GEO 4427

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Progress Report: CoNB Walkability

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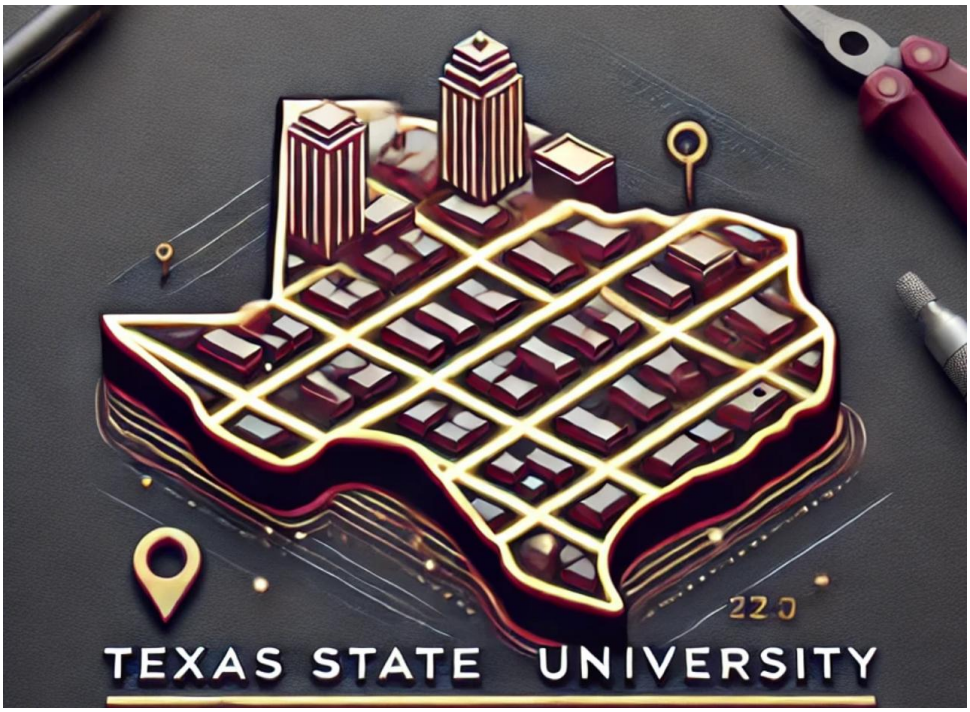

1. Introduction

1.1 Summary

This project is to develop a Student Pedestrian Walkability GIS dataset for the City of New Braunfels. The introduction details the project's aim to create a comprehensive inventory of sidewalks and crosswalks using GIS and high-resolution imagery. The primary goal is to analyze pedestrian network connectivity, generate relevant metrics, and produce maps highlighting student access to schools and parks, considering accessibility. This effort will inform the city's five-year plan for pedestrian infrastructure and provide valuable GIS skills development for participating students.

Early assessment methods are contrasted with more recent, comprehensive, GIS-based indices considering factors like population density, connectivity, land use, and infrastructure quality. The review also highlights the ongoing debate around the weighting of these factors and how GIS facilitates the application of these weights to spatial data for a more accurate representation of walkability. Furthermore, it underscores GIS's indispensable role in identifying areas for improvement, mapping pedestrian networks, and informing spatial planning decisions.

1.2 Purpose Statement

The purpose of this project is to develop a comprehensive Student Pedestrian Walkability GIS dataset for the City of New Braunfels to support planning and transportation initiatives. This will be achieved by leveraging high-resolution city imagery and street view photography to create a detailed inventory of sidewalk and crosswalk assets through heads-up digitizing in GIS. The primary objective is to enable network connectivity analysis, generate relevant metrics, and produce map end products that address key questions regarding student access to schools and parks with accessibility in mind, ultimately informing the city's five-year plan for pedestrian infrastructure development.

1.3 Scope

The scope of this project encompasses the creation of a geodatabase containing a comprehensive inventory of pedestrian infrastructure within the City of New Braunfels, specifically focusing on sidewalks and crosswalks relevant to student walkability. This involves the heads-up digitization of these assets using provided high-resolution city imagery and street view photography within

designated grid areas. The project will include the attribution of these features with relevant information such as location, connectivity status (connected, disconnected, gap), and sidewalk width. Furthermore, the scope includes performing network connectivity analysis to identify gaps in pedestrian infrastructure and generating metrics related to student access to schools and parks, considering accessibility. The project will also involve quality assurance and quality control processes throughout the digitization and analysis phases. The final deliverables will include the completed GIS dataset (fcWalkabilityPrimary), a final project report, a website summarizing the project, and all necessary supporting files. The project is bounded by the available imagery, the defined grid system, and the project timeline running from January to April 2025.

2. Tasks

2.1 Work Completed

As of the writing of this report extensive digitizing has been accomplished both on ‘clean’ grids and grids in need of revision. Seven grids in total are fully completed and seven other grids also have considerable levels of digitization progress to show for them. Of the seven complete grids three are designated ‘high’ priority and four are designated as ‘mid-high’ priority. Quality control is performed immediately after these grids are processed for completion to ensure a minimal margin for error.

2.2 Present Work

Presently the team is working to complete the seven in-progress high priority grids and then to follow up with increased work on incomplete mid-high to mid-low grids. Of the seven current in-progress grids three are designated ‘high’ priority, two are designated ‘mid-high’ priority, one is designated as ‘mid-low’ priority and one is designated as a revised grid. As previously mentioned quality control is performed after the specific grid is complete and is used to designate a grid as complete rather than in-progress.

2.3 Work Scheduled

The revised dates reflect more of an emphasis on quality control that we have discovered over the course of the project. The Digitization and Quality Control sections are now scheduled to

continue at length from 3/29-4/13 in which case our goal is to fully digitize the entire grid system completely by this time. The Analysis section is still continuing as scheduled previously starting in April.

2.4 Problems

Google Earth is used frequently to guide in digitizing since imagery on Arc GIS can be blurry or is blocked due to trees. Sometimes the Google Earth imagery is outdated or is somewhat visible from an aerial view but ground level imagery is outdated. Any other unique situations that have been run into will be put into the schema as well as future situations.

3. Conclusion

In conclusion, this project benefits everyone in the city although it is aimed for students in no transport school zones. The digitization of sidewalks and their gaps will allow for the city to improve their infrastructure. Metrics and statistics will allow for the city to identify which areas need sidewalks the most and the size of the sidewalks. The assignment of grids to each team member at the beginning of the project is crucial for efficient workflow.