APPENDIX B

TECHNICAL APPENDIX

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TECHNICAL APPENDIX

The statistics reported in this guide are based on detailed analyses of several national data sets. In this technical appendix, we explain how we calculated these statistics and describe the various data sources we used in our analyses. First, we describe the data and measures we used in our analyses of births to unmarried women. Second, we describe the two data sets we used to calculate state-level divorce statistics. We end the appendix by describing our analyses of the distribution of low-income children across family types.

A. BIRTHS TO UNMARRIED WOMEN

Our analyses of births to unmarried women were conducted using data from the 2004 natality file produced by the National Center for Health Statistics (NCHS 2006). The data set includes records for all 4.1 million births registered in the United States in 2004, collected from information reported on state birth certificates. The 2004 data were the most recent available. We analyzed the data set online using the interactive VitalStats website.[6]
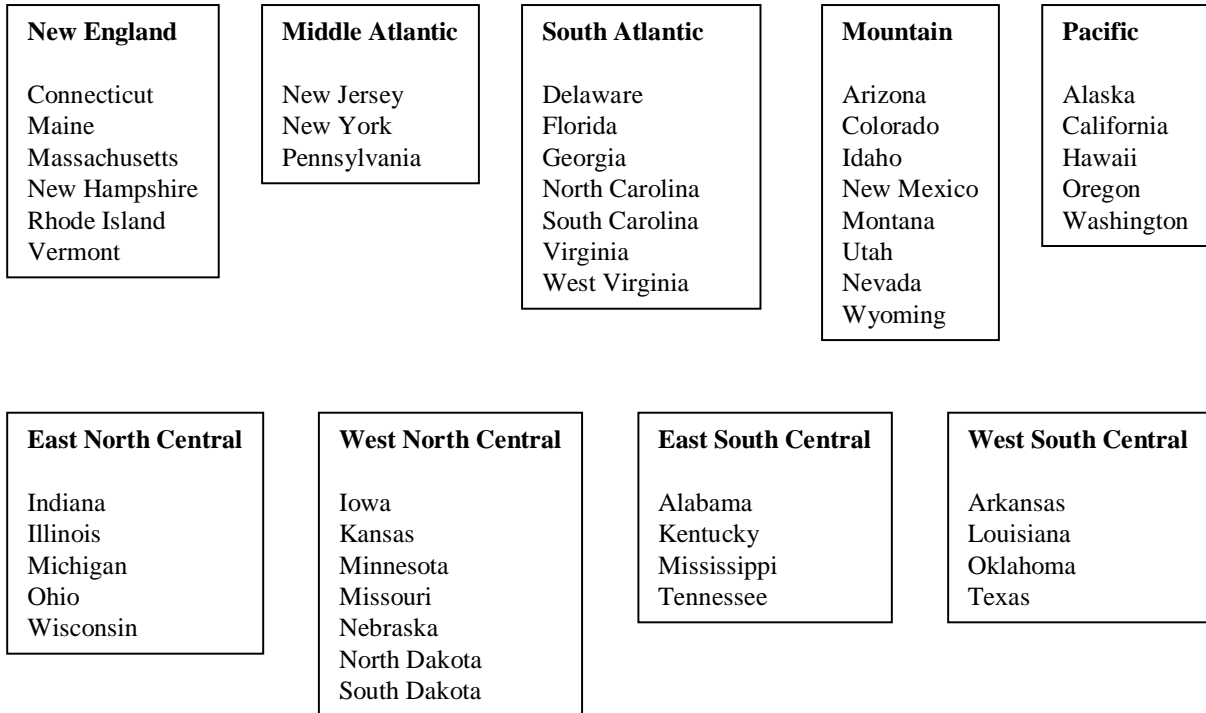
Births can be classified by either the state where the birth occurred or the mother's state of residence. For this analysis, we classified births by the mother's state of residence, because this information is more relevant for marriage program operators and policymakers working with their state populations. Regional estimates were calculated for the nine standard geographic divisions defined by the U.S. Census Bureau (see Figure B.1).

The following measures of maternal demographic characteristics were used in our analyses:

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[6] "VitalStats." [http://www.cdc.gov/nchs/VitalStats.htm]. Accessed November 21, 2007.

FIGURE B.1

GEOGRAPHIC DIVISIONS DEFINED BY U.S. CENSUS BUREAU

New England

Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island
Vermont

Middle Atlantic

New Jersey
New York
Pennsylvania

South Atlantic

Delaware
Florida
Georgia
North Carolina
South Carolina
Virginia
West Virginia

Mountain

Arizona
Colorado
Idaho
New Mexico
Montana
Utah
Nevada
Wyoming

Pacific

Alaska
California
Hawaii
Oregon
Washington

East North Central

Indiana
Illinois
Michigan
Ohio
Wisconsin

West North Central

Iowa
Kansas
Minnesota
Missouri
Nebraska
North Dakota
South Dakota

East South Central

Alabama
Kentucky
Mississippi
Tennessee

West South Central

Arkansas
Louisiana
Oklahoma
Texas

- *Marital Status.* The mother's marital status is reported on state birth certificates everywhere except Michigan and parts of New York. In areas where marital status is not reported, NCHS identifies births to unmarried women using other information reported on the birth certificate, primarily the paternity acknowledgement used to enforce child support obligations. NCHS also classifies births as nonmarital if the father's name is missing from the birth certificate.

- *Age.* Mother's age is reported in the data set for all 50 states. To simplify the presentation of results, we collapsed this variable into three broad age groups: (1) less than 18 years, (2) 18 to 29 years, and (3) over 30 years. We chose 18 years as the cut-off between the two youngest age groups because healthy marriage programs for new unmarried parents generally do not serve minors.

- *Race/Ethnicity.* We used a combination of two variables to measure the mother's racial/ethnic background. The first variable classifies mother's race into one of the following four categories: (1) white, (2) African American, (3) American Indian, or (4) Asian or Pacific Islander. A separate variable indicates whether the mother is Hispanic. We combined these variables to create broader categories for four main racial/ethnic groups: (1) non-Hispanic whites, (2) non-Hispanic African Americans, (3) non-Hispanics from any other racial group, and (4) Hispanics of any race. For states with large American Indian, Asian, or Pacific Islander populations, we also

provide separate estimates for non-Hispanics in these groups. For example, for the following five states we report separate estimates for Asians or Pacific Islanders: Alaska, California, Hawaii, Minnesota, and Washington. In addition, for the following eight states we report separate estimates for American Indians: Alaska, Arizona, Montana, New Mexico, North Dakota, Oklahoma, South Dakota, and Wyoming.

- *Education Level.* The variable used to measure mother's education level varies by state. Some states report the mother's highest grade level completed (for example, 8th grade or 12th grade), whereas other states report the highest degree she completed (for example, a high school diploma or bachelor's degree). To make these variables more comparable across states, we combined the different categories into three mutually exclusive groups: (1) women who had not finished high school, (2) women who had graduated from high school but did not have a college degree, and (3) women with four-year college degrees. Information on mother's education level is reported in the data set for all states except Florida and New Hampshire. In 2004, Florida and New Hampshire revised the education question included on their birth certificates, so the data for these states are not consistent throughout the year. Florida and New Hampshire are also excluded from the national and regional benchmark estimates reported in the tables.

- *Geographic Area.* Within the records for each state, the data set identifies the mother's county of residence for those living in counties with populations of 100,000 or more. For confidentiality reasons, county of residence is not identified for mothers living in smaller counties. Using this information, we calculated subgroup estimates for the one or two largest counties in each state, as well as a combined estimate for the state's smaller counties. We do not report any subgroup estimates for Wyoming, because all of the counties in that state have fewer than 100,000 people.

B. DIVORCE STATISTICS

We calculated state-level divorce statistics using two different data sources: (1) administrative data compiled by the National Center for Health Statistics (NCHS), and (2) survey data from the 2006 American Community Survey (ACS). In this section, we first describe our analyses of administrative data from NCHS. Then we describe our analyses of the 2006 ACS.

1. Administrative Data

In the second table for each state, the divorce statistics reported in the top half of the table are based on administrative data from NCHS (Eldridge and Sutton 2007). The data consist of

basic monthly counts of the number of divorces granted in each state, as reported to NCHS by various state agencies. In 2005, the most recent year for which data were available, divorce counts were collected from 44 states. The six states that did not report data are California, Georgia, Hawaii, Indiana, Louisiana, and Minnesota.

We used these administrative data to calculate three key divorce statistics for each reporting state: (1) the total number of divorces granted in 2005; (2) the number of divorces granted per capita; and (3) the state's rank in divorces per capita, among the 44 states reporting data. For the first two statistics, we also calculated regional and national averages by pooling data across states. Regional averages were calculated for the nine standard geographic divisions defined by the U.S. Census Bureau (see Figure B.1), excluding the six states that did not report any data.

2. American Community Survey (ACS)

The second data source we used in our analyses of state-level divorce statistics was the 2006 American Community Survey (ACS). We used the ACS to supplement our analyses of divorce statistics, first, because the ACS contains data for all 50 states and, second, because the ACS can be used to calculate subgroup estimates by race/ethnicity and other demographic characteristics—an option that is not available with the administrative data from NCHS.

The ACS is a new, nationally representative survey of U.S. households conducted annually by the U.S. Census Bureau since 2004. It is especially well suited for calculating state-level statistics such as those included in this guide, because it has an extremely large sample size. The 2006 ACS collected social and demographic information for more than 2.9 million individuals from a nationally representative sample of more than 1.2 million households. Most of the data were collected through questionnaires mailed to sampled households. Additional data were collected through telephone calls and in-person interviews with sample members who did not return their questionnaires.

The ACS asks household members ages 15 and older to indicate their current marital status in one of the following five categories: (1) currently married; (2) widowed; (3) divorced; (4) separated; or (5) never married. We used responses to this question to calculate for each state the number and percentage of people who reported their marital status as divorced. To calculate the percentage of people who are divorced, we divided the total number of divorced people by the total number of adults ages 15 and older, excluding any singles who had never been married. We excluded singles because they had never faced the possibility of becoming divorced. Our statistics do not account for the number of times a person has been divorced or for divorces among individuals who have remarried. However, in additional analyses not reported in Table 3, we found that state rankings of the divorce statistics generated from the ACS correspond fairly closely to rankings generated from the administrative data compiled by NCHS (described earlier), indicating that the percentage of adults in the state who are divorced is a good proxy for the state's divorce rate—at least for the purpose of ranking states from the highest to lowest divorce rate.

To calculate subgroup estimates by race/ethnicity and other demographic characteristics, we used the following variables included in the 2006 ACS data set:

- *Gender.* Gender is reported in the data set for all sample members. We used this information to calculate separate divorce statistics for men and women.

- *Race/Ethnicity.* We measured race/ethnicity following the same approach we used in our analyses of births to unmarried mothers (described earlier), dividing the sample into four broad categories: (1) non-Hispanic whites, (2) non-Hispanic African Americans, (3) non-Hispanics from any other racial group, and (4) Hispanics of any race. We chose these categories to ensure that the sample sizes were large enough to report subgroup estimates in most states. Respondents who selected more than one race/ethnicity were classified in the category for non-Hispanics from other racial/ethnic groups. For states with large Asian or American Indian populations, we provide separate estimates for non-Hispanics in these groups. For example, for the following four states we report separate estimates for Asians: Alaska, California, Minnesota, and Washington. In addition, for the following seven states we report separate estimates for American Indians: Arizona, Montana, New Mexico, North

Dakota, Oklahoma, South Dakota, and Wyoming. For Alaska, we report separate estimates for Alaska Natives. For Hawaii, where the racial/ethnic composition of the state's population is very different from other states, we report subgroup estimates for a different combination of racial/ethnic groups: (1) non-Hispanic whites; (2) non-Hispanic Asians or Pacific Islanders, including Native Hawaiians; (3) Hispanics of any race; and (4) people with multiracial backgrounds or from other non-Hispanic racial/ethnic groups.

- *Education Level.* Education level is measured in the ACS with a question asking respondents to indicate the highest level schooling they completed from a list of 16 categories—for example, high school graduate, bachelor's degree, or professional degree. To simplify the presentation of results, we combined these categories into three mutually exclusive groups: (1) individuals without high school degrees, (2) high school graduates without college degrees, and (3) four-year college graduates. This is the same approach we used in our analyses of births to unmarried mothers.

- *Geographic Area.* For confidentiality reasons, the ACS public use data set does not include detailed geographic measures such as county of residence, city size, or rural or urban residence. Therefore, to calculate subgroup estimates for rural and urban areas, it was necessary to combine the ACS data with additional geographic information from other sources. The smallest geographic area identified in the ACS is the Public Use Microdata Area (PUMA), a special statistical region defined by the U.S. Census Bureau to divide each state's population into blocks of approximately 100,000 residents. The boundaries of each PUMA do not necessarily correspond with those of cities, towns, counties, or other familiar areas. Using a computer program developed by researchers at the Missouri Census Data Center,[7] we used geographic information from the 2000 U.S. Census to determine whether each ACS respondent lived in a primarily rural or urban PUMA. We defined each PUMA as either rural or urban depending on whether the percentage of residents classified as rural in the 2000 Census was greater or less than 50 percent. To check the validity of this approach, we compared the aggregate numbers of people classified as rural or urban to those reported in recent Census publications, including reports based on the confidential ACS data not included in the public use data set. The results of this comparison suggested that our approach may overstate the size of the urban population in some states, including Connecticut, Hawaii, New Jersey, and Rhode Island. Because of the limitations involved in identifying geographic areas in the ACS data set, readers should interpret our subgroup estimates for rural and urban areas with caution.

Like any estimates based on survey data, the divorce statistics we calculated from the ACS are subject to sampling error. The most reliable estimates are for the national, regional, and

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[7] "MABLE/Geocorr 2K Version 1.3 – Missouri Census Data Center."

state-level statistics, which are based on very large sample sizes. Estimates are less reliable for smaller subgroup populations defined by race/ethnicity or other demographic characteristics. To ensure that the guide does not include any statistics based on insufficient data, we excluded estimates for subgroups of fewer than 5,000 people. These excluded estimates are reported in the tables with the symbol "NA" to indicate that the information is not available.

C. DISTRIBUTION OF CHILDREN ACROSS FAMILY TYPE

Our analyses of the distribution of children across family type were also conducted using the 2006 ACS. In these analyses, race/ethnicity and geographic area were measured following the same procedures used in our analyses of state-level divorce statistics (described earlier). Low-income children were defined as those ages 18 and younger and living in families with incomes below 200 percent of the federal poverty level. We excluded children living in group quarters such as correctional facilities, group homes, and college dormitories.

To measure family type, we divided low-income children into six groups: (1) married-parent families, (2) families with cohabiting parents, (3) never-married single-parent families, (4) formerly married single-parent families, (5) families with neither parent present, and (6) unknown family types. These groups do not distinguish between biological parents, adoptive parents, and stepparents, because the ACS data set does not make these distinctions. We created the groups by combining information from several measures of household structure included in the data set. The ACS collects social and demographic information for all members of selected households. The person who rents or owns the residence is identified as the "householder" and the other household members are identified in relation to the householder. For example, in a four-person household consisting of a husband, wife, and their two young children, either the

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(continued)
      [http://mcdc2.missouri.edu/websas/geocorr2k.html]. Accessed November 26, 2007.

husband or the wife is designated the householder, the other parent is identified as the spouse of the householder, and the two children are identified as sons or daughters of the householder. With this information, we accurately identified a basic family type for 92 percent of low-income children.

The remaining 8 percent of children were classified as having "unknown" family types because we could not accurately determine whether they lived with their parents. Most of these children were from one of three types of households:

- *Multigenerational Households.* For households with more than two generations of family members, the ACS questionnaire does not collect enough information to accurately determine how everyone in the family is related. For example, in households consisting of a grandparent living with a child and grandchild, it is not always possible to determine that the child is a parent of the grandchild instead of an aunt or uncle. Therefore, the grandchild could be living with either one parent or neither parent.

- *Multifamily Households.* For households with more than one family present—for example, with two siblings living together with their children—the ACS data set designates one of the two families as the "primary" family and the other family as a related "subfamily." The data set includes relatively detailed information concerning parent-child relationships among members of the "primary" family, but no direct measures of family relationships among members of the "subfamily." For this reason, it is impossible to accurately determine a family type for any children in the "subfamily."

- *Households with Cohabiting Partners.* For households headed by cohabiting partners, the ACS designates one partner as the "householder" and the other as the householder's "unmarried partner." We classified any children of the householder as living with cohabiting parents. However, we could not accurately identify a family type for any other children in the household—for example, children of the unmarried partner from a previous relationship. This issue arises because the ACS asks only how the children are related to the householder, not to the unmarried partner.

Nationally, the percentage of low-income children we classified in the category for "unknown" family types is slightly higher in urban areas (8.3 percent) than in rural areas (7.9 percent) and higher among African Americans (10.9 percent) than among whites (6.2 percent) and Hispanics (8.9 percent). The rate also varies by state. However, because the

overall percentage of low-income children in the unknown category is relatively low, this limitation should not greatly change the main conclusions readers draw from our analyses.

Our estimates of the distribution of children across family type are also subject to sampling error in the underlying survey data. To ensure that the figures are reliable, we excluded any estimates for subgroups of fewer than 5,000 people, the same approach we followed in our analyses of state-level divorce statistics (described earlier). We also excluded state-level estimates for any family-type categories that account for less than 2 percent of children in any group. The excluded estimates are reported in the tables with the symbol "NA" to indicate that the information is not available.