunizations but NOT by:	03/31/2012	10	2%
Up-to-date and complete by:	**03/31/2012**	**276**	**59%**

References

Centers for Disease Control and Prevention. National Immunization Survey, NIS. Estimated for Completion of 4:3:1:3:3:1:4, complete for Hib series. Retrieved May 18, 2015. http://www.cdc.gov/vaccines/imz-managers/coverage/nis/child/data/tables-2013.html#overall

Centers for Disease Control and Prevention (CDC). (2015) Epidemiology and Prevention of Vaccine-Preventable Diseases. 13th ed. May 2015.

Centers for Disease Control and Prevention (CDC) Comprehensive Clinic Assessment Software Application (CoCASA), Version 10.0.143

Indiana Immunization Registry, CHIRP. Data obtained April 6, 2015.