DATA
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ALLIANCE

Literacy Analysis
Partnership with University of San Diego
October 2025

Overview

Data Science Alliance (DSA) is excited to collaborate with the University of San Diego's (USD) Data for Social Good class on a comprehensive literacy initiative that will identify service gaps around low-literacy hotspots across San Diego County, with a stretch goal to develop an innovative Micro-Area Literacy Score methodology.

Background

A 6-week data science initiative to develop a comprehensive analysis to identify low-literacy hotspots and quantify service accessibility gaps across San Diego County, leveraging San Diego Council on Literacy data and the 34 affiliated literacy programs to provide actionable insights for educators, policymakers, and community organizations working to improve literacy outcomes.

Stretch Goal: Upon completion of the core hotspot analysis in Week 4, the team will develop a granular Literacy Score methodology and visualization that enables neighborhood-level literacy assessment.

Approach

Phase 1 - Data Collection and Processing (Weeks 1-2):

- Clean and standardize San Diego Council on Literacy data to identify geographic areas with low literacy rates, educational attainment levels, and demographic characteristics associated with literacy challenges
- Geocode and map all 34 affiliated literacy program locations with their service capacities, target populations, and program types (adult literacy, ESL, family literacy, early childhood)
- Integrate MTS transportation data to analyze public transit accessibility between low-literacy areas and literacy service providers

Phase 2 - Data Analysis and Visualization (Weeks 3-4):

Core Requirements:
- Apply geospatial analysis to identify low-literacy hotspots using literacy assessment data, educational attainment statistics, and demographic indicators

- Calculate service accessibility scores by measuring distance, travel time, and transportation barriers between identified hotspots and the nearest appropriate literacy programs
- Develop an interactive dashboard displaying low-literacy hotspots, available services, transportation barriers, and service gap severity with heat maps and accessibility overlays

Phase 3 - Stretch Goal: Micro-Area Literacy Score Development (Weeks 5-6)

- Develop a weighted scoring algorithm framework that combines multiple literacy indicators (educational attainment, library usage, program participation, demographic factors) into a composite score
- Calculate Micro-Area Literacy Scores (0-100 scale) for each zip code across San Diego County using the developed framework
- Add a tab to the dashboard (from Weeks 3-4) that visualizes the literacy scores at the zip code level with color-coded mapping
- Document the scoring methodology including data sources, weighting decisions, and calculation steps to enable replication by other regions

Goals & Deliverables

Primary Deliverables (Weeks 1-4):
1. Map current low-literacy hotspots across San Diego County with demographic analysis
2. Quantify geographic and transportation barriers to accessing literacy services
3. Identify communities with the greatest service gaps relative to literacy program availability
4. Create an interactive dashboard to visualize literacy needs and service accessibility patterns

Stretch Goal Deliverables (Weeks 5-6):
1. Develop an innovative Micro-Area Literacy Score methodology for neighborhood-level analysis
2. Create a validated scoring algorithm that accurately reflects literacy challenges at granular geographic scales
3. Create a visualization at the San Diego County Zip-Code level of the literacy scores
4. Establish a replicable framework with comprehensive methodology documentation for literacy measurement

Timeline and Milestones

The project will span approximately 6 weeks from the date of kick-off (as stated below), covering the phases of setup, discovery, design, development, and final analysis. The following is an outline and time estimate of the approach (phases):

1) Data Collection and Processing (2 weeks)
2) Data Analysis and Visualization (2 weeks)
3) Stretch Goal: Micro-Area Literacy Score Development (2 weeks)

The following table illustrates the planned milestones for the project:

Milestone	Target Date
Project kick-off	Oct 28
Onboarding Check-In	Oct 29-30
Check-in w/ Team (Q&A for Phase 1)	Nov 4 - 6
Phase 1 Complete	Nov 7
Check-in w/ Team (Discuss Phase 1 Findings)	Nov 11-14
Check-in w/ Team (Q&A for Phase 2)	Nov 17-21
Phase 2 Complete	Nov 21
Check-in w/ Team (Discuss Phase 2 Findings and Q&A for Phase 3)	Dec 1-5
Phase 3 complete	Dec 9
Project wrap	Dec 9