

# Accepted Manuscript

Identification of spatial variation in road network and its driving patterns: Economy and population

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PII: S0166-0462(17)30328-9

DOI: [10.1016/j.regsciurbeco.2018.04.014](https://doi.org/10.1016/j.regsciurbeco.2018.04.014)

Reference: REGEC 3365

To appear in: *Regional Science and Urban Economics*

Received Date: 14 September 2017

Accepted Date: 28 April 2018

Please cite this article as: Hu, X., Wu, C., Wang, J., Qiu, R., Identification of spatial variation in road network and its driving patterns: Economy and population, *Regional Science and Urban Economics* (2018), doi: 10.1016/j.regsciurbeco.2018.04.014.

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1 **Identification of spatial variation in road network and its driving patterns: economy and**  
2 **population**

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9 **ABSTRACT:** China is a globally important ecosystem that is undergoing rapid development and  
10 land use/cover change (LUCC). The role of road networks in the LUCC is becoming increasingly  
11 important. Much of the upgrading in road networks is propelled by economy and population growth.  
12 However, the relationships between the road networks and the social-economic factors are poorly  
13 understood by using the ordinary least squares (OLS) regression, which assumes that the estimated  
14 beta value holds the same everywhere within a given study area. To determine whether there is  
15 spatial variation in the relationship between the road networks and the social-economic drivers in a  
16 given region, we employed a local model, geographically weighted regression (GWR), that  
17 provides a regression coefficient (beta) for each sample location within the study area. Taking  
18 Fujian Province, one of the most developed regions in China, as a case, this paper firstly employed  
19 an Exploratory Spatial Data Analysis (ESDA) to identify the spatial patterns of the road networks at  
20 the different sizes of sampling units. We found that the spatial distribution of road networks had an  
21 obvious tendency toward the geographical dependency, with High-High clusters seated in the  
22 eastern coastal areas and Low-Low clusters distributed dispersedly in the study area. The spatial

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