Data and Methods

The data used in this report are drawn primarily from the 1980, 1990, and 2000 microdata earnings files of the Current Population Survey (CPS). Each file is comprised of the responses from the outgoing rotation group of each month's surveyed households. This subset is asked about the hourly and weekly earnings of working household members, typically including 150,000-180,000 respondents in total. In addition, information on age, sex, race/ethnicity, education, labor force status, industry, and occupation (where relevant) is collected on every adult member of the survey household.

Households' locations for our purpose are categorized as either "metropolitan" or "nonmetropolitan." Because metropolitan status changes over time due to changes in population and commuting flows, adjustment is required to make each pair of CPS files consistent (1980 with 1990 and 1990 with 2000) in order to chart skill change within decades. We make this adjustment using county population information from the 1980 and 1990 Census of Population.

Metropolitan (metro) and nonmetropolitan (nonmetro) counties, as defined in 1993, are used in this report to define "urban" and "rural" areas, respectively. In 1993, the Office of Management and Budget defined metro areas to include central counties with 1 or more cities of at least 50,000 residents or with an urbanized area of 50,000 or more residents and total area population of at least 100,000. Adjacent, outlying counties were also included if they were both economically tied to the central counties, as measured by daily commuting, and they displayed a level of "metropolitan character" based on population density, urbanization, and population growth. Nonmetro areas included all counties that were not part of a metro area.

The method for defining metropolitan status changed in 2003, as did the set of counties identified as metropolitan. The Current Population Survey files we analyzed, however, used earlier delineations. Although we use the terms "rural" and "nonmetro" interchangeably in this report, official definitions of urban and rural, set by the U.S. Census Bureau, are geographically different areas (Cromartie, 2000).

How We Measured Skill

The focus of this report is on job skill requirements—the knowledge and abilities necessary to perform the tasks specific to each job. The occupation associated with a job is the closest descriptive designation for which skill information is available. Researchers have employed a number of occupational classification schemes to measure the skill content of jobs, each with its distinctive set of advantages. We draw upon a set of seven skill dimensions from the Dictionary of Occupational Titles (DOT), produced by the U.S. Department of Labor, each measuring a different aspect of the intellectual or physical complexity of an occupation, or the level of specific formal knowledge required. The dimensions include three "general educational development" (GED) levels of a job with respect to math, language skills, and general reasoning; three "functional level" variables that characterize occupations in terms of the sophistication of the interactions required with

people, data, and things; and the extent of "specific vocational preparation" required for the job.

The seven dimensions are then aggregated into a single numerical skill index, allowing us to rank occupations and to identify low-skill occupations as those that fall below a median index value for the slightly more than 500 occupations, weighted by number of workers. Twenty-two of the 218 occupations below the median are not classified as "low-skill" because of the high average educational attainment of workers in those occupations, leaving a total of 196 low-skill occupations. Appendix A provides more detail about the DOT, the seven skill dimensions used, and a discussion of alternative metrics.

While our median index threshold is only one of several plausible ways to identify low-skill occupations, we find that it is closely correlated with other common measures, such as educational attainment. With the exception of the 22 occupations removed from the "low-skill" category, for example, the median index threshold accords with the distinction between occupations in which the majority of workers have no college experience and those in which they do.

Shift-Share Decomposition of Changes in Low-Skill Employment Share

One of the central questions of this report is whether changes in rural industrial composition or occupation mix explain more of the decline in low-skill employment share in the 1990s. We are especially interested in how the transition from goods production to service provision affects skill demand. In order to separate these industry and occupation effects, we use a variation of the shift-share method to decompose changes in low-skill employment share into three components:

• Changes caused by shifts in the distribution of employment between the goods and service sectors ("sectoral").

• Changes caused by shifts in the distribution of employment across the industries within each sector ("interindustry").

• Changes caused by shifts in the distribution of employment across occupations within each of 220 industries ("occupation mix").

These changes are calculated and compared with one another in order to ascertain the relative importance of each effect.

The mathematics of shift-share also requires a fourth component, which captures the interaction among the other three changes. The sum of the three effects and the interaction term equals the total change in the low-skill share of employment.