

# Simulations of Changes in the Proportion of Metropolitan-Born Population Using Bi-Regional Demographic Models

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This study used bi-regional demographic models to simulate the impacts of migration and fertility on the changing proportions of metropolitan-born population in Japan. In these simulations, 14 patterns of age-specific outmigration rates and child-woman ratios (according to birthplace, current residence, and residence 5 years earlier) were used to observe changes in the proportion of metropolitan-born population among metropolitan residents over the next 50 years. There are four main findings. First, when outmigration rates and child-woman ratios were fixed at the initial levels, based on data from the Eighth National Survey on Migration, the proportion of metropolitan-born population eventually rose. Second, when the initial rates/ratios were changed in a way that decreased the proportion of metropolitan-born population and fixed at  $\pm 5$ -10% of the initial rates/ratios, the proportion eventually rose. Third, when the rates/ratios were continuously changed over the whole period in a direction that decreased the proportion of metropolitan-born population, the proportion declined on a long-term base. Fourth, changes in the child-woman ratio had generally larger impacts on the proportion of metropolitan-born population. However, there were also some cases where the effect of migration was much larger.

Keywords: metropolitan-born population, bi-regional model, outmigration rate, child-woman ratio