Expected vs. Actual Birth and Infant Death Data

Birth Dashboard

Teen and Repeat Teen Births

The purpose of this annual analysis is to identify areas in Florida where teen birth rates and repeat teen birth rates are statistically significantly higher than would be expected considering the unique demographics of each area. This information may be used to encourage further, more detailed analyses to investigate factors that contribute to the higher-than-expected rates and to develop intervention strategies for improving outcomes.

In this analysis, the actual number of teen births and repeat teen births are compared to the expected number for each county in Florida. The expected number of teen births is calculated by multiplying the state teen birth rate by the teen population for each county. The expected number of repeat teen births is calculated by multiplying the percentage of repeat teen births statewide by the number of actual teen births for each county. The assumption is the expected rates for the counties are equal to the statewide rates. If the rates are not equal, the difference between the number of actual and expected births is tested for statistical significance.

In the tables, the word “Higher” appears for the counties where the number of actual births is statistically significantly higher than the expected number of births and the word “Lower” appears for the counties where the number of actual births is statistically significantly lower than the expected number of births. For counties without the words “Higher” or “Lower” the number of actual births is not statistically significantly different from the expected number of births. An alpha level of 0.05 is used for this test, which means that for the counties marked as “Higher” or “Lower” there is a 5% chance that the difference between the actual and expected number is due to random variation. Note that for larger counties, smaller differences between the statewide rate and the county rate may be statistically significant while the same or greater differences may not be statistically significant in smaller counties. This is because larger counties have a higher sample size and therefore a higher level of statistical power. Having more statistical power means the differences in rates are more likely to be statistically different. The Poisson function in Excel was used for the statistical testing.

In the following tables, actual statistics are compared to expected statistics. Counties with statistically significantly higher than expected statistics are indicated in the tables as “Higher.” Counties with statistically significantly lower than expected statistics are indicated in the tables as “Lower.” Counties not marked as “Higher” or “Lower” had rates that were not statistically significantly different from the expected rates. Counties where the actual statistics are significantly higher or lower than the expected are shaded, as indicated by the legend on the maps.

Infant Mortality and Low Birthweight

The purpose of this annual analysis is to identify geographic areas in the Florida that exhibit statistically significant differences in IM and LBW rates than would be expected considering the unique demographics of each geographic area. These rates vary across geographic areas. This variation is due, in part, to the unique demographic characteristics of the population in different geographic areas.

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.

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 infant death linkage indicator is not recorded on the birth record until up to one year after a birth. Therefore, the most recent year linked infant birth-death records were not completed at the time of this analysis and previous year data were instead used to calculate expected IM estimates.

This adjustment technique is referred to as “indirect adjustment.” To obtain the expected number of infant deaths by county or coalition area, each of the nine state-level categories-specific IM rates were multiplied by the total number of births and then summed.

To compute the expected IM rates for each county, the most recent year expected number of infant deaths was used as the numerator and the total number of births 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 births in each county and infant deaths 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, 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 birthweight 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.

Actual statistics are compared to expected statistics. The expected statistics are adjusted for the demographic characteristics in each county or coalition area, as described above. Counties or coalitions with statistically significantly higher than expected actual statistics are marked as “Higher” and those marked with “Lower” indicate statistically significantly lower than expected actual statistics. The maps display the results of the statistical tests for significance. Counties where the actual statistics are significantly higher or lower than the expected are shaded, as indicated by the legend on the maps.

Resource(s):

IM and LBW Actual Versus Expected Rates by County