Econ 330: Urban Economics

Lecture 8

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30 January, 2020

Lecture 8: Neighborhood Choice II

Schedule

Today

1. **Model of Neighborhood Sorting**
2. **Minimum Lot Size**
3. **Discussion**

Upcoming

- **HWII due in class Feb 6th**
- **Reading** (Chapter IV & V *ToTC*)
- **Midterm** week 6 -- on the horizon

Neighborhood Sorting

Last class we asked:

1. Who gets desirable neighbors?
2. Will there be segregated or integrated neighborhoods?
3. Will there be sorting or mixing with respect to income, age, race, or some combination of those factors?
4. What are the implications for the price of land in various neighborhoods?

Intro

We will focus on positive externalities (for now). **Assume**

- These increase with income and education level

Question:

- What is the income mix of neighborhoods - segregated or integrated?

Model

- Two neighborhoods: A and B, each with 80 lots
- Two income groups (high and low), each with 80 households
- Only difference between the neighborhoods is income mix

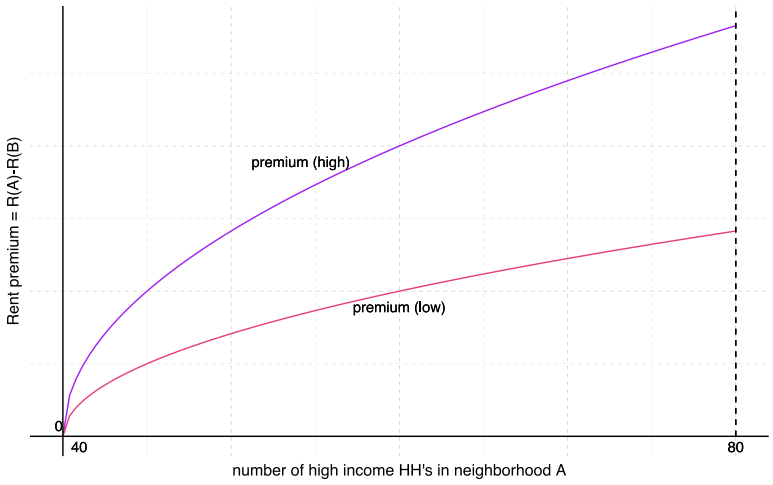
Model

In this model, individual choices to stay or move are determined by the *rent premium*

- **Rent Premium** (for neighborhood A): $RP = R(A) - R(B)$
- Premium for workers might be different by type: $RP_{high} \neq RP_{low}$
    - IE, the benefit of living close to high types might vary by type

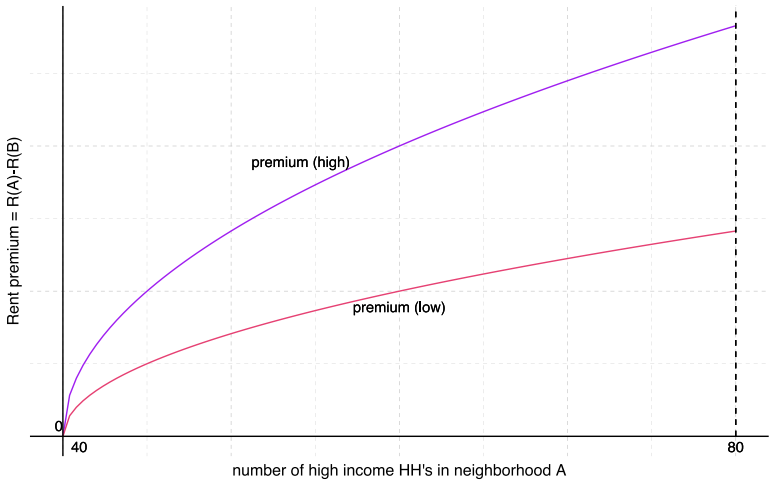
      Assume
- **Land will be allocated to the highest bidder**
- Everyone in the same neighborhood pays the same rent/price

Segregation Eq



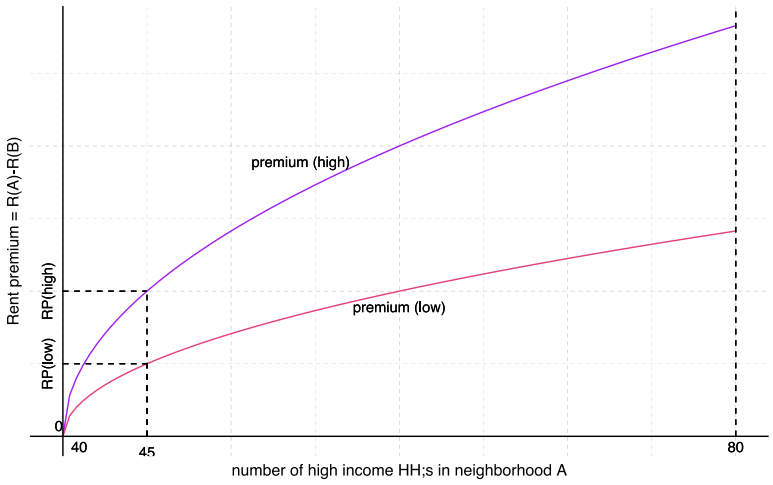
- Suppose we start at 40 HH's in neighborhood A. This is a **perfectly intergrated** equilibrium
- The RP is 0 for both groups, so households are indifferent between neighborhoods (no incentive to move)

Segregation Eq



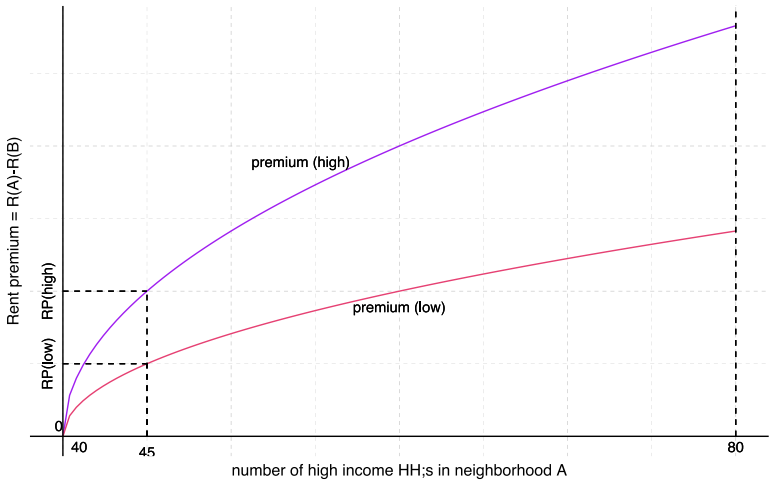
- Suppose we start at 40 HH's in neighborhood A. This is a **perfectly intergrated** equilibrium
- The RP is 0 for both groups, so households are indifferent between neighborhoods (no incentive to move)
- What happens if there is a small "shock" to the equilibrium and a few high income households move to neighborhood A?

Segregation Eq



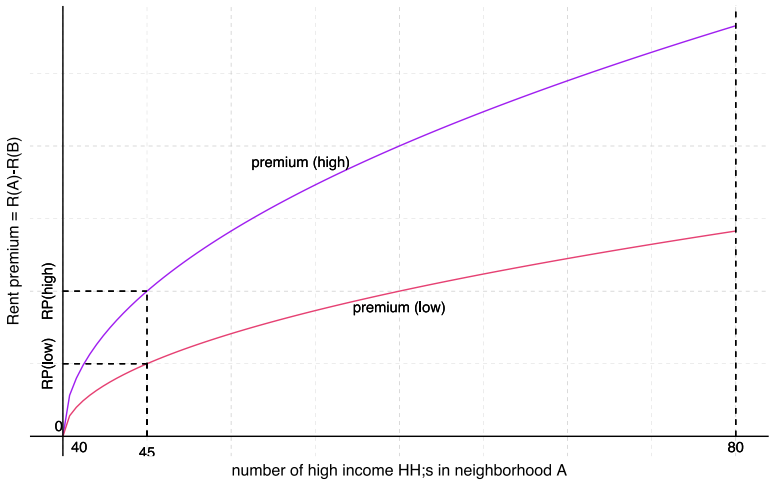
- If 5 high income HH's move into A, $RP(high) > RP(low)$
- This means high income HH's are willing to bid more for neighborhood A even if they are in neighborhood B. So what happens?

Segregation Eq



- If 5 high income HH's move into A, $RP(high) > RP(low)$
- This means high income HH's are willing to bid more for neighborhood A even if they are in neighborhood B. So what happens?
- More blues move in (and since they bid higher, they get to live in neighborhood A). This is called a *self reinforcing effect* or positive feedback loop.

Segregation Eq



- **Axiom 2**: ***Self-reinforcing effects*** *generate extreme outcomes* $\implies$ we end up at a fully segregated eq of all 80 high inc HH's in nbhd A

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Integration Eq

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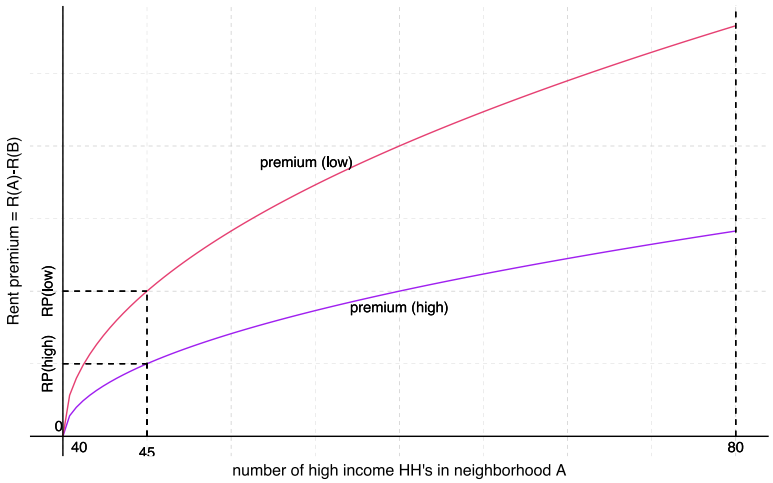
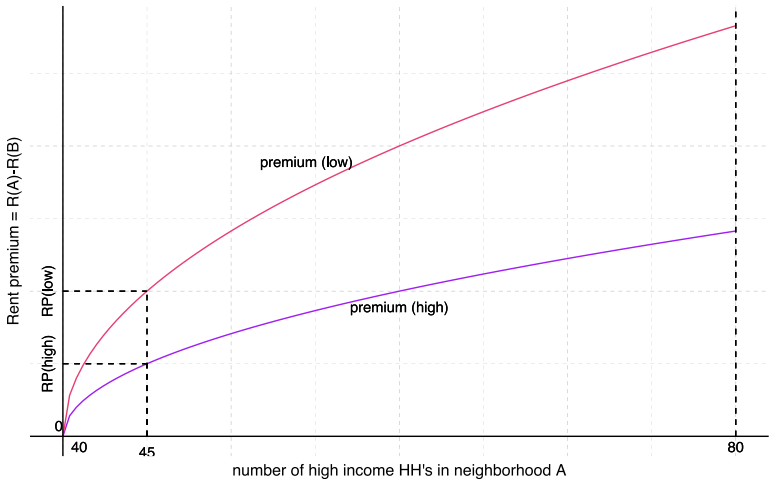
Integration Eq



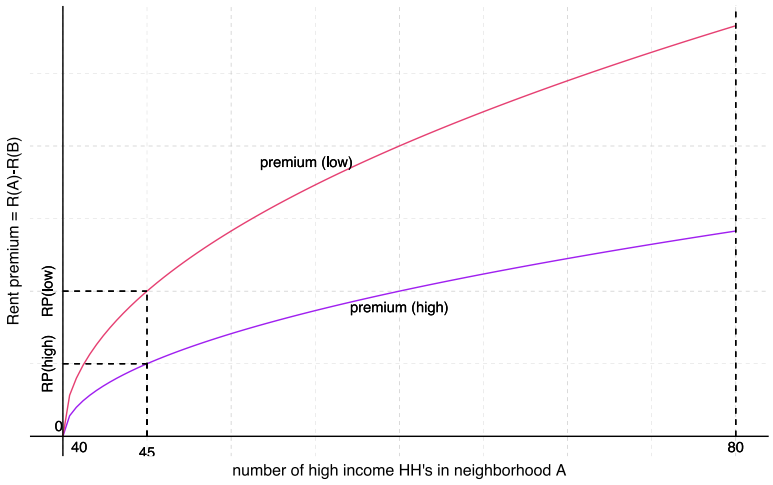
- Is the story the same here?
- Now, a small movement of high income HH's into A means $RP(High) < RP(low)$

Integration Eq



- Is the story the same here?
- Now, a small movement of high income HH's into A means $RP(High) < RP(low)$
- So we get pushed back to the initial equilibrium. In this case, intergration is the **only equilibrium**
- Furthermore, integration is a **stable equilibrium**

Integration Eq



Note: 80 high income HH's in A is not an EQ because $RP(low) > RP(high)$. So low incomes will outbid highs and move in

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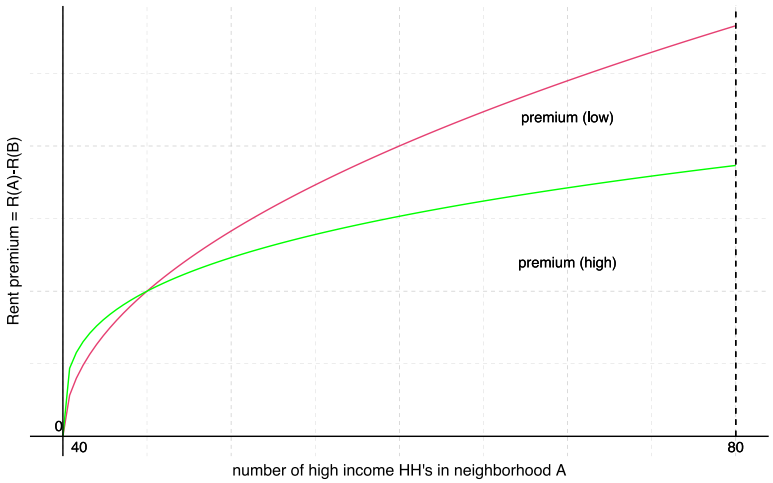
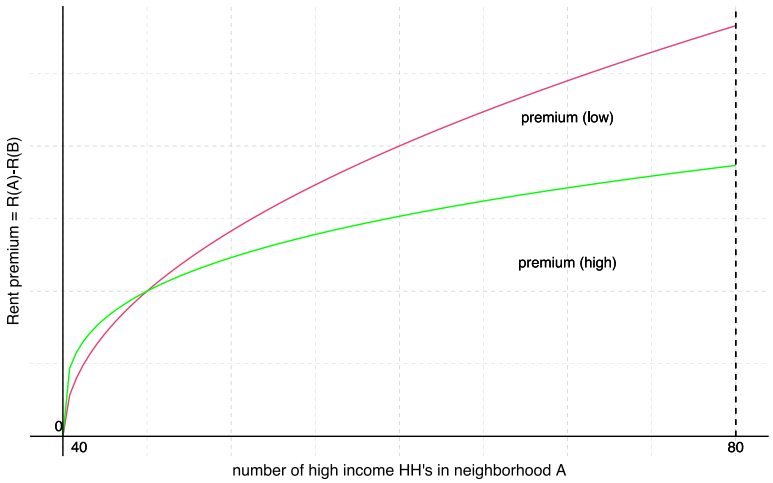
Mixed Eq



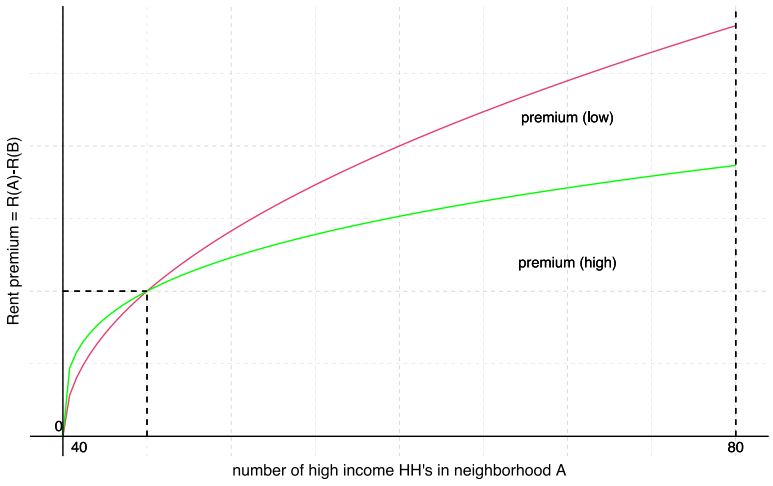
- What about a story like this?

Mixed Eq



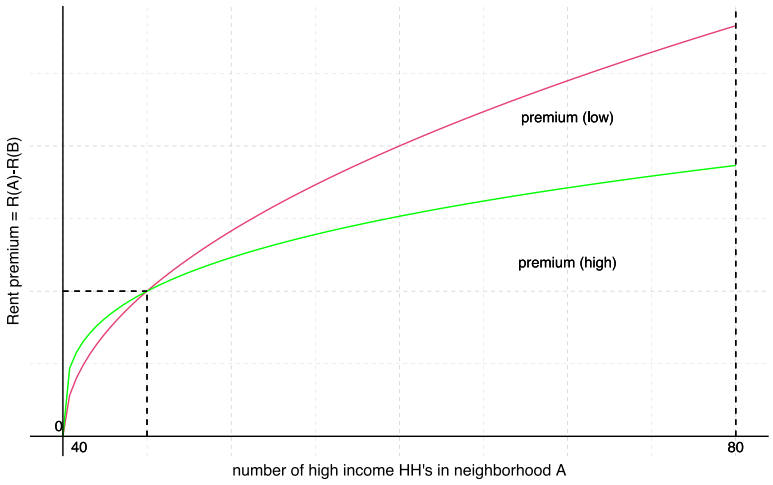
- What about a story like this?
- Integration eq (40 of each type in each nbhd) is still an equilibrium. Is it **stable**?

Mixed Eq



- What about a story like this?
- Integration eq (40 of each type in each nbhd) is still an equilibrium. Is it **stable**?
- No. A small deviation away means $RP(high) > RP(low)$. So highs outbid lows until $RP(high) = RP(low)$ at 45 highs in A and 35 lows.
- Is 45 highs in A stable?

Mixed Eq



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- Is 45 highs in A stable? Yes (you think about why)

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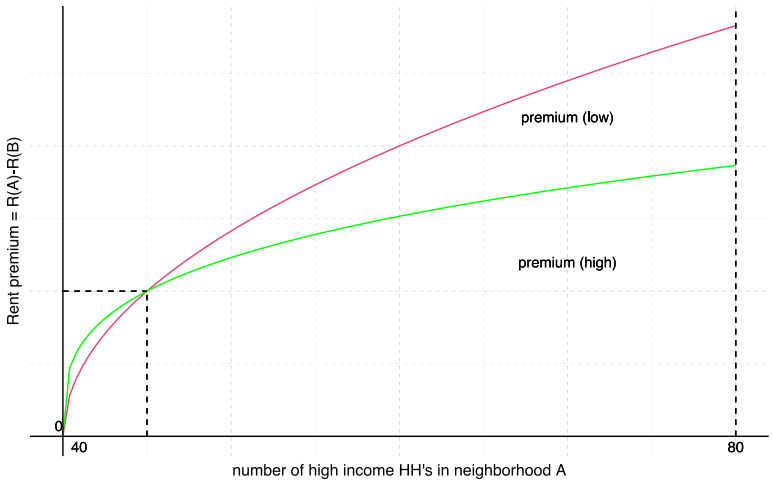

- **Note**: Full segregation here is *not* an equilibrium for a similar reason to the last example

- What about a story like this?
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- Is 45 highs in A stable? Yes (you think about why)

Eq Defn

To be clear, an *equilibrium* in this model is a point at which the rent premium is in balance across both groups

- This will hold when the rent premium curves intersect. Except at full segregation
  - If the RP for the group listed on the axis is *higher* then this will also be an equilibrium because **there is no tendency for change**
  - If the RP for the group listed on the axis is *lower* then population dynamics move away from this point

Stable vs Unstable Eq

1) An eq is **stable** if a small movement away will encounter self - **correcting** forces

- An eq is stable if when you move away from it, the pop. dynamics push you back to where you came from

2) A eq is **unstable** if a small movement away will encounter self - **reinforcing** forces

- That is, an eq is untable if when you move away from it, the population dynamics push you even farther than where you came from

A Heuristic

1) Draw a verticle dashed line at every intersection point

2) For every region between the verticle dashed lines, it must be the case that one of the rent premium curves is above the other

- If the rent prem curve for the group listed on the axis is **higher**, then this group will increase in number. Draw rightward arrows on the axis
- If the rent prem curve for the group listed on the axis is **lower**, then this group will decrease in number. Draw leftward arrows

A Heuristic

3) If there are rightward arrows pushing toward 100% in one nbhd, then 100% (complete segregation) is an eq even if the rent prem curves do not intersect there

4) For every eq. value, look at its immediate vicinity

- If there are arrows moving towards it, it is a **stable eq**
- If there are arrows moving away from it on one or both sides, it is a **unstable eq**

Checklist

1) **Model of Neighborhood Sorting** ✅

- Segregated, Integrated, & Mixed Equilibria
- Stable vs Unstable Equilibria

2) **Minimum Lot Size**

3) **Discussion**

Lot Size

Role of lot-sizes

- Land is a **normal good**. Recall from EC201, what does this mean?
  - more 💰 $\Longrightarrow$ higher demand
  - Larger lot $\Longrightarrow$ smaller premium per unit of land
  - **Pair of low-income** households outbids **single high income** household

Minimum Lot Size

Minimum Lot Size (MLS) zoning increases the premium per unit of land for low-income households

- Low-income households are thus more likely to be outbit for lots by high-income households
- MLS restrictions promote segregation

Example

Consider a developer that is **facing a choice** to develop a plot of $60,000 ft^2$ into:

- 12 lots and sell to low-income HH's for 200k each
  - they are WTP 200k for $5000 ft^2$ of land
- 4 lots and sell to high-income HH's for 500k each
  - they are WTP 500k for $15000 ft^2$ of land

Questions

1. What does the developer do?
2. How large does the MLS need to be to keep low income households out?

Example

Sell to?

- If they sell to L: $200k * 12 = 2.4m$
- If they sell to H: $500k * 4 = 2m$
  - They sell to **low**

Example

MLS?

- Low, get $\frac{200k}{5000ft^2} = 40/ft^2$
- High, get $\frac{500k}{15000ft^2} = \mathbf{33.333}/ft^2$

$$\frac{200,000}{lot_l} = 33.33$$

$$lot_l = \frac{200,000}{33.33}$$

$$lot_l = 6000ft^2$$

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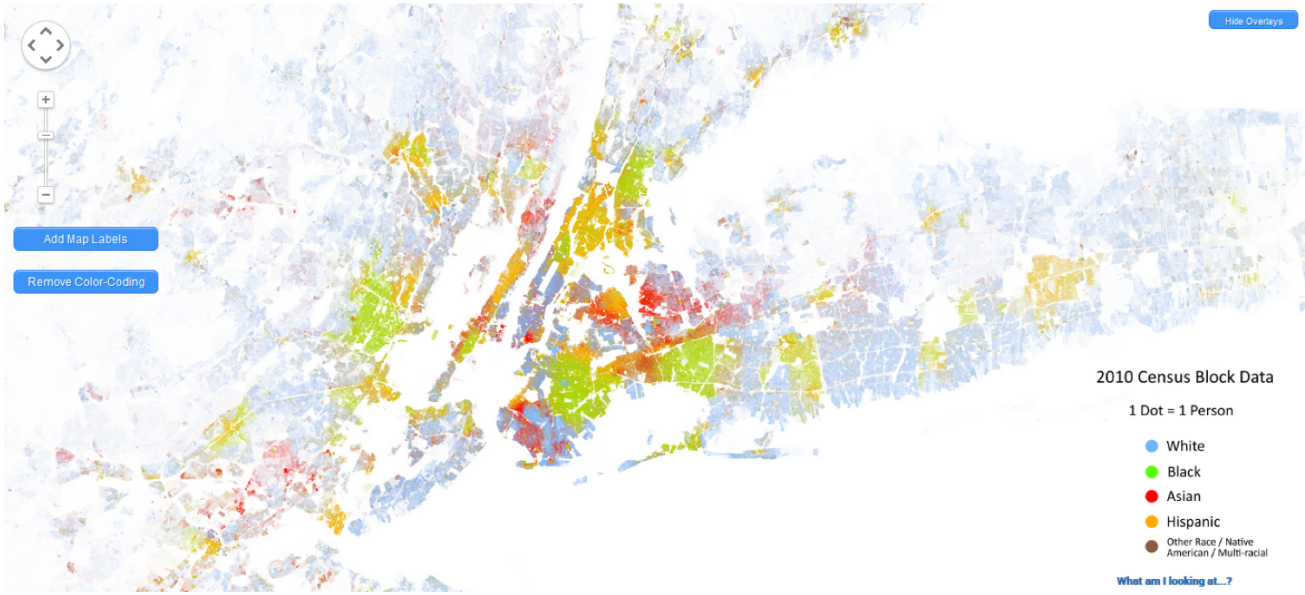
Racial Integration



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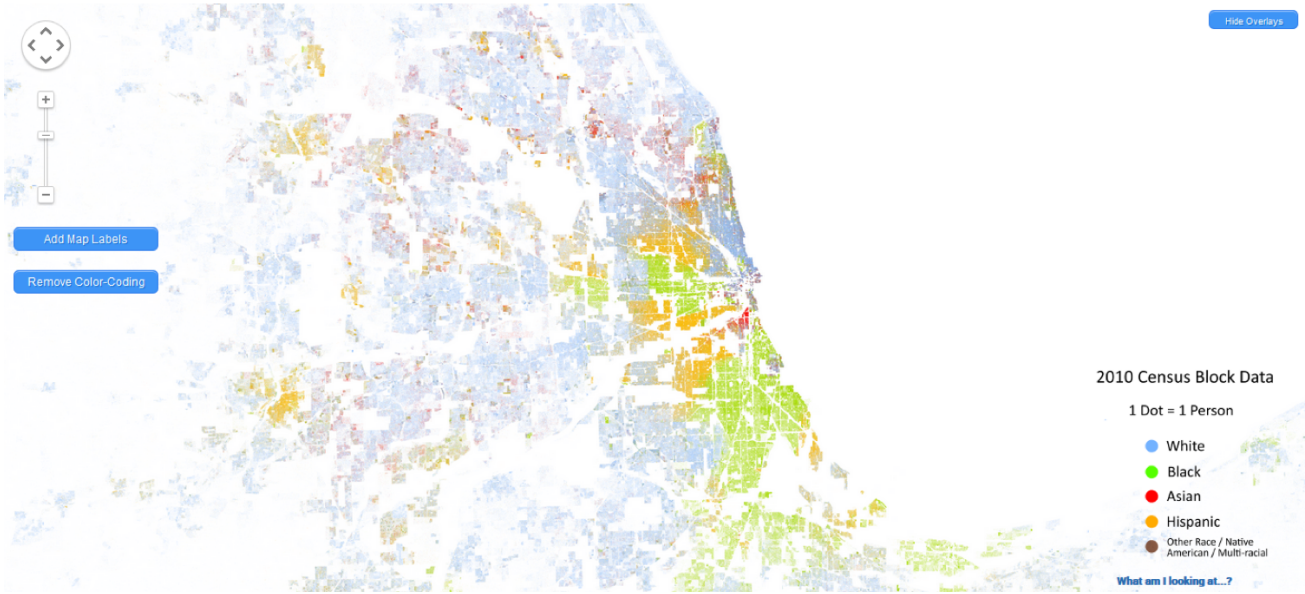

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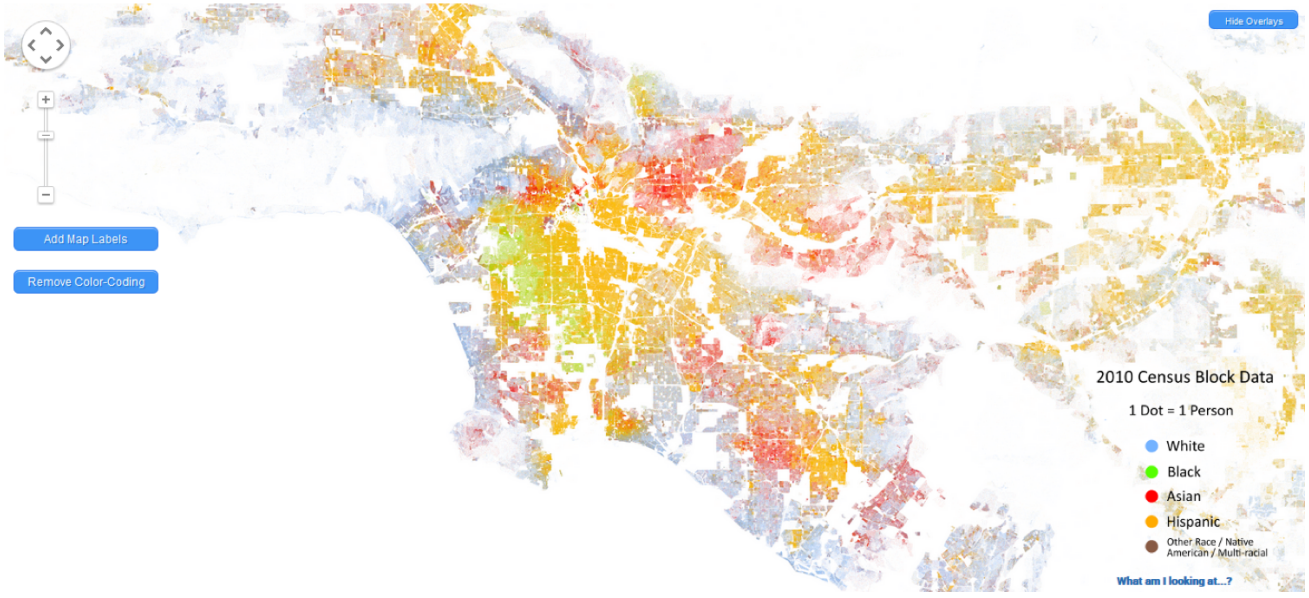

Racial Integration

Discussion

Common theories for racial segregation (in no particular order)

1) White households have preference for segregated neighborhoods

2) Income and race are strongly correlated, so income segregation contributes to racial segregation

3) MLS zoning excludes low-income HH's

4) **Racial Steering**: Encouraging by real-estate agents, bureaucrats, or property owners reduce access of minority households to certain neighborhoods

So What?

What are the consequences of nbhd segregation? *Spatial Mismatch*

- Inferior access to jobs
  - **Inferior access** explains **25%** of black-white employment gap
  - **Inferior acess** explains **31%** of Hispanic-white employment gap
- Mismatching bigger problem in large cities

So What?

Schools and Poverty Traps

- Low education spending $\Longrightarrow$ low achievement in poor nbhds
- Education more costly in poor nbhds
  - family crises
  - security
  - weak prep

Central City Schools

- twice highschool dropout rate
- Education for black HS grad eq to ed of white suburban dropout
- High poverty schools: low proficiency rates for math and reading

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