

MEMORANDUM

FROM: Qiushi Huang
TO: Dr. Andrew Greenlee
SUBJECT: Memorandum Subject
DATE: November 30, 2021

Introduction

In this memo, I will analyze the policy that influences the income status in Champaign and Urbana. In the previous memo, I dug into Urbana's data and have the following findings: 1. The overall poverty rate in Urbana is 29.8%, much higher than Champaign County level (19.9%), slightly higher than 25.0% in Champaign city. 2. The majority race in Urbana is White, and the Black and the Asian are the second and third biggest races. Urbana has a higher ratio of other races than the county. 3. The majority age group in Urbana is 20-25, while half of the poverty population is 18-34. 4. The educational attainment in Urbana is very different from the county level, for it has a 34.8% population with a graduate or professional degree, almost three times that of the county. Additionally, this number of Champaign city is at the same level, but slightly lower than Urbana. 5. Urbana's most significant employment sector is educational services, taking more than half of the employees.

All the findings point out that Urbana is hugely influenced by, or to say, shaped by the university. The majority age groups of students in UIUC are 20-29, matching the age structure and poverty in age. As for the educational attainment, graduate & professional students take 33% of the total students of UIUC in 2019, which is close to the 34.8% graduated population of Urbana.

The university has a significant impact on more aspects. In the last memo, I want to find the relationship between race and income. I created a bar chart showing the income by race in Urbana and found that both the Black and Asian have only 1/6 or 1/7 of the Urbana median income. Things become different when it comes to the white. The white people below poverty are in a similar income level with other races, but those above the poverty level earn almost four times the poverty white people. This fact can be seen as evidence of racial injustice but cannot tell the whole story — if I notice the gap between the income of white above poverty and the median income in Urbana. The gap is so obvious to ignore that race isn't the only reason for that, and perhaps it's the education. After all, I can see both race and education here shape the Urbana. In this memo, I will further see how much race and education influence income in Champaign-Urbana, the "Chambana" region.

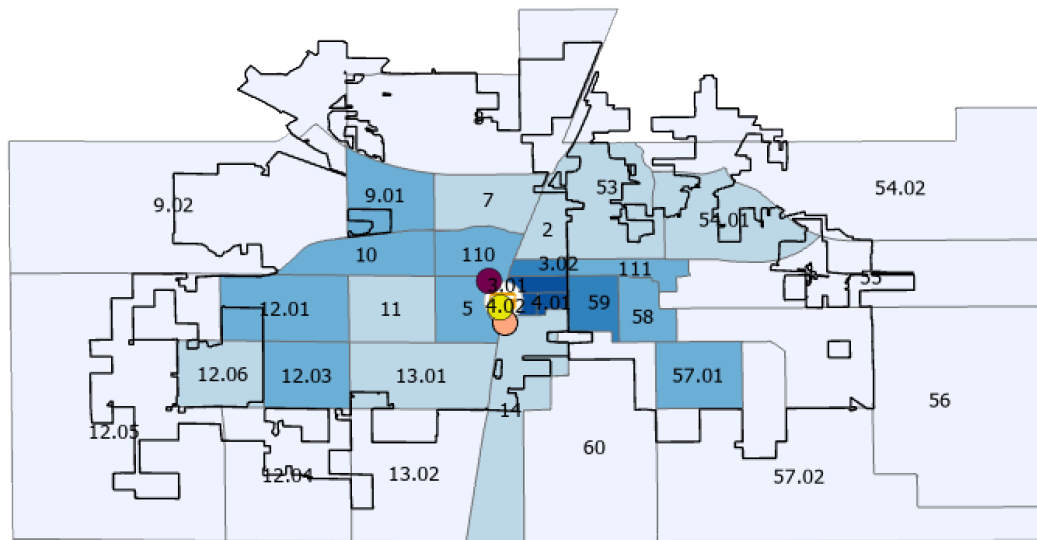
Get started

From census data, I downloaded the ACS 5-y for both Champaign city and Urbana city. First, I filtered out all the census tracts within their boundaries. Then, I did "select by location" in GIS to find which tracts are within the Chambana and got their tract ID. Here is the tract map of both cities. The boundaries of tracts are not perfectly within the cities, but I use them as proximity.

Student Age Group	Number	Percent
20-21	15,369	31.88%
18-19	14,482	30.04%
22-24	8,226	17.06%
25-29	5,181	10.75%
30-34	2,135	4.43%
35 and over	2,077	4.31%

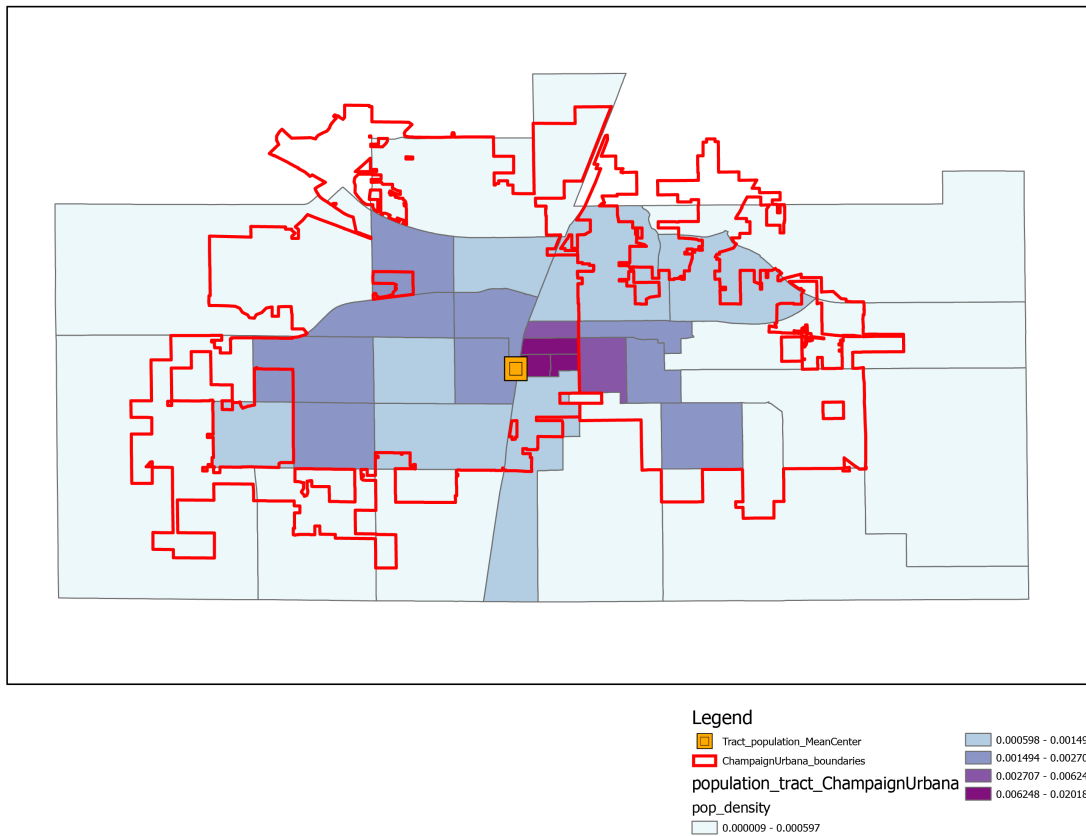
Figure 1: 1- UIUC student age range

Tract map with labels



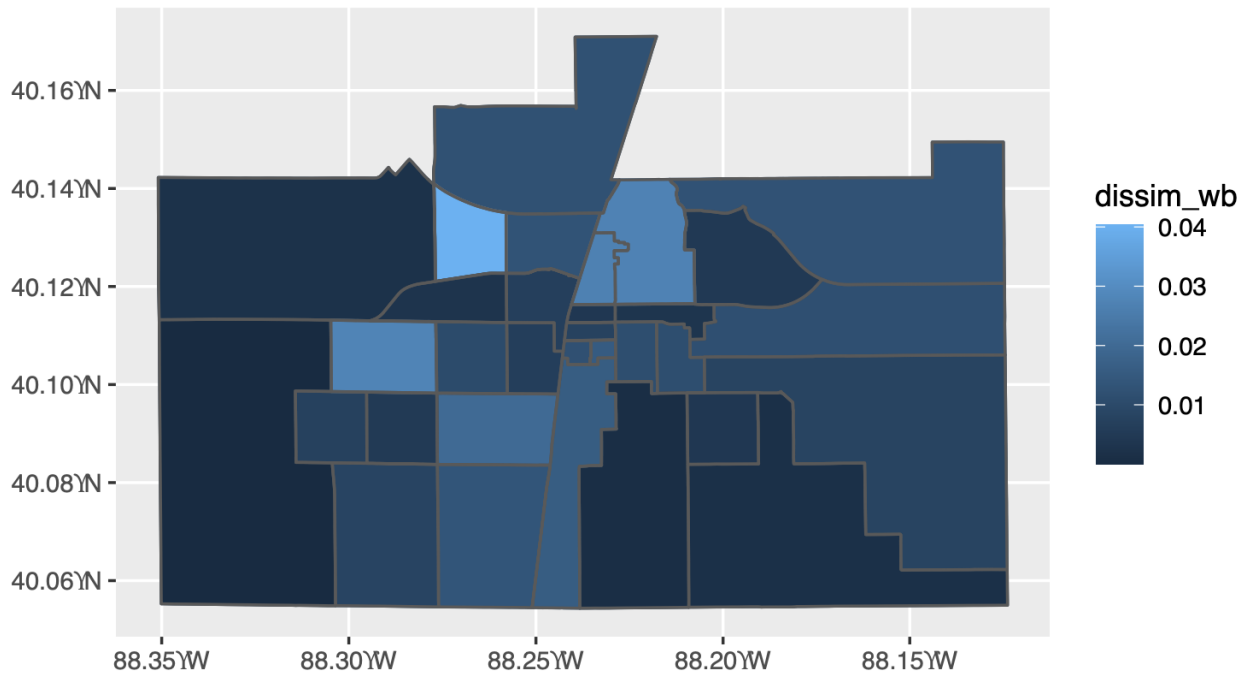
The second step is to see where the population is concentrated. I got help from GIS to do the population density map, and I can see that the center of Champana has the highest population density, where is exactly the campus. Additionally, the mean center is calculated by the weight of each tract's population, which turns out to locate in the heart of the Champana area.

Population density by census tract



Dissimilarity Then, as I learned in the segregation workbook, I calculated the dissimilarity of each tract to see if the races distributed evenly. After getting the White, Asian, and Black calculation results, I can tell that Champaign has a good performance on minority population dissimilarity. The numbers here are all under 0.1. Among Black, Asian, and Latino, Black has the highest dissim-

Black–White Dissimilarity Map of the Chambana Region



ilarity.

After checking the tract map of Chambana, I found the tracts with the highest black-white dissimilarity are tract 000901 and 000100. Furthermore, for Nonwhite-White dissimilarity, tract 000901 is the highest one, in the north of the heart of Chambana.

Income inequality

I found the median income of all the 33 tracts as the standard and calculated the income ratio. When the ratio is 1, this means this tract is in the middle of income level. When the ratio is above 1, the tract has a higher income, and the number means how many times it is of the middle income. The map shows that the heart of Chambana, where the campus locates, has the lowest income ratio; some tracts are even less than half of the middle level. Furthermore, in the west wing, it has the highest income. Considering that the west is Champaign city and the east is Urbana, I can say that Champaign has a higher income level than Urbana. Surprisingly the tract 000901 is not the one among those with the lowest income level; thus the race does not significantly impact its income.

Nonwhite–White Dissimilarity Map of the Chambana Region

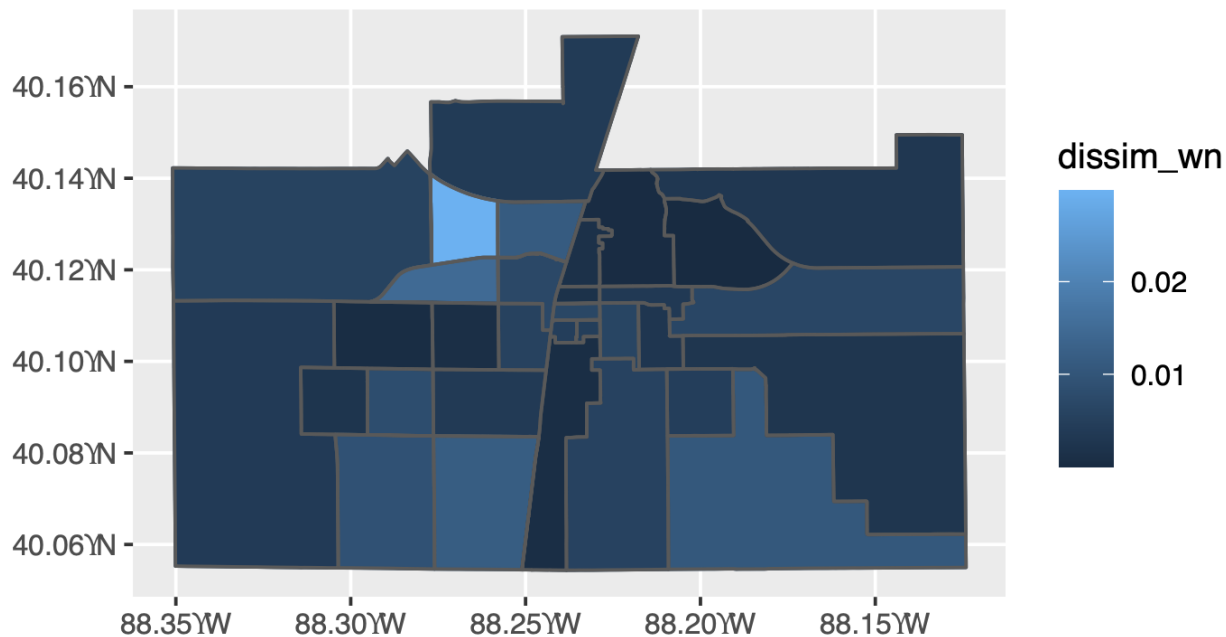
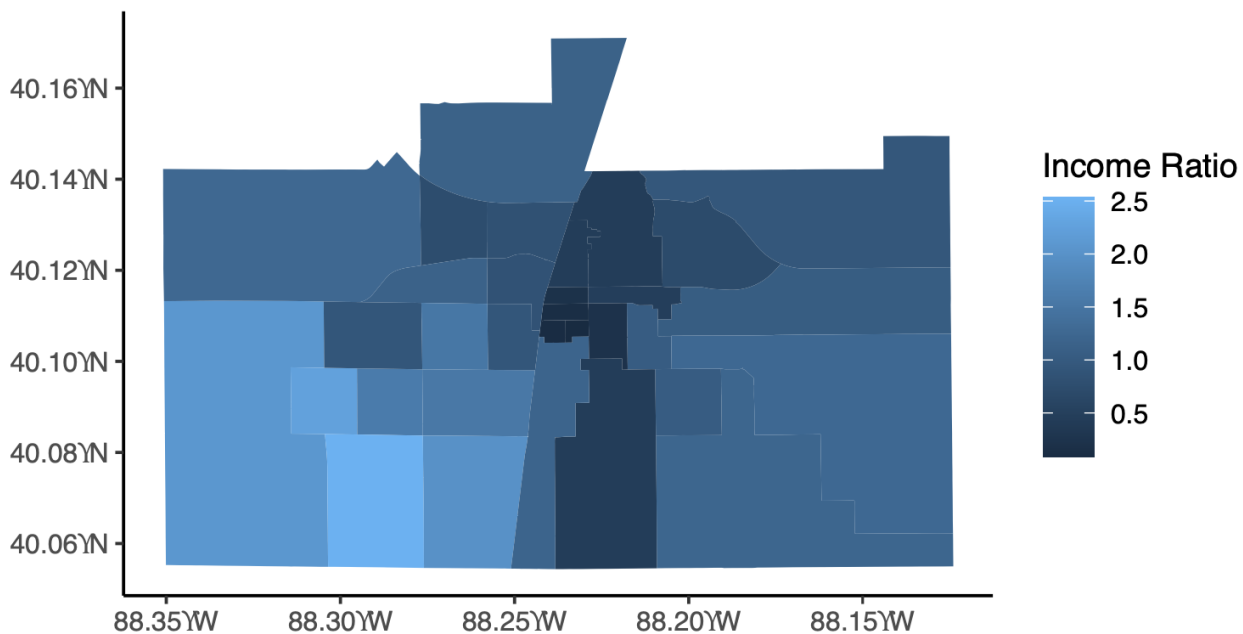


Figure 2: 5- Dissimilarity map of Nonwhite-White

Income Ratio for the Chambana Region



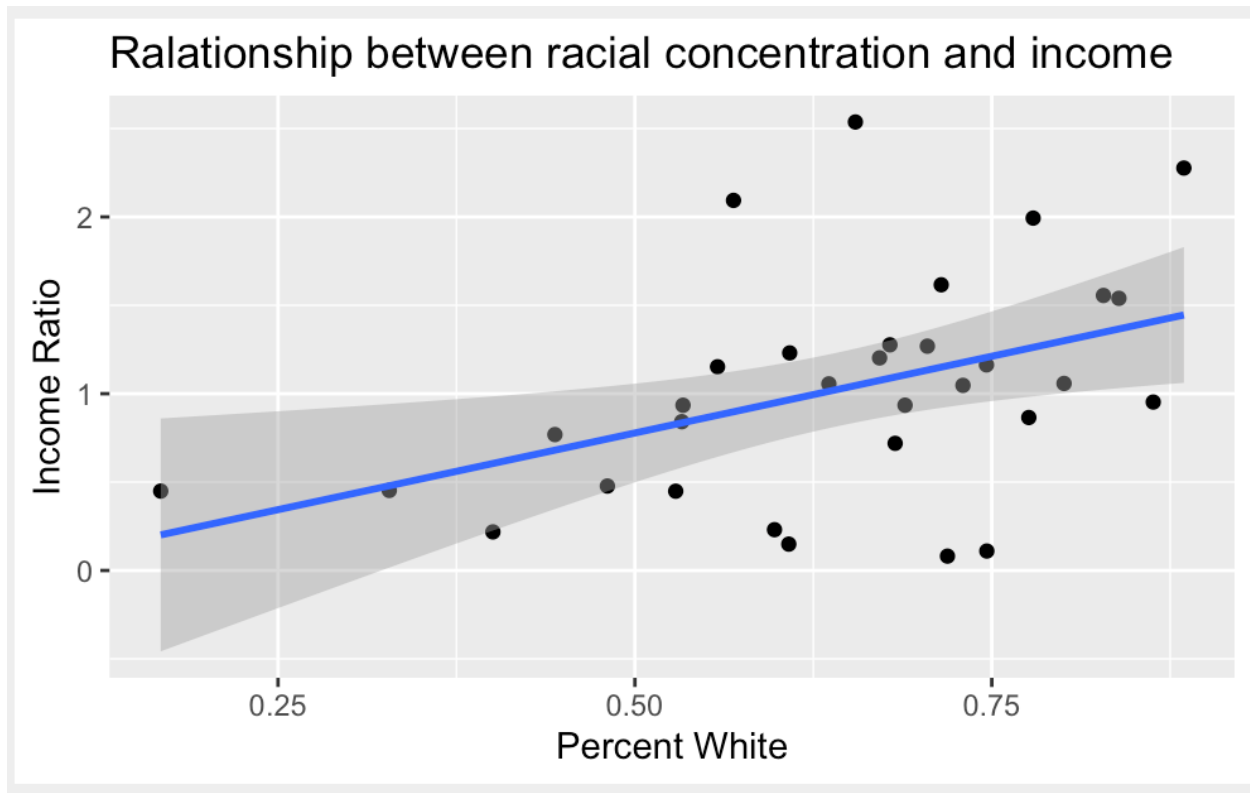


Figure 3: 7- Relationships between racial concentration and income

Relationships between race and income ratio

I use the line chart in ggplot to show the relationship between the percentage of white and the income ratio. The line shows the correlation that the higher percentage of white the tract has, the higher its income. And figure 8 confirms this again by the negative correlation between the percentage of nonwhite and income ratio. This is not a surprise cause I've seen the income status among all the races.

Conclusion

From my analysis, I can respond to what I came out in the introduction. First, the income status in the Champaign – Urbana area is greatly impacted by race. This fact could be told from Figures 7 & 8. Second, the income status is also impacted by the university. This could be from the geographic information– the location of the campus, the highest population density, and the lowest income ratio. In conclusion, if I want to give suggestions on changing the current situation, I have to start from the university.

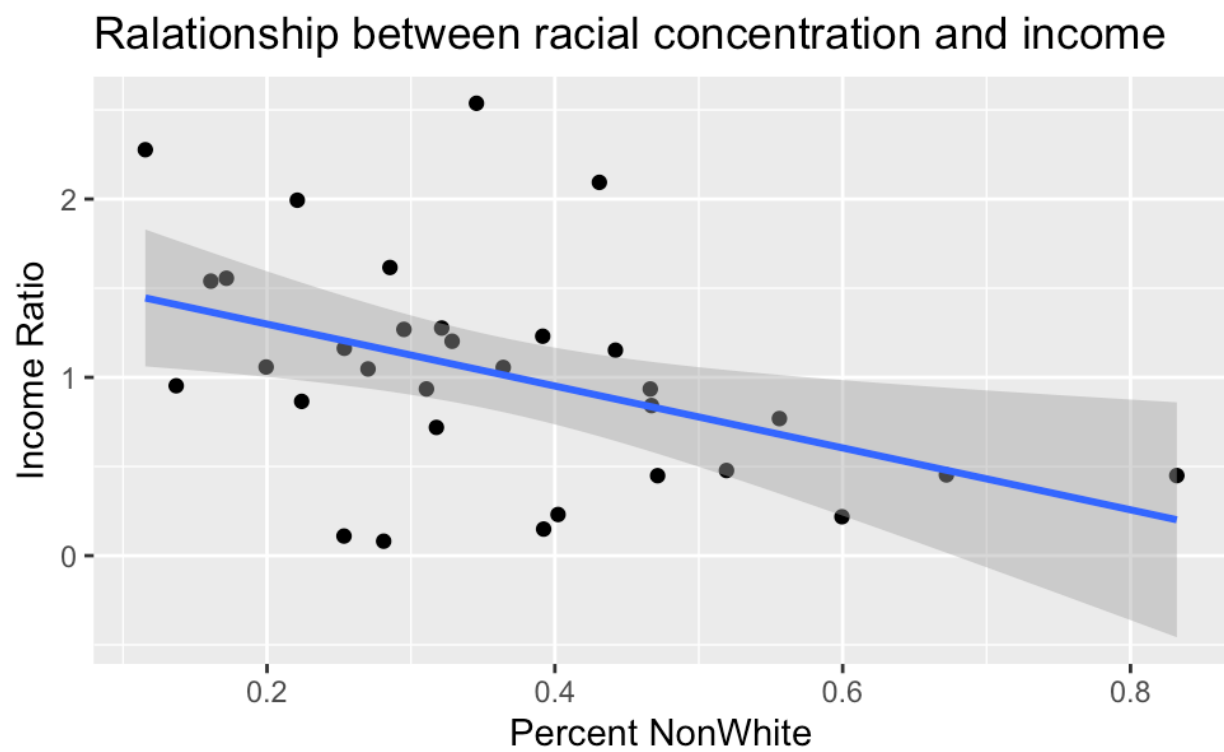


Figure 4: 8- Relationships between racial concentration and income -2