AN ANALYSIS OF METRO–RURAL DIFFERENCES IN FERTILITY INDICATORS FOR WOMEN IN US DHHS REGION IV WITH SPECIAL EMPHASIS ON RURAL ADOLESCENTS

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Introduction

In recent years, there has been a growing interest in adolescent health research, particularly in the area of adolescent pregnancy and childbearing. Despite increased interest, no study identified through this project examined the relationship between rural residence and teen pregnancy antecedents and consequences. Little is known about the predictive risk factors or pregnancy outcomes of rural teens, or the prevalence of adolescent pregnancy and childbearing in rural areas. Much of the existing data related to adolescent pregnancy and childbearing has been collected from urban populations. This working paper describes what is known about teenage pregnancy and pregnancy prevention using Census and vital records data from eight southeastern states. The project was funded under a Delivery Order agreement from the U.S. Agency for Health Care Policy and Research (AHCPR) to the North Carolina Center for Rural Health Research at the Sheps Center for Health Services Research, University of North Carolina at Chapel Hill.

The work under the Delivery Order was organized within the Rural Adolescent Pregnancy Project (RAPP) and, as directed by the Agency, the project examined the availability of primary data sources related to rural teen pregnancy at the national, regional, state, and local levels. Because of a related project at the Center, the Region IV Network for Data Management and Utilization (RNDMU), vital statistics data were readily available for analysis by RAPP project staff. The eight participating RNDMU states provided vital statistics data to address key elements of RAPP Study Questions I and III concerning adolescent fertility patterns and infant health outcomes.

Methods

Data Used

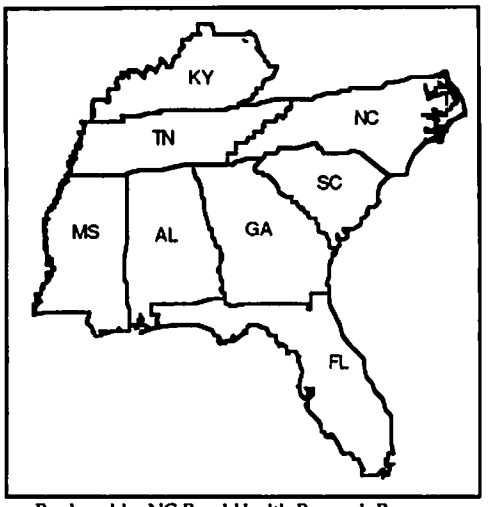
In March 1994, all eight states in Region IV agreed to provide us with vital statistics data related to pregnancy and birth outcomes according to race, age, and residence categories. Computer runs were conducted by each of the states during April and May 1994. Printouts were sent to the RAPP project office for final computations and regional analyses. Data base management was overseen by Robin Schectman, based on her experience managing vital statistics data for RNDMU. She coordinated the addition of denominator data from the 1990 Census with Ann Howard, Programmer for the Rural Program at the Sheps Center for Health

Services Research. Rates are based on numerator data for a single year, 1990; the study population is adolescent female residents of Region IV states aged 10 through 44 who experienced a pregnancy or gave birth between 1/1/90 and 12/31/90. Comparisons were made with pregnant and childbearing women in other age groups, in order to distinguish between the effects of age and residence.

Definition of Variables

Region and states: US DHHS Region IV is composed of eight states: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee. Figure 1 shows the eight states included in this area.

Figure 1. US DHHS Region IV States



Produced by NC Rural Health Research Program,
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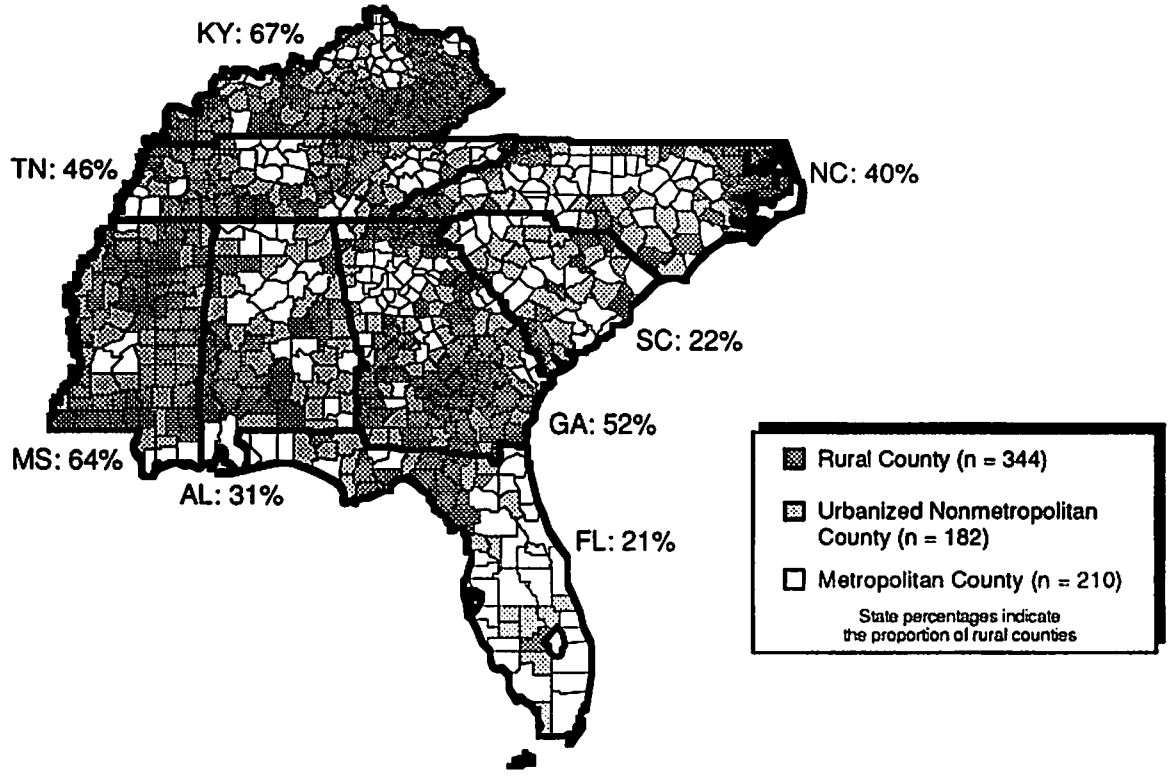
Residence: The project definition of rurality is based on the rural/urban continuum codes developed by the Economic Research Service of the Department of Agriculture (Butler MA and Beale CL, 1994) and the Office of Management and Budget. This continuum classifies counties according to population size and proximity to metropolitan areas. In order to achieve the most extreme contrast between population areas for the purpose of this study, counties were grouped into three categories: metro, urbanized non-metro, and rural. For the purposes of this report, the urbanized non-metro category is sometimes referred to as urban. Table 1 shows the correspondence between the scheme used by RAPP and the Beale reclassification codes as well as the classification of counties in Region IV states into RAPP residence categories. The appendix shows the rural/urbanized non-metro/metro distribution of counties within each Region IV state. Figure 2 is a corresponding map of Region IV states highlighting the rural grouping of counties.

Table 1. Comparison of Rural Coding Schemes

RAPP	Scale	Population and Proximity Parameters
Metro:	0	Central counties of metro areas of 1 million or more.
	1	Fringe counties to metro areas of 1 million or more.
	2	Counties in metro areas of 250,000 to 1 million
	3	Counties in metro of fewer than 250,000.
Urbanized Non-Metro:	4	Urban population of 20,000 or more, adjacent to a metro area.
	5	Urban population of 20,000 or more, not adjacent to a metro area.
	6	Urban population of between 2,500 and 19,999, adjacent to a metro area.
Rural:	7	Urban population of between 2,500 and 19,999, not adjacent to a metro area.
	8	Completely rural or fewer than 2,500 urban population adjacent to a metro area.
	9	Completely rural or fewer than 2,500 urban population, not adjacent to a metro area.

Figure 2. US DHHS Region IV State Distribution of County Residence Categories

(Percents shown are proportion of total counties that are rural)



Race: Women in the study sample were categorized by race as stated in vital statistic records or Census files. The main categories of interest were white and black, since 95.8 percent of the women in the total sample were identified as being either white or black. Only 4.1 percent of women aged 10 and over were classified as "other" because they were reported to be Asian

American or Native American or because race data were missing. Population totals were analyzed wherever race categories were analyzed separately, in order not to exclude women in the "other" category from analysis; findings for totals are not always presented, but are available from the authors. Hispanic ethnicity was not taken into account due to RNDMU protocols and small numbers; the proportion of Hispanic/Latino women in the white, black, and "other" categories is not known. Racial comparisons were considered to be important because of extensive prior data indicating racial differences in fertility and perinatal health outcomes.

Age: Women were classified according to the following age groups: 10-14, 15-17, 18-19, 20-34, and 35 and over. In some analyses, women 15-19 were combined into one group to facilitate national comparisons; smaller age groupings of women under 20 were generally considered because of the heightened risk status established for younger teen mothers. Of particular concern was the 15- to 17-year-old group because of heightened social and medical risks associated with this age group. While 10- to 14-year-olds warrant serious attention, the numbers are comparatively small.

Outcome indicators: Outcome indicators included birth rates, pregnancy rates, abortion rates, abortion ratios, infant mortality rates, low birthweight rates, births rates w/gravidity >1, and birth ratios w/gravidity >1. These indicators were defined as follows:

Birth Rate	Number of live births/Number of women in population * 1,000 (numerator includes live births to women of any age; denominator includes women ages 10-44)
Pregnancy Rate	Number of live births + number of abortions/Number of women in population * 1,000
Abortion Rate	Number of abortions/Number of women in population * 1,000
Abortion Ratio	Number of abortions/Number of pregnancies (live births + abortions) * 100
Infant Mortality Rate	Number of infant deaths (<1 year)/Number of live births * 1,000
Low Birthweight Rate	Number of live births <2,500 grams/Number of live births * 100
Repeat Pregnancy Rates	Number of live births ≥ second pregnancy/number of women in population * 1,000
Repeat Pregnancy Ratios	Number of live births ≥second pregnancy/number of live births * 100

Denominators include all women ages 10-44. Numerators summarize all events, potentially including those occurring to women younger than 10 years or older than 44 years. Thus, strictly speaking, some of our rates could actually be ratios; for simplicity's sake, we have used the term "rates" for indicators with population-based denominators.

Data Analysis

Using SAS® software, descriptive analyses were conducted to create a profile of the rural continuum within the region and each of its states. Population distributions by residence, race, and age were analyzed in the region and the individual states. Outcome variables were

examined for the region and the states by race and age within residence categories, and by residence and age within race categories.

After considerable discussion, it was decided that the urbanized non-metro category would be excluded from final presentation of results for two reasons: (1) the urbanized non-metro category is a combination of county types that makes interpretation of findings difficult; and (2) by presenting results for metro and rural only, we highlight potential differences (or lack of difference) in the extremes of the continuum.

Limitations

Although the metro and rural categories identify counties at the extremes of the rural continuum, metro counties may contain sparsely populated areas commonly perceived as rural. Furthermore, the urbanized nonmetro category spans a broad range of county types which might be mixed in character or logically be grouped with either the metro or rural categories. Exclusion of urban counties in state comparisons creates biases that are difficult to characterize; however, urbanized nonmetro findings are difficult to interpret. Urban rates and ratios generally were intermediate between metro and rural indicators. Future analyses could attempt to address this problem by developing and utilizing more refined definitions of residence.

Infant mortality data were not obtained from Florida, so the region consisted of seven states for analyses of infant mortality rates. Abortion rates and ratios could only be calculated for a five-state region and compared among those five states, since abortion data for 1990 were not available from Alabama, Florida, or Kentucky.

Actual pregnancy rates were understated because they included live births and abortions, but not fetal deaths. Fetal deaths are not reported consistently across states in Region IV in terms of both completeness and definition, and were therefore excluded. The extent to which the lack of fetal death data may have created differential bias in reporting of fertility for different population subgroups is unknown. Data were not requested for maternal deaths or causes of infant death due to small numbers expected once age, race, and residence were taken into account. Interpretation of existing data is hampered by lack of information about rates of sexual activity and contraceptive utilization for the population studied.

It was not always possible to calculate indicators for every subgroup because of small numbers of events. Small numbers as well as lack of access to individual-level data and restriction of variables in the RNDMU data set prevented analysis of issues such as neonatal v. postneonatal mortality, preterm delivery v. small for gestational age infants, complications of pregnancy and delivery, and maternal education. Without individual records containing county

identifiers, counties could not be aggregated and compared for the effects of important variables such as distance to abortion providers.

Findings

Population Measures

In the eight-state region as a whole, 72.0 percent of all women of childbearing age live in metro areas, 15.2 percent in urbanized nonmetro areas, and 12.8 percent in rural areas. However, as shown previously in Figure 2, states vary in the distribution of counties across the metro–rural continuum. The proportion of counties classified as rural in each state ranges from about two-thirds (64% and 67% in MS and KY) to one-fifth (21% and 22% in FL and SC). The proportion of states' populations concentrated in rural areas ranges from 35.7 percent in Mississippi and 35.5 percent in Kentucky to only 1.4 percent in Florida. As shown in Table 2, most of the states (Alabama, Georgia, North Carolina, South Carolina, and Tennessee) are typical of the region with approximately 70 percent of their total populations in metro areas. The range of those states' rural populations extends from 6.1 percent in South Carolina to 15.4 percent in Georgia.

Table 2. State Population Distributions by Residence (%)

State	Residence		
	Metro	Urban	Rural
AL	69.7	20.6	9.7
FL	93.8	4.8	1.4
GA	70.1	14.5	15.4
KY	50.1	14.4	35.5
MS	31.1	33.2	35.7
NC	67.2	20.5	12.3
SC	70.4	23.5	6.1
TN	70.7	14.0	15.3
Region IV	72.0	15.2	12.8

Table 3 shows the state variations and regional breakdown of the female population (10-44 years) by race. Within Region IV, the racial composition is 74.6 percent white and 23.0 percent black, but wide variations exist among the states and must be kept in mind when reviewing the data presented below. For example, the population in Kentucky is 91.3 percent white and 7.7 percent black. Florida (79.1 percent white, 16.7 percent black) and Tennessee (80.7 percent white, 18.1 percent black) also have relatively smaller black populations than

the other states in the region. In contrast, Mississippi's female population is 59.3 percent white and 39.6 percent black.

Table 3. State Population Distribution by Race Females 10-44 years, 1990

State	White	Black
AL	70.5	28.2
FL	79.1	16.7
GA	67.9	29.9
KY	91.3	7.7
MS	59.3	39.6
NC	72.7	24.6
SC	65.7	32.9
TN	80.7	18.1
Region IV	74.6	23.0

As shown in Table 4, the racial composition within Region IV's metro areas (74.9 percent white, 22.3 percent black) is almost identical to that of rural areas (76.3 percent white, 22.8 percent black). State profiles, however, are widely variable, as would be expected from differences in overall racial composition and residential concentrations. For example, female residents in metro areas in Kentucky are 87.5 percent white and 11.2 percent black; in rural areas, 97.0 percent white and 2.7 percent black. Similarly, in Tennessee, women residing in rural areas are 92.5 percent white and only 7.0 percent black. A different pattern exists in South Carolina, where 70.6 percent of women in metro areas are white and 27.8 percent are black; in rural areas, 44.4 percent of women are white and 54.9 percent are black. In the region and in every state, among both white and black women, a slightly higher proportion of teens than older women live in rural v. metro areas (not shown).

Table 4. State Population Distribution by Residence and Race Women 10-44 years, 1990

	Rural		Metro	
State	White	Black	White	Black
AL	62.2	37.1	70.9	27.6
FL	80.3	18.0	78.9	16.8
GA	70.5	28.5	67.3	30.1
KY	97.0	2.7	87.5	11.2
MS	58.8	40.1	64.6	33.9
NC	69.8	28.0	74.0	23.8
SC	44.4	54.9	70.6	27.8
TN	92.5	7.0	76.2	22.4
Region IV	76.3	22.8	74.9	22.3

The regional variation in the proportion of the population living in rural areas means that analyses of fertility-related indicators by age, race, and residence are based on extremely small numbers in some cases. For example in Table 5, Florida reports only 1,221 black 15- to 19-year-olds living in rural counties whereas Mississippi reports a much higher number — 18,515 rural teen residents (15-19 years). Another example is the difference between Florida's total teenage rural population (8,276) versus Kentucky's rural teens (55,412).

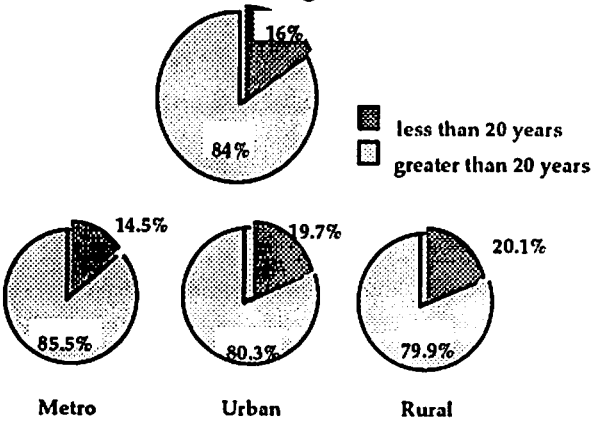
Table 5. Distribution of Rural Teen Population (Aged 15 to 19 years) US DHHS Region IV, 1990

State	Total	Black	White
Alabama	19,016	7,228 (38.0)	9,772 (51.4)
Florida	8,276	1,221 (14.8)	4,927 (59.5)
Georgia	45,693	13,140 (28.8)	28,909 (63.3)
Kentucky	55,412	1,532 (2.8)	50,798 (91.7)
Mississippi	46,733	18,515 (39.6)	22,910 (49.0)
North Carolina	47,376	10,199 (21.5)	21,885 (46.2)
South Carolina	9,933	5,354 (53.9)	3,528 (35.5)
Tennessee	32,805	2,219 (6.8)	27,263 (83.1)
REGION IV	265,244	59,408 (22.4)	169,992 (64.1)

Birth Rates and Proportion of Births to Adolescents

The regional birth rate for all teens 15-19 is 70.0 births per 1,000 young women 15-19, considerably higher than the U.S. national rate of 59.9 for 1990 (AGI, *Sex and America's Teenagers*, 1994). As shown in Figure 3, 16.0 percent of all 1990 births in Region IV were to young women under age 20. The proportion varies by residence with a greater proportion of the births in rural areas occurring to teens. Just over one-fifth (20.1 percent) of births in rural areas were to teens compared with 14.5 percent of births in metropolitan areas.

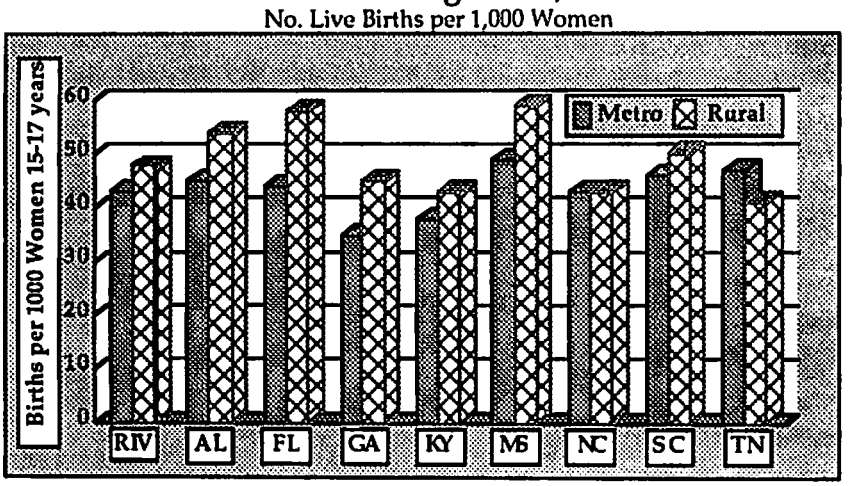
Figure 3. Proportion of Live Births to Teens by Residence US DHHS Region IV, 1990



In the region as a whole, 6.7 percent of births in 1990 were to teens ages 15-17 (8.8 percent in rural areas and 6.0 percent in metropolitan areas). The birth rate for teens 15-17 was 44.8 per 1,000 in the region, somewhat higher in rural than in metro areas (47.5 versus 42.9 per 1,000, respectively). Within other age groups, higher rural rates prevail for women 18-19 and 20-34. Little difference exists in the 10- to 14-year-old group, and women ages 35 and over have higher birth rates in metropolitan areas (data not shown).

Figure 4 shows the state variations in rural/metro birth rates for 15- to 17-year-olds in Region IV for 1990. Although exact percentages are not given on the bars, certain patterns are clear from the figure. Across the region, birth rates are consistently higher for rural than metro counties with the exceptions of Tennessee and North Carolina. In North Carolina, there is little difference in birth rates for rural and metro teens aged 15-17 (43.1 versus 42.6 per 1,000, respectively). The metropolitan birth rate for 15- to 17-year-olds in Tennessee (46.6) is higher than the rural rate (41.3). Rural birth rates for teens 15-17 range from 41.3 per 1,000 in Tennessee to 58.8 per 1,000 in Mississippi; Georgia has the lowest metro rate (35.0) and Mississippi has the highest (48.9).

Figure 4. Birth Rates for Adolescents 15 to 17 Years, US DHHS Region IV, 1990



In the region as a whole, birth rates are higher for blacks than whites in every age group, but the greatest differences are found among teens and especially younger teens. In the 10- to 14-year-old group (data not shown), the birth rate is 0.7 per 1,000 for whites and 5.0 for blacks; among 15- to 17-year-olds, 31.8 for whites and 81.2 for blacks; among 18- to 19-year-olds, 85.7 for whites and 156.2 for blacks.

At the regional level, there is little difference between rural and metro birth rates for all ages combined either for whites or for blacks. However, there are strong racial differences

in rates among 15- to 17-year-olds. As shown in Figure 5, the rural birth rate is higher in this age group for whites (37.9 rural versus 29.3 percent metro), but metro rates are higher for blacks (74.4 rural versus 83.7 metro). Examination of state-specific data (Table 6) shows that this pattern is not consistent among the region's states.

Table 6. State Birth Rates* by Age, Race, and Residence

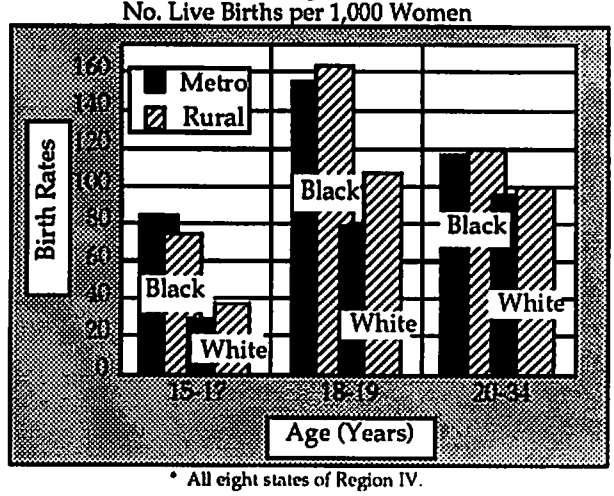
State	Rural				Metro			
	White		Black		White		Black	
	15-17	18-19	15-17	18-19	15-17	18-19	15-17	18-19
AL	39.8	104.6	73.5	155.5	30.4	80.6	77.8	142.0
FL	47.2	144.6	100.5	257.1	30.7	83.2	102.4	185.0
GA	32.7	110.5	72.5	185.2	20.7	68.0	65.7	139.4
KY	42.7	122.0	60.4	130.4	29.2	80.4	95.5	187.1
MS	36.7	81.1	83.8	151.2	30.4	79.8	78.7	132.5
NC	30.9	75.5	66.1	165.1	29.5	71.2	79.3	129.9
SC	32.8	94.1	61.6	151.6	33.2	74.0	71.0	145.9
TN	38.6	119.5	74.7	148.8	31.0	82.0	92.1	166.6
Region IV	37.9	106.3	74.4	162.4	29.3	78.1	83.7	154.2

* No. Live births per No. Women x 1,000

Looking at individual state differences, metro black birth rates are consistently higher than rural black rates in Kentucky and Tennessee, states with extremely small black rural populations. In many other cases, birth rates are higher for rural black women than for metro black women, especially among women 18-19 and 20-34. State variations in birth rates by age and residence are quite pronounced. Rural teen birth rates range between 30.9-47.2 for whites and 60.4-100.5 for blacks in the 15- to 17-year-old age group, and between 75.5-144.6 for whites and 130.4-257.1 for black 18- to 19-year-olds.

At the extremes of the age continuum (10-14, 35 and over), numbers of births in different categories become too small for reliable analysis, and patterns appear inconsistent in the vital statistics data. Looking at the region and focusing on births to women ages 15-34 (see Figure 5), white birth rates are generally higher in rural v. metro areas; differences among teens (15-17 and 18-19) are greater than those among older women 20-34. Among blacks, the pattern is more variable. Most salient perhaps is the fact that birth rates are high among both urban and rural women across all age groups, and that in some cases, women in rural areas have birth rates that exceed their metro counterparts.

Figure 5. Birth Rates* by Residence and Race, US DHHS Region IV, 1990

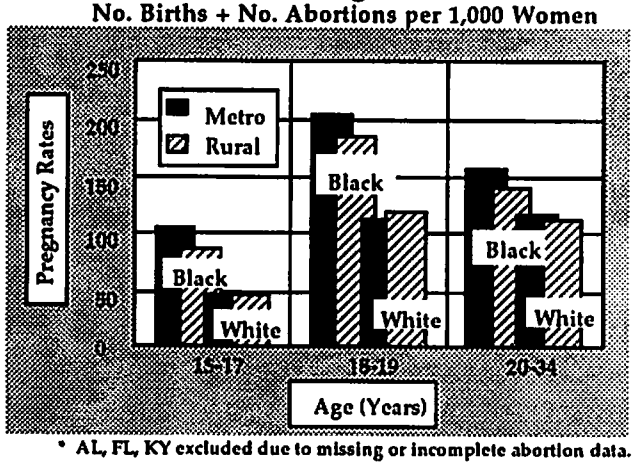


* All eight states of Region IV.

Pregnancy Rates

As mentioned earlier, pregnancy rates combining abortions and live births (but not fetal deaths) serve as a conservative estimate of the actual occurrence of pregnancies. Since abortion data were not available from Alabama, Florida, and Kentucky, the region is comprised of only five states for analyses of pregnancy rates and abortion rates and ratios.

Figure 6. Pregnancy Rates* by Residence and Race, US DHHS Region IV, 1990



* AL, FL, KY excluded due to missing or incomplete abortion data.

In the region as a whole, metro and rural pregnancy rates are similar for young women under 20 (3.0 rural and 3.2 metro for ages 10-14, 59.9 rural and 63.6 metro for ages 15-17, and 139.0 rural and 139.8 metro for ages 18-19). The higher metro rate for all ages combined (70.2 rural

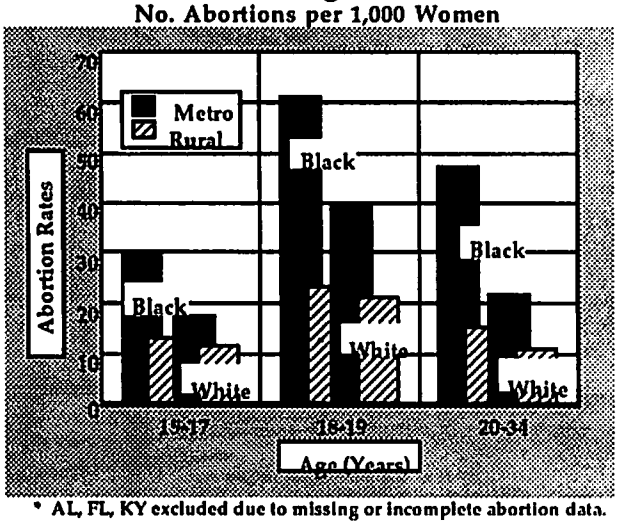
versus 78.9 metro) is attributable to higher metro rates among older women. Figure 6 shows pregnancy rates by age, residence, and race for the region as a whole.

As with birth rates, pregnancy rates are considerably higher for black women compared with white women in all age groups, regardless of residence. Differences by residence within racial groups are less marked; black women of all ages have higher metro pregnancy rates, whereas residential differences among white women vary only slightly across metro/rural residence categories. These patterns generally hold true in each of the five states.

Abortion Rates

Abortion rates, used in calculating pregnancy rates in combination with birth rates, are much higher for metro compared to rural women, independent of age and race, in the five-state region (total metro abortion rate of 19.8 per 1,000 women, 8.8 per 1,000 rural women) and in each of the component states with abortion reporting (Georgia, Mississippi, North Carolina, South Carolina, and Tennessee). As shown in Figure 7, although black abortion rates are generally much higher than those of whites in all age groups shown, the differences are much less pronounced for women in rural areas where abortion utilization is lower: abortion rates for 18-19 year-olds black and white teens are 23.2 and 21.1 respectively, compared with 60.9 for metro black and 39.8 for metro white teens ages 18-19.

Figure 7. Abortion Rates by Residence and Race, US DHHS Region IV, 1990



* AL, FL, KY excluded due to missing or incomplete abortion data.

As shown further in Table 7, where differences exist by residence, metro/rural differences in abortion rates are more salient for blacks than whites. For example, the rural abortion rate for white women ages 15-17 is 11.5, and the comparable metro rate is 17.7 per 1,000

white 15-to-17-year-olds. Among black teenagers aged 15-17, the rural rate is 13.1 and the metro rate 29.9.

Table 7. State Abortion Rates* by Age, Race, and Residence, US DHHS Region IV, 1990

Adolescents Aged 15 to 17 years

	White		Black	
State	Metro	Rural	Metro	Rural
GA	14.8	8.4	29.4	10.6
MS	15.2	11.2	17.0	10.1
NC	23.6	16.1	39.6	22.3
SC	14.5	10.3	19.4	8.6
TN	16.8	11.7	33.4	21.6
Region IV	17.7	11.5	29.9	13.1

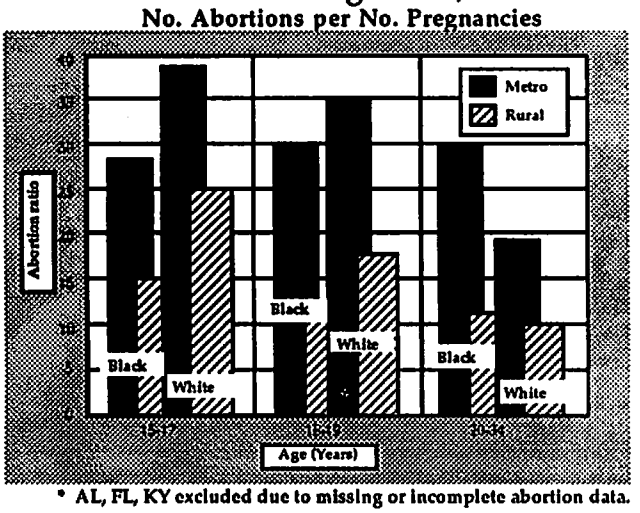
*No. Abortions per 1,000 Women

Racial differences in abortion rates are concentrated in metropolitan areas. Region-wide, rural black rates are only slightly higher than rural white rates for teens as well as older women. In Mississippi, rural black abortion rates are lower than rates for rural white teens aged 15-17 (10.1 for blacks v. 11.2 for whites) and those aged 18-19 (14.6 for blacks v. 19.8 for whites). Similarly, in South Carolina, the abortion rate for rural black teens ages 15-17 (8.6) is somewhat lower than the comparable rate for rural white teens (10.3). Black rural teens aged 18-19 have much higher rates in North Carolina (43.6) and in Tennessee (45.6) than their counterparts in the other three states (14.6-18.7).

Abortion Ratios

Abortion ratios, reflecting the likelihood of obtaining an abortion once pregnant, follow patterns similar to the abortion rates (see Figure 8). Metro abortion ratios are generally much higher than rural ratios in every state — often twice as high for a particular age/race group. The exceptions tend to be among women at the extremes of age; in a few cases, rural abortion ratios are higher than metro ratios for young teens 10-14 and older women 35 and over.

Figure 8. Abortion Ratios* by Residence and Race, US DHHS Region IV, 1990



* AL, FL, KY excluded due to missing or incomplete abortion data.

Differences by residence are especially dramatic in Georgia among women ages 20-34. Among white women in this age group, the metro abortion ratio of 22.6 contrasts with the rural ratio of 7.4. Among their black counterparts, the ratios are 33.5 for metro women and 8.7 for rural women.

The total black ratio is higher than the white ratio in every state except Mississippi, where the ratios are similar (13.9 for whites, 13.2 for blacks). White ratios in other states range from 16.2 in South Carolina to 21.8 in North Carolina. Abortion ratios vary markedly with age, and interactions between race and age are apparent. In the region as a whole, abortion ratios are higher for white teens (15-17 and 18-19) than for black teens; the situation reverses among older women, with higher ratios for black v. white women ages 20-34 and 35+. This is the case for both metro and rural women, though the racial gap is slight among rural women past the teen years. These patterns are generally consistent among the states, with abortion more likely among white pregnant teens under 18, and black pregnant women 20 and over. Women ages 18-19 appear to be a transitional group with somewhat more inconsistent results.

Infant Mortality Rates

The infant mortality rate for all races combined in the seven-state region (excluding Florida) is 10.9 deaths per thousand live births. The metro and rural rates are similar when data are aggregated for women of all ages, with a metro rate of 10.7 and a slightly higher rural rate of 11.2. However, metro rates are somewhat higher for women ages 15-34 and rural rates are higher for women at the extremes of the age spectrum. Among women 10-14, the metro rate

is 20.0 and the rural rate is 33.0; for ages 35 and over, the metro rate of 9.3 compares with the rural rate of 13.6 per thousand (not shown).

Consistent with national data, the racial differential for infant mortality in the region is more than two-fold, with a black rate of 17.0 and a white rate of 8.1. Among blacks, differences by residence are slight (17.2 metro, 16.5 rural) except among the youngest women. Black infant mortality rates among 10- to 14-year-old mothers are 17.2 in metro areas and 28.5 for rural areas (not shown); however, caution should be used in interpreting these rates due to small numbers.

Focusing on teens ages 15-19 (see Table 8), metro/rural differences in infant mortality are very slight in the region as a whole. White infant mortality rates are 11.4 for metro teens and 11.2 for rural teens; among black teens, the rates are 15.6 in metro areas and 15.4 in rural areas. Variation exists among the states, with infant mortality rates higher in rural versus metro areas for all teens in Georgia and Mississippi, and for white teens in North Carolina. The most pronounced rural disadvantage occurred among black teens in Georgia and white teens in Mississippi, with infant mortality rates nearly 40 percent higher than metro rates.

Table 8. Infant Mortality Rate* by Race and Residence for 15- to 19-year-olds

	White		Black	
State	Metro	Rural	Metro	Rural
AL	12.2	11.0	18.0	15.8
GA	6.5	6.9	8.2	11.2
KY	11.3	10.3	18.0	--
MS	12.6	17.5	17.2	19.9
NC	12.9	14.4	14.0	12.2
SC	12.1	--	20.8	13.5
TN	12.5	11.7	20.1	--
Region IV	11.4	11.2	15.6	15.4

* No. Infant Deaths < 1 year per 1,000 Live Births ** FL is excluded due to missing data.

Low Birthweight Rates

Low birthweight rates were available for all 8 states in the region. The overall rate for the total population was 8.1 percent. Metro and rural rates were nearly identical: 8.6 and 8.5 percent, respectively, for whites and 14.4 and 13.3 percent for blacks. Age/race patterns were generally similar to those for infant mortality, and most metro/rural differences were slight. Where differences exist, the rates are lower for rural teens, both black and white as compared with teens in metro areas. Table 9 shows the rates for 15- to 17-year-olds by race and residence. As with infant mortality, state patterns are variable, but residence does not appear to be a major factor in low birthweight.

Table 9. Low Birth Weight Rates* by Race and Residence for 15- to 17-year-olds

	White		Black	
State	Metro	Rural	Metro	Rural
AL	8.4	5.9	14.4	16.2
FL	8.5	6.2	14.3	11.9
GA	8.3	7.6	15.0	11.0
KY	9.1	9.5	12.3	--
MS	10.4	8.2	16.2	13.5
NC	8.7	8.3	12.9	14.3
SC	8.5	--	15.5	15.9
TN	8.6	8.9	14.7	10.3
Region IV	8.6	8.5	14.4	13.3

* No. Live Births < 2,500 grams per 100 Live Births

Birth Rates with Gravidity > 1

Finally, two measures related to repeated teen pregnancy were calculated from birth certificate data, and are therefore available for all eight states. The first is the population-based rate of live births that result from second or higher order pregnancies (per 1,000 women). The second measure, described in the subsequent section is a proportion of all births that result from second or higher order pregnancies, using age-specific number of births as the denominator. The rate of births from higher order pregnancies for women of all ages was 39.8, with a markedly higher rate for black (52.4) compared with white (35.7) women (not shown). The overall metro rate of 39.6 was only slightly higher than the rural rate of 37.1.

Table 10. Repeat Pregnancy Rate* by Age, Race, and Residence

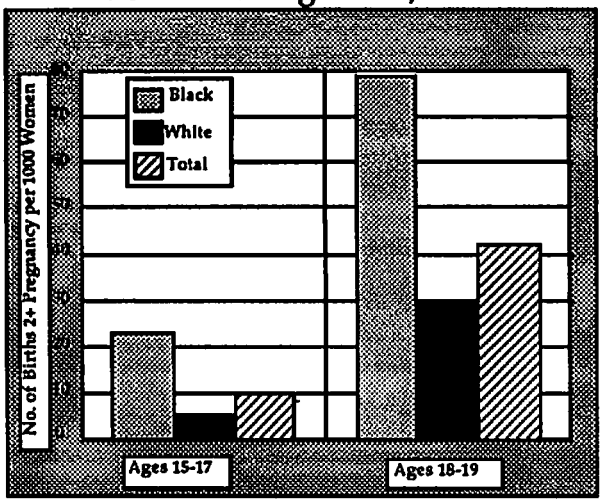
	White				Black			
State	15-17		18-19		15-17		18-19	
	Metro	Rural	Metro	Rural	Metro	Rural	Metro	Rural
AL	4.5	4.7	26.3	32.7	21.6	18.7	71.2	73.0
FL	5.9	8.4	31.4	44.2	31.8	26.3	99.4	119.5
GA	3.1	5.0	22.1	34.4	18.5	17.1	67.8	81.1
KY	3.9	6.2	27.1	39.7	28.9	11.0	98.7	41.9
MS	4.9	5.1	25.3	23.6	20.3	20.5	63.9	70.7
NC	5.5	5.3	24.6	26.8	23.6	16.9	68.5	78.9
SC	5.6	5.6	27.4	34.5	19.7	14.1	73.6	58.8
TN	4.6	5.9	27.5	40.2	27.9	20.0	87.5	63.0
Region IV	5.0	5.6	27.5	34.3	24.7	18.2	79.7	73.3

* No. Live Births >= 2nd Pregnancy per 1,000 Women

Rates of births to teens resulting from repeat pregnancies are close to 80 per 1,000 for black 18- to 19-year-olds and 30 per 1,000 for the older white teens. Only small differences by residence exist among teens for this indicator. As shown in Table 10, the rate is slightly higher in rural versus metro areas for white teens aged 15-17 and 18-19 years. For black teens aged 15-

17, the repeat pregnancy rates are generally higher in metro versus rural counties; the pattern is inconsistent for the older black teens. In four states (FL, GA, MS, and NC), rural, black teens aged 18-19 have higher repeat pregnancy rates; in the other three states (KY, SC, and TN) the rate is higher for metro black teens.

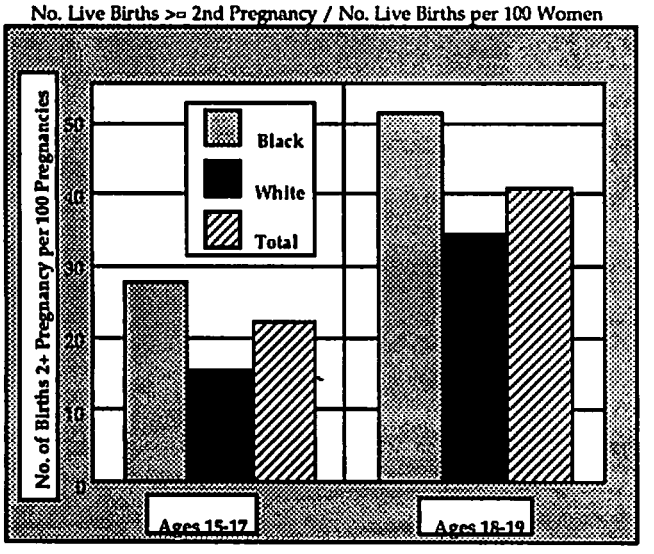
Figure 9. Repeat Pregnancy Rates* by Race, US DHHS Region IV, 1990



* No. live births 2+ order pregnancy per 1,000 women

Birth Ratios with Gravidity >1

Figure 10. Repeat Pregnancy Ratios by Race US DHHS Region IV, 1990



The last measure is the number of live births resulting from second or higher order pregnancies as a proportion of all live births. The ratio is 66.3 for the region, meaning that on

the average about two-thirds of all births to women in 1990 were the result of second or higher order pregnancies. In the aggregate, and for blacks and whites separately, the ratio is somewhat higher for metro v. rural births in most age groups. As shown in Figure 10, the repeat pregnancy ratio is substantially higher for black teens, and is as high as 50% in the 18-19 year age group. Not shown due to small numbers are the repeat pregnancy ratios for the youngest teens aged 10-14. The data for Region IV indicate that five to six percent of the births to these young women in 1990 were the result of repeat pregnancies.

Focusing on patterns by residence, Figure 10 highlights the ratios for the 15- to 17- year-old and 18- to 19-year-old age groups by race and residence. Of note is the large proportion of young teens who are experiencing their second or greater pregnancy (ranging from 11.8 percent to 19.2 percent for whites and from 18.2 percent to 31.1 percent for blacks). Although black ratios appear consistently higher than white ratios across the region, the differences between metro and rural ratios within racial groups are generally small. The proportion of births to teens resulting from repeat pregnancies are high in both metro and rural areas. Among the 15- to 17-year-old mothers, ratios tend to be somewhat higher in metro areas. The largest metro/rural discrepancy appears in Georgia, where whites had a metro ratio of 64.0 and a rural ratio of 55.2, and blacks had ratios of 70.3 and 63.9 in metro and rural areas, respectively. Close to 30 percent of the older white teens and over half of blacks who had a baby in 1990 were experiencing a second or higher order pregnancy. Clearly, as seen in Table 11, repeat pregnancy is a frequent occurrence for teen mothers, regardless of race or residence.

Table 11. Repeat Pregnancy Ratio* by Age, Race, and Residence

State	White				Black			
	15-17		18-19		15-17		18-19	
	Metro	Rural	Metro	Rural	Metro	Rural	Metro	Rural
AL	14.9	11.8	32.7	31.3	27.8	25.4	50.1	47.0
FL	19.2	17.8	37.8	30.6	31.1	26.2	53.8	46.5
GA	14.9	15.2	32.5	31.1	28.1	23.6	48.6	43.8
KY	13.3	14.5	33.7	32.5	30.3	18.2	52.8	32.1
MS	16.0	13.8	31.7	29.1	25.8	24.5	48.3	46.7
NC	18.7	17.2	34.6	35.5	29.7	25.5	52.8	47.8
SC	16.8	17.1	37.1	36.6	27.8	22.9	50.4	38.8
TN	14.7	15.2	33.6	33.6	30.3	26.8	52.5	42.3
Region IV	17.1	14.9	35.3	32.3	29.5	24.4	51.7	45.1

* No. Live Births >= 2nd Pregnancy per 100 Pregnancies

Outcomes for Very Young Adolescents

While fertility rates for adolescents in the 10-14 year age group are relatively low compared with older women and other teens, the actual numbers of very young adolescents

experiencing pregnancy and childbirth are notable, and merit special attention. There are strong differences by race and patterns of birth outcomes that vary considerably in the region. In some states, there are differences by residence, where young black teens in rural counties have much higher rates of poor birth outcomes than their metro counterparts. See *Key Findings* box below for specifics.

Key Findings for Very Young Adolescents

- In five of the eight Southern states where pregnancy data exist, over 2,600 10 to 14 year olds became pregnant in 1990. Over 1500 very young adolescents gave birth in 1990; North Carolina had the highest total number with 791 pregnant 10- to 14-year-olds, and 402 live births to this age group.
- Young adolescents have the highest abortion ratios of any age group, with over 40% of pregnancies to 10- to 14-year-olds ending in abortion versus live birth. This is especially true for white, metro teens where over 60% of pregnancies end in abortion compared with rural, white teens (49%) or rural, black 10- to 14 -year-olds (28%).
- Rates of low birthweight babies born to 10- to 14-year-olds in 1990 were high in both metro (14.6%) and rural areas (15.1%). For blacks, rates are higher for rural teens (16.8% LBW babies) versus 15.2 percent for black 10- to 14-year-olds in metro areas. Babies born to young, black teens in rural areas have a much lower chance of surviving, with infant mortality rates for this group being 28.5 versus 17.2 for the metro group.
- In 1990 out of the 2,800 live births to 10- to 14-year-olds, over 150 were repeat pregnancies. In both metro and rural areas, repeat pregnancy, even among the very young adolescents is a problem — a strong indicator of program failure and need for improved education and services.

Summary

The Southeastern states vary dramatically in their concentrations of population in metropolitan and rural areas, as well as in the racial composition of those populations. In the Appalachian states of Kentucky and Tennessee, the proportionately small number of black residents are concentrated in urban areas. However, approximately 13 percent of both the region's white and black populations reside in extremely rural areas. Rural areas appear to have a slightly higher proportion of adolescents compared with metropolitan areas, probably due to out-migration of adults to more urban settings.

Rural birth rates to teens ages 15-19 are generally higher than metro rates throughout the region; the exception is a higher birth rate for black teens ages 18-19 in metro versus rural areas. Abortion rates and ratios are generally much higher in metro than rural areas for women of all ages and races, though differences by residence are more extreme for black women.

Abortion rates are considerably higher for black compared with white women of all ages; abortion ratios, however, are higher for white than black teens in both metro and rural areas.

Infant mortality rates tend to be somewhat higher for women in metro areas at ages 15-34, but higher for rural women ages 10-14 and 35 or over. Differences in low birthweight rates by residence appear to be slight. The likelihood of teen births resulting from higher order pregnancies is higher in metropolitan than rural areas, but repeated teen pregnancy is a common occurrence across all groups of teenage mothers. Among older teens giving birth in the region, approximately one-third of rural whites and close to half of rural blacks have experienced a prior pregnancy by the age of 18-19 years. The proportions are equally high, and in some states much higher, for teens of both races in metro areas.

The largest and most consistent difference between metropolitan and rural areas is in the likelihood of obtaining an abortion. It is unclear to what extent these and other differences may be explained by variable access to health care services, including family planning, abortion, primary health care, prenatal care, delivery, or other hospital care. The same discrepancies might be at least partially attributable to differences in cultural norms, values, and preferences between metropolitan and rural areas. Further research with qualitative components is needed to explore cultural patterns, e.g., in Appalachian v. coastal communities.

In general, infant health outcomes are quite similar in rural and metropolitan areas, though troubling for births to adolescent mothers regardless of residence. The apparent disadvantage of the youngest and oldest mothers related to infant mortality in rural areas may be attributable to biological risk combined with lessened access to care in remote regions. Though the numbers of births to women ages 10-14 and 35+ are relatively small, the conditions that lead to their poor outcomes require further investigation.

Perhaps the most salient finding is the similarity between metropolitan and rural areas in the Southeast in measures of adolescent fertility and outcomes of adolescent pregnancy. The general consistency of these findings among the states is surprising considering the extent of demographic differences in population composition and distribution. Rural adolescent pregnancy receives much less attention than teen pregnancy in urban areas in the media, in public health research efforts, and in allocation of resources for adolescent pregnancy prevention and parenting programs. However, rural teens appear to be about equally as likely as their more urban counterparts to become pregnant, to give birth, to have low birthweight babies, and to experience infant deaths. The data on repeat pregnancy for teens in both metro and rural areas point to the need for more effective programs and more targeted services.

References

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Appendix
Identification of Rural, Urban, and Metro Counties within Region IV States

Alabama			
Rural Counties:			
Butler	Cherokee	Choctaw	Clarke
Clay	Conecuh	Coosa	Covington
Greene	Lamar	Lowndes	Marengo
Marion	Monroe	Perry	Randolph
Sumter	Tallapoosa	Washington	Wilcox
Winston			
Urban Counties:			
Barbour	Bibb	Bullock	Chambers
Chilton	Cleburne	Coffee	Crenshaw
Cullman	Dallas	De Kalb	Escambia
Fayette	Franklin	Geneva	Hale
Henry	Jackson	Lee	Macon
Marshall	Pickens	Pike	Talladega
Metro Counties:			
Autauga	Baldwin	Blount	Calhoun
Colbert	Dale	Elmore	Etowah
Houston	Jefferson	Lauderdale	Lawrence
Limestone	Madison	Mobile	Montgomery
Morgan	Russell	Shelby	St. Clair
Tuscaloosa	Walker		

Florida			
Rural Counties:			
Franklin	Gilchrist	Glades	Hamilton
Holmes	Lafayette	Levy	Liberty
Madison	Suwannee	Taylor	Union
Wakulla			
Urban Counties:			
Baker	Calhoun	Citrus	Gulf
Hardee	Hendry	Highlands	Indian River
Jackson	Jefferson	Monroe	Okeechobee
Putnam	Sumter	Walton	Washington
Metro Counties:			
Alachua	Bay	Bradford	Brevard
Broward	Charlotte	Clay	Collier
Duval	Escambia	Flagler	Gadsden
Hernando	Hillsborough	Lake	Lee
Leon	Manatee	Marion	Martin
Nassau	Okaloosa	Orange	Osceola
Palm Beach	Pasco	Pinellas	Polk
St. Johns	St. Lucie	Santa Rosa	Sarasota
Seminole	Volusia		

Georgia			
Rural Counties:			
Appling	Atkinson	Bacon	Baker
Banks	Ben Hill	Berrien	Brantley
Brooks	Calhoun	Camden	Candler
Charlton	Chattooga	Clay	Clinch
Coffee	Colquitt	Cook	Crawford
Crisp	Dawson	Dodge	Early
Echols	Emanuel	Evans	Fannin
Franklin	Gilmer	Glascock	Gordon
Habersham	Hancock	Heard	Irwin
Jasper	Jeff Davis	Jenkins	Johnson
Lanier	Laurens	Lincoln	Long
Lumpkin	Marion	Mc Intosh	Miller
Montgomery	Murray	Oglethorpe	Pierce
Pike	Quitman	Rabun	Randolph
Schley	Screven	Stephens	Stewart
Sumter	Talbot	Taliaferro	Tattnall
Taylor	Telfair	Thomas	Tift
Toombs	Towns	Treutlen	Turner
Union	Upson	Warren	Washington
Wayne	Webster	Wheeler	White
Wilcox	Wilkes		
Urban Counties:			
Baldwin	Bleckley	Bulloch	Burke
Decatur	Dooly	Elbert	Floyd
Glynn	Grady	Greene	Hall
Haralson	Hart	Jefferson	Lamar
Liberty	Lowndes	Macon	Meriwether
Mitchell	Monroe	Morgan	Polk
Pulaski	Putnam	Seminole	Terrell
Troup	Ware	Whitfield	Wilkinson
Worth			
Metro Counties:			
Barrow	Bartow	Bibb	Bryan
Butts	Carroll	Catoosa	Chatham
Chattahoochee	Cherokee	Clarke	Clayton
Cobb	Columbia	Coweta	Dade
De Kalb	Dougherty	Douglas	Effingham
Fayette	Forsyth	Fulton	Gwinnett
Harris	Henry	Houston	Jackson
Jones	Lee	Madison	Mc Duffie
Muscogee	Newton	Oconee	Paulding
Peach	Pickens	Richmond	Rockdale
Spalding	Twiggs	Walker	Walton

Kentucky			
Rural Counties:			
Adair	Allen	Ballard	Barren
Bath	Bell	Boyle	Bracken
Breathitt	Breckinridge	Butler	Caldwell
Calloway	Carlisle	Carroll	Casey
Clay	Clinton	Crittenden	Cumberland
Edmonson	Elliott	Fleming	Floyd
Fulton	Graves	Grayson	Green
Hancock	Harlan	Hart	Henry
Hickman	Jackson	Johnson	Knott
Knox	Larue	Laurel	Lawrence
Lee	Leslie	Letcher	Lewis
Lincoln	Livingston	Logan	Lyon
Magoffin	Marion	Marshall	Martin
Mason	Mc Creary	Mc Lean	Menifee
Metcalfe	Monroe	Morgan	Muhlenberg
Nicholas	Owen	Owsley	Perry
Pike	Pulaski	Robertson	Rockcastle
Rowan	Russell	Simpson	Spencer
Taylor	Todd	Trigg	Trimble
Washington	Wayne	Whitley	Wolfe
Urban Counties:			
Anderson	Estill	Franklin	Garrard
Hardin	Harrison	Hopkins	Mc Cracken
Meade	Mercer	Montgomery	Nelson
Ohio	Powell	Union	Warren
Webster			
Metro Counties:			
Boone	Bourbon	Boyd	Bullitt
Campbell	Carter	Christian	Clark
Daviess	Fayette	Gallatin	Grant
Greenup	Henderson	Jefferson	Jessamine
Kenton	Madison	Oldham	Pendleton
Scott	Shelby	Woodford	

Mississippi			
Rural Counties:			
Alcorn	Amite	Attala	Benton
Calhoun	Carroll	Chickasaw	Choctaw
Claiborne	Clarke	Clay	Covington
Franklin	George	Greene	Grenada
Humphreys	Issaquena	Itawamba	Jasper
Jefferson	Jefferson Davis	Kemper	Lafayette
Lamar	Lawrence	Lincoln	Marion
Monroe	Montgomery	Neshoba	Newton
Noxubee	Oktibbeha	Panola	Perry
Pike	Pontotoc	Prentiss	Quitman
Sharkey	Smith	Sunflower	Tallahatchie
Tippah	Tunica	Union	Walthall
Wayne	Webster	Wilkinson	Winston
Yalobusha			
Urban Counties:			
Adams	Bolivar	Coahoma	Copiah
Forrest	Holmes	Jones	Lauderdale
Leake	Lee	Leflore	Lowndes
Marshall	Pearl River	Scott	Simpson
Stone	Tate	Tishomingo	Warren
Washington	Yazoo		
Metro Counties:			
De Soto	Hancock	Harrison	Hinds
Jackson	Madison	Rankin	

Mississippi			
Rural Counties:			
Alcorn	Amite	Attala	Benton
Calhoun	Carroll	Chickasaw	Choctaw
Claiborne	Clarke	Clay	Covington
Franklin	George	Greene	Grenada
Humphreys	Issaquena	Itawamba	Jasper
Jefferson	Jefferson Davis	Kemper	Lafayette
Lamar	Lawrence	Lincoln	Marion
Monroe	Montgomery	Neshoba	Newton
Noxubee	Oktibbeha	Panola	Perry
Pike	Pontotoc	Prentiss	Quitman
Sharkey	Smith	Sunflower	Tallahatchie
Tippah	Tunica	Union	Walthall
Wayne	Webster	Wilkinson	Winston
Yalobusha			
Urban Counties:			
Adams	Bolivar	Coahoma	Copiah
Forrest	Holmes	Jones	Lauderdale
Leake	Lee	Leflore	Lowndes
Marshall	Pearl River	Scott	Simpson
Stone	Tate	Tishomingo	Warren
Washington	Yazoo		
Metro Counties:			
De Soto	Hancock	Harrison	Hinds
Jackson	Madison	Rankin	

North Carolina			
Rural Counties:			
Alleghany	Ashe	Avery	Beaufort
Bertie	Camden	Caswell	Cherokee
Chowan	Clay	Columbus	Dare
Gates	Graham	Greene	Hertford
Hyde	Jackson	Jones	Lee
Macon	Martin	Mitchell	Montgomery
Northampton	Pamlico	Pasquotank	Pender
Perquimans	Polk	Richmond	Scotland
Swain	Tyrrell	Vance	Warren
Washington	Watauga	Wilkes	Yancey
Urban Counties:			
Anson	Bladen	Brunswick	Carteret
Cleveland	Craven	Duplin	Granville
Halifax	Harnett	Haywood	Henderson
Hoke	Iredell	Lenoir	Mc Dowell
Moore	Person	Robeson	Rockingham
Rutherford	Sampson	Stanly	Surry
Transylvania	Wilson		
Metro Counties:			
Alamance	Alexander	Buncombe	Burke
Cabarrus	Caldwell	Catawba	Chatham
Cumberland	Currituck	Davidson	Davie
Durham	Edgecombe	Forsyth	Franklin
Gaston	Guilford	Johnston	Lincoln
Madison	Mecklenburg	Nash	New Hanover
Onslow	Orange	Pitt	Randolph
Rowan	Stokes	Union	Wake
Wayne	Yadkin		

South Carolina			
Rural Counties:			
Allendale	Bamberg	Calhoun	Chesterfield
Georgetown	Hampton	Jasper	Lee
Marlboro	Mccormick		
Urban Counties:			
Abbeville	Barnwell	Beaufort	Chester
Clarendon	Colleton	Darlington	Dillon
Fairfield	Greenwood	Kershaw	Lancaster
Laurens	Marion	Newberry	Oconee
Orangeburg	Saluda	Union	Williamsburg
Metro Counties:			
Aiken	Anderson	Berkeley	Charleston
Cherokee	Dorchester	Edgefield	Florence
Greenville	Horry	Lexington	Pickens
Richland	Spartanburg	Sumter	York

Tennessee			
Rural Counties:			
Bedford	Benton	Bledsoe	Cannon
Carroll	Chester	Clay	Cocke
Crockett	Cumberland	Decatur	Dyer
Fentress	Franklin	Giles	Grundy
Hancock	Hardeman	Hardin	Henderson
Henry	Houston	Jackson	Johnson
Lake	Lawrence	Lewis	Mc Minn
Mc Nairy	Meigs	Moore	Morgan
Obion	Overton	Perry	Pickett
Polk	Scott	Stewart	Van Buren
Warren	Wayne	Weakley	White
Urban Counties:			
Bradley	Campbell	Claiborne	Coffee
De Kalb	Gibson	Greene	Hamblen
Haywood	Hickman	Humphreys	Lauderdale
Lincoln	Macon	Marshall	Maury
Monroe	Putnam	Rhea	Roane
Smith	Trousdale		
Metro Counties:			
Anderson	Blount	Carter	Cheatham
Davidson	Dickson	Fayette	Grainger
Hamilton	Hawkins	Jefferson	Knox
Loudon	Madison	Marion	Montgomery
Robertson	Rutherford	Sequatchie	Sevier
Shelby	Sullivan	Sumner	Tipton
Unicoi	Union	Washington	Williamson
Wilson			