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Public health and multiple-phase mortality decline : Evidence from industrializing Japan

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Abstract

A growing body of literature shows the mitigating effects of water-supply systems on the mortality rates in large cities, yet the heterogeneities in the effects have been understudied. This study fills in the gap in existing knowledge by providing evidence for non-linearity in the effects of clean water using semiparametric fixed effects approach with city-level nationwide longitudinal dataset between 1922 and 1940, which covers 91% of total city population. According to our baseline estimate, the clean water accounts for approximately 27% of the decrease in the crude death rate in this period. Our results also indicate the heterogeneities in the improving effects of clean water with respect to the coverage of tap water among citizens. We found evidence that the installation of the water-supply system itself decreased waterborne infections and infant mortality but did not substantially improve the overall mortality rate in the initial phase. However, the subsequent expansion of tap water could result in a continuous decline in the overall risk of deaths in the second phase.

Keywords: mortality; water-supply system; semi/nonparametric estimation; panel data analysis; piped water; public health;

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