Chapter 92
A Spatial Analysis of Male and Female Unemployment in the USA

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ABSTRACT
An analysis of male and female unemployment in the U.S. explores how gender affects spatial variation in unemployment. The effects of spatially-unlagged and spatially-lagged unemployment rates on the likelihood that individual men and women are unemployed are also explored. Using a recent tabulation of microdata from the American Community Survey, multilevel models of male and female unemployment are fit. Results indicate that age and occupation at the individual-level and a right-to-work dummy at the PUMA-level are the variables that best distinguish unemployed men and women. Results also indicate that unemployment for men is more clustered in space than unemployment for women. Finally, results indicate that the vast majority of the variation in unemployment for individuals in the U.S. is attributable to the personal characteristics of unemployed men and women, not the locational characteristics of high-unemployment places. The paper concludes with a discussion of the policy implications of the latter result.

INTRODUCTION
The unemployment rate across the U.S. in 2009 was almost as high as its peak of 9.7% in 1982 (Figure 1). This means that the annual average unemployment rate in 2009 of 9.3% rivals the jobless rate from the recession of the early 1980s. At the same time, the annual average unemployment rate for men (10.3%) was higher than the annual average unemployment rate for women (8.1%). This fits with the argument that since the recession of the early 1980s male unemployment rates surpass female unemployment rates in recessionary times (Rives & Sosin, 2002). In fact, the unemployment gender gap in the most recent recession of the late 2000s is the largest since the male unemployment rate (9.9%) first surpassed the female unemployment rate (9.4%) in 1982 (Figure 2). Economists attribute the cyclical nature of the unemployment gender gap to the concentration
of men in sectors most vulnerable to economic downturns (Sahin, Song, & Hobijn, 2010) such as the secondary sector.

Differences in joblessness in different sectors of the economy are an important focus for scholarship on labor market outcomes for individual men and women. At the same time, public policy on unemployment needs to focus on other aspects of the problem. One aspect of the joblessness problem which needs more attention is the spatial variation in unemployment between men and women in recessionary times. Focusing on the spatial variation in unemployment between the sexes is timely given the current regional variation in joblessness across the U.S. The seasonally-adjusted, unemployment rates for regions currently range from a high of 10.9% in the West to a low of 8.5% in the Northeast (U.S. Bureau of Labor Statistics, 2010b). Public policy to target places and people who are most adversely affected by the joblessness of the current recession is vital to help promote economic prosperity.

Using newly available microdata on labor market outcomes for individuals this paper extends scholarship on spatial variation in unemployment by further exploring the effect of gender. A multilevel approach is adopted to account for the nesting of individuals within geographic units. The specific research questions the paper asks are as follows. First, what variables best distinguish unemployed men and women? Second, what effect do spatially-unlagged unemployment rates (measuring unemployment within an area) and spatially-lagged unemployment rates (measuring unemployment in contiguous areas) have on the likelihood that individual men and women are unemployed? Third, and finally, are unemployed women more clustered in space than unemployed men as suggested by Alonso-Villa & Del Rio (2008)? Results suggest that age, occupation, and

Figure 1. Annual average unemployment rate in the U.S. from 1949 to 2009 (Data source: U.S. Bureau of Labor Statistics)
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