

Assignment Two: The MAUP and Multilevel Modelling

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1 Demonstrating the MAUP

1.1 Background

Areal units in zoning systems amalgamate into objects that constitute the basic units for the observation and analysis of spatial phenomena (Openshaw 2015). Yet, no gold standard for guiding the spatial aggregation process exists, with the validity of zonal objects subject to the arbitrary and modifiable decision-making of quantitative geographers. Problematically, the analysis of socioeconomic data involving areal units is encumbered by the modifiable areal unit problem (MAUP): “the sensitivity of analytical results to the definition of units for which data are collected.” According to the literature, the MAUP constrains the reliability of analyses for aggregated spatial data, as findings have shown varying results with the scale of aggregation and configuration of the zoning system (Avery and Clark 2015).

Highly problematic to areal data, the modifiable unit problem (MAUP) describes the sensitivity of spatial analysis to the definition of

1.2 Data

To demonstrate the MAUP issue, we analyse the correlation between property price data derived from Land Registry (???)

```
# fit random intercept model - i.e. model intercept term which varies across MSOAs
OAdat$H_bad_Prop <- (OAdat$H_Vbad + OAdat$H_bad) / OAdat$pop

model.1 <- lmer(unemp ~ S_Rent + dis_ind + Ethnic + (1|MSOA_CD), data = OAdat)
summary(model.1)
```

2 Multilevel Modelling

2.1 Interpretation

3 Bibliography

Avery and Clark. 2015. “R: A Language and Environment for Statistical Computing.” Journal Article. <http://www.R-project.org>.

Openshaw. 2015. “R: A Language and Environment for Statistical Computing.” Journal Article. <http://www.R-project.org>.