



# The small-area distribution of hypertension in SHI claims data of the AOK Nordost, Germany. Does regional deprivation have an effect?

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## Abstract

### Background

Hypertension belongs to one of the most frequently diagnosed chronic diseases in Germany. Prevention strategies aimed at high-risk groups and allocation of healthcare where it is needed most is necessary to prevent adverse health outcomes. Previous studies have shown that area deprivation is associated with a higher prevalence of chronic diseases and premature mortality. However, the discussion about the inclusion of area deprivation for planning of healthcare is still relatively young in Germany. The aim of our study is to analyze the spatial distribution of hypertension at fine administrative units and to assess location-specific associations between hypertension, sociodemographic population characteristics and area deprivation based on health insurance claims of the AOK Nordost.

### Methods

We used the conditional autoregressive Besag–York–Mollié (BYM) model to visualize the spatial distribution of hypertension. Geographically weighted regression modelling (GWR) was applied to analyze the location-specific risk factors of hypertension.

### Results

The sex- and age-adjusted prevalence of hypertension was 33.1 % in 2012 and varied widely across northeastern Germany. The main risk factors for hypertension were proportions of insurants aged 45 to 64, 65 and older, area deprivation and proportion of persons commuting to work outside their residential municipality. The GWR model revealed that the examined associations vary strongly across northeastern Germany.

### Conclusion

Area deprivation has only a significant and therefore direct influence in a part of the study area. The GWR model revealed however, that there is also an indirect effect as the associations to demographic variables are stronger in deprived areas. It can therefore be expected that persons ageing in deprived areas will have a greater risk of developing hypertension, irrespective of individual characteristics. Based on our results, the current planning of healthcare would therefore benefit from expanding the current ratio of inhabitants to physicians by a deprivation factor.

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### Keywords

AOK Nordost, Area deprivation, geographically weighted regression model, hypertension, prevalence, regional deprivation, small area analysis

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