

## TD 3 (part 2): Tipping model and segregation indices

In this TD we will review the tipping model with some practice questions. Then we will build segregation indices and understand what factors influence them within cities.

### Exercises

1. The tipping model:
  - (a) Explain in words how urban segregation may be driven by demand factors, supply factors, or a combination of both.
  - (b) Graph the Schelling model for: 61 Whites  $i \in [0, 60]$  and 41 Blacks  $j \in [0, 40]$  who contemplate living in a city and whose tolerance level of the other kind is defined by  $T_i^W = 1 - i/60$  for Whites and by  $T_j^B = 5 - j/8$  for Blacks and use your graph to explain the segregation paradox in this model.
  - (c) Assuming now that there is a stock of 50 houses in the city, describe the set of stable mixed equilibria and describe the tipping process toward an all-Black equilibrium.
2. Prepare data: like last week work directly inside the dofile “partII\_td3.do” we provide you with.
  - (a) Load the dataset “LA2010\_Blocks\_forTD.dta”. Keep only observations for which the census block population is higher than 0. How many observations have you deleted?
  - (b) Generate a variable *tot\_pop* equal to the total population and a variable *pop\_tract* which counts the population per tract.
  - (c) Using the *egen* command with the *tag* function (see more information in the help for *egen*) to keep the value of *pop\_tract* only once per tract (for the other blocks in the tract the value should be set to missing).
  - (d) Generate a variable *N\_block* that counts the number of blocks per tract.
  - (e) Count the total number of blocks in each tract and generate a new variable, *N\_block* with this information. Hint: use *\_N* to identify the maximum number of observations per tract.
  - (f) Obtain summary statistics for *pop\_tract*, *pop\_block* and *N\_block*.
3. Building segregation indices
  - (a) We will build an index for each main ethnic group. Notice that population data for each ethnic group is identified with the first few letters of the ethnic group name. To loop over them we have created a global macro called *ethnic* in the code. Using the *help* function can you explain simply what a global macro is?

- (b) Compute a city dissimilarity index at the census tract level for each ethnic group. To do it for all three ethnic groups at once we have written a loop. Type your code inside (be careful when calling the local variable created by the loop, *y*, we often make typos with Stata's syntax to call local variables). Hint: creating the variables you need to compute the dissimilarity index is very much similar to the way we created the variables in q2).
  - (c) Compute summary statistics for all three dissimilarity indexes.
4. Statistical analysis: what makes tracts more segregated?
- (a) Generate a variable equal to the fraction of whites within each tract, called *whi\_frac\_tract*.
  - (b) Compare the dissimilarity index at the tract level for whites (*diss\_whi\_block\_tract*) with *whi\_frac\_tract* using a binned scatter plot (*binscatter*). (You might need to install *binscatter* using *ssc install binscatter* first) Hint: Remember to only use one observation per tract. What does the graph tell you? Why do we use a binned scatter plot rather than a simple scatter plot?
  - (c) Do a regression using the same variables. How can you interpret the results?
  - (d) Control for the log of population at the tract level. What happens to the regression coefficient? Control for the standard deviation of population at the tract level. What happens? (You need to generate the control variables first).