"Sleepwalking towards Johannesburg"? Local measures of ethnic segregation between London's secondary schools, 2003 – 2008/9.

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A Headline

- Headteacher expresses alarm over racial segregation in London schools: "**It can't be a good thing for London to be sleepwalking towards Johannesburg**," conference warned […] with classrooms in some parts of the capital teaching almost exclusively black or Asian pupils (*The Guardian,* October 4, 2011)

Is it true?

- Johnston et al. (2006)
  - **greater ethnic segregation in schools than in neighbourhoods**, more so for primary schools than secondary schools, more so for Black and South Asian pupils, especially Pakistani ones, and generally more so in London than in other places.
 - The comparison of neighbourhoods with schools is not, however, exact

Is it true?

- Harris & Johnston (2008)
  - contrasting the ethnic profile of primary school intakes with the ethnic profile of pupils living in areas from which the schools could plausibly recruit students but do not necessarily do so.
  - It also compared the profile of each school with those of other schools recruiting locally from the same areas.
  - In both London and Birmingham the study found **clear examples of where the intake of a school had an ethnic profile very different from the places from which the pupils were drawn, and from other nearby schools.**

Is it true?

- Johnston et al. (2007)
  - cohort analysis of pupils entering English primary and secondary schools in each of the years 1997 to 2003.
  - with one exception, that "**levels of segregation remain as they were – considerable but not growing**" (p. 88), with any apparent increase in segregation explained by an increase in the non-white groups' share of the entry cohort in each local authority.
  - **The exception is relevant: Black Africans in London's secondary schools**

Is it true?

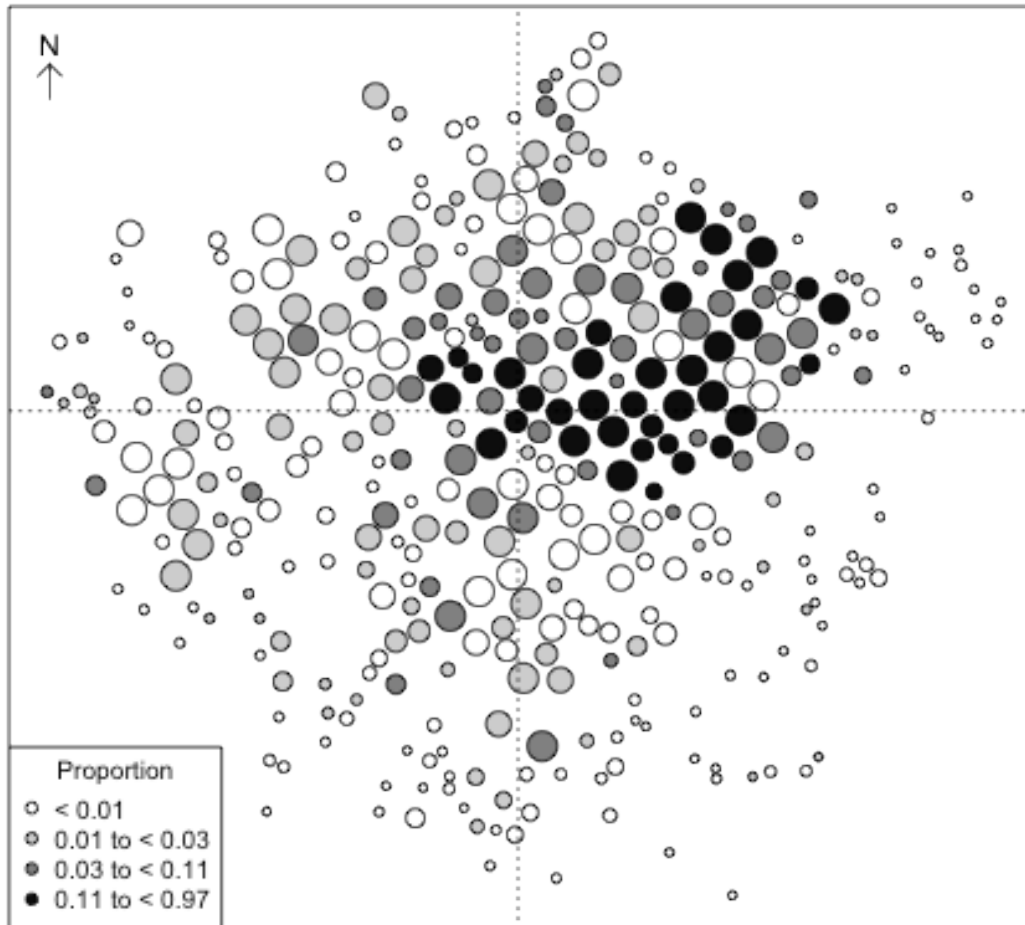- Geographies of ethnicity for London's secondary schools (new entrants, 2008) …
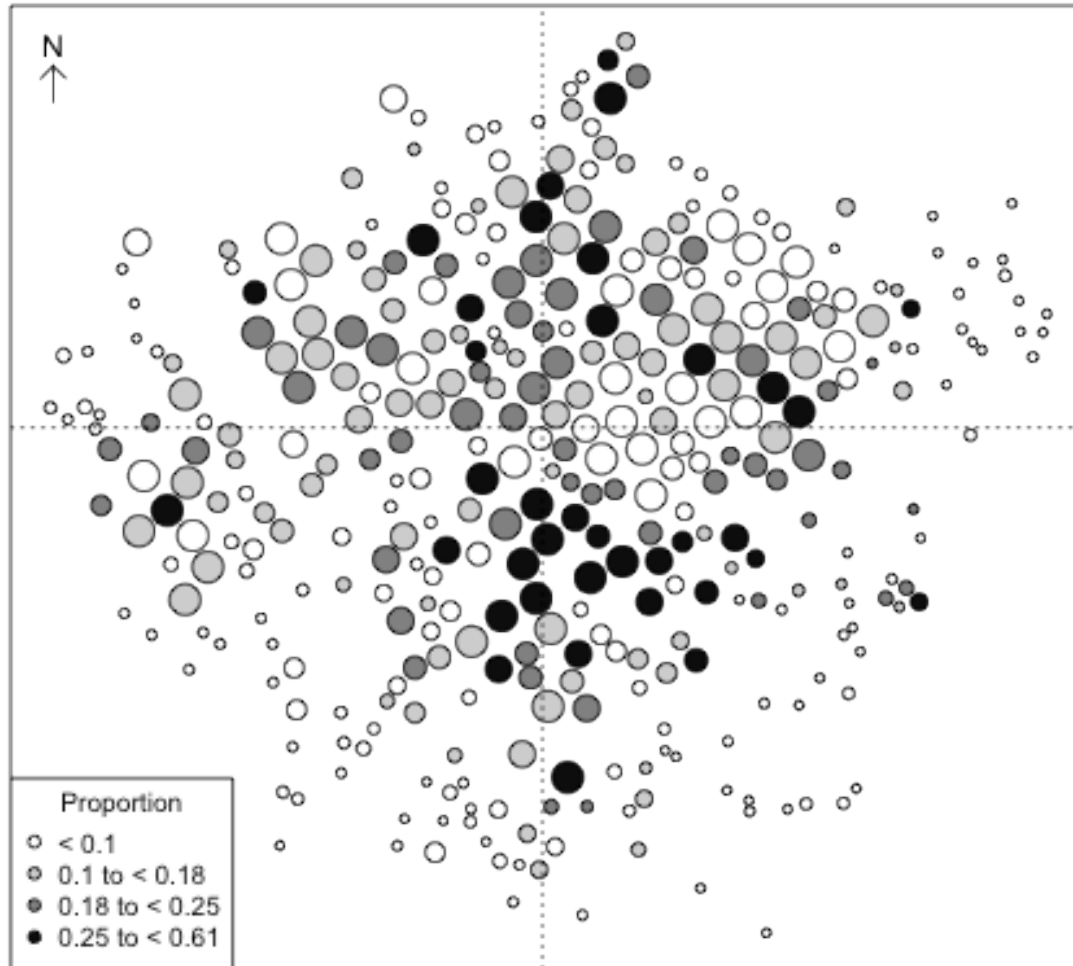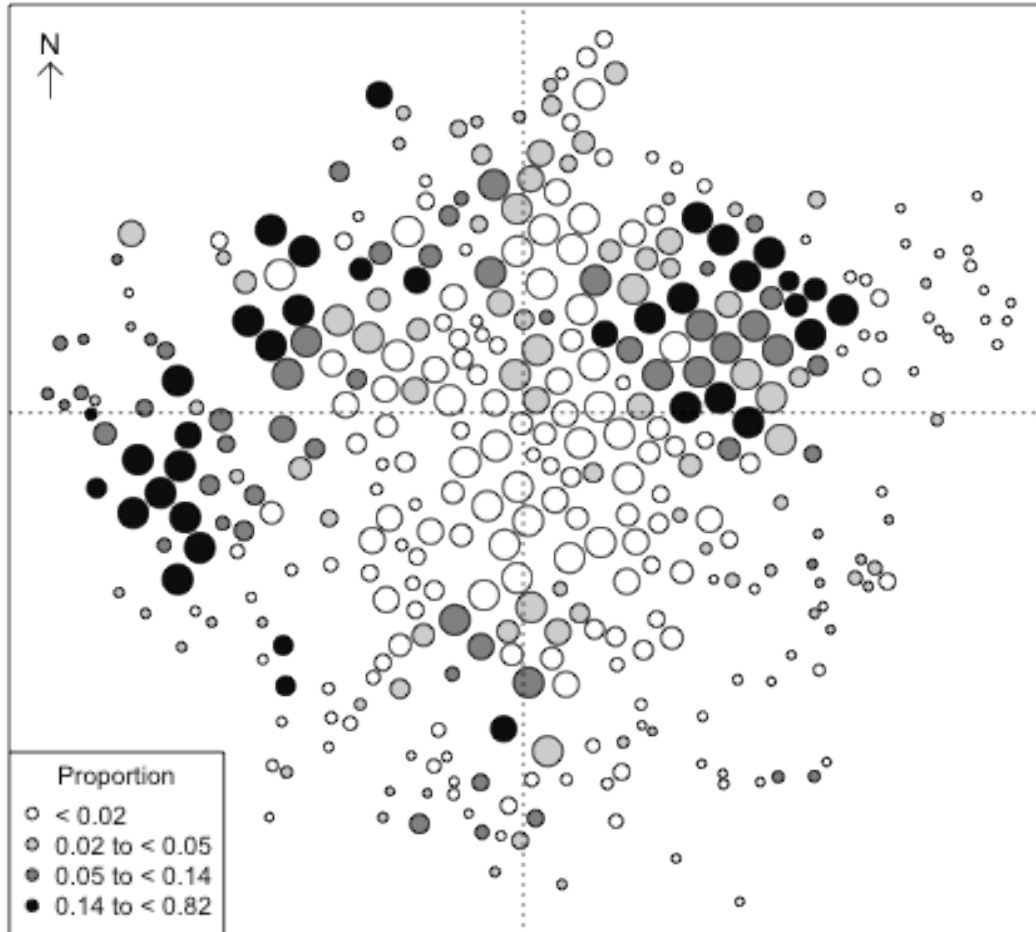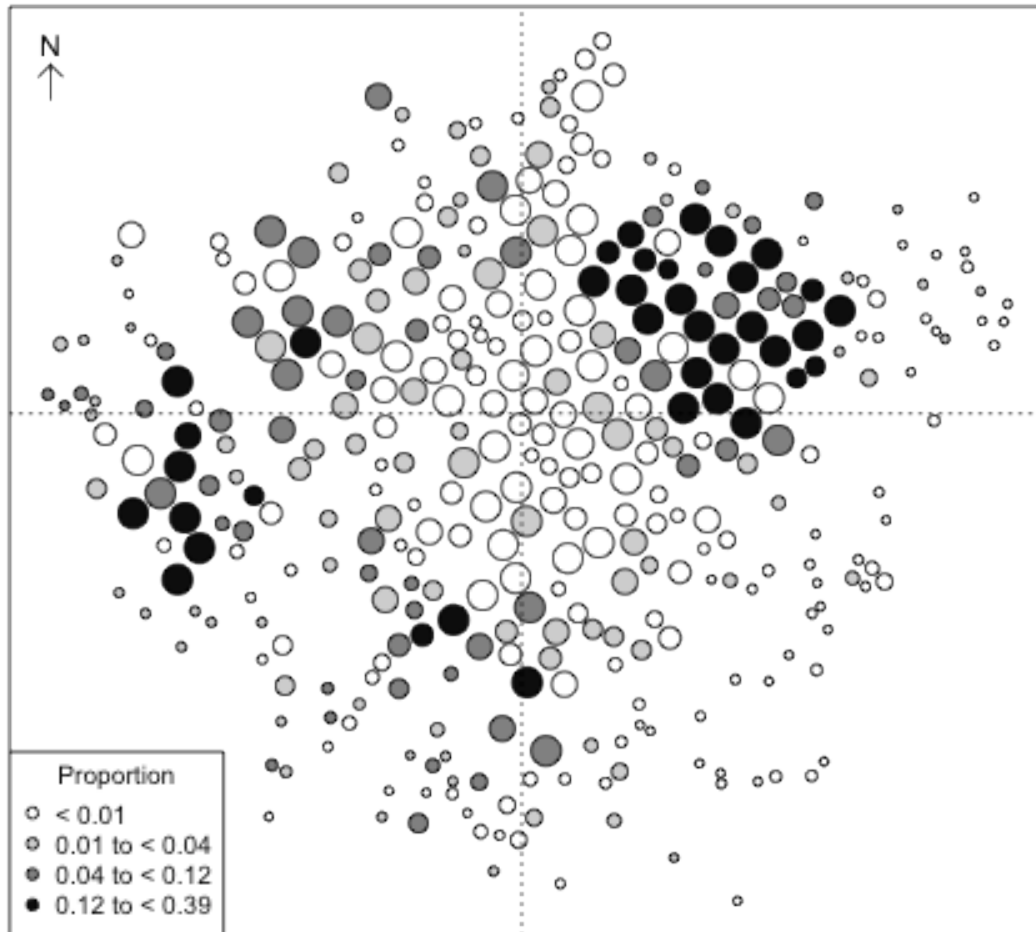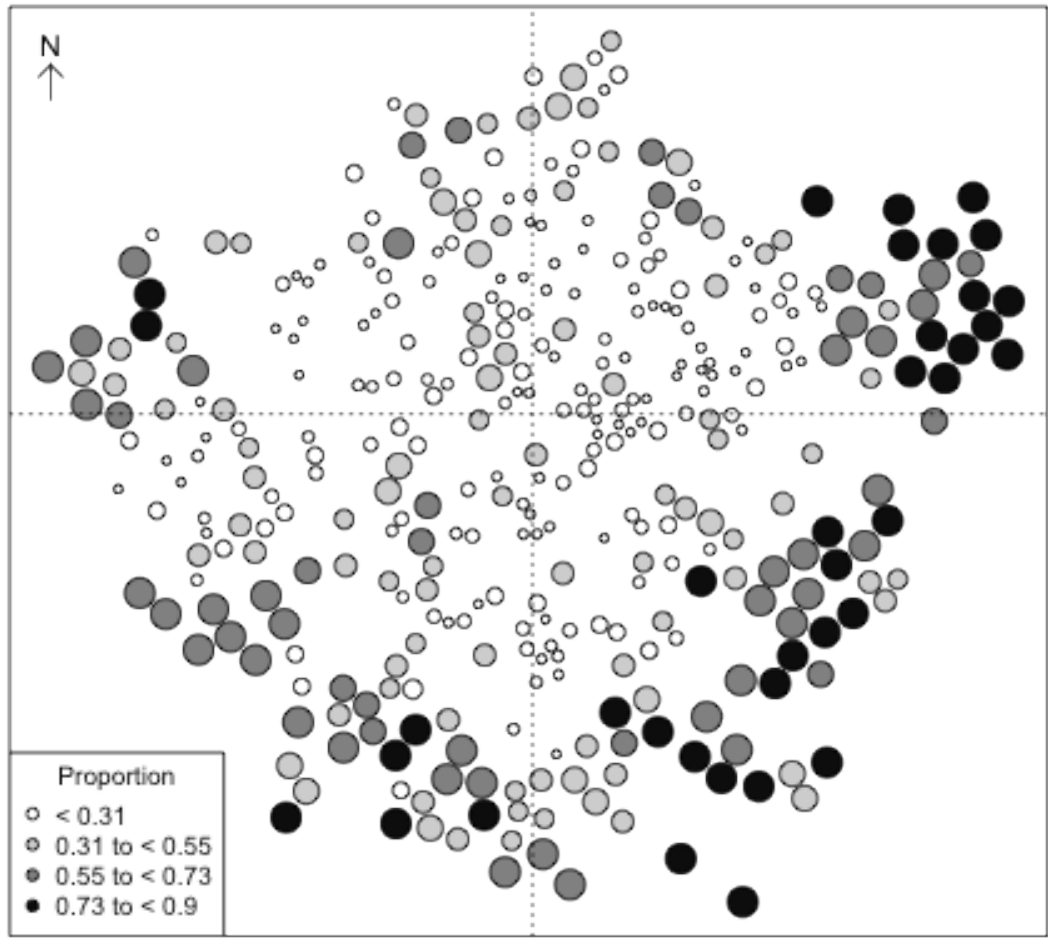
Black Caribbean
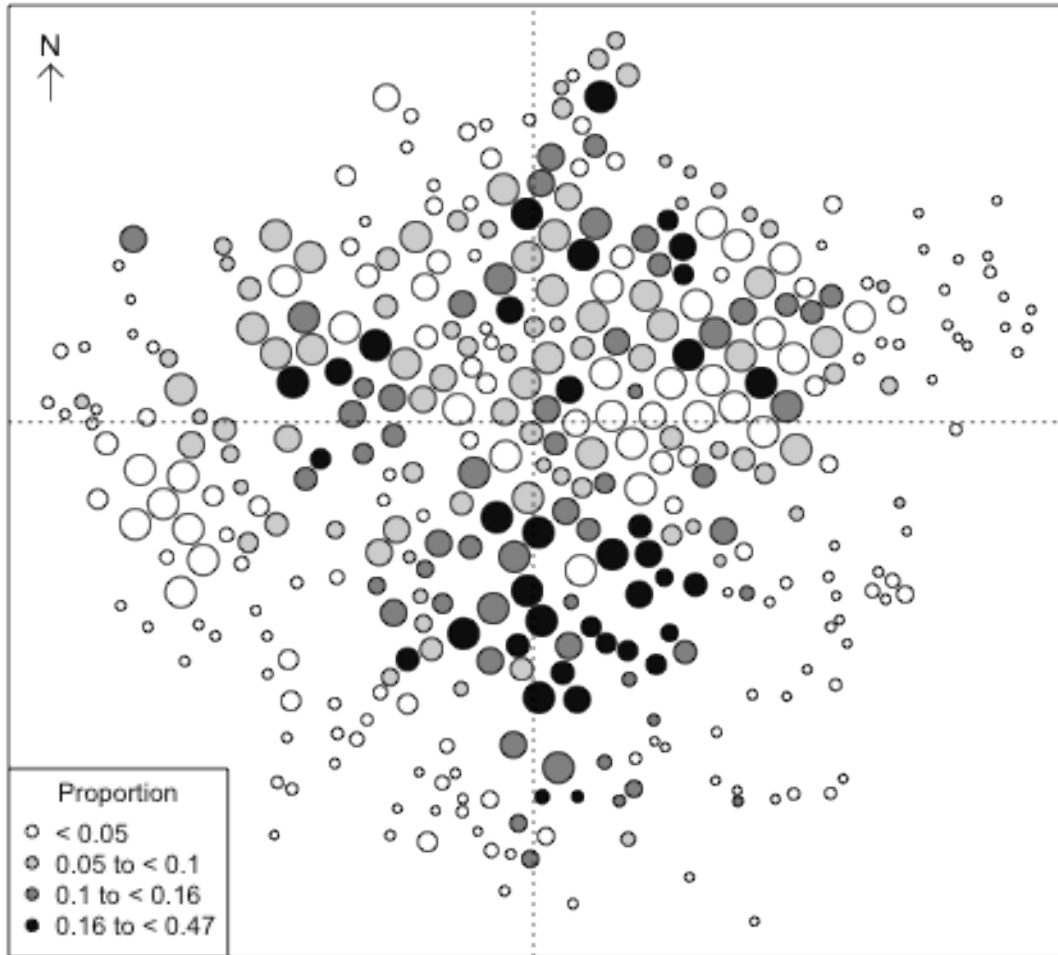
Black African

Bangladeshi

Indian

Pakistani

White British

- It is certainly true that there are **geographies** to the schools that a member of a given ethnic group is more likely to attend.

Unevenness ratio

$$U_k = \frac{n^{-1} \sum_{i=1}^{n} \left| p_{i(\text{OBS})} - p_k \right|}{n_2^{-1} \sum_{i=1}^{n_2} \left| p_{i(\text{EXP})} - p_k \right|} \qquad n_2 \leq n$$

- where p_k is the proportion of all pupils that are of the ethnicity group (in the 2008 cohort), $p_{i(\text{OBS})}$ is the observed proportion of the group in each of the n secondary schools and $p_{i(\text{EXP})}$ is either
  a) the expected proportion if the pupils are assigned randomly, or
  b) the expected proportion in each of n_2 secondary schools if every pupil attended the nearest primary.

Unevenness ratio

	(a)	(b)
Black African	3.832	1.081
Black Caribbean	3.437	1.054
Bangladeshi	4.873	1.019
Indian	3.966	1.109
Pakistani	3.636	1.062
White	7.169	1.017

Don't misinterpret this!
Cf. Table 2 of CMPO Working Paper 11/275 and text

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"Sleepwalking towards Johannesburg"?

- Well….
  - Yes, there are **differences** in the ethnic composition of schools in London
  - And, yes, 'segregation' may be **greater at the school level than the neighbourhood level** in some places (but not excessively so)
  - And **possibly even growing** re. Black Africans in London's secondary schools

- But…
  - "Sleepwalking towards Johannesburg…" ?

What is segregation?

- **Segregation is the separation of one or more groups of people** that have, or are given, characteristics that they or others imbue with particular meaning (for instance, race, religion, gender, wealth, age, social class).

- **The separations are place-bound**, by residential neighbourhood or by institutions such as schools or workplaces.

- **The implication is that people who might otherwise be coming together and interacting are not doing so**, a situation that is genuinely assumed to create distrust, a lack of mutual empathy, misunderstanding and/or to hinder life chances and social mobility.

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What is segregation?

- The word **means a person of a particular group is more likely to be found in one place more than others.**

- This inequality can be described and conceived in various ways including as unevenness, isolation, clustering and as a lack of exposure to other groups (Massey & Denton, 1988)
  - Leads to different forms of segregation index (Johnston & Jones 2010).

- There is an expectation that if places are compared then differences in their composition will be found.

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Measuring segregation

- **To measure segregation is to measure the spatial separation of groups within a region** (Rey & Folch, 2011).

- All segregation measures are in principle spatial, (though not necessarily in the spatial statistical sense)

- They measure differences between places. Consequently they encounter a general measurement issue, that of the well-known **modifiable areal unit problem** (MAUP).

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The MAUP

- Has two components.
- The first is the **zoning problem**.
- Segregation is marked by a greater density/concentration/prevalence of a particular group in some places more than others but any measure of it depends upon where the boundaries of the places are drawn.
  - Some have more obvious and fixed boundaries
    - e.g. school buildings
  - Others have indeterminate and subjective boundaries
    - e.g. school catchment areas
  - Still others have arbitrary boundaries imposed for governmental or administrative purposes
    - e.g. electoral wards and census tracts

The MAUP

- The second component is **scale dependency**.
- Any measure of density / prevalence (etc.) is inherently dependent on the area or population size of the place for which the measurement is made.

The MAUP and the measurement of segregation

- In the context of segregation indices there is a twofold problem

- **deciding on the choice of areal unit** (e.g. schools, census tracts or districts) and then **deciding which places should be compared with which others across or within a wider region** (for example, local education authorities or governmental regions).

The MAUP and the measurement of segregation

- It is common for measures of segregation to sum across regions such as a local or regional authority with the **implicit assumption** that these provide the units that best capture the spatial extent and boundaries of the segregation-forming processes and their resultant patterns.

- **The assumption is often questionable** precisely because the group of interest has an uneven geographical distribution, because it is segregated within the region.

Local indices of segregation

- A **local and spatial index of segregation** is here defined as one where

  a) each zone or place in the study region is considered with respect to all others with which it interacts, is proximate to, shares a border and/or with which there is an interdependency or connection; and

  b) where a separate index value is calculated for every zone or place within the study region (as opposed to having one summary average for them all) so their distribution of the values across the study region can be considered

More simply

- I am going to compare the proportion of a school's intake of a particular ethnic group with the corresponding proportion for the average 'competing' school

$$\text{ID}_i = p_i - \sum_{j=1}^{n-1} w_{ij} p_j \qquad -1 \leq \text{ID}_i \leq 1, \, j \neq i, \, 0 \leq w_{ij} \leq 1, \, \sum w_{ij} = 1$$

- This all hinges on the **(spatial) weights matrix**

Defining the weights matrix

- Schools A and B are 'competing'

- As are schools B and C but less so

- Schools A and C are not competing

Secondary
Primary
Flow
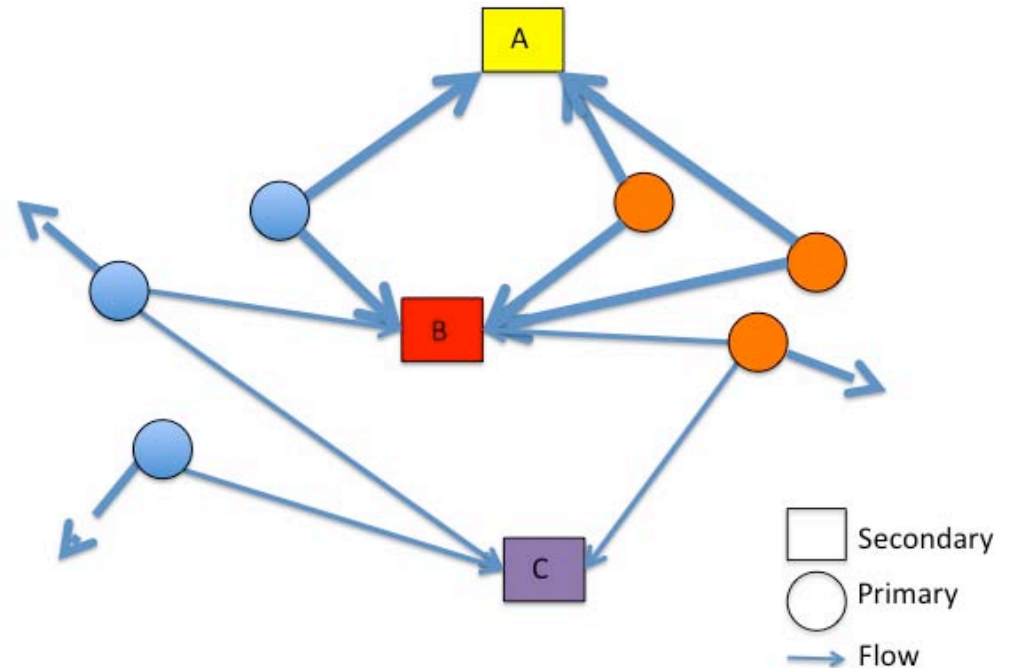
Defining the weights matrix

- (Prior to standardisation) w_{ij} is the (joint) probability that a pupil selected at random from secondary school i will have attended the same primary school as a pupil selected at random from secondary school j

Moran tests

|	I	P
Black African	0.541	<0.001
Black Caribbean	0.602	<0.001
Bangladeshi	0.803	<0.001
Indian	0.530	<0.001
Pakistani	0.649	<0.001
White	0.707	<0.001

Comparing the proportion of the ethnic group in one school with the average proportion for locally competing schools.

| | | | | Competing with | | |
School type	VA CoE	VA RC	VC	Other faith	Selective	NFNS
VA CoE	0.136	0.135	0.024	0.019	0.053	0.633
VA RC	0.051	0.651	0.004	0.009	0.052	0.233
VC	0.122	0.072	0.000	0.000	0.034	0.772
Other faith	0.074	0.094	0.000	0.208	0.065	0.559
Selective	0.058	0.115	0.008	0.002	0.221	0.596
NFNS	0.064	0.055	0.015	0.011	0.065	0.790

Indicating the strength of competition between schools of one type (the rows) with schools of the same or other types (the columns), where the rows sum to one.
(NFNS = Neither faith nor selective by entrance exam)

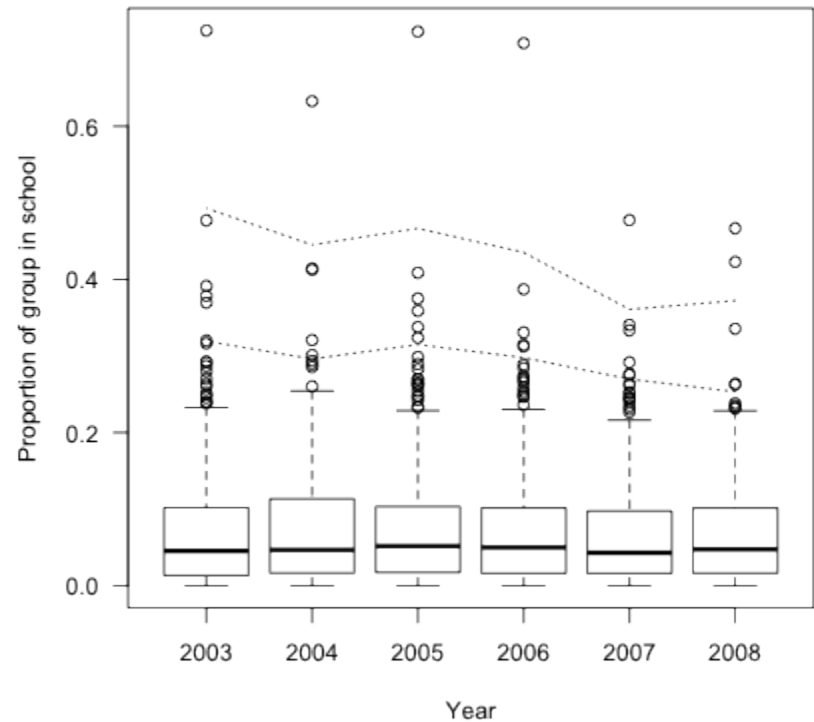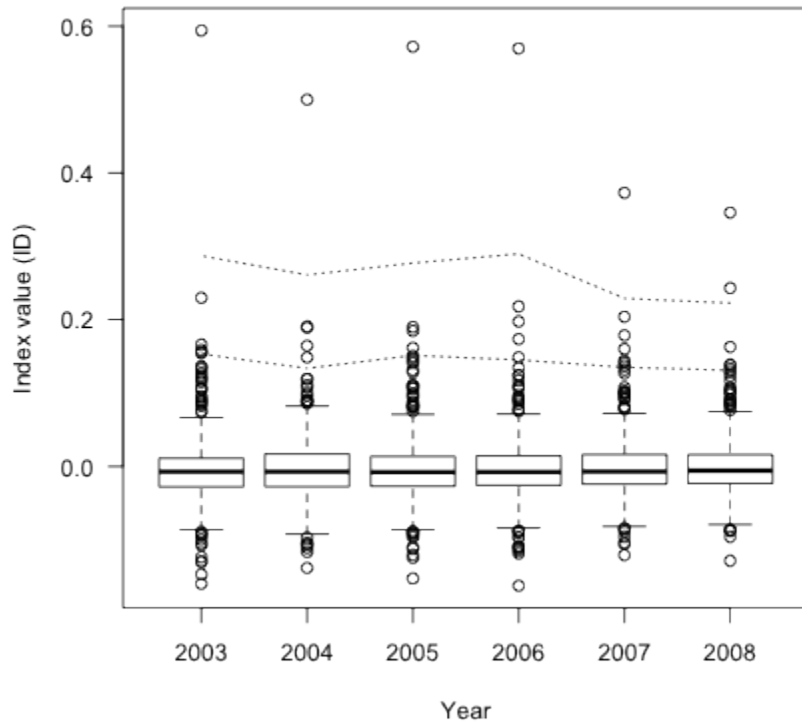# Distribution of the ID scores
(and of the proportion of the ethnic group in each school)
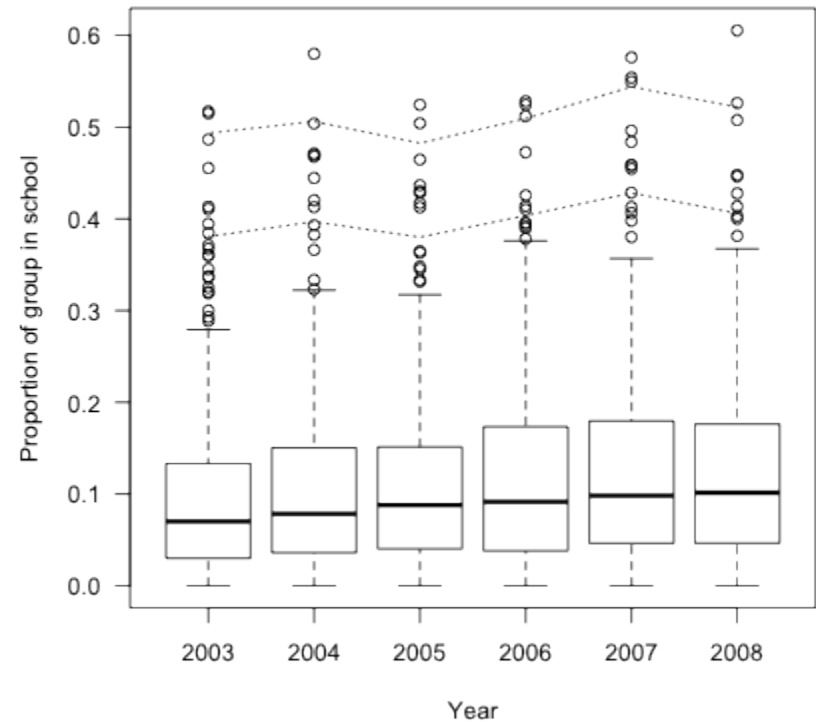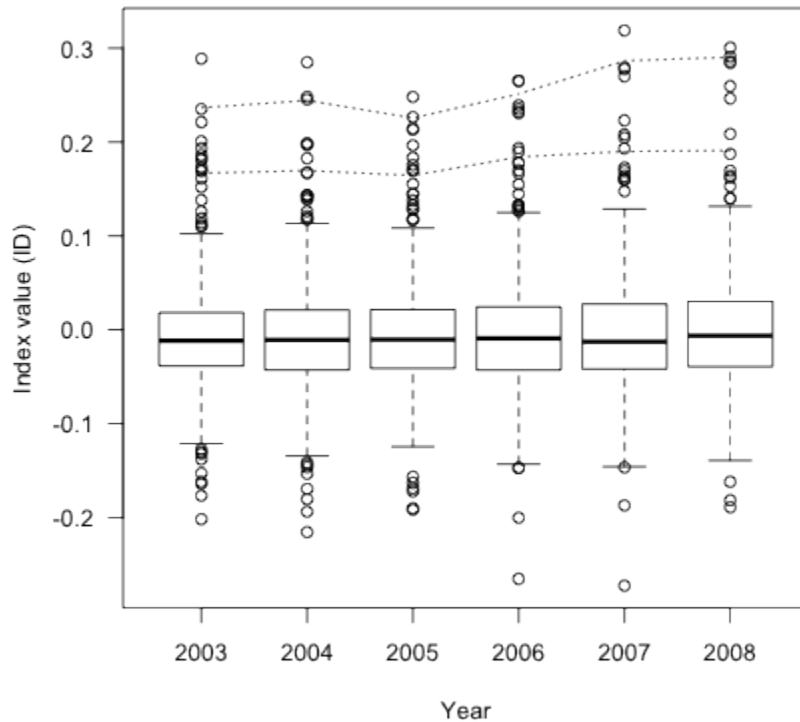
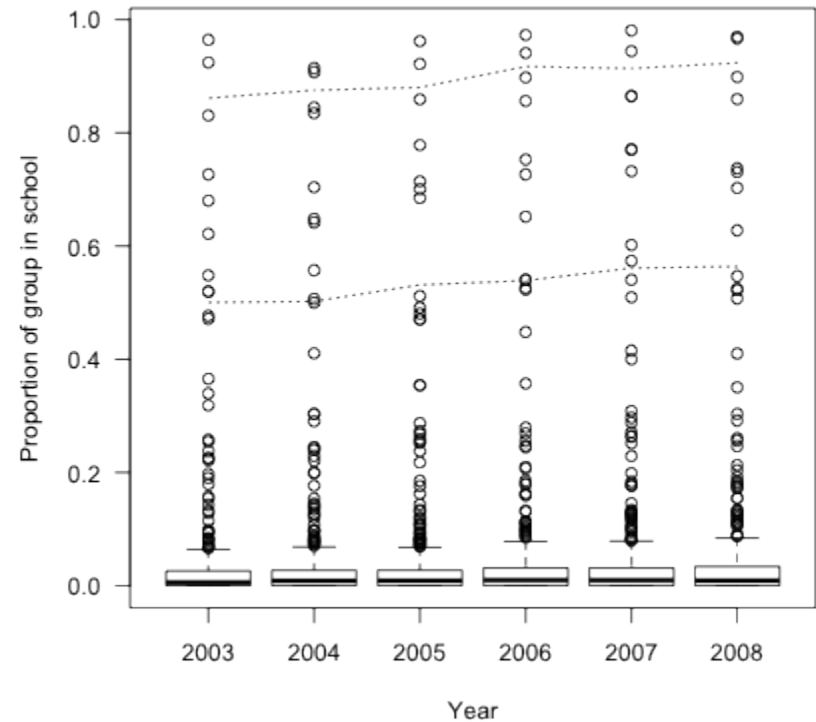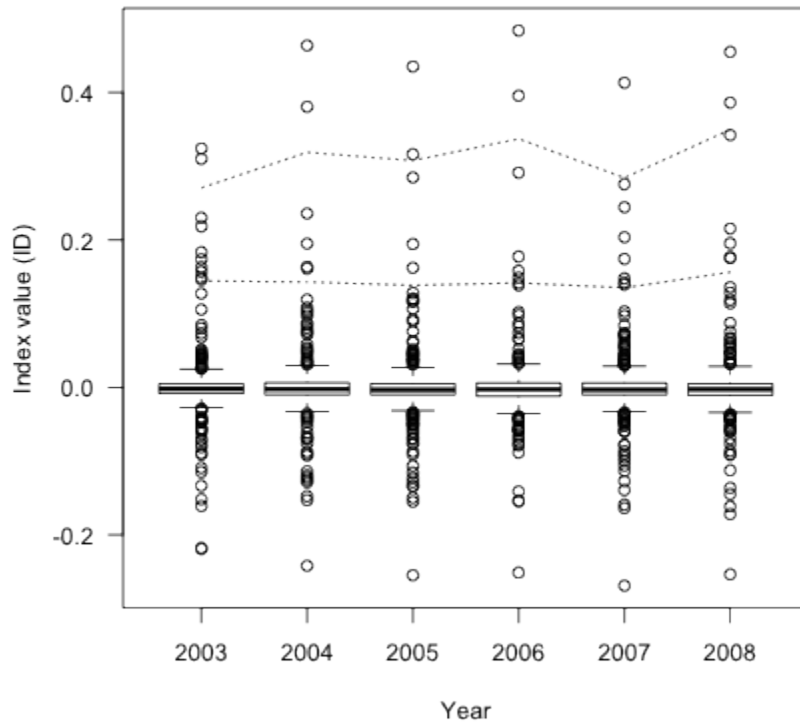(a) Black African

Distribution of the ID scores
(and of the proportion of the ethnic group in each school)

(b) Black Caribbean

Distribution of the ID scores
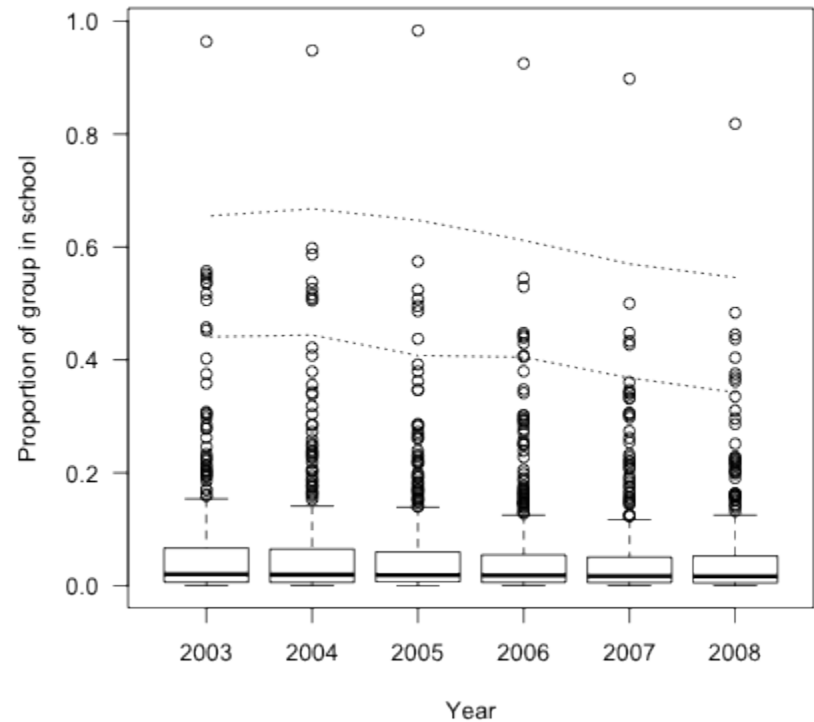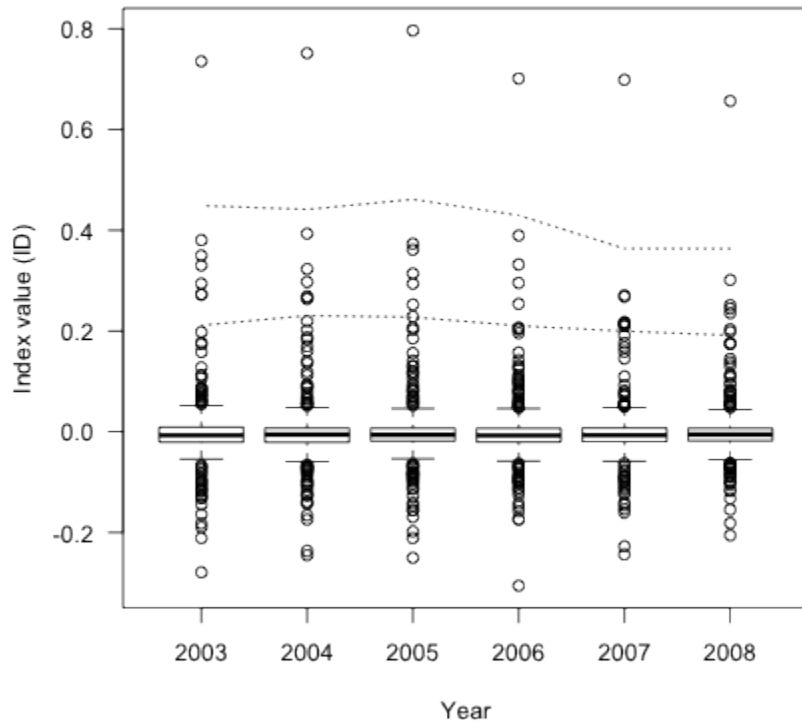## (and of the proportion of the ethnic group in each school)

(c) Bangladeshi
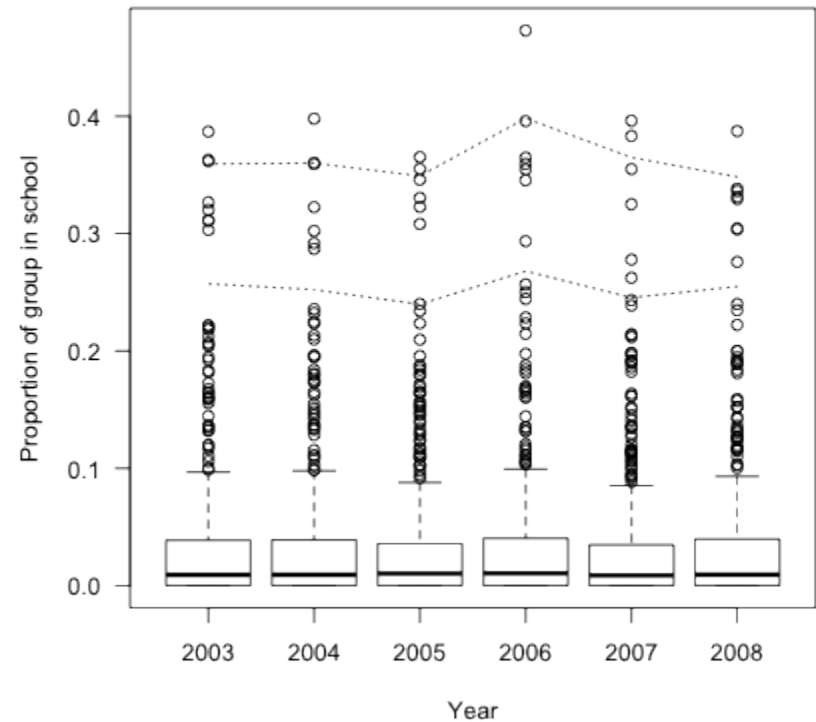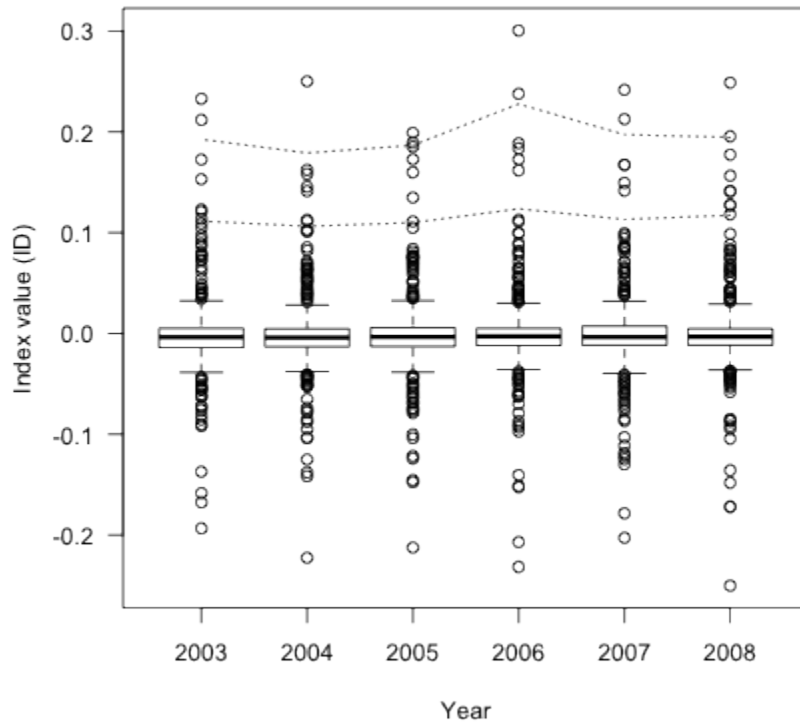
Distribution of the ID scores
(and of the proportion of the ethnic group in each school)
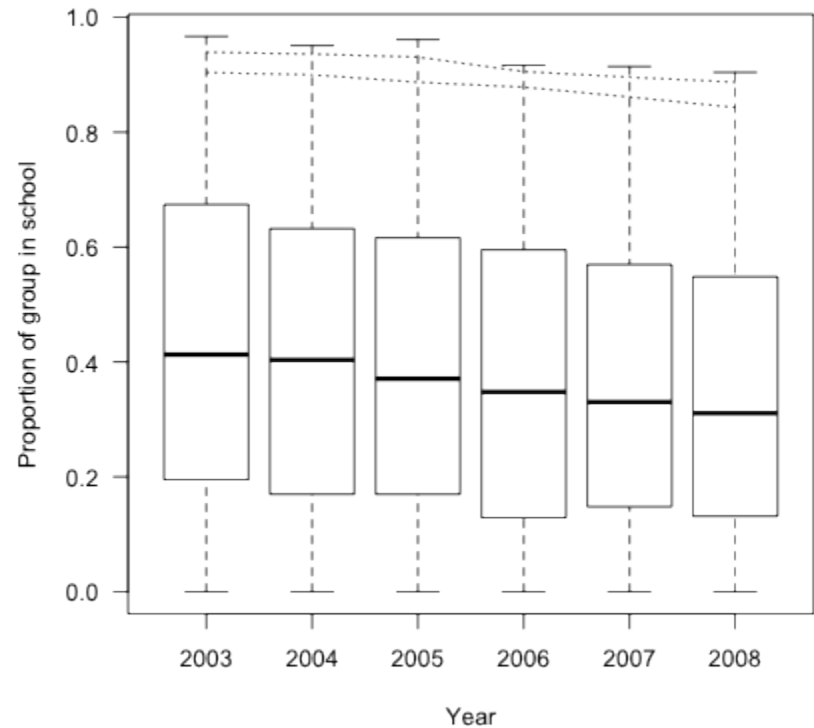

(e) Indian

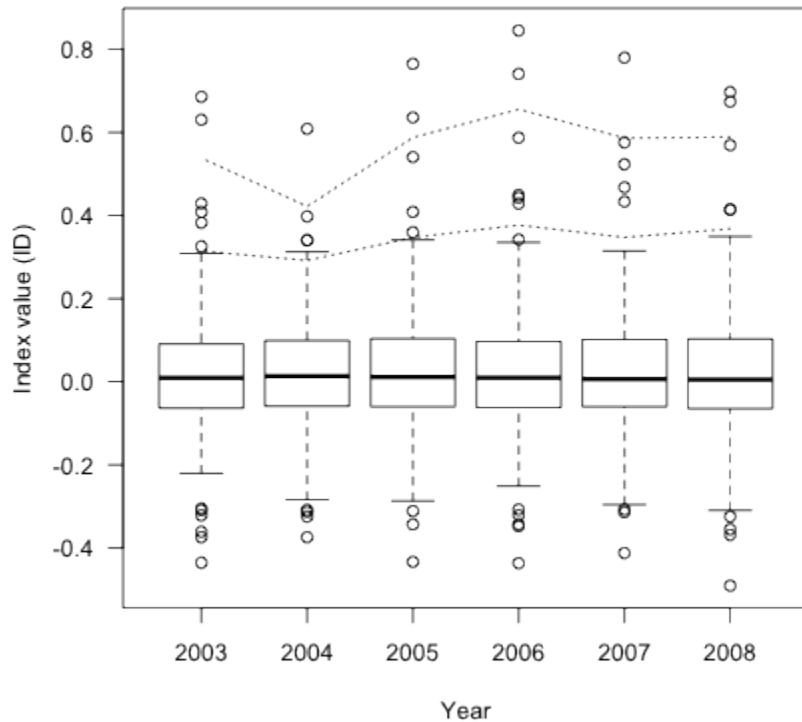# Distribution of the ID scores
(and of the proportion of the ethnic group in each school)

(f) Pakistani

Distribution of the ID scores
(and of the proportion of the ethnic group in each school)

(g) White British

Summary of plots

- it is possible to find, in all years, **secondary schools that are predominantly or wholly filled by pupils from a single ethnic group**, especially so for the Bangladeshi and Indian groups.

- It is also possible to find **schools that strongly differ from others locally**: schools that have 70-80 percentage points more Indian pupils, for example.

- This is not trivial. Recall that the weights matrix defines locally competing schools as those that recruit from the same primary schools. The differences are therefore subsequent to any prior sorting by ethnicity between primary schools

Summary of plots

- There is also **asymmetry** in the distribution of the ID values, with more schools with high positive than negative scores.

- These **high, positive values are generally greater than if pupils had simply attended their nearest-to-primary secondary school**
    - Cf. Table 3 of CMPO Working Paper 11/275

- As such, there is **evidence of clustering**, of some schools containing a disproportionate number of pupils from a particular ethnic group. In this sense, 'segregation' exists.

- But, is it increasing?

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Increasing segregation?

- Looking at the Black African group first
    - in addition to the trends in the index values, the proportion of Black Africans in the schools where the group are most prevalent also **appears to be rising**.
    - However, **the prevalence of the group amongst all school pupils is rising too**. In 2003, 8.79 per cent of the school population (as recorded in the data) was Black African, 9.76% in 2004, 10.1% in 2005, 10.9% in 2006, 11.6% in 2007 and 11.6% in 2008.
    - Comparing the cohorts for years 2003 and 2008, a sizeable proportion of Black African pupils are found in an increasing number of London state-supported secondary schools.

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Increasing segregation?

- Second, Bangladeshi pupils.
  - Although the index of difference may again be increasing in the most extreme cases, as with Black African pupils the Bangladeshi group forms a growing proportion of the school population (4.19 per cent in 2003, 4.23% in 2004, 4.54% in 2005, 4.80% in 2006, 4.96% in 2007 and 5.35% in 2008)

Increasing segregation?

- The suspicion is that the **apparent increases in the index of difference are driven by demographic changes**.

- This can be tested by asking if the rate of change is proportional to the group's increased prevalence amongst the local school population: if,

$$\frac{\text{ID}_{t2}}{\text{ID}_{t1}} = \frac{p_{t2}^*}{p_{t1}^*}$$

$$\Rightarrow \frac{\text{ID}_{t2}}{p_{t2}^*} = \frac{\text{ID}_{t1}}{p_{t1}^*}$$

- Where the local prevalence of the group, p^* can be estimated as proportional to its prevalence in a school and its average competitor.

Index of clustering

$$\text{ICL}_i = \frac{\text{ID}_i}{p_i + \sum_{j=1}^{n-1} w_{ij} p_j} \qquad -1 \leq \text{ICL}_i \leq 1, \; j \neq i, \; 0 \leq w_{ij} \leq 1, \; \sum w_{ij} = 1$$
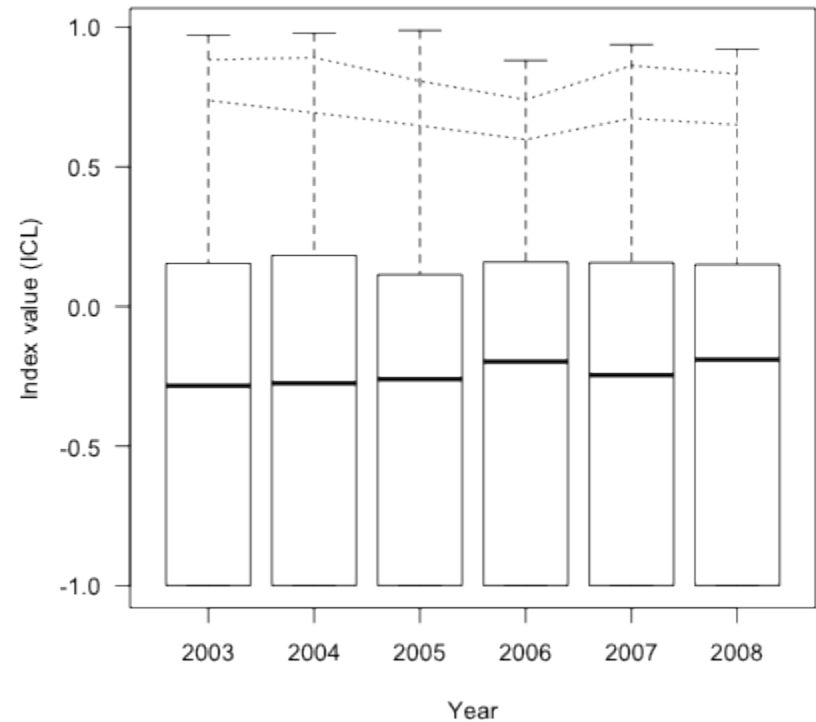
- **measures the local differences between schools relative to the local prevalence of the ethnic group**.

- reaches its maximum when any pupils of the group are wholly found in one school and none of its competitors; its minimum when there is none of the group in the school but there are in competing schools.

Index of clustering

There is no evidence of change:
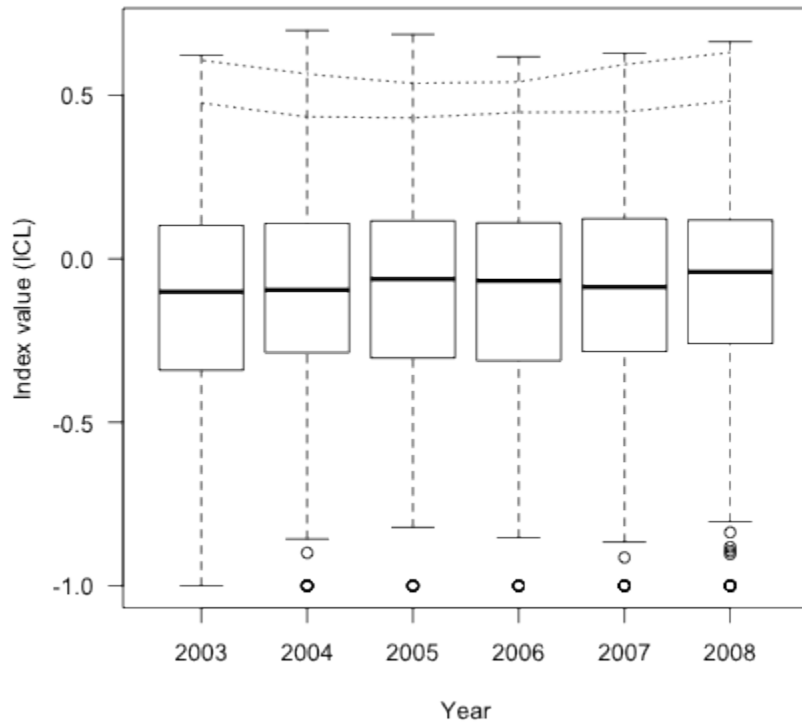
(left) for Black African pupils   (right) for Bangladeshi pupils

Conclusions

- Certainly **there are differences between schools locally** and some of these differences are quite stark.

- However, we **need to be wary of presenting the most extreme cases as the norm**.

- More commonly the differences do not seem to veer too greatly from what would occur if all pupils simply attended the nearest secondary school to their primary.

- There is also little, if any, evidence to suggest those differences are growing, at least not when demographic changes are taken into consideration.

Conclusions

- The debatable words are "too greatly".
- For anyone who would aspire for schools to either represent the ethnic mix of their surrounding neighbourhoods or, even better, to ameliorate residential differences by being better mixed than neighbourhoods, any increase in the concentration of particular ethnic groups in particular schools will be a disappointment.

Conclusions

- However, taking the evidence in the round, whilst it is undoubtedly true to say that some but a few secondary schools in London contain a high proportion of a single ethnic group, **the dynamic implied by the phrase "sleepwalking" is unhelpful, no matter how well intentioned (or possibly misreported) it may be**.

Conclusions

- More generally, the paper has argued that the word segregation is a spatial and comparative phrase, measured by looking at differences between places within a region.

- The importance of making geographically meaningful comparisons has been stressed, giving emphasis to local measures of segregation.

References

- **Harris, RJ, 2011, "Sleepwalking towards Johannesburg"? Local measures of ethnic segregation between London's secondary schools, 2003 – 2008/9. CMPO Working Paper series 11/275.**

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