



Florida's Infant Mortality and Low Birth Weight Actual Rate Compared to Expected Rate by County Coalitions

2018 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 low birth weight (LBW) and infant mortality (IM) rates than would be expected considering the unique demographics of each county.

IM and LBW rates in Florida vary across geographic areas. This variation is due, in part, 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 LBW and IM, and because adjusting provides a way to make valid comparisons among areas with different population sizes based on these characteristics.

Other demographic characteristics, such as young maternal age and smoking status, were not used to adjust IM and LBW estimates, to avoid eliminating differences that could possibly be attributed to public health interventions. 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 2017 and 2018. 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 above, 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 categories-specific IM expected rates were calculated from the 2017 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, 2018 linked infant birth-death records were not completed at the time of this analysis and 2017 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 2017 were multiplied by the total number of county-level or coalition area births in 2018 and then summed. To compute the 2018 expected infant mortality rates for each county or coalition area, the 2018 expected number of infant deaths was used as the numerator and the total number of births in 2018 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, 2018 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 significant higher than expected actual statistics are indicated in the tables with an "H" and those with an "L" indicate statistically significant 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 not a statistically significant correlation between the actual to expected LBW ratios and the actual to expected infant death ratios (Kendall's rank correlation coefficient = 0.16; p value of 0.057).

Also included in this report are summary tables for the years 2014 through 2018 that show the Hs and Ls for the counties and coalitions for each of the past five years.

Summary

For 2018 IM rates: Actual vs. Expected

- Broward (4.70 vs. 6.61), Dade (4.64 vs. 5.98), Indian River (1.55 vs. 7.66), Manatee (3.48 vs. 5.87), Palm Beach (4.85 vs. 6.41), and Saint Lucie (3.84 vs. 6.55) counties (Table 1 and 2), which also comprise their own Healthy Start Coalition (HSC) areas with lower IM rates than expected are in the southeastern region of the state (Maps 1 and 2). Broward, Dade, and Palm Beach counties and their respective HSC areas presented lower IM rates than expected for all the five years studied (Tables 5 and 6).
- Alachua (10.98 vs. 6.18), and Marion (9.49 vs. 5.97) counties had statistically significant higher than expected IM rates. Alachua and Marion counties are located within the Healthy Start of North Central Florida Coalition area, which also had a higher than expected IM rate (9.53 vs. 6.08). Bay (11.44 vs. 6.60) and Gulf (27.78 vs. 5.65) counties had statistically significant higher than expected IM rates and are located within the Bay, Franklin, Gulf HSC area which also had higher than expected (12.21 vs. 6.54) IM rates. Citrus County (10.73 vs. 5.30) had a higher than expected IM rate and is located within the Central HSC area. This coalition had results within the expected range. Duval (9.48 vs. 6.64) had higher than expected IM rates and is in the Northeast Florida HSC area which also had higher than expected (7.91 vs. 6.19) IM rates. Highlands (12.02 vs. 5.91) and Polk (8.16 vs. 5.95) counties had higher than expected IM rates and are located within the HSC area of Hardee, Highlands, and Polk Counties, which also had higher than expected (8.21 vs. 5.95) IM rates. Santa Rosa (8.70 vs. 4.73) county had statistically significant higher than expected IM rate. Santa Rosa is located within the HSC area of Santa Rosa County. Wakulla county (14.79 vs. 5.35) had higher than expected IM rate. Wakulla is located within the Capital Area HSC which had results within the expected range.

For 2018 low birth weight percentages: Actual vs. Expected

- Manatee (7.36% vs. 8.39%), Okeechobee (5.36% vs. 8.00%), Palm Beach (8.61% vs. 9.07%), Pinellas (7.95% vs. 8.59%), and Seminole (7.38% vs. 8.09%) counties which also comprise their own respective HSC areas, each had statistically significant lower percentages of LBW than expected (Tables 3 and 4). Of note, the HSC area of Southwest Florida which comprises Collier, Hendry, Glades, and Lee counties (7.75% vs. 8.20%) had statistically significant lower percentage of LBW than expected. These counties and HSCs with lower percentages of LBW are in the south regions of the state (Maps 3 and 4). Palm Beach county/coalition presented lower than expected percentages of LBW weight for five consecutive years (Tables 7 and 8).

- Alachua (11.68% vs. 9.18%) county had statistically higher percentages of LBW than expected, Alachua county is included in the Healthy Start of North Central Florida area. (9.77% vs. 8.88%) which had higher than expected LBW percentages as well. Baker (12.13% vs. 8.24%) and Duval (10.55% vs. 9.58%) counties had significant higher than expected LBW and are located within the Northeast Florida HSC area (9.77% vs. 9.03%) which also had a higher than expected LBW. Highlands county (11.30% vs. 8.70%) had significant higher than expected LBW, but its associated HSC area, of Hardee, Highlands, and Polk Counties did not. These counties and HSCs with higher percentages of LBW are in the north and center regions of the state (Map 3 and 4). Alachua and Escambia counties each had four years of higher percentages of LBW infants than expected (Table 7). The Healthy Start of North Central Florida Coalition area presented five years of higher percentages of LBW. (Tables 8).

Discussion

This analysis should be considered a preliminary step in the continuing endeavor to reduce IM and low birth weight 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 significant 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 significant lower or higher than expected rates with separate analyses performed for each area of concern. 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, 2018

Mother's Resident County	2018 Births ¹	2018 Expected Infant Deaths ²	2018 Actual Infant Deaths	2018 Expected Infant Mortality Rate per 1,000 Births	2018 Actual Infant Mortality Rate per 1,000 Births	Actual Rate ³
Alachua	2,731	17	30	6.18	10.98	H
Baker	338	2	4	5.75	11.83	
Bay	2,186	14	25	6.60	11.44	H
Bradford	293	2	1	5.98	3.41	
Brevard	5,309	29	34	5.51	6.40	
Broward	21,922	145	103	6.61	4.70	L
Calhoun	140	1	1	5.40	7.14	
Charlotte	1,040	6	7	5.38	6.73	
Citrus	1,025	5	11	5.30	10.73	H
Clay	2,182	12	10	5.38	4.58	
Collier	3,197	18	15	5.48	4.69	
Columbia	817	5	9	5.99	11.02	
Dade	31,017	186	144	5.98	4.64	L
Desoto	395	2	1	5.97	2.53	
Dixie	149	1	2	5.56	13.42	
Duval	12,971	86	123	6.64	9.48	H
Escambia	3,733	24	30	6.38	8.04	
Flagler	809	5	6	5.68	7.42	
Franklin	81	0	1	5.99	12.35	
Gadsden	496	4	7	8.75	14.11	
Gilchrist	179	1	2	5.25	11.17	
Glades	65	0	1	5.87	15.38	
Gulf	108	1	3	5.65	27.78	H
Hamilton	169	1	1	7.20	5.92	
Hardee	338	2	0	5.92	0.00	
Hendry	582	4	2	6.13	3.44	
Hernando	1,617	9	9	5.59	5.57	
Highlands	832	5	10	5.91	12.02	H
Hillsborough	17,127	101	107	5.90	6.25	
Holmes	177	1	0	5.49	0.00	
Indian River	1,294	10	2	7.66	1.55	L
Jackson	503	3	6	6.29	11.93	
Jefferson	111	1	1	6.82	9.01	
Lafayette	56	0	0	5.71	0.00	
Lake	3,369	19	15	5.54	4.45	
Lee	6,794	38	40	5.58	5.89	

Mother's Resident County	2018 Births ¹	2018 Expected Infant Deaths ²	2018 Actual Infant Deaths	2018 Expected Infant Mortality Rate per 1,000 Births	2018 Actual Infant Mortality Rate per 1,000 Births	Actual Rate ³
Leon	2,914	20	25	7.02	8.58	
Levy	423	2	1	5.67	2.36	
Liberty	59	0	0	5.68	0.00	
Madison	184	1	2	7.40	10.87	
Manatee	3,452	20	12	5.87	3.48	L
Marion	3,476	21	33	5.97	9.49	H
Martin	1,251	8	5	6.50	4.00	
Monroe	720	4	3	5.76	4.17	
Nassau	847	4	3	4.96	3.54	
Okaloosa	2,717	14	22	5.20	8.10	H
Okeechobee	560	3	3	5.75	5.36	
Orange	16,914	102	104	6.05	6.15	
Osceola	4,434	23	25	5.19	5.64	
Palm Beach	15,064	97	73	6.41	4.85	L
Pasco	5,083	26	22	5.14	4.33	
Pinellas	8,122	49	44	6.09	5.42	
Polk	7,846	47	64	5.95	8.16	H
Putnam	821	6	6	6.75	7.31	
Saint Johns	2,243	11	7	4.91	3.12	
Saint Lucie	3,121	20	12	6.55	3.84	L
Santa Rosa	1,954	9	17	4.73	8.70	H
Sarasota	2,876	17	11	5.89	3.82	
Seminole	4,661	25	21	5.35	4.51	
Sumter	479	3	3	5.69	6.26	
Suwannee	475	3	6	6.00	12.63	
Taylor	242	1	2	5.87	8.26	
Union	173	1	2	5.69	11.56	
Volusia	4,859	28	36	5.85	7.41	
Wakulla	338	2	5	5.35	14.79	H
Walton	780	4	2	4.91	2.56	
Washington	251	2	0	6.15	0.00	
Total	221,491	1,334	1,334	6.02	6.02	

H = Actual Rate Significantly Higher; L = Actual Rate Significantly Lower than Expected

¹ Total births excluded 17 births with county unknown.

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

³ 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, 2018

Healthy Start Coalition (HSC) Area	2018 Births ¹	2018 Expected Infant Deaths ²	2018 Actual Infant Deaths	2018 Expected Infant Death Rate per 1,000 Births	2018 Actual Infant Death Rate per 1,000 Births	Actual Rate ³
<i>Multiple Counties (HSC) Areas</i>						
Bay, Franklin, Gulf Healthy Start Coalition Area	2,375	16	29	6.54	12.21	H
Capital Area Healthy Start Coalition	3,252	22	30	6.85	9.23	
Central Healthy Start Area	6,490	36	38	5.52	5.86	
Chipola Healthy Start Coalition Area	1,130	7	7	5.99	6.19	
Healthy Start Community Coalition Area of Okaloosa and Walton Counties	3,497	18	24	5.14	6.86	
Healthy Start of North Central Florida Area	9,762	59	93	6.08	9.53	H
Healthy Start Coalition Area of Hardee / Highlands / Polk Counties	9,016	54	74	5.95	8.21	H
Healthy Start Coalition Area of Jefferson / Madison / Taylor Counties	537	4	5	6.59	9.31	
Healthy Start Coalition Area of Southwest Florida	10,638	59	58	5.58	5.45	
Northeast Florida Healthy Start Coalition Area	18,581	115	147	6.19	7.91	H
The Healthy Start Prenatal & Infant Coalition Area of Flagler and Volusia Counties	5,668	33	42	5.82	7.41	
<i>Single County (HSC) Areas</i>						
Broward Healthy Start Coalition Area	21,922	145	103	6.61	4.70	L
Charlotte County Healthy Start Coalition Area	1,040	6	7	5.38	6.73	
Florida Department of Health in Desoto County	395	2	1	5.97	2.53	
Escambia County Healthy Start Coalition Area	3,733	24	30	6.38	8.04	
Florida Keys Healthy Start Coalition Area	720	4	3	5.76	4.17	
Gadsden County Healthy Start Coalition Area	496	4	7	8.75	14.11	
Healthy Start Coalition of Miami-Dade Area	31,017	186	144	5.98	4.64	L
Healthy Start Coalition Area of Sarasota County	2,876	17	11	5.89	3.82	
Healthy Start Coalition Area of Hillsborough County	17,127	101	107	5.90	6.25	

Healthy Start Coalition (HSC) Area	2018 Births ¹	2018 Expected Infant Deaths ²	2018 Actual Infant Deaths	2018 Expected Infant Death Rate per 1,000 Births	2018 Actual Infant Death Rate per 1,000 Births	Actual Rate ³
Healthy Start Coalition Area of Manatee County	3,452	20	12	5.87	3.48	L
Healthy Start Coalition Area of Palm Beach County	15,064	97	73	6.41	4.85	L
Healthy Start Coalition Area of Pasco County	5,083	26	22	5.14	4.33	
Healthy Start Coalition Area of Pinellas County	8,122	49	44	6.09	5.42	
Healthy Start Coalition Area of Santa Rosa County	1,954	9	17	4.73	8.70	H
Healthy Start Coalition Area of St. Lucie County	3,121	20	12	6.55	3.84	L
Indian River County Healthy Start Coalition Area	1,294	10	2	7.66	1.55	L
Martin County Healthy Start Coalition Area	1,251	8	5	6.50	4.00	
Okeechobee County Family Health / Healthy Start Coalition Area	560	3	3	5.75	5.36	
Orange County Healthy Start Coalition Area	16,914	102	104	6.05	6.15	
Healthy Start Coalition Area of Brevard County	5,309	29	34	5.51	6.40	
Florida Department of Health in Seminole County	4,661	25	21	5.35	4.51	
The Healthy Start Coalition Area of Osceola County	4,434	23	25	5.19	5.64	
Total	221,491	1,334	1,334	6.02	6.02	

H = Actual Rate Significantly Higher; L = Actual Rate Significantly Lower than Expected

¹ Total births excluded 17 births with county unknown.

² The expected number of infant deaths is calculated adjusting for maternal race, marital status, and maternal education of the mother.

³ The significant level 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 County, 2018

Mother's Resident County	2018 Births ¹	2018 Expected LBW Births ^{2, 3}	2018 Actual LBW Births	2018 Expected LBW Percent	2018 Actual LBW Percent	Actual Rate ⁴
Alachua	2,731	251	319	9.18%	11.68%	H
Baker	338	28	41	8.24%	12.13%	H
Bay	2,186	187	177	8.57%	8.10%	
Bradford	293	27	30	9.20%	10.24%	
Brevard	5,309	437	423	8.24%	7.97%	
Broward	21,922	2,082	2,113	9.50%	9.64%	
Calhoun	140	12	8	8.27%	5.71%	
Charlotte	1,040	82	96	7.84%	9.23%	
Citrus	1,025	79	82	7.75%	8.00%	
Clay	2,182	178	177	8.16%	8.11%	
Collier	3,197	258	238	8.07%	7.44%	
Columbia	817	73	84	8.92%	10.28%	
Dade	31,017	2,626	2,567	8.47%	8.28%	
Desoto	395	34	28	8.52%	7.09%	
Dixie	149	12	16	8.23%	10.74%	
Duval	12,971	1,243	1,369	9.58%	10.55%	H
Escambia	3,733	346	344	9.27%	9.22%	
Flagler	809	67	71	8.24%	8.78%	
Franklin	81	7	3	8.07%	3.70%	
Gadsden	496	58	53	11.73%	10.69%	
Gilchrist	179	14	12	7.86%	6.70%	
Glades	65	5	7	8.16%	10.77%	
Gulf	108	9	8	8.44%	7.41%	
Hamilton	169	17	19	9.97%	11.24%	
Hardee	338	28	25	8.22%	7.40%	
Hendry	582	50	44	8.51%	7.56%	
Hernando	1,617	136	127	8.42%	7.85%	
Highlands	832	72	94	8.70%	11.30%	H
Hillsborough	17,127	1,494	1,549	8.72%	9.04%	
Holmes	177	13	9	7.59%	5.08%	
Indian River	1,294	109	97	8.39%	7.50%	
Jackson	503	46	50	9.19%	9.94%	
Jefferson	111	12	14	10.44%	12.61%	
Lafayette	56	5	3	8.24%	5.36%	
Lake	3,369	279	288	8.27%	8.55%	
Lee	6,794	559	535	8.23%	7.87%	

Mother's Resident County	2018 Births ¹	2018 Expected LBW Births ^{2, 3}	2018 Actual LBW Births	2018 Expected LBW Percent	2018 Actual LBW Percent	Actual Rate ⁴
Leon	2,914	290	293	9.95%	10.05%	
Levy	423	36	31	8.40%	7.33%	
Liberty	59	5	3	7.80%	5.08%	
Madison	184	19	25	10.25%	13.59%	
Manatee	3,452	290	254	8.39%	7.36%	L
Marion	3,476	304	312	8.76%	8.98%	
Martin	1,251	98	95	7.81%	7.59%	
Monroe	720	58	52	8.02%	7.22%	
Nassau	847	64	75	7.53%	8.85%	
Okaloosa	2,717	213	231	7.85%	8.50%	
Okeechobee	560	45	30	8.00%	5.36%	L
Orange	16,914	1,490	1,455	8.81%	8.60%	
Osceola	4,434	353	368	7.96%	8.30%	
Palm Beach	15,064	1,366	1,297	9.07%	8.61%	L
Pasco	5,083	403	399	7.92%	7.85%	
Pinellas	8,122	698	646	8.59%	7.95%	L
Polk	7,846	689	704	8.78%	8.97%	
Putnam	821	75	76	9.09%	9.26%	
Saint Johns	2,243	166	154	7.41%	6.87%	
Saint Lucie	3,121	289	290	9.27%	9.29%	
Santa Rosa	1,954	144	151	7.36%	7.73%	
Sarasota	2,876	230	217	8.01%	7.55%	
Seminole	4,661	377	344	8.09%	7.38%	L
Sumter	479	41	46	8.60%	9.60%	
Suwannee	475	40	34	8.36%	7.16%	
Taylor	242	22	23	8.90%	9.50%	
Union	173	14	18	8.18%	10.40%	
Volusia	4,859	412	411	8.48%	8.46%	
Wakulla	338	27	36	7.91%	10.65%	
Walton	780	59	55	7.59%	7.05%	
Washington	251	21	23	8.18%	9.16%	
Total	221,491	19,268	19,268	8.70%	8.70%	

H = Actual Rate Significantly Higher; L = Actual Rate Significantly Lower than Expected

¹ Total births excluded 17 births with county unknown.

² The expected number of low birth weight births is calculated adjusting for maternal race, marital status, and education characteristics of the mother.

³ LBW = Low birth weight, defined as birth weight below 2,500 grams.

⁴ The significant level is .05.

Table 4. Florida Actual vs Expected Low Birth Weight (LBW) Percentages by Healthy Start Coalition Area, 2018

Healthy Start Coalition (HSC) Area	2018 Births ¹	2018 Expected LBW Births ^{2, 3}	2018 Actual LBW Births	2018 Expected LBW Percent	2018 Actual LBW Percent	Actual Rate ⁴
<i>Multiple Counties (HSC) Areas</i>						
Bay, Franklin, Gulf Healthy Start Coalition Area	2,375	203	188	8.55%	7.92%	
Capital Area Healthy Start Coalition	3,252	317	329	9.74%	10.12%	
Central Healthy Start Area	6,490	535	543	8.25%	8.37%	
Chipola Healthy Start Coalition Area	1,130	96	93	8.53%	8.23%	
Healthy Start Community Coalition Area of Okaloosa and Walton Counties	3,497	273	286	7.79%	8.18%	
Healthy Start of North Central Florida Area	9,762	867	954	8.88%	9.77%	H
Healthy Start Coalition Area of Hardee / Highlands / Polk Counties	9,016	789	823	8.75%	9.13%	
Healthy Start Coalition Area of Jefferson / Madison / Taylor Counties	537	52	62	9.68%	11.55%	
Healthy Start Coalition Area of Southwest Florida	10,638	872	824	8.20%	7.75%	L
Northeast Florida Healthy Start Coalition Area	18,581	1678	1,816	9.03%	9.77%	H
The Healthy Start Prenatal & Infant Coalition Area of Flagler and Volusia Counties	5,668	479	482	8.44%	8.50%	
<i>Single County (HSC) Areas⁵</i>						
Broward Healthy Start Coalition Area	21,922	2082	2,113	9.50%	9.64%	
Charlotte County Healthy Start Coalition Area	1,040	82	96	7.84%	9.23%	
Florida Department of Health in Desoto County	395	34	28	8.52%	7.09%	
Escambia County Healthy Start Coalition Area	3,733	346	344	9.27%	9.22%	
Florida Keys Healthy Start Coalition Area	720	58	52	8.02%	7.22%	
Gadsden County Healthy Start Coalition Area	496	58	53	11.73%	10.69%	
Healthy Start Coalition of Miami-Dade Area	31,017	2626	2,567	8.47%	8.28%	
Healthy Start Coalition Area of Sarasota County	2,876	230	217	8.01%	7.55%	
Healthy Start Coalition Area of Hillsborough County	17,127	1494	1,549	8.72%	9.04%	
Healthy Start Coalition Area of Manatee County	3,452	290	254	8.39%	7.36%	L

Healthy Start Coalition (HSC) Area	2018 Births ¹	2018 Expected LBW Births ^{2, 3}	2018 Actual LBW Births	2018 Expected LBW Percent	2018 Actual LBW Percent	Actual Rate ⁴
Healthy Start Coalition Area of Palm Beach County	15,064	1366	1,297	9.07%	8.61%	L
Healthy Start Coalition Area of Pasco County	5,083	403	399	7.92%	7.85%	
Healthy Start Coalition Area of Pinellas County	8,122	698	646	8.59%	7.95%	L
Healthy Start Coalition Area of Santa Rosa County	1,954	144	151	7.36%	7.73%	
Healthy Start Coalition Area of St. Lucie County	3,121	289	290	9.26%	9.29%	
Indian River County Healthy Start Coalition Area	1,294	109	97	8.39%	7.50%	
Martin County Healthy Start Coalition Area	1,251	98	95	7.81%	7.59%	
Okeechobee County Family Health / Healthy Start Coalition Area	560	45	30	8.00%	5.36%	L
Orange County Healthy Start Coalition Area	16,914	1490	1,455	8.81%	8.60%	
Healthy Start Coalition Area of Brevard County	5,309	437	423	8.24%	7.97%	
Florida Department of Health in Seminole County	4,661	377	344	8.09%	7.38%	L
The Healthy Start Coalition Area of Osceola County	4,434	353	368	7.96%	8.30%	
Total	221,491	19,268	19,268	8.70%	8.70%	

H = Actual Rate Significantly Higher; L = Actual Rate Significantly Lower than Expected

¹ Total births excluded 17 births with county unknown.

² The expected number of low birth weight births is calculated adjusting for maternal race, marital status, and maternal education of the mother.

³ LBW = Low Birth Weight, defined as birth weight below 2500 grams.

⁴ The significant level is .05.

⁵ For each coalition that is comprised of a county health Department, their values are the same as in Table 2.

**Table 5. Florida Actual vs Expected Infant Mortality Statistical Significance
Summary by County, 2014-2018¹**

Mother's Resident County	2014	2015	2016	2017	2018	Total L	Total H
Alachua							
Baker	H				H		2
Bay							
Bradford	H				H		2
Brevard		H		H			2
Broward							
Calhoun	L	L	L	L	L	5	
Charlotte							
Citrus							
Clay					H		1
Collier							
Columbia							
Dade							
Desoto	L	L	L	L	L	5	
Dixie							
Duval							
Escambia	H		H	H	H		4
Flagler							
Franklin							
Gadsden							
Gilchrist							
Glades							
Gulf							
Hamilton					H		1
Hardee							
Hendry							
Hernando							
Highlands				H			1
Hillsborough					H		1
Holmes	H	H	H				3
Indian River							
Jackson					L	1	
Jefferson							
Lafayette							
Lake			H				1
Lee	H	H					2
Leon							

Mother's Resident County	2014	2015	2016	2017	2018	Total L	Total H
Levy							
Liberty				H			1
Madison							
Manatee							
Marion					L	1	
Martin	H		H	H	H		4
Monroe							
Nassau							
Okaloosa				H			1
Okeechobee					H		1
Orange							
Osceola	L			H		1	1
Palm Beach							
Pasco	L	L	L	L	L	5	
Pinellas							
Polk							
Putnam		H			H		2
Saint Johns	H			H			2
Saint Lucie							
Santa Rosa					L	1	
Sarasota					H		1
Seminole							
Sumter							
Suwannee	H						1
Taylor							
Union							
Volusia							
Wakulla		H					1
Walton					H		1
Washington							

L = Actual Infant Death Rate Significantly Lower than Expected

H = Actual Infant Mortality Rate Significantly Higher than Expected After Adjusting for Maternal Race, Marital Status and Maternal Education

¹ The significance level used is .05.

Table 6. Florida Actual vs Expected Infant Mortality Statistical Significance Summary by Healthy Start Coalition Area, 2014-2018¹

Healthy Start Coalition (HSC) Area	2014	2015	2016	2017	2018	Total L	Total H
<i>Multiple Counties (HSC) Areas</i>							
Bay, Franklin, Gulf Healthy Start Coalition Area	H				H		2
Capital Area Healthy Start Coalition							
Central Healthy Start Area	H	H		H			3
Chipola Healthy Start Coalition Area							
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	H		3
The Healthy Start Prenatal & Infant Coalition Area of Flagler and Volusia Counties		H					1
<i>Single County (HSC) Areas²</i>							
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	H				3
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 (HSC) Area	2014	2015	2016	2017	2018	Total L	Total H
Healthy Start Coalition Area of Pinellas County							
Healthy Start Coalition Area of Santa Rosa County					H		1
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	L			H		1	1
Healthy Start Coalition Area of Brevard County							
Florida Department of Health in Seminole County							
The Healthy Start Coalition Area of Osceola County							
Total							

L = Actual Infant Death Rate Significantly Lower than Expected

H = Actual Infant Mortality Rate Significantly Higher than Expected After Adjusting for Maternal Race, Marital Status and Maternal Education

¹ The significance level used is .05.

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
Summary by County, 2014-2018¹**

Mother's Resident County	2014	2015	2016	2017	2018	Total L	Total H
Alachua		H	H	H	H		4
Baker					H		1
Bay							
Bradford		H					1
Brevard							
Broward							
Calhoun							
Charlotte							
Citrus		H					1
Clay							
Collier	L	L	L			3	
Columbia			H				1
Dade							
Desoto				L		1	
Dixie	L	H	H			1	2
Duval		H	H		H		3
Escambia	H	H	H				3
Flagler							
Franklin							
Gadsden	H						1
Gilchrist		H					1
Glades							
Gulf							
Hamilton							
Hardee							
Hendry	L					1	
Hernando			H				1
Highlands					H		1
Hillsborough		H		H			2
Holmes				H			1
Indian River	L	L				2	
Jackson							
Jefferson		L				1	
Lafayette							
Lake		H					1
Lee		L				1	1
Leon		L				1	

Mother's Resident County	2014	2015	2016	2017	2018	Total L	Total H
Levy		H					1
Liberty							
Madison							
Manatee	L	L	L		L	4	
Marion							
Martin	L	L				2	
Monroe	L	L	L	L		4	
Nassau		H		H	H		3
Okaloosa							
Okeechobee					L	1	
Orange							
Osceola	H						1
Palm Beach	L	L	L	L	L	5	
Pasco	H						1
Pinellas		L			L	2	
Polk		L	L			2	
Putnam	H			H			2
Saint Johns			L			1	
Saint Lucie	L	L				2	
Santa Rosa	H						1
Sarasota	L					1	
Seminole	L			L	L	3	
Sumter	H						1
Suwannee				H			1
Taylor							
Union				H			1
Volusia		H		H			2
Wakulla		H	L			1	1
Walton							
Washington							

L = Actual Low Birth Weight Percentage Significantly Lower than Expected

H = Actual Low Birth Weight Percentage Significantly Higher than Expected After Adjusting for Maternal Race, Marital Status and Maternal Education

¹ The significance level used is .05.

Table 8. LBW (<2,500 Grams) Percentage Actual vs Expected Statistical Significance Summary by Health Start Coalition Area, 2014-2018¹

Healthy Start Coalition (HSC) Area	2014	2015	2016	2017	2018	Total L	Total H
<i>Multiple Counties (HSC) Areas</i>							
Bay, Franklin, Gulf Healthy Start Coalition Area							
Capital Area Healthy Start Coalition			L			1	
Central Healthy Start Area	H	H	H				3
Chipola Healthy Start Coalition Area							
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		L	L			2	
Healthy Start Coalition Area of Jefferson / Madison / Taylor Counties							
Healthy Start Coalition Area of Southwest Florida	L	L		L	L	4	
Northeast Florida Healthy Start Coalition Area		H			H		2
The Healthy Start Prenatal & Infant Coalition Area of Flagler and Volusia Counties				H			1
<i>Single County (HSC) Areas²</i>							
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	L		4	
Gadsden County Healthy Start Coalition Area	H	H					2
Healthy Start Coalition of Miami-Dade Area				L		1	
Healthy Start Coalition Area of Sarasota County	L			L			
Healthy Start Coalition Area of Hillsborough County		H		H			2
Healthy Start Coalition Area of Manatee County	L	L	L		L	4	
Healthy Start Coalition Area of Palm Beach County	L	L	L	L	L	5	
Healthy Start Coalition Area of Pasco County	H						1

Healthy Start Coalition (HSC) Area	2014	2015	2016	2017	2018	Total L	Total H
Healthy Start Coalition Area of Pinellas County		L			L	2	
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	L				2	
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	H						1
Total							

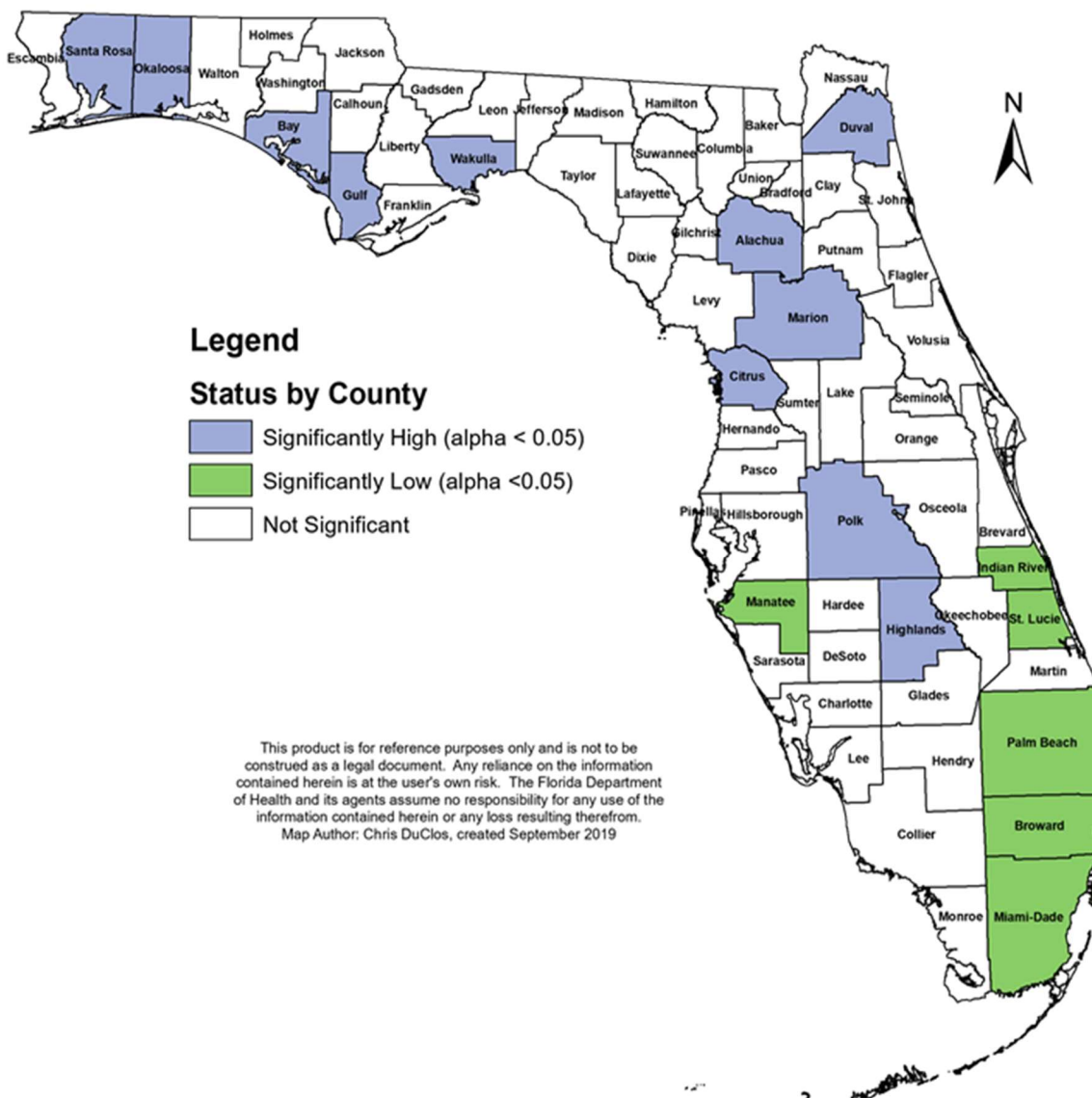
L = Actual Low Birth Weight Significantly Lower than Expected

H = Actual Low Birth Weight Percentage Significantly Higher than Expected After Adjusting for Maternal Race, Marital Status and Maternal Education

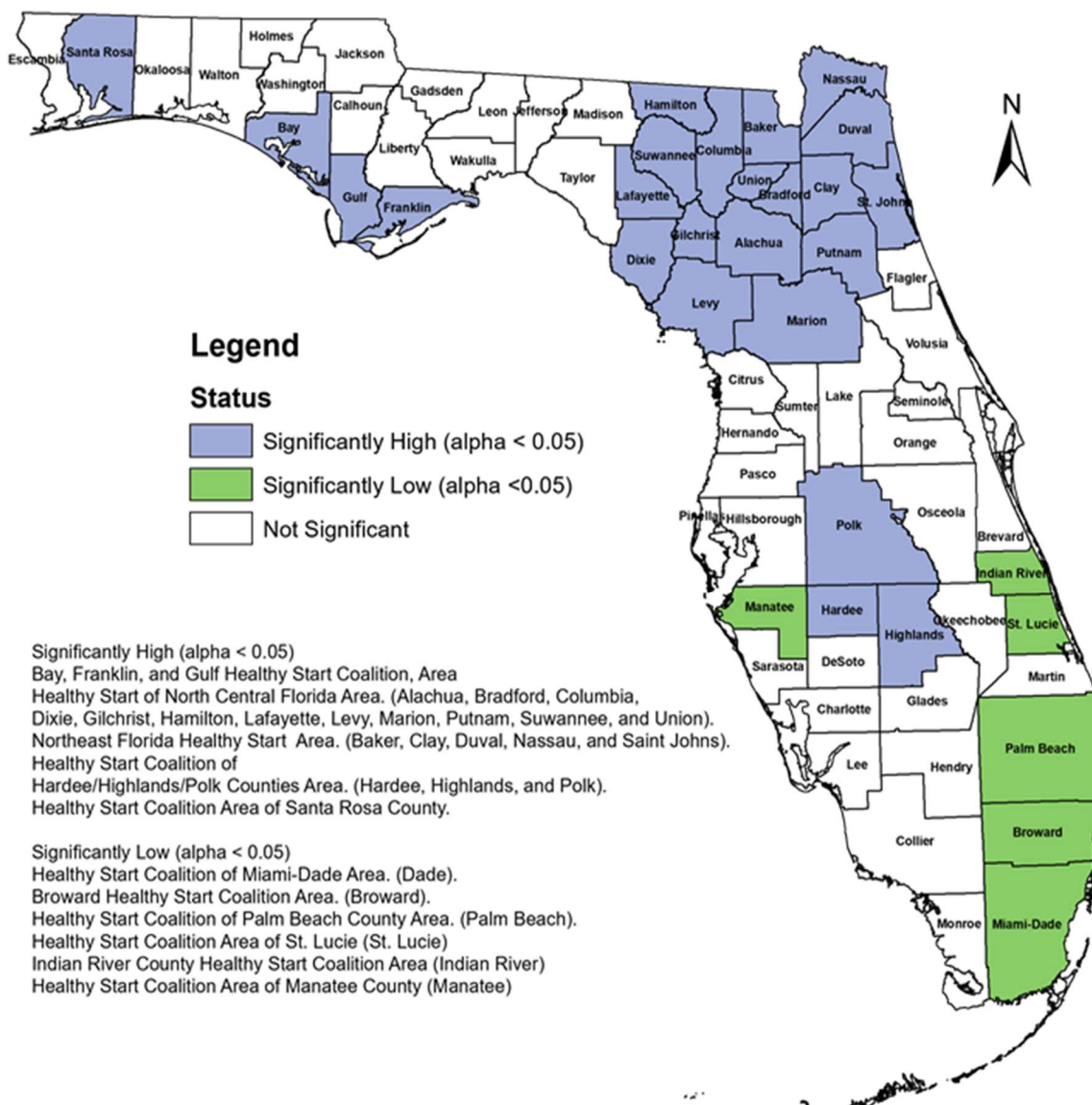
¹ The significance level used is .05.

² For each coalition comprised of a single county, their values are the same as in table 6.

Map 1. Actual vs. Expected Infant Mortality Rates per 1,000 Live Births by County, Florida 2018

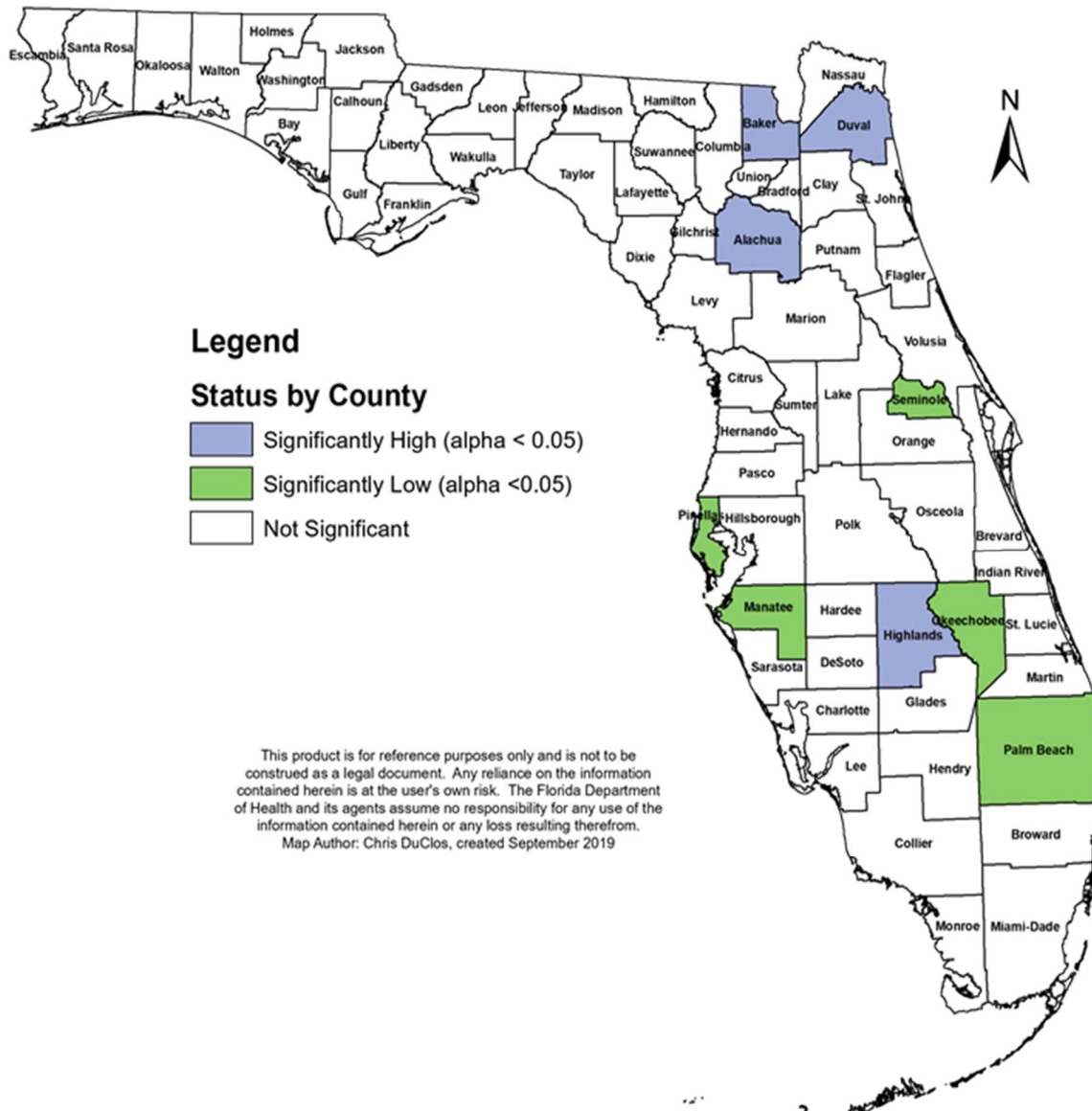


Map 2. Actual vs. Expected Infant Mortality Rates per 1,000 Live Births by Healthy Start Coalition, Florida 2018



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Map Author: Chris DuClos, created September 2019

Map 3. Actual vs. Expected Low Birth Weight Percentages by County, Florida 2018



Map 4. Actual vs. Expected Low Birth Weight Percentages by Healthy Start Coalition Area, Florida 2018

