

# The Effect of Railway Development on Population and Occupational Change in Japan, 1920-2000: A Spatiotemporal Analysis

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## Summary

The relationship between the expansion of the railway network and population as well as occupational change has been little examined in Japan. In this study, we utilize census data as well as data obtained through digitizing historical railway maps to quantify this relationship for municipalities in Aomori prefecture, between the periods of 1920 to 1960, and 1960 to 2000. Along with rail density, we also obtain data for change in distance to ports, and use a dummy variable to categorize if the municipality bordered the coast or not.

In summary, our regression model shows mixed results. For 1920-1960, increased railway networks had a positive effect on population density and secondary sector jobs, and a negative effect on the number of primary sector jobs, as per our hypotheses. The results for the remaining time periods and the tertiary sector, however, directly contradict our predictions. One of our significant findings is that through the fact that increased rail networks had a positive effect on secondary sector employment from 1920-1960, but no longer from 1960-2000, we can confirm the diminishing role of rail freight in the late 20<sup>th</sup> century in Japan. While many of our independent variables did end up being statistically insignificant, our study marks a contribution in the field of historical GIS—a field still mostly unexplored in Japan—and demonstrates the promise that such technologies hold for quantifying the impacts of transport infrastructure.