Digital Cities | BENV7504 | Assignment 3

Data-driven decision making using open-source datasets and visualization platforms

Scenario

Imagine you just started working in a Local Government (LGA) in Western Parklands City (Ex. Liverpool City Council). This LGA is experiencing substantial growth in both urban release areas and redevelopment in established areas. Their overarching vision is to continue to grow into a central business district in the region and to achieve positive environmental, social, and economic outcomes for the community. This includes better transport connectivity to the new airport as part of the proposed planning for Western Sydney Aerotropolis.

As someone skilled in smart cities strategies and city analytics, you are asked to report to your director regarding a **potential new site for a metro/train station that connects your LGA to Western Sydney, the Aerotropolis, and different key LGAs**. The various dimensions you are expected to consider in relation to siting this new train station include: walkability, environmental conditions, property valuation, and other socioeconomic indicators relevant to the area.

You are tasked to inform the decision-making process using your data visualization and critical thinking skills. You are expected to use **available data layers** in your LGA and deploy the **visualization tools** at your disposal to support the planning process for a) selecting the site of this new metro proposal and b) determining the benefits and challenges of this proposed new metro development.

Visualization of the data and multi-criteria evaluation

To understand the priorities and challenges in the LGA and how the area may benefit from the new station, use a combination of data sources available on transport, environmental, social, cultural, infrastructure, and health indicators (detailed below) in the area. Use at least two data layers to provide a more comprehensive assessment and discussion. You can use one or a combination of tools discussed during the class to create simple visualizations to demonstrate and support your arguments using these datasets.

Development of data analyses and finding report

In preparing your report, you can structure your findings as follows:

1. Development of the assessment criteria for determining the best location of a metro train station
2. Description of selected data layers for each criterion that assists you to achieve data-driven future planning in your LGA.
3. Description of how each criterion is quantified and how you obtain/download/transfer dataset/s to a visualization platform (documentation of your technical workflow).
4. Schematic of visualizations obtained such as maps and screenshots of visualizations on data portals. Visualization of some of the indicators or data in online platforms such as Flourish, Kepler or dashboards such as Google data studio is highly recommended.
5. Discussions of the insights obtained from this visualization and how they assist you in informing the decision-making process.
6. Consider a few scenarios for the metro station's best location and discuss the reasons for your final decision on the best scenario (Clearly describe the reasoning behind siting your new metro station in a specific area in the LGA). For this task, you may compare the walkability and connectivity scores of the proposed scenarios.
7. Concluding discussions regarding the benefits and challenges of this proposed new metro station as well as the role, opportunities, and challenges of using these open data sources, digital twin, and visualization/analytic platforms for such site selection analysis.

Available datasets:

- Data layers available in NSW Digital Twin https://nsw.digitaltwin.terria.io/
- Data layers available in AURIN map and portal https://map.aurin.org.au/
- Data layers available in the CityData portal https://citydata.be.unsw.edu.au
- Environmental data layers available in the SEED platform: https://www.seed.nsw.gov.au/
- Data layers available in NSW open data platform: https://data.nsw.gov.au/
- Transport for NSW open data layer: https://opendata.transport.nsw.gov.au/
- Spatial Collaboration Portal: https://portal.spatial.nsw.gov.au/
- Property sales in Sydney for the year 2018-19: https://bit.ly/2vX4yRG
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- Any other map/data portal you may find in this LGA

Tools at your disposal

- **Kepler kepler.gl/**
  - o For uploading CSV, GeoJson or saved map Json files from other sources and creating quick exploratory visualizations.
- **NSW Digital Twin https://nsw.digitaltwin.terria.io/**
  - This is a simple platform with a range of existing open datasets. You can also use NSW Digital twin to import the data from other sources
- **AURIN Map/Portal**
  - Additional data layers and analytic platforms are available in AURIN. You can benefit from getting/visualising the data for the areas of focus in AURIN. Note that some datasets may be too large to download/import.
- **Flourish**
  - You may include the link to your online visualization via Flourish to your report
- **Google data studio**
  - To visualize some of the indicators on a dashboard
- **QGIS**
  - If you feel comfortable with using QGIS for visualization/processing of the layers
- **Pedcatch**
  - You may make accessibility scenarios for the proposed train station locations using pedcatch. You can record videos of the accessibility simulation scenarios for the agents' movements originating from the train stations' proposed locations and add them to your dashboard. For this task, you can upload the video on YouTube, embed the URL to your dashboard, or you can download the kml file to keep the catchment boundaries and submit the file as an attachment.
- **Australian Property Market Explorer**
  - This tool is hot off the press. APME is a visual exploration tool for conducting visual analytics on data available on property markets across Australia. You can find some demo here or the full tutorial included here. We have already created access for all students (username: students_digital_cities@ahdap.org, password: cavcA6-hidnyj-bicpog).

Marking Criteria

Task	Mark (100%)	Assessment Criteria
The report	20	● Well written report, structure, clarity, and format ● Appropriate use of examples and references
Methodology, visualization, and assessment of scenarios	60	● Criteria development and data exploration and using appropriate data for each criterion ● Documentation of technical and analytical workflow ● Critical thinking conveyed through the critique of visualization techniques and technologies ● Quality of visual material and inclusion of online/interactive visualization techniques and appropriate use of data layers ● Analysis of scenarios
Discussion and conclusion	20	Discussion on the benefits of the new station and available/missing data sources Conclusion based on analysis of various scenarios and role, opportunities, and challenges of using these open data sources

Due Date and word limit

This assignment is due **Tuesday, April 30th, 11:55 PM**, submission through the assignment link on Moodle. Please maintain 2500 - 3,500 words limit for the assignment.

Note: If deployed, please include the link/s to your interactive visualizations in your report.