**E366 Second exercise: social class transition matrices**

**Summer 2024**

**Description**

The dataset this week comes from the registers of male apprenticeships kept by the city of Coventry. You will be working with a subsample covering the years 1781-1829. Every male who registered for an apprenticeship in the city of Coventry was required to register with the municipal government. These records give father’s occupation and the occupation of the boys’ master, along with some other details.

**Preparing the data**

Inspect the dataset. What do you notice? What do we need to do/know before we begin?

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**Creating a transition matrix**

Using Excel’s pivot table function, create a transition matrix with the frequency of father-son class pairings in each cell. What do you notice?

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**A summary measure of immobility**

Calculate the proportion of the sample who are socially immobile. Calculate the proportion who are upwardly and downwardly mobile.

Using the filter feature of the pivot table, calculate this proportion for different time periods. Does this suggest social mobility increased or decreased over time?

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**Relative social mobility**

Calculate symmetric likelihood ratios from the table. Where there are two classes, A and B, this is the that odds a child whose parents are in class A also ends up in class A and not class B, divided by the odds that a child whose parents are in class B ends up in class A and not class B.

What does this suggest about relative social mobility in this sample?

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**Altham’s Statistic**

Altham’s statistic is a summary measure of relative social mobility, given by the following equation:

$$d\left(P,J\right)=\left(\sum\_{i=}^{N}\sum\_{j=1}^{N}\sum\_{l=1}^{N}\sum\_{m=1}^{N}\left(θ\_{ijlm}\right)^{2}\right)^{\frac{1}{2}}$$

where *i, l* index son’s occupation, *j, m* index father’s occupation, and

$$θ\_{ijlm}=ln\left(\frac{{p\_{ij}}/{p\_{im}}}{{p\_{lj}}/{p\_{lm}}}\right)$$

Calculate Altham’s statistic for the whole sample. Does relative social mobility change much over time?

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