15. *Writing about Multivariate Models*

SOLUTIONS

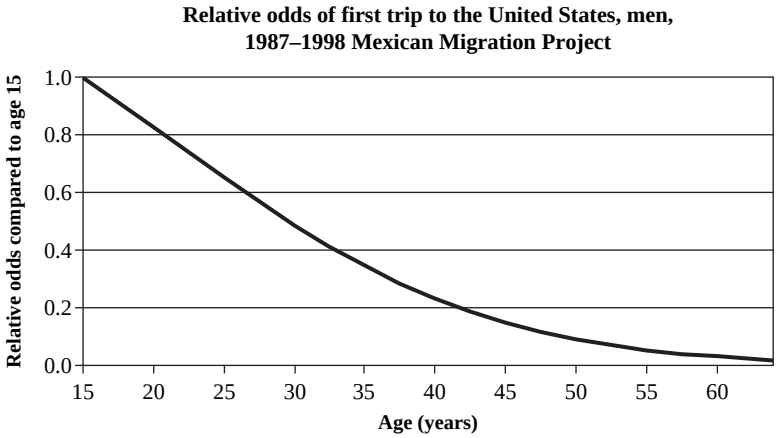
1. Answer questions based on the data in tables 15A and 15B.

   a. No, the random assignment didn't succeed in equalizing the background characteristics of movers and stayers. "Despite random assignment of treatment and control groups in the Yonkers Residential Mobility Program, there were statistically significant differences in four of the six measured background characteristics between participants who moved versus those who stayed in their original neighborhoods (table 15A). Movers were on average slightly older, more likely to have at least a high school education, less likely to be in female-headed households, and had slightly fewer children than stayers (all $p < 0.05$). No differences were observed in terms of race/ethnicity or gender."
   b. Yes, neighborhood and housing characteristics differed according to residential status. "On all six dimensions studied, outcomes were statistically significantly better among movers than stayers (table 15A). Negative outcomes (danger, victimizations, disorder, and indicators of poor housing) were all lower among movers than stayers, while favorable outcomes (cohesion and resources) were higher among movers than stayers."
   c. These bivariate statistics suggest that a multivariate regression is necessary to assess the impact of residential status on the outcomes studied, net of the potentially confounding effect of the background characteristics. All of the observed differences in background characteristics would be expected to favor better outcomes among movers than stayers regardless of where they live. For example, older age, two-parent households, better education, and smaller families are often associated with better resources than younger, female-headed, less-educated, and larger families. Hence a multivariate model is needed to control for those characteristics in order to measure the net effect of moving versus staying.

3. "Table 15B presents results of multivariate models of six measures of neighborhood characteristics and housing problems from the Yonkers Residential Mobility Program. On five of the six outcomes studied, subjects who moved showed statistically significant better

outcomes than those who remained in their original neighborhoods, even when the effects of potential confounders were taken into account. The negative outcomes (danger, victimization, disorder, and housing problems) were each lower among movers than stayers, while the favorable outcomes (cohesion and resources) were higher among movers, though the difference in resources was not statistically significant. Although some of the background control variables were statistically significantly associated with one or two of the outcomes, none showed a consistent pattern of association."

5. "The odds of first migration to the United States declined rapidly between ages 15 and 40, then continued to decline with age, but at a slower rate (figure 15A). For example, the relative odds of migration were roughly 0.60 among 25-year-olds, 0.30 among 35-year-olds, and 0.15 among 45-year-olds when each was compared to 15-year-olds."

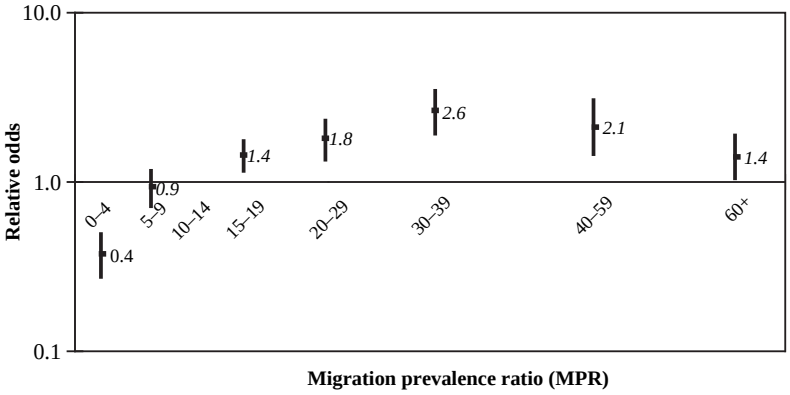


Based on model controlling for marital status, number of children, education, labor force experience, family migrant history, and migration prevalence ratio. Reference category = 15 year olds.

Figure 15A.

7. "Social capital in the family and in the community is an important predictor of odds of migration from Mexico to the United States even when individual demographic background, human capital, and community economic and policy context are taken into account. In terms of family social capital, both having a parent and having a sibling who was a prior US migrant increased the chances of migrating (OR = 1.67 and 1.43, respectively, compared to having no family members as prior US migrants; both $p < 0.001$). In terms of community social capital, odds of migration increased with increasing migration prevalence ratio (MPR) up to an MPR of 40%, then declined slightly among communities with very high MPRs (figure 15B). For example, the odds of migration were nearly seven times as high among men from communities where 30% to 39% of people aged 15 and older had ever been to the United States as among those from communities where fewer than 5% had been there."

Relative odds and 95% confidence interval (CI) of first trip to the United States, by migration prevalence ratio, Men, 1987–1998, Mexican Migration Project



Compared to MPR = 10-14. Based on model controlling for age, marital status, number of children, education, labor force experience, and family migrant history.

Figure 15B.