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Background[1]

In this paper I attempt to investigate the kind of urban discourses Minervans perpetuate by analyzing Minervans' travel patterns using data obtained from Oyster cards — the transit cards. Urban discourses "can be considered as interpretive frameworks that not only help us understand reality [about cities] but also to develop ideas about future, more ideal situations" (Karsten, 2009). Discourses are inevitably built upon tradeoffs in the sense that no one discourse is ideal — each comes with its own advantages and disadvantages. As Hajer observes, "[discourses] are powerful instruments intertwined with the dialectic of inclusion and exclusion" (Karsten, 2009).

As young adults who relocate to cities every four months, we have the opportunity to ask ourselves and reflect upon what kind of urban discourses our lifestyles suggest. In the first iteration of this assignment, I suggested that perhaps we tend to exhibit the same behaviors of those who gentrify neighborhoods by choosing to spend time in more "hip" areas of the city. A relevant critique to this suggestion is that we are too small in number and live in these cities for too short a time to cause gentrification, given that a neighborhood gentrifies over a long period of time. Gentrification, then, may not be the right way to characterize our behavior; however we still need to understand the implications of our behavior.

In her paper *From a top-down to a bottom-up urban discourse: (re) constructing the city in a family-inclusive way*, Lia Karsten offers three lenses upon which urban discourses are constructed: consumption, production, and housing (Kirsten, 2009). The lenses on consumption focus on how the city offers activities that people indulge in and consume, the lenses on production focus on how the city is place to generate economic value, and the lenses on housing focus on how the city provides cheap accommodation. Given that we are within cities exclusively for educational purposes, the urban discourses we generate do not fall under the realm of production. The lenses that do pertain to us are consumption and housing. In this paper, I focus on solely on the consumption lense, although there is certainly potential in examining Minervans' activities through the housing lense.

Karsten explains the urban discourse 'attractive city,' which focuses on the city as a leisure domain, highly attractive for a broad range of consuming activities (Kirsten,

[1] urbantheory: I situate my project within the urban theories we have studied in class namely urban discourses and urban spatial analyses and built upon that understanding by applying that knowledge to a Minerva context. I also formulate how the "old" and "new" viewpoints on the spatial analyses can in fact be combined together.

2009). She says, "[the attractive city discourse] regards cities as first and foremost places to visit and a place for tourists" (Kirsten, 2009). Our temporary stay within Minerva cities encourages us to "make the most out of it," which we do by exploring the main attractions as well as visiting recommended locations in both the city we live in, neighbouring cities, and neighbouring countries.

A question that arises naturally from this observation is then whether Minerva students perpetuate the discourse of an attractive city. Or could it be that this notion is completely faulty and that, given we are residents in the same city, we do in fact have the same concerns and interests as long-term residents? I hypothesize that because we are short-term residents, our actions may perpetuate the demand for amenities that are focussed upon under the attractive city.

An alternate and perhaps even complementary approach to examining whether our behaviors perpetuate the notion of an "attractive city" is analyzing our behavior from an urban sociology and spatial analysis lens. The paper *Spatial Analysis in Urban Studie*s argues there are two schools of thought on urban sociology: one focussing primarily on space and another focusing on the human interactions of the space. The former provides a spatial analysis model for how spaces are distributed and used. For example, Burgess proposed a "concentric zone model" for cities wherein the first ring is the central business district that hosts all the economic and social activities of the city. The second zone is the transition zone, which is the "peripheral areas of central business districts" (Sun, 2015). The third, fourth, and fifth rings correspond to the the residential area of the workers, middle class, and upper-middle class homes. The zone model, then, analyses urban interactions on the basis of the distribution of space. In contrast, the urban sociology approach focuses on humanistic interactions within the city. It posits that the urban space has become a capitalist production with urban lifestyles being increasingly rooted within consumptive practices (Sun, 2015).

While these two perspectives are positioned as "the old" and "the new", I propose that both frameworks can be combined to analyze our behavior. From the spatial discourse part, we can assess whether Minervans spend the bulk of their time in the what Burgess' model described as "zone 1", which is the heart of all social and economic activity. By examining which stations Minervans have visited, we can determine which zones and boroughs of London Minervans frequent. By examining the most popular words associated with city immersion, we can determine whether our notions of city exploration do in fact correlate with consumptive practices.

Methodology

The aim of the assignment is to investigate our patterns of city immersion to better understand the urban discourses we perpetuate. I gathered datasets about Minervans' Oyster card usage and used these datasets to calculate the total time and cost Minervans spent on transit, which I then compare these results with existing data on Londoner's travel patterns. This comparative analysis will reveal whether our behavior does in fact encourage the discourse of the attractive city. If we do, then our travel patterns should be different than Londoners' travel patterns. This could mean that the total amount of time and money spent on transit are significantly varying between both groups. However, if we don't perpetuate the discourse of attractive city, then we should see similar results in terms of the metrics measured.

In the previous iteration of the paper, I had initially attempted to calculate the transit patterns of Londoners based on a dataset released in 2009 by Transport for London — the governmental body that organizes public transport in London — containing Oyster card data of randomly sampled 5% of transit users. My idea was to draw several random samples from this dataset, each sample being the same size as the total number of datasets I have gathered from Minervans. I was to then calculate the metrics I am measuring for each of the sample to generate and analyze a distribution and see how this distribution compares to the results generated from the analysis of the data gathered from Minervans. However, when I downloaded the data, it contained no analyzable information. Thus I decided to gather secondary data on the travel behaviors of Londoners and compare this data to the results I generate.

In addition, I calculate which stations Minervans visited and overlay these stations on top of a London map to illustrate our travels. This is done to test how much of London was explored in the time period in which the data was collected. I end by creating a word cloud generated from definitions of city immersion gathered from 19 students to extract what words are most commonly associated with city immersion.

Questions to Answer

(a) How much money and time do the participants in the study spend on transit, both in total and monthwise?
(b) Which stations have we frequented?
(c) What concepts do we associate with city immersion?

Limitations of data[2]

Very few students filled out the survey and even amongst those who did fill out the survey, very few were able to obtain their Oyster card data. So I do not have enough information to make any substantial claims about the city immersion patterns in the city. To compensate for this, I had initially intended to compare results from a similarly sized randomly sampled data of Londoners' transit histories. However it turned out that the dataset did not contain analyzable information. For that reason, I had to rely on other sources of data. Even if this data did contain analyzable information, the dataset was from 2009. This would have been problematic because of a large temporal difference between the times that the Minerva and London datasets were generated. While these limitations put us in a non-ideal situation, the key takeaway is that it is still possible to request data from Transit for London to perform the kind of comparative analysis I was initially attempting to undertake.

Another limitation, which I learnt about much later in my data collection process, is that Transit for London collects data not only from Oyster cards but also contactless cards. Given that there are contactless card users within Minerva, this could have been a valuable dataset to collate and use within my study alongside the data from Oyster cards. However I had already administered the survey by the time I learnt about this. I include this point here so that, if a similar analysis is performed in the future for our underclassmen, the contactless card data could also be used as well as other obtainable datasets on additional modes of transport.

On a more conceptual note, one major limitation is that transit card data may not be representative of travels within the city given that several students use bikes instead of public transport. Even amongst the people who use the tube, there is a subset that uses Apple Pay instead of the Oyster card. Even within those who pay using the Oyster card, if one uses the bus instead of the tube, then there is relatively less information to analyze because buses do not have the same tap-in & tap-out system as the tube. In addition, because the TfL collects data only for 8 weeks, to get a representative view of the transit patterns, there would have ideally had to be two rounds of data collection: one at the end of October to get the data from September and October and one in the middle of the December to get data from November and December. However, I only have data from mid November onwards. These subtleties imply that even if every

[2] #urbandata: I think this entire section highlights that I have grasped nuances of where to obtain urban data, how they might be limited, and how to gather my own urban data, and analyze the strengths and evaluations of the data I gather.

student managed submitted their Oyster card data, we could still be missing important dimensions within our analysis.

Despite these points, the limitations with our data should not be used to interpret the results as irrelevant but rather as limited in their scope of shedding light on Minervans' transit habits. The inference potential is not diminished completely but instead is limited to be telling of a subset of the student body.

Results[3,4]

To obtain the datasets from Minervans, I administered a survey to the student body and had 19 participants total. Of these 19 students, only 9 students were able to access their Oyster card data. I calculated the total time and money spent on transit as well as the stations frequently visited. I also collected definitions of city immersion from each survey participant, which I then used to analyze the terms associated with city immersion.

As suspected, Minervans spend far less time on transit than average Londoners within an 8 week period. This diagram below shows the total time we cumulatively spent on transit from the end of October and the beginning of December. We see that majority of the students cumulatively spent between slightly less than 200 minutes and slightly more than 400 minutes. In fact the majority of students cumulatively spent less than 300 minutes total on transit. Based on a government report titled Transport Statistics Great Britain 2017, it is estimated that a commuter spends an average of 54 minutes on transit per day, which results in 2,160 minutes in a 40 day period (Department of Transport, 2017). Even if we selected the highest value within our results — which is about 480 minutes total 2,160 — , Londoners spend slightly more than 4 times on transit compared to Minervans. Even if we did commute on a daily basis, because we live in highly central locations, we do not have to travel as far as average Londoners, who mostly live in Zone 3 or 4 which is further away from the center.

[3] I have included the code used to generate these results as a separate file. I have formatted the code as per the PEP8 guidelines we saw in class, which include maintaining simplicity of code, using descriptive variable names, ensuring that no line is too long, etcetera (Dixit, 2018).

[4] #datavizandcomm: In this section, I visualize the results generated from my analysis. I visualize the results using principles from our class on data visualization principles. With each visualization, I write an accompanying description of what the visualizations suggest and what they mean in the broader context of the aims of the paper.

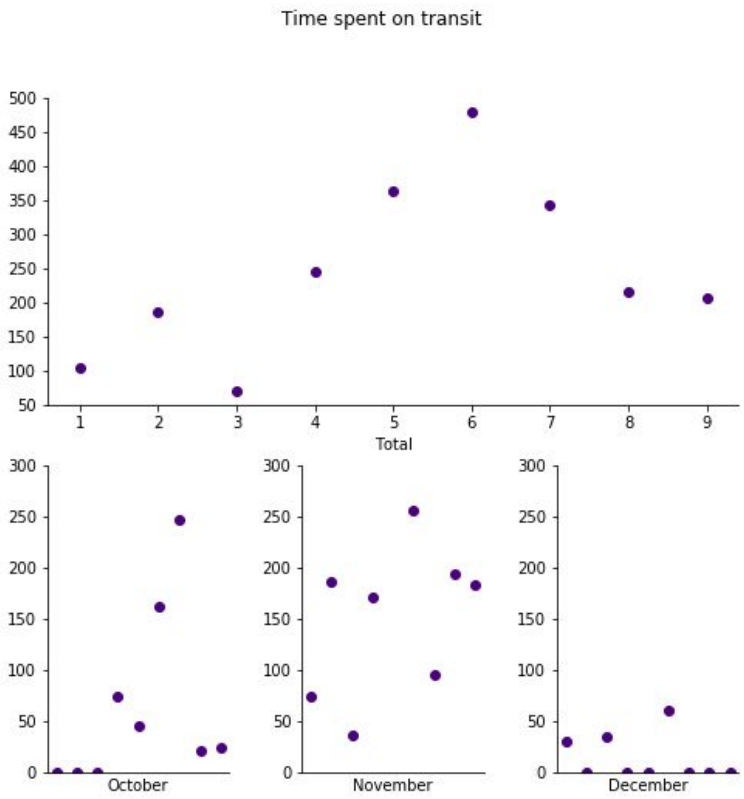

Image 1: Chart showing the total time spent on transit (in minutes).

Similar observations can be made about Minervans' expenditures on transit. Hypothetically, it is plausible that even if we do not spend much time on transit, we could still spend a significant amount of money on transit given that there are lower bars of fees paid on every trip. That is, for travelling on buses, there is a flat charge of 1.5 pounds. Similarly, for trains, there is a 2.8 pounds minimum charge. Thus even if we spent a smaller amount of time on transit by staying on the train for a shorter time, it is still possible to spend money on transit. Despite this, compared to Londoners, we spend much less money on transit, as illustrated in the chart below.

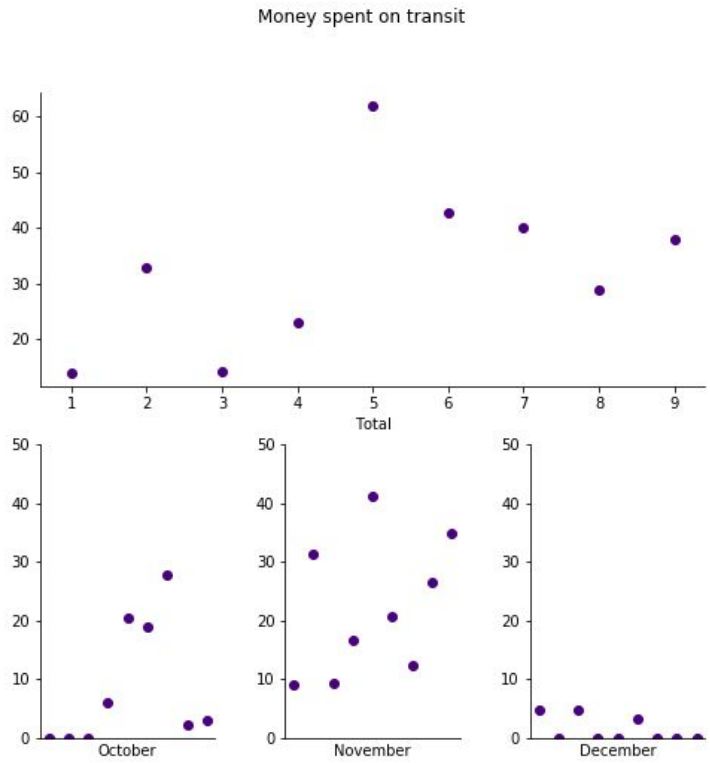

Image 2: Chart showing the total money spent on transit (in British Pounds).

We observe that cumulatively the most we have spent on transit in a 40 days interval is £60 while most values fall in the range of £ 20 – 40. As per an article by CityMetric in 2015, an average commuter tends to spend £ 118 per month on transit which would today be £ 120 per month (CityMetric, 2015). This means that we spent a third of what an average Londoner spends on transport, further corroborating that our travel patterns do not match the travel patterns of those who reside in the city.

As for the spatial distributions of our travels, the first observation is that of all the 630 tube stations in London, we collectively visited 42 of these within the 40 day period. Within these 42 stations, the most frequented once were Farringdon (23 times) and Chancery Lane (15 times) stations — understandably so, given that these are the two stations closest to where we reside. Other than these two stations, most other stations were visited between 1 and 3 times with some rare exceptions of 5 times. We tended to visit a variety of places but we did so only few times. This pattern could be indicative of a behavior perpetuating the attractive city. This is because travelers tend to visit multiple places without going back to them in an attempt to have a breadth of experiences. However, those are residents of the city and have a relatively fixed

schedule may tend to go to the same places multiple times, such that their experiences have depth rather than breadth.

	Count
Holborn	3
Euston Square	2
Farringdon	23
Willesden Green	1
Leicester Square	2
Aldgate	2
Chancery Lane	12
Bow Road	1
Old Street	2
Wood Green	1
White City	1
Embankment	1
Mile End	4
Moorgate	2
Upminster	1
Liverpool Street	5
Westminster	1
St Pancras International	1
Borough	1
Barbican	1
Bond Street	2
Streatham	3

	Count
Cutty Sark	1
Bank	1
Euston	2
Brixton	1
Great Portland Street	3
Aldgate East	1
Finsbury Park	3
South Kensington	5
Wembley Park	2
Camden Town	1
Greenwich	2
Victoria	1
Tower Gateway	1
Limehouse	1
Bethnal Green	1
Warren Street	1
Kentish Town	1
Oxford Circus	1
Stratford	1
Theydon Bois	1
Paddington	2
Finchley Road	1

Image 3: Tables showing the stations visited as well as the visit count.

The map below visualizes the stations Minervans have collectively visited. The different colors represent the different areas of London. The majority of the points cluster around the centre of the map, which is the bulk of Zone 1 and the periphery of Zone 2. There are few markers further out into Zones 4 and 5 but these are fewer in number. This calls attention to the concentric zone model described above as well as its overlap with the attractive city. Within the concentric zone model, Zone 1 is the harbour of all activity — especially economic and social. These are the areas that are marketed to and frequented by tourists. That the bulk of the stations visited are in Zone 1 and Zone 2 could be yet another indication that we might perpetuate the discourse of attractive cities.

Image 4: Map of Greater London showing stations visited by students[5].

There is, however, a fascinating juxtaposition to the story told by the numbers above. The following word clouds generated from the definitions of city immersion gathered from 19 participants of my survey provides a different perspective. Although quantitatively our statistical footprint does suggest our tendency to behave like those who perpetuate the discourse of attractive cities, an analysis of the qualitative data gathered suggests that we do not want to engage in purely consumptive practices. Below are two sample word clouds generated from the definitions of Minervans.

Example 1:

[5] #dataviz (HC) & #datavizandcomm (LO) — I visualize the map of Greater London as well as visually display the different areas. However I ensure that the background is light and not distracting from the main point of the map, which is to show the different stations visited by the students. To highlight the difference, I use black star markers, which clearly stand out from the background. I ensure that the markers are not very large so that they do not overlap with other stars. I use the principles from the Aldhous reading while making design choices in order to "visualize data for the human brain" (Aldhous, n.d.)

Image 5: Sample word cloud generated from definitions of city immersion.

Example 2:

Image 6: Sample word cloud generated from definitions of city immersion.

The consistent themes within these sample word clouds as well as the other word clouds generated were history, culture, understanding, experiences, and local. It could be argued that these words are not indicative of consumption behavior. That is because they focus on non-tangible aspects of living in the city such as experiences and cultural understanding which cannot necessarily be purchased. Contrary to what I had expected, the words cafe or sightseeing did not show up, which would have been indicative of consumptive behavior. The word clouds suggest inclinations of students to go beyond what tourists might to do — which in many cases is restricted to visiting places rather than getting to know people.

Do these results provide a definitive response to the question of whether we perpetuate the discourse of attractive city? Not necessarily. The behavior of visiting several stations with relatively low frequencies as well as staying within the more central zones of London could be interpreted as strong correspondents to the attractive city discourse. Spending significantly less time and money on transit does not as strongly correspond to the attractive city discourse because even though we spend significantly less time and money compared to average Londoners, living in relatively more central parts of the city gives us easier access to locations. And finally, the most frequent words appearing with the word clouds correspond weakly to the attractive city discourse, given that the words are not suggestive of consumptive behaviors. Perhaps this suggests that the urban discourses we generate do not strictly fall under the attractive discourses but rather borrow some parts from the attractive city discourse as well as other l discourses not explored in this project. Formulating the urban discourse for Minervans is a huge task within itself and is beyond the scope of this paper. Nonetheless, this paper provides the foundations upon which we can start formulating our own discourses by examining one aspect of our student experience.

Limitations of Study and Next Steps

That the data was not representative of the Minerva student body both temporally and demographically limits our understanding of Minervans' urban discourses because it is possible that our travel patterns are drastically different at the beginning of the semester compared to the end of the semester, given that being in a new city is exciting and students are eager to explore.

Additionally, without gathering information on alternate forms of transport within the student body, we are unable to refine our understandings of Minervans' urban discourses because we factor in limited dimensions into our analysis. For example, if a significant percentage of the student body commuted using bikes , then we would have to reexamine our projections of both cost and time spent on transit. In addition, by investigating whether commuting via bikes has its roots in eco-friendly motivations, we could investigate the role of the environment within our urban discourses. This study is thus limited in the amount of dimensions considered within our travel patterns.

While there are many ways to extend and improve upon this investigation, the contribution of this work should be situated within an exploratory framework. Prior to this, there have not been efforts to systematically analyze Minervans' transit behaviors.

Thus one of the intentions of this work is to provide both inspiration and examples of how Minervans' urban discourses can be understood, analyzed, and interpreted in the hope of increasing awareness around the importance of discerning the urban discourses we create.

Works cited

Aldhous, P. (n.d). *Data visualization: basic principles*. Retrieved from http://paldhous.github.io/ucb/2016/dataviz/week2.html

CityMetric Staff, 2015. *How much do Londoners spend on commuting?*. CityMetric. Retrieved from https://www.citymetric.com/transport/how-much-do-londoners-spend-commuting-1668.

Department for Transport (2017). *Transport Statistics Great Britain 2017*. Retrieved from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/661933/tsgb-2017-report-summaries.pdf

Dixit, C. (2018). *PEP-8 Tutorial: Code Standards in Python*. Retrieved from: https://www.datacamp.com/community/tutorials/pep8-tutorial-python-code

Karsten, L. (2009). *From a top-down to a bottom-up urban discourse:(re) constructing the city in a family-inclusive way*. Journal of Housing and the Built Environment, 24(3), 317-329

Sun, X. (2015). *Spatial Analysis in Urban Studies*. New Vision, 1. doi: C912.81. Retrieved from http://www.cnki.com.cn/Article/CJFDTotal-XISY201501009.htm