Florida's Infant Mortality and Low Birth Weight Actual Rate Compared with Expected Rate by County and Healthy Start Coalition Areas

2019 Update

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Introduction

The public health community uses infant mortality and birth weight statistics extensively as maternal and child health indicators because they are relevant, readily available and reliable due to a relatively high level of completeness.

The purpose of this analysis is to identify geographic areas in the state that exhibit statistically significant differences in infant mortality (IM) and low birth weight (LBW) rates than would be expected considering the unique demographics of each county.

IM and LBW rates in Florida vary across geographic areas, in part due to the unique demographic characteristics of the population in different geographic areas. In this analysis, adjustments are made to account for the differences in demographic characteristics. Three demographic characteristics are included to calculate the expected IM and LBW: maternal race, marital status, and maternal education. These variables are used because of their known associations with risk of IM and LBW, and because adjusting provides a way to make valid comparisons among areas with different population sizes based on these characteristics.

To eliminate differences that could be attributed to public interventions, other demographic characteristics, such as young maternal age and smoking status, were not used to adjust IM and LBW estimates. For example, counties with lower than expected LBW percentages may have implemented successful smoking cessation programs. If adjustments had been made for smoking status, differences between actual and expected statistics would not be apparent. In another example, births to women under the age of 20 can be influenced by teen pregnancy prevention interventions; and by the same logic, adjustments are not made for maternal age.

IM and LBW rates can also vary due to random variation or chance. In this analysis, statistical methods are used to separate random from non-random variation, so rates reported as significantly higher or lower are most likely a result of non-random influences. Likewise, rates that are higher or lower than expected, but not statically significant, are most likely to be the result of random variation.

Methods

The data used in this analysis were extracted from the birth records for Florida residents who were born in calendar years 2018 and 2019. Infant mortality is defined as the death of a child less than one year of age. Infants born weighing less than 2,500 grams at delivery are considered LBW. This analysis uses three demographic variables to perform statistical adjustment on expected IM and LBW estimates: maternal race, marital status and maternal education. Each demographic variable has two defined values as follows: maternal race as non-Black or Black, marital status as married or not married and maternal education as high school or more, or less than high school graduation. All possible combinations of the three demographic variables form nine mutually exclusive categories. The ninth category includes birth records for which any of the three demographic variables had a missing value. The nine categories are as follows:

Category	Maternal Race	Marital Status	Maternal Education
1	Non-Black	Married	High School or More
2	Non-Black	Married	Less than High School
3	Non-Black	Not Married	High School or More
4	Non-Black	Not Married	Less than High School
5	Black	Married	High School or More
6	Black	Married	Less than High School
7	Black	Not Married	High School or More
8	Black	Not Married	Less than High School
9	Unknown	Unknown	Unknown

Calculating IM and LBW Expected Rates

Using the classification scheme shown above, nine state-level specific categories, IM expected rates were calculated from the 2018 vital records (the latest year available at the time of this analysis for complete linked birth and infant death data). The infant death linkage indicator is not recorded on the birth record until up to one year after a birth. Therefore, 2019 linked infant birth-death records were not completed at the time of this analysis and 2018 data were instead used to calculate expected IM estimates. This adjustment technique is referred to as "indirect adjustment." To obtain the 2018 expected number of infant deaths by county or coalition area, each of the nine state-level categories-specific IM rates for 2018 were multiplied by the total number of county-level or coalition area births in 2019 and then summed. To compute the 2019 expected infant mortality rates for each county or coalition area, the 2019 expected number of infant deaths was used as the numerator and the total number of births in 2019 was used as the denominator. Using the nine state-level categories-specific rates to estimate county-specific expected IM counts and rates accounts for the unique sociodemographic composition of

mothers in each county who gave birth to an infant and mothers whose infants had died by adjusting for the influence of maternal race, marital status and maternal education.

These methods were applied in the same way to calculate expected LBW counts. However, 2019 state-level birth counts for each category were used to calculate expected county-level LBW percentages because birth weight is recorded at the time of delivery.

The Normal Approximation to the Binomial Distribution was used to test for statistically significant differences between actual and expected rates in most of the counties or coalition areas. In instances where the number of infant deaths or number of low birth weight infants was less than 30, the Poisson formula was used. The correlation between the actual to expected ratios for IM and LBW across the counties was assessed.

In March 2004, the recording of maternal race on the birth record was changed to allow the selection of more than one race. For this analysis, births where the only maternal race recorded was Black were classified as Black and all others were classified as non-Black.

Results

The results of this analysis are shown in the following tables and maps for IM and LBW. In the tables, actual statistics are compared to expected statistics. The expected statistics are adjusted for the demographic characteristics in each county or coalition areas, as described above. Counties or coalitions with statistically significantly higher than expected actual statistics are indicated in the tables with an "H" and those with an "L" indicate statistically significantly lower than expected actual statistics. The maps display the results of the statistical tests for significance. Counties or coalition areas where the actual statistics are significantly higher or lower are shaded, as indicated by the legend on the maps.

There was a statistically significant correlation between the actual to expected LBW ratios and the actual to expected infant death ratios (Kendall's rank correlation coefficient = 0.25; p value of 0.04).

Also included in this report are summary tables for the years 2015 through 2019 that show the Hs and Ls for the counties and coalitions for each of the past five years.

Summary

For 2019 IM rates: Actual vs. Expected

- Broward (5.25 vs. 6.62), Dade (4.69 vs. 5.76), and Palm Beach (4.68 vs. 6.40) Counties (Tables 1 and 2), which also comprise their own Healthy Start Coalition (HSC) areas with lower statistically significant IM rates than expected. These coalitions are in the southeastern region of the state (Maps 1 and 2). Broward, Dade, and Palm Beach Counties and their respective Healthy Start Coalition areas presented lower IM rates than expected for all the five years studied (Tables 5 and 6).

- Alachua (10.00 vs. 6.32), and Columbia (16.88 vs. 6.33) Counties had statistically significantly higher than expected IM rates. Alachua and Columbia Counties are located within the Healthy Start of North Central Florida area, which also had a higher than expected IM rate (8.82 vs. 6.25), (Tables 1 and 2). Lake (8.46 vs.5.58) and Sumter (17.39 vs. 6.14) Counties had statistically significantly higher than expected IM rate. Lake and Sumter are located within the Central Healthy Start area, which also had a higher than expected IM rate (8.49 vs. 5.81), (Tables 1 and 2). Jackson (16.99 vs. 6.58) and Washington (17.30 vs. 5.79) Counties had statistically significantly higher than expected IM rates and are located in Chipola Healthy Start Coalition area, which also had higher than expected (14.63 vs. 5.96) IM rate (Tables 1 and 2). Santa Rosa County (7.70 vs. 4.60) had statistically significantly higher than expected IM rate. Santa Rosa is located within the HSC area of Santa Rosa County (Tables 1 and 2). These counties and coalitions are in the northcentral and central regions of the state (Maps 1 and 2). The North Central Florida Coalition area presented five years of higher IM rates (Table 6).

For 2019 low birth weight percentages: Actual vs. Expected

- Martin (6.39% vs. 8.04%), Pinellas (7.99% vs. 8.70%), St. Lucie (8.53% vs. 9.36%), and Seminole (6.76% vs. 8.12%) Counties which also comprise their own respective Healthy Start Coalitions areas, each had statistically significant lower percentages of LBW than expected (Tables 3 and 4). Collier County (6.77% vs. 8.08%) had statistically significantly lower percentages of LBW than expected. Collier is located within the Healthy Start Coalition area of Southwest Florida. This coalition had results within the expected range (Tables 3 and 4). St. Johns County (6.65% vs. 7.58%) had statistically significantly lower percentages of LBW than expected. St. Johns is located within the Northeast Florida Healthy Start Coalition area. This coalition had results within the expected range (Tables 3 and 4). These counties and HSCs with lower percentages of LBW are in the north central and southeastern region of the state (Maps 3 and 4). Counties and their

respective HSC areas with significantly lower or higher LBW percentages than expected for the years studied are presented in Tables 7 and 8.

- Escambia (11.13% vs. 9.50%) and Santa Rosa (9.30% vs. 7.41%) Counties which also comprise their own respective HSC areas, each had statistically significantly higher percentages of LBW than expected (Tables 3 and 4). Alachua (10.96% vs. 9.16%), Bradford (16.08% vs. 8.80%), Columbia (11.69% vs. 8.99%), Dixie (14.02% vs.8.25%), and Putnam (12.11% vs. 9.35%) Counties had statistically significantly higher percentages of LBW than expected. Alachua, Bradford, Columbia, Dixie, and Putnam Counties are included in the Healthy Start of North Central Florida area (10.42% vs. 8.96%) which had higher than expected LBW percentages as well (Tables 3 and 4). Hernando County (10.16% vs. 8.40%) had statistically significantly higher percentages of LBW than expected. Hernando is located within the Central Healthy Start area. This coalition had results within the expected range (Tables 3 and 4). Leon County (11.15% vs. 10.07%) had statistically significantly higher percentage of LBW than expected. Leon is included in the Capital area Healthy Start Coalition (10.96% vs. 9.85%) which had higher than expected LBW percentages (Tables 3 and 4). Taylor County (13.03% vs. 9.39%) had statistically significantly higher percentage of LBW than expected. Taylor is included in the Healthy Start Coalition area of Jefferson, Madison, and Taylor Counties (13.07% vs. 9.94%) which had higher percentage of LBW than expected (Tables 3 and 4). Walton County (9.74% vs. 7.71%) had statistically significantly higher than expected LBW. Walton is included in the Healthy Start Community Coalition area of Okaloosa and Walton Counties (8.80% vs. 7.84%) which had higher percentage of LBW than expected (Tables 3 and 4). Washington County (11.76% vs. 8.36%) had statistically significantly higher percentage of LBW than expected. Washington is included in the Chipola Healthy Start Coalition area. This coalition had results within the expected range (Tables 3 and 4). These counties and HSCs with higher percentages of LBW are in the north and central regions of the state (Maps 3 and 4). Alachua County had five years of higher percentages of LBW infants than expected (Table 7). The Healthy Start of North Central Florida area Coalition presented five years of higher percentages of LBW as well (Table 8).

Discussion

This analysis should be considered a preliminary step in the continuing endeavor to reduce IM and LBW in Florida. The results of this analysis can be used to focus further studies and public health efforts on areas of the state where the risks of poor infant health outcomes are significantly higher and analyze factors that contribute to the lower risks seen in some areas.

One limitation of this analysis is the high variability of rates in smaller populations compared to those with larger populations. Consequently, larger differences in rates for small counties or coalitions may not be statistically significant while the same or smaller differences may be statistically significant in larger counties or coalitions. Actual rates that are statistically significantly higher than the expected rates are most likely not a result of random fluctuations and may indicate a public health problem requiring further investigation and intervention; however, higher rates that are not statistically significant may warrant further investigation as well. Smaller counties or coalitions with higher than expected rates for a period of several years may also be cause for concern.

Since adjustments were used to account for the differing demographic composition in each county or coalition, further analysis could focus on other factors not included in this report, such as smoking rates and mother's age at birth. Unique factors in each county or coalition contribute to IM and LBW. Local area analysis of factors associated with these outcomes should be undertaken to better understand the reasons for statistically significantly lower or higher than expected rates with separate analyses performed for each area of concern. Local area analysis might include using FLHealthCHARTS data to get better understanding of the social determinants, performing perinatal period of risk analysis – PPOR or utilizing data from the local fetal and infant mortality review project – FIMR. Finally, it should be noted that in this analysis, rates for each county or coalition are compared to the statewide rates, after adjustment for maternal race, marital status and maternal education. The issue of whether the statewide rates should be used as a baseline in these comparisons is not addressed in this analysis.

Table 1. Florida Actual Vs. Expected Infant Mortality Rates per 1,000 Live Births by County, 2019

Mother's Resident County	Births[1]	Expected[2] Infant Deaths	Actual Infant Deaths	Expected IMR Per 1,000 Live Births	Actual IMR Per 1,000 Live Births	Actual Rate[3]
Alachua	2,700	17	27	6.32	10.00	H
Baker	362	2	4	5.65	11.05	
Bay	1,990	13	15	6.45	7.54	
Bradford	286	2	2	6.67	6.99	
Brevard	5,185	29	29	5.51	5.59	
Broward	21,724	144	114	6.62	5.25	L
Calhoun	117	1	1	5.69	8.55	
Charlotte	951	5	5	5.31	5.26	
Citrus	1,029	6	8	5.36	7.77	
Clay	2,235	12	15	5.44	6.71	
Collier	3,117	17	12	5.41	3.85	
Columbia	770	5	13	6.33	16.88	H
Dade	30,258	174	142	5.76	4.69	L
Desoto	400	3	2	6.39	5.00	
Dixie	164	1	0	6.00	0.00	
Duval	13,032	89	103	6.82	7.90	
Escambia	3,871	25	31	6.53	8.01	
Flagler	843	5	3	5.77	3.56	
Franklin	102	1	1	5.74	9.80	
Gadsden	501	4	5	8.97	9.98	
Gilchrist	210	1	3	5.32	14.29	
Glades	54	0	1	5.74	18.52	
Gulf	125	1	0	5.94	0.00	
Hamilton	166	1	0	7.43	0.00	
Hardee	338	2	3	6.13	8.88	
Hendry	614	4	2	6.20	3.26	
Hernando	1,565	10	10	6.53	6.39	
Highlands	839	5	7	6.12	8.34	
Hillsborough	17,178	106	113	6.16	6.58	
Holmes	205	1	2	5.28	9.76	
Indian River	1,260	7	7	5.69	5.56	
Jackson	471	3	8	6.58	16.99	H
Jefferson	117	1	0	7.61	0.00	
Lafayette	63	0	0	5.59	0.00	
Lake	3,427	19	29	5.58	8.46	H
Lee	6,928	39	44	5.56	6.35	
Leon	2,968	21	25	7.04	8.42	
Levy	439	3	2	5.92	4.56	
Liberty	80	0	1	5.11	12.50	
Madison	219	2	3	7.45	13.70	
Manatee	3,482	21	18	6.03	5.17	
Marion	3,551	22	24	6.15	6.76	
Martin	1,205	6	6	5.31	4.98	
Monroe	650	3	1	5.32	1.54	
Nassau	844	4	4	4.81	4.74	
Okaloosa	2,706	14	14	5.18	5.17	
Okeechobee	495	3	4	5.65	8.08	
Orange	16,621	100	96	6.01	5.78	
Osceola	4,440	23	21	5.25	4.73	
Palm Beach	14,737	94	69	6.40	4.68	L
Pasco	5,092	27	26	5.38	5.11	
Pinellas	7,894	49	43	6.15	5.45	
Polk	8,197	51	55	6.21	6.71	
Putnam	809	6	10	6.85	12.36	
Saint Johns	2,210	10	10	4.75	4.52	
Saint Lucie	3,107	21	19	6.63	6.12	
Santa Rosa	1,947	9	15	4.60	7.70	H
Sarasota	2,885	17	13	5.82	4.51	
Seminole	4,647	24	32	5.26	6.89	
Sumter	460	3	8	6.14	17.39	H
Suwannee	445	3	2	5.84	4.49	
Taylor	238	1	2	6.26	8.40	
Union	153	1	3	5.52	19.61	
Volusia	4,824	28	26	5.90	5.39	
Wakulla	307	2	4	5.12	13.03	
Walton	862	4	6	4.98	6.96	
Washington	289	2	5	5.79	17.30	H
TOTAL	220,000	1,328	1,328	6.04	6.04	

[1] Total births excluded 10 births with county unknown.

[2] Calculated adjusting for maternal race, marital status, and education characteristics of the mother.

[3] H = Significant Higher, L = Significant Lower than Expected. The significance level used is .05.

Table 2. Florida Actual Vs. Expected Infant Mortality Rates per 1,000 Live Births by Healthy Start Coalition Area, 2019

	Births[1]	Expected[2] Infant Deaths	Actual Infant Deaths	Expected IMR Per 1,000 Live Births	Actual IMR Per 1,000 Live Births	Actual Rate[3]
Healthy Start Coalition (HSC) Area						
Multiple Counties HSC Areas						
Bay, Franklin, Gulf Healthy Start Coalition Area	2217	14	16	6.39	7.22	
Capital Area Healthy Start Coalition	3275	22	29	6.86	8.85	
Central Healthy Start Area	6481	38	55	5.81	8.49	H
Chipola Healthy Start Coalition Area	1162	7	17	5.96	14.63	H
Healthy Start Community Coalition Area of Okaloosa and Walton Counties	3568	18	20	5.13	5.61	
Healthy Start of North Central Florida Area	9756	61	86	6.25	8.82	H
Healthy Start Coalition Area of Hardee / Highlands / Polk Counties	9374	58	65	6.20	6.93	
Healthy Start Coalition Area of Jefferson / Madison / Taylor Counties	574	4	5	6.99	8.71	
Healthy Start Coalition Area of Southwest Florida	10713	60	59	5.56	5.51	
Northeast Florida Healthy Start Coalition Area	18683	118	136	6.29	7.28	
The Healthy Start Prenatal & Infant Coalition Area of Flager and Volusia Counties	5667	33	29	5.88	5.12	
Single County HSC[4] Areas						
Broward Healthy Start Coalition Area	21724	144	114	6.62	5.25	L
Charlotte County Healthy Start Coalition Area	951	5	5	5.31	5.26	
Florida Department of Health in Desoto County	400	3	2	6.39	5.00	
Escambia County Healthy Start Coalition Area	3871	25	31	6.53	8.01	
Florida Keys Healthy Start Coalition Area	650	3	1	5.32	1.54	
Gadsden County Healthy Start Coalition Area	501	4	5	8.97	9.98	
Healthy Start Coalition of Miami-Dade Area	30258	174	142	5.76	4.69	L
Healthy Start Coalition Area of Sarasota County	2885	17	13	5.82	4.51	
Healthy Start Coalition Area of Hillsborough County	17178	106	113	6.16	6.58	
Healthy Start Coalition Area of Manatee County	3482	21	18	6.03	5.17	
Healthy Start Coalition Area of Palm Beach County	14737	94	69	6.40	4.68	L
Healthy Start Coalition Area of Pasco County	5092	27	26	5.38	5.11	
Healthy Start Coalition Area of Pinellas County	7894	49	43	6.15	5.45	
Healthy Start Coalition Area of Santa Rosa County	1947	9	15	4.60	7.70	H
Healthy Start Coalition Area of St. Lucie County	3107	21	19	6.63	6.12	
Indian River County Healthy Start Coalition Area	1260	7	7	5.69	5.56	
Martin County Healthy Start Coalition Area	1205	6	6	5.31	4.98	
Okeechobee County Family Health / Healthy Start Coalition Area	495	3	4	5.65	8.08	
Orange County Healthy Start Coalition Area	16621	100	96	6.01	5.78	
Healthy Start Coalition Area of Brevard County.	5185	29	29	5.51	5.59	
Florida Department of Health in Seminole County	4647	24	32	5.26	6.89	
The Healthy Start Coalition Area of Osceola County	4440	23	21	5.25	4.73	
TOTAL	220,000	1,328	1,328	6.04	6.04	

[1] *Total births excluded 10 births with county unknown.*

[2] *Calculated adjusting for maternal race, marital status, and maternal education of the mother.*

[3] *H = Significant Higher, L = Significant Lower than Expected. The significance level used is .05.*

[4] *For each coalition that is comprised of a county health Department, their values are the same as in Table 1.*

Table 3. Florida Actual Vs. Expected Low Birth Weight (LBW) Percentages by Counties, 2019

Mother's Resident County	Births[1]	Expected[2] LBW[3] Births	Actual LBW Births	Expected LBW Percent	Actual LBW Percent	Actual Rate[4]
Alachua	2,700	247	296	9.16%	10.96%	H
Baker	362	30	34	8.31%	9.39%	
Bay	1,990	180	174	9.02%	8.74%	
Bradford	286	25	46	8.80%	16.08%	H
Brevard	5,185	429	400	8.28%	7.71%	
Broward	21,724	2,062	2,072	9.49%	9.54%	
Calhoun	117	10	10	8.76%	8.55%	
Charlotte	951	77	70	8.08%	7.36%	
Citrus	1,029	83	94	8.02%	9.14%	
Clay	2,235	182	182	8.14%	8.14%	
Collier	3,117	252	211	8.08%	6.77%	L
Columbia	770	69	90	8.99%	11.69%	H
Dade	30,258	2,562	2,496	8.47%	8.25%	
Desoto	400	35	28	8.85%	7.00%	
Dixie	164	14	23	8.25%	14.02%	H
Duval	13,032	1,267	1,317	9.72%	10.11%	
Escambia	3,871	368	431	9.50%	11.13%	H
Flagler	843	70	72	8.35%	8.54%	
Franklin	102	9	11	8.39%	10.78%	
Gadsden	501	60	66	12.01%	13.17%	
Gilchrist	210	17	20	7.94%	9.52%	
Glades	54	5	6	9.05%	11.11%	
Gulf	125	11	8	8.79%	6.40%	
Hamilton	166	17	16	10.40%	9.64%	
Hardee	338	27	31	8.09%	9.17%	
Hendry	614	54	58	8.82%	9.45%	
Hernando	1,565	131	159	8.40%	10.16%	H
Highlands	839	73	85	8.71%	10.13%	
Hillsborough	17,178	1,496	1,502	8.71%	8.74%	
Holmes	205	16	18	8.03%	8.78%	
Indian River	1,260	106	104	8.45%	8.25%	
Jackson	471	43	39	9.21%	8.28%	
Jefferson	117	12	17	10.31%	14.53%	
Lafayette	63	5	4	7.67%	6.35%	
Lake	3,427	284	281	8.29%	8.20%	
Lee	6,928	582	574	8.40%	8.29%	
Leon	2,968	299	331	10.07%	11.15%	H
Levy	439	37	38	8.41%	8.66%	
Liberty	80	7	6	8.34%	7.50%	
Madison	219	23	27	10.35%	12.33%	
Manatee	3,482	297	273	8.53%	7.84%	
Marion	3,551	315	322	8.87%	9.07%	
Martin	1,205	97	77	8.04%	6.39%	L
Monroe	650	52	45	8.04%	6.92%	
Nassau	844	63	60	7.51%	7.11%	
Okaloosa	2,706	213	230	7.88%	8.50%	
Okeechobee	495	40	35	8.10%	7.07%	
Orange	16,621	1,471	1,439	8.85%	8.66%	
Osceola	4,440	357	353	8.03%	7.95%	
Palm Beach	14,737	1,356	1,319	9.20%	8.95%	
Pasco	5,092	404	402	7.94%	7.89%	
Pinellas	7,894	687	631	8.70%	7.99%	L
Polk	8,197	723	739	8.81%	9.02%	
Putnam	809	77	98	9.53%	12.11%	H
Saint Johns	2,210	167	147	7.58%	6.65%	L
Saint Lucie	3,107	291	265	9.36%	8.53%	L
Santa Rosa	1,947	144	181	7.41%	9.30%	H
Sarasota	2,885	236	232	8.17%	8.04%	
Seminole	4,647	377	314	8.12%	6.76%	L
Sumter	460	41	40	8.81%	8.70%	
Suwannee	445	38	48	8.57%	10.79%	
Taylor	238	22	31	9.39%	13.03%	H
Union	153	13	16	8.40%	10.46%	
Volusia	4,824	417	399	8.63%	8.27%	
Wakulla	307	24	28	7.70%	9.12%	
Walton	862	66	84	7.71%	9.74%	H
Washington	289	24	34	8.36%	11.76%	H
TOTAL	220,000	19,289	19,289	8.77%	8.77%	

[1] Total births excluded 10 births with county unknown.

[2] Calculated adjusting for maternal race, marital status, and education characteristics of the mother.

[3] LBW = Low birth weight, defined as birth weight below 2500 grams.

[4] H = Significant Higher, L = Significant Lower than Expected. The significance level used is .05.

Table 4. Florida Actual Vs. Expected Low Birth Weight (LBW) Percentages by Healthy Start Coalition Area, 2019

	Births[1]	Expected[2] LBW[3] Births	Actual LBW Births	Expected LBW Percent	Actual LBW Percent	Actual Rate[4]
Healthy Start Coalition (HSC) Area						
Multiple Counties HSC Areas						
Bay, Franklin, Gulf Healthy Start Coalition Area	2217	199	193	8.98	8.71	
Capital Area Healthy Start Coalition.	3275	323	359	9.85	10.96	H
Central Healthy Start Area	6481	539	574	8.31	8.86	
Chipola Healthy Start Coalition Area	1162	101	107	8.68	9.21	
Healthy Start Community Coalition Area of Okaloosa and Walton Counties	3568	280	314	7.84	8.80	H
Healthy Start of North Central Florida Area	9756	874	1017	8.96	10.42	H
Healthy Start Coalition Area of Hardee / Highlands / Polk Counties	9374	823	855	8.78	9.12	
Healthy Start Coalition Area of Jefferson / Madison / Taylor Counties	574	57	75	9.94	13.07	H
Healthy Start Coalition Area of Southwest Florida	10713	893	849	8.33	7.92	
Northeast Florida Healthy Start Coalition Area	18683	1710	1740	9.15	9.31	
The Healthy Start Prenatal & Infant Coalition Area of Flager and Volusia Counties	5667	487	471	8.59	8.31	
Single County HSC[4] Areas						
Broward Healthy Start Coalition Area	21724	2062	2072	9.49	9.54	
Charlotte County Healthy Start Coalition Area	951	77	70	8.08	7.36	
Florida Department of Health in Desoto County	400	35	28	8.85	7.00	
Escambia County Healthy Start Coalition Area	3871	368	431	9.50	11.13	H
Florida Keys Healthy Start Coalition Area	650	52	45	8.04	6.92	
Gadsden County Healthy Start Coalition Area	501	60	66	12.01	13.17	
Healthy Start Coalition of Miami-Dade Area	30258	2562	2496	8.47	8.25	
Healthy Start Coalition Area of Sarasota County	2885	236	232	8.17	8.04	
Healthy Start Coalition Area of Hillsborough County	17178	1496	1502	8.71	8.74	
Healthy Start Coalition Area of Manatee County	3482	297	273	8.53	7.84	
Healthy Start Coalition Area of Palm Beach County	14737	1356	1319	9.20	8.95	
Healthy Start Coalition Area of Pasco County	5092	404	402	7.94	7.89	
Healthy Start Coalition Area of Pinellas County	7894	687	631	8.70	7.99	L
Healthy Start Coalition Area of Santa Rosa County	1947	144	181	7.41	9.30	H
Healthy Start Coalition Area of St. Lucie County	3107	291	265	9.36	8.53	L
Indian River County Healthy Start Coalition Area	1260	106	104	8.45	8.25	
Martin County Healthy Start Coalition Area	1205	97	77	8.04	6.39	L
Okeechobee County Family Health / Healthy Start Coalition Area	495	40	35	8.10	7.07	
Orange County Healthy Start Coalition Area	16621	1471	1439	8.85	8.66	
Healthy Start Coalition Area of Brevard County.	5185	429	400	8.28	7.71	
Florida Department of Health in Seminole County	4647	377	314	8.12	6.76	L
The Healthy Start Coalition Area of Osceola County	4440	357	353	8.03	7.95	
TOTAL	220,000	19,290	19,289	8.77	8.77	

[1] *Total births excluded 10 births with county unknown.*

[2] *Calculated adjusting for maternal race, marital status, and maternal education of the mother.* [3] *LBW defined as birth weight below 2500 grams.*

[4] *H = Significant Higher, L = Significant Lower than Expected. The significance level used is .05.*

[5] *For each coalition that is comprised of a county health Department, their values are the same as in Table 1.*

Table 5. Florida Actual vs Expected Infant Mortality Statistical Significance[1] Summary by County, 2015–2019

Mother's Resident County	2015	2016	2017	2018	2019	Total L	Total H
Alachua				H	H		2
Baker							
Bay				H			1
Bradford	H		H				2
Brevard							
Broward	L	L	L	L	L	5	
Calhoun							
Charlotte							
Citrus				H			1
Clay							
Collier							
Columbia					H		1
Dade	L	L	L	L	L	5	
Desoto							
Dixie							
Duval		H	H	H			3
Escambia							
Flagler							
Franklin							
Gadsden							
Gilchrist							
Glades							
Gulf				H			1
Hamilton							
Hardee							
Hendry							
Hernando			H				1
Highlands				H			1
Hillsborough	H	H					2
Holmes							
Indian River				L		1	
Jackson					H		1
Jefferson							
Lafayette		H					1
Lake	H				H		2
Lee							
Leon							
Levy			H				1
Liberty							
Madison							
Manatee				L		1	
Marion		H	H	H			3
Martin							
Monroe							
Nassau			H				1
Okaloosa				H			1
Okeechobee							
Orange			H				1
Osceola							
Palm Beach	L	L	L	L	L	5	
Pasco							
Pinellas							
Polk	H			H			2
Putnam			H				1
Saint Johns							
Saint Lucie				L		1	
Santa Rosa				H	H		2
Sarasota							
Seminole							
Sumter					H		1
Suwannee							
Taylor							
Union							
Volusia	H						1
Wakulla				H			1
Walton							
Washington					H		1

[1] The significance level used is .05. "L" indicates the actual infant death rate was statistically significantly lower than the expected for the county. "H" indicates that the actual infant mortality rate was significantly higher than expected after adjusting for maternal race, marital status, and maternal education in each county.

Table 6. Florida Actual Vs. Expected Infant Mortality Statistical Significance[1] Summary by Healthy Start Coalition Area, 2015–2019

Healthy Start Coalition (HSC) Area	2015	2016	2017	2018	2019	Total L	Total H
Multiple Counties HSC Areas							
Bay, Franklin, Gulf Healthy Start Coalition Area				H			1
Capital Area Healthy Start Coalition							
Central Healthy Start Area	H		H		H		3
Chipola Healthy Start Coalition Area					H		1
Healthy Start Community Coalition Area of Okaloosa and Walton Counties							
Healthy Start of North Central Florida Area	H	H	H	H	H		5
Healthy Start Coalition Area of Hardee / Highlands / Polk Counties			H	H			2
Healthy Start Coalition Area of Jefferson / Madison / Taylor Counties							
Healthy Start Coalition Area of Southwest Florida							
Northeast Florida Healthy Start Coalition Area			H	H			2
The Healthy Start Prenatal & Infant Coalition Area of Flager and Volusia Counties	H						1
Single County HSC[2] Areas							
Broward Healthy Start Coalition Area	L	L	L	L	L	5	
Charlotte County Healthy Start Coalition Area							
Florida Department of Health in Desoto County							
Escambia County Healthy Start Coalition Area							
Florida Keys Healthy Start Coalition Area							
Gadsden County Healthy Start Coalition Area							
Healthy Start Coalition of Miami-Dade Area	L	L	L	L	L	5	
Healthy Start Coalition Area of Sarasota County							
Healthy Start Coalition Area of Hillsborough County	H	H					2
Healthy Start Coalition Area of Manatee County				L		1	
Healthy Start Coalition Area of Palm Beach County	L	L	L	L	L	5	
Healthy Start Coalition Area of Pasco County							
Healthy Start Coalition Area of Pinellas County							
Healthy Start Coalition Area of Santa Rosa County				H	H		2
Healthy Start Coalition Area of St. Lucie County				L		1	
Indian River County Healthy Start Coalition Area				L		1	
Martin County Healthy Start Coalition Area							
Okeechobee County Family Health / Healthy Start Coalition Area							
Orange County Healthy Start Coalition Area			H				1
Healthy Start Coalition Area of Brevard County							
Florida Department of Health in Seminole County							
The Healthy Start Coalition Area of Osceola County							
TOTAL							

[1] The significance level used is .05. "L" indicates the actual infant death rate was statistically significantly lower than the expected for the coalition.

"H" indicates that the actual infant mortality rate was significantly higher than expected after adjusting for maternal race, marital status, and maternal education in each county. [2] For each coalition comprised of a single county, their values are the same as in table 5.

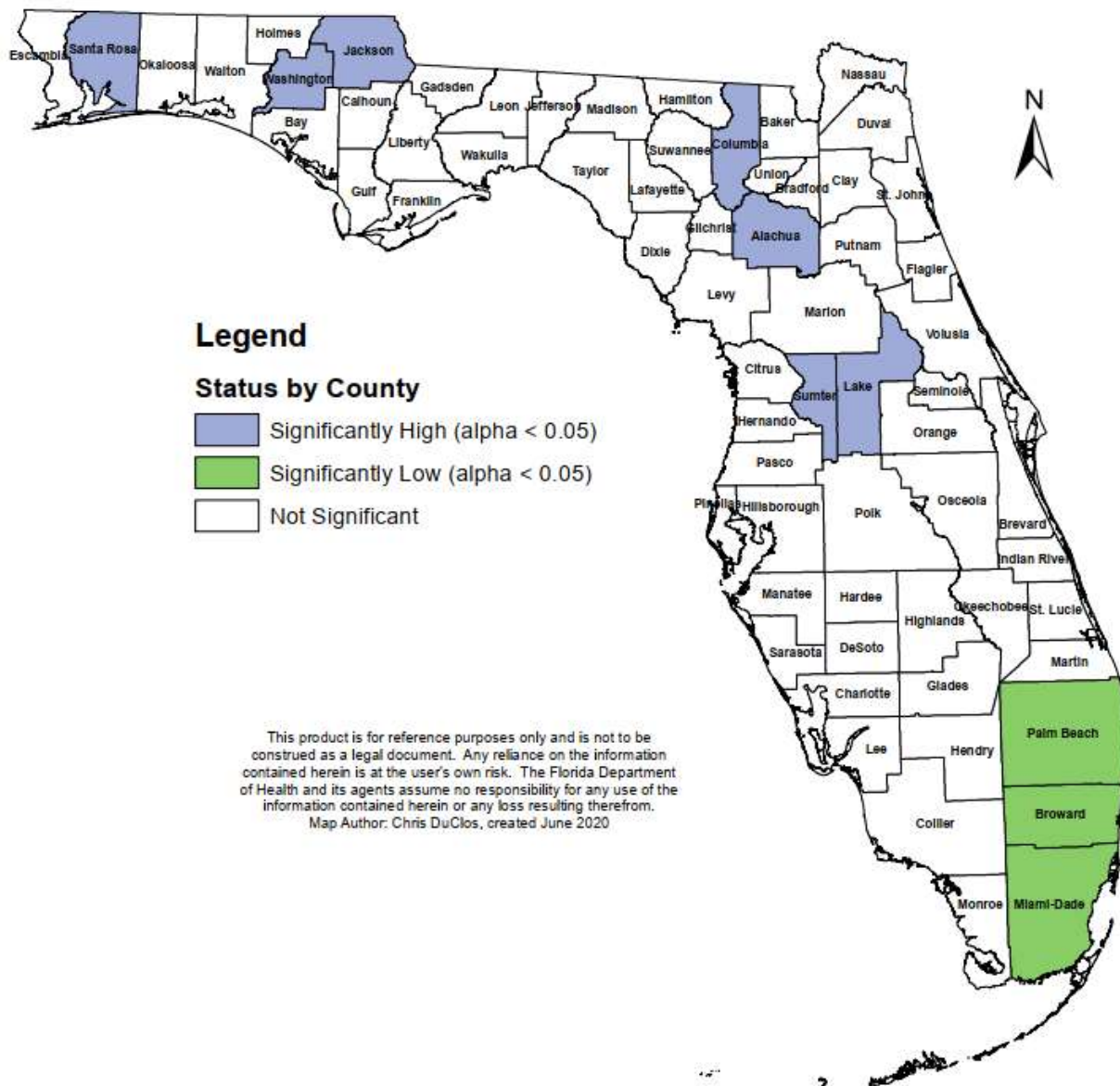**Table 7. Florida Actual Vs. Expected Low Birth Weight Statistical Significance[1] Summary by County, 2015–2019**

Mother's Resident County	2015	2016	2017	2018	2019	Total L	Total H
Alachua	H	H	H	H	H		5
Baker				H			1
Bay							
Bradford	H				H		2
Brevard							
Broward							
Calhoun							
Charlotte							
Citrus	H						1
Clay							
Collier	L	L			L	3	
Columbia		H			H		2
Dade							
Desoto			L			1	
Dixie	H	H			H		3
Duval	H	H					2
Escambia	H	H		H	H		4
Flagler							
Franklin							
Gadsden							
Gilchrist	H						1
Glades							
Gulf							
Hamilton							
Hardee							
Hendry							
Hernando		H			H		2
Highlands				H			1
Hillsborough	H		H				2
Holmes			H				1
Indian River	L					1	
Jackson							
Jefferson	L					1	
Lafayette							
Lake	H						1
Lee	L					1	
Leon	L				H	1	1
Levy	H						1
Liberty							
Madison							
Manatee	L	L		L		3	
Marion							
Martin	L				L	2	
Monroe	L	L	L			3	
Nassau	H		H				2
Okaloosa							
Okeechobee				L		1	
Orange							
Osceola							
Palm Beach	L	L	L	L		4	
Pasco							
Pinellas	L			L	L	3	
Polk	L	L				2	
Putnam			H		H		2
Saint Johns		L			L	2	
Saint Lucie	L				L	2	
Santa Rosa					H		1
Sarasota							
Seminole			L	L	L	3	
Sumter							
Suwannee			H				1
Taylor					H		1
Union			H				1
Volusia	H	H					2
Wakulla	H	L				1	1
Walton					H		1
Washington					H		1

[1] The significance level used is .05. "L" indicates the actual low birth weight rate was statistically significantly lower than the expected for the county. "H" indicates that the actual low birth weight rate was significantly higher than expected after adjusting for maternal race, marital status, and maternal education in each county.

Table 8. LBW (<2,500 Grams) Percentage Actual Versus Expected Statistical Significance[1] Summary by Healthy Start Coalition Area, 2015–2019

Healthy Start Coalition (HSC) Area	2015	2016	2017	2018	2019	Total L	Total H
Multiple Counties HSC Areas							
Bay, Franklin, Gulf Healthy Start Coalition Area							
Capital Area Healthy Start Coalition		L			H	1	
Central Healthy Start Area	H	H					2
Chipola Healthy Start Coalition Area							
Healthy Start Community Coalition Area of Okaloosa and Walton Counties					H		1
Healthy Start of North Central Florida Area	H	H	H	H	H		5
Healthy Start Coalition Area of Hardee / Highlands / Polk Counties	L	L				2	
Healthy Start Coalition Area of Jefferson / Madison / Taylor Counties					H		1
Healthy Start Coalition Area of Southwest Florida	L		L	L		3	
Northeast Florida Healthy Start Coalition Area	H			H			2
The Healthy Start Prenatal & Infant Coalition Area of Flager and Volusia Counties			H				1
Single County HSC[2] Areas							
Broward Healthy Start Coalition Area							
Charlotte County Healthy Start Coalition Area							
Florida Department of Health in Desoto County			L			1	
Escambia County Healthy Start Coalition Area	H	H	H		H		4
Florida Keys Healthy Start Coalition Area	L	L	L			3	
Gadsden County Healthy Start Coalition Area	H						1
Healthy Start Coalition of Miami-Dade Area			L			1	
Healthy Start Coalition Area of Sarasota County			L			1	
Healthy Start Coalition Area of Hillsborough County	H		H				2
Healthy Start Coalition Area of Manatee County	L	L		L		3	
Healthy Start Coalition Area of Palm Beach County	L	L	L	L		4	
Healthy Start Coalition Area of Pasco County							
Healthy Start Coalition Area of Pinellas County	L			L	L	3	
Healthy Start Coalition Area of Santa Rosa County					H		1
Healthy Start Coalition Area of St. Lucie County	L				L	2	
Indian River County Healthy Start Coalition Area	L					1	
Martin County Healthy Start Coalition Area	L				L	2	
Okeechobee County Family Health / Healthy Start Coalition Area				L		1	
Orange County Healthy Start Coalition Area							
Healthy Start Coalition Area of Brevard County							
Florida Department of Health in Seminole County				L	L	2	
The Healthy Start Coalition Area of Osceola County							
TOTAL							

[1] The significance level used is .05. "L" indicates the actual low birth weight rate was statistically significantly lower than the expected for the coalition.

"H" indicates that the actual low birth weight rate was significantly higher than expected after adjusting for maternal race, 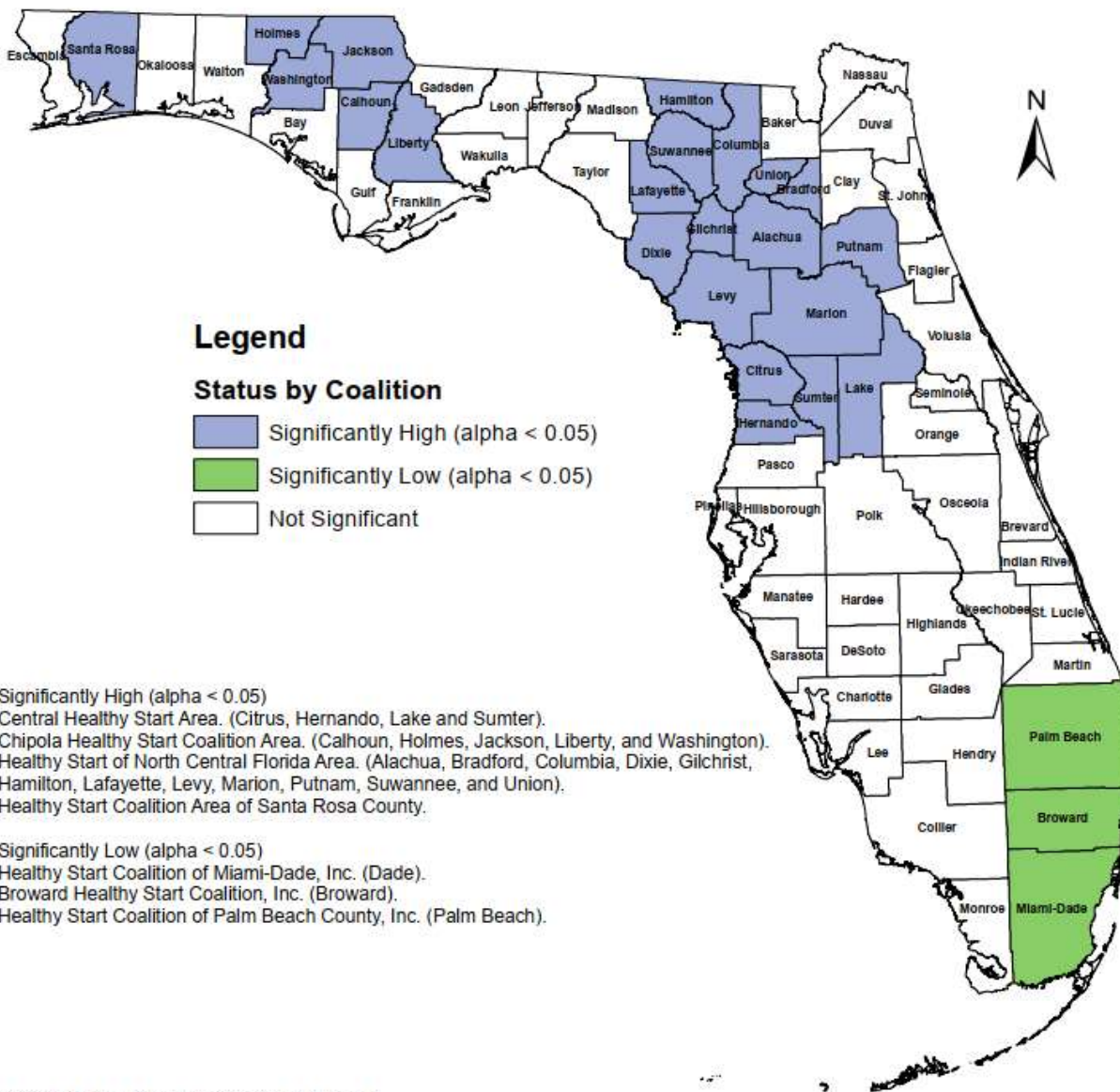marital status, and maternal education in each county. [2] For each coalition comprised of a single county, their values are the same as in table 5.

Map 1. Actual vs. Expected Infant Mortality Rates per 1,000 Live Births by County, Florida 2019

Map 2. Actual vs. Expected Infant Mortality Rates per 1,000 Live Births by Healthy Start Coalition, Florida 2019

Legend

Status by Coalition

Significantly High (alpha < 0.05)

Significantly Low (alpha < 0.05)

Not Significant

Significantly High (alpha < 0.05)
Central Healthy Start Area. (Citrus, Hernando, Lake and Sumter).
Chipola Healthy Start Coalition Area. (Calhoun, Holmes, Jackson, Liberty, and Washington).
Healthy Start of North Central Florida Area. (Alachua, Bradford, Columbia, Dixie, Gilchrist, Hamilton, Lafayette, Levy, Marion, Putnam, Suwannee, and Union).
Healthy Start Coalition Area of Santa Rosa County.

Significantly Low (alpha < 0.05)
Healthy Start Coalition of Miami-Dade, Inc. (Dade).
Broward Healthy Start Coalition, Inc. (Broward).
Healthy Start Coalition of Palm Beach County, Inc. (Palm Beach).

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Map Author: Chris DuClos, created June 2020

Map 3. Actual vs. Expected Low Birth Weight Percentages by County, Florida 2019

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Map Author: Chris DuClos, created June 2020
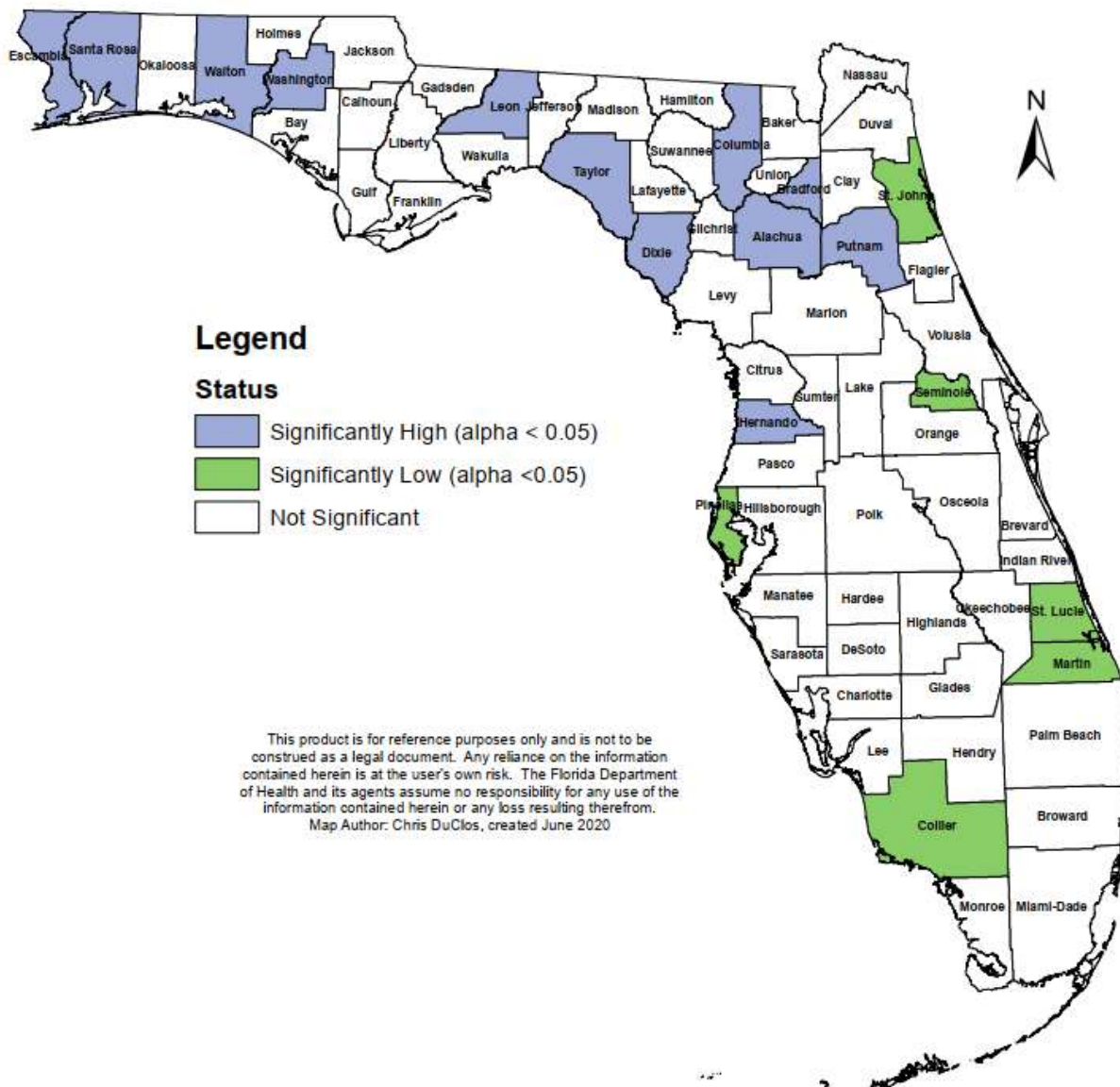
Map 4. Actual vs. Expected Low Birth Weight Percentages by Healthy Start Coalition, Florida 2019

Legend

Status by Coalition

- Significantly High (alpha < 0.05)
- Significantly Low (alpha < 0.05)
- Not Significant

Significantly High (alpha < 0.05)
Capital Area Healthy Start Coalition. (Leon and Wakulla).
Escambia County Healthy Start Coalition Area. (Escambia).
Healthy Start Coalition Area of Jefferson, Madison, and Taylor Counties. (Jefferson, Madison, and Taylor).
Healthy Start Community Coalition Area of Okaloosa and Walton Counties. (Okaloosa and Walton).
Healthy Start of North Central Florida Area. (Alachua, Bradford, Columbia, Dixie, Gilchrist, Hamilton, Lafayette, Levy, Marion, Putnam, Suwannee, and Union).
Healthy Start Coalition Area of Santa Rosa County. (Santa Rosa).

Significantly Low (alpha < 0.05)
Martin County Healthy Start Coalition. (Martin).
Healthy Start Coalition Area of Pinellas County (Pinellas).
Healthy Start Coalition Area of St. Lucie County. (Saint Lucie).
Florida Department of Health in Seminole County. (Seminole).

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