Mapping Human Services with AI-Enhanced GIS

Learning Objectives

Upon completion of this assignment, students will be able to:

- Identify publicly available GIS tools and platforms relevant to human service mapping.
- Describe the traditional features of GIS tools that can be utilized to locate and analyze the distribution of social services.
- Explain how Artificial Intelligence (AI) is being integrated into GIS tools to enhance accessibility and functionality for users without extensive GIS expertise.
- Critically analyze the potential biases and limitations inherent in AI-enhanced GIS tools for social service identification and planning.
- Propose innovative AI features that could be developed or integrated into existing GIS tools to improve their utility for social work practitioners and other non-GIS users.

Assignment Description

As future social work professionals, you will need to understand the communities you serve, including the availability and accessibility of vital human services. Geographic Information Systems (GIS) offer powerful tools for visualizing and analyzing spatial data, which can be invaluable in identifying service gaps, understanding resource distribution, and advocating for community needs. Increasingly, Artificial Intelligence (AI) is being integrated into GIS platforms, promising to make these tools more user-friendly and insightful for individuals without formal GIS training.

This assignment requires you to explore the landscape of AI-enhanced GIS tools and critically evaluate their potential for social work practice. You will investigate publicly accessible platforms, examine their features for identifying social services, understand how AI is transforming these capabilities, consider potential biases, and envision future AI-driven enhancements.

Assignment Tasks

This assignment consists of four main parts:

Part 1: Exploration of Publicly Available GIS Tools (30 points)

- Review either the Esri (esri.com/en-us/home) or QGIS (www.qgis.org) websites to learn more about geospatial tools and how they can be used. Consider specifically how they could be used to locate human social services.
- Do a web search for University Library Guides on GIS and review at least two different guides.
- Review either the Community Commons (communitycommons.org/) or Health Resources & Services Administration (HRSA) Data Warehouse (https://data.hrsa.gov/maps/services).
- For each website, provide a brief overview of its key features, data sources (if readily apparent), and any specific functionalities that appear relevant to locating and visualizing social services (e.g., points of interest, thematic mapping capabilities, search functions).
- Discuss the ease of access and usability of each platform for someone without prior GIS experience.

Part 2: Traditional GIS Features for Identifying Services (30 points)

- Describe at least three traditional GIS features or functionalities that can be employed to identify and analyze the spatial distribution of human services. Examples could include point data visualization, buffer analysis, spatial queries, or density mapping.
- Explain how each of these traditional features could be applied in a social work context to understand service availability and accessibility. Provide a brief, hypothetical example for each feature (e.g., "Using buffer analysis to identify the number of food banks within a 1-mile radius of a low-income housing complex.").

Part 3: The Integration of AI in GIS Tools (20 points)

- Research and describe at least two ways in which Artificial Intelligence (AI) is currently being integrated into GIS tools to enhance their functionality for non-GIS users in the context of identifying human services. This might include AI-powered search capabilities, automated feature extraction from satellite imagery (identifying potential service locations), natural language processing for data interaction, or intelligent data visualization suggestions.
- Explain how these AI features aim to simplify the process of identifying and analyzing social service data for users who lack technical GIS skills.

Part 4: Critical Analysis and Future AI Enhancements (20 points)

- Critically discuss at least two potential biases or limitations that might be present in AI-enhanced GIS tools used for identifying human services. Consider issues such as data gaps, algorithmic bias in identifying service locations, or the potential for misinterpreting AI-generated insights without adequate contextual understanding.
- Based on your exploration and critical analysis, propose at least two novel AI features or enhancements that you believe would significantly improve the utility of GIS tools for social work practitioners and other non-GIS users in identifying and understanding human service landscapes. Explain the functionality of these proposed features and how they would address current limitations or enhance existing capabilities.

Submission Requirements

Your submission should be a written report (approximately 1500 to 2000 words, 5 pages) organized according to the four parts outlined above. Please ensure your report is clearly written, well-organized, and demonstrates a thorough understanding of the concepts. You should cite any sources you consult using APA format.

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