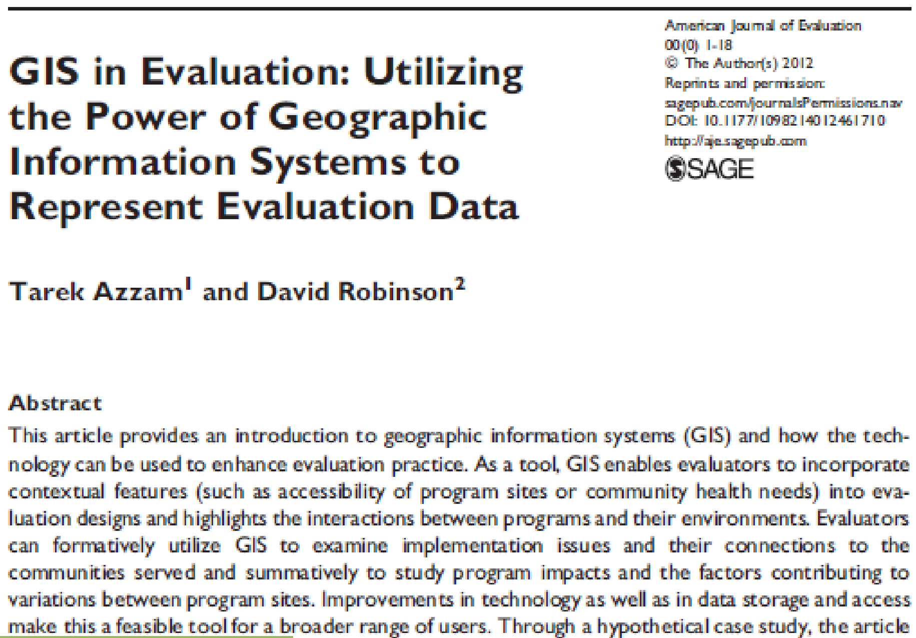
45th PARALLEL
HALFWAY BETWEEN
EQUATOR & NORTH POLE
45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GIS in Evaluation: Utilizing the Power of Geographic Information Systems to Represent Evaluation Data

Tarek Azzam[1] and David Robinson[2]

Abstract

This article provides an introduction to geographic information systems (GIS) and how the technology can be used to enhance evaluation practice. As a tool, GIS enables evaluators to incorporate contextual features (such as accessibility of program sites or community health needs) into evaluation designs and highlights the interactions between programs and their environments. Evaluators can formatively utilize GIS to examine implementation issues and their connections to the communities served and summatively to study program impacts and the factors contributing to variations between program sites. Improvements in technology as well as in data storage and access make this a feasible tool for a broader range of users. Through a hypothetical case study, the article
ons, and future trends of GIS in the context of the evaluation field.

s, context, multiple-site evaluation, geostatistics

uch as online surveys, interactive data displays, and sophisticated
ve transformed how we conduct evaluations. Today, evaluators can
across multiple time zones, conduct complex analyses, and quickly
new program developments. Although the adoption of these innova-
ce (Jamieson & Azzam, 2012), other valuable technological tools
cause they are emerging and require time to develop and prove their
es), or because, even with an established pedigree of utility and
simply remain relatively untapped within the field of evaluation.
ed but underutilized tools is geographic information systems (GIS).
nbine geographic information (e.g., streets, addresses, and school
f data (e.g., demographic data, program satisfaction results, and

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emont, CA, USA
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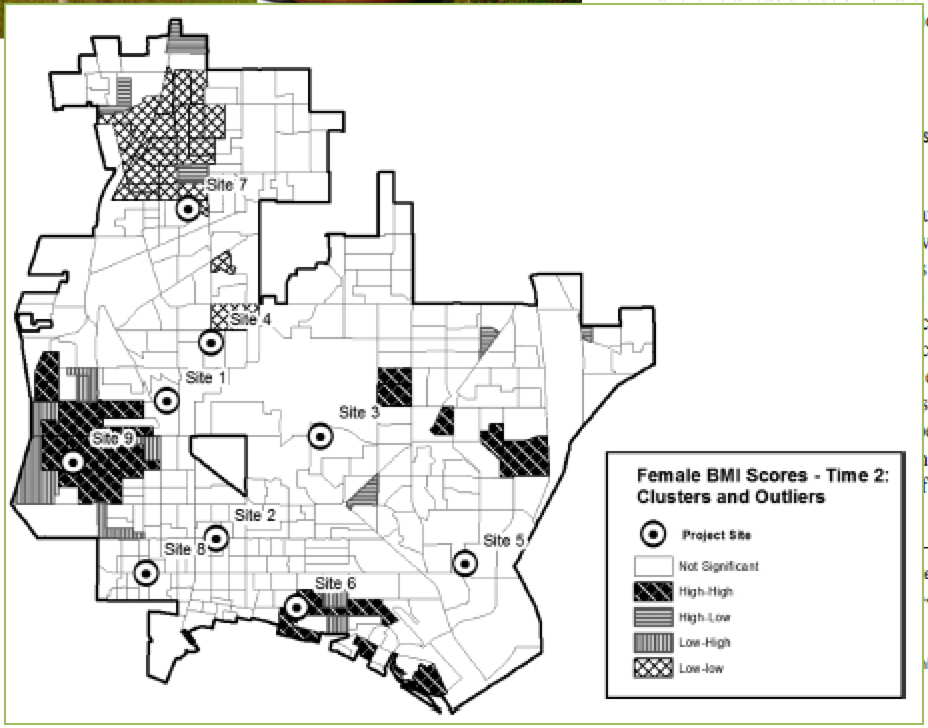
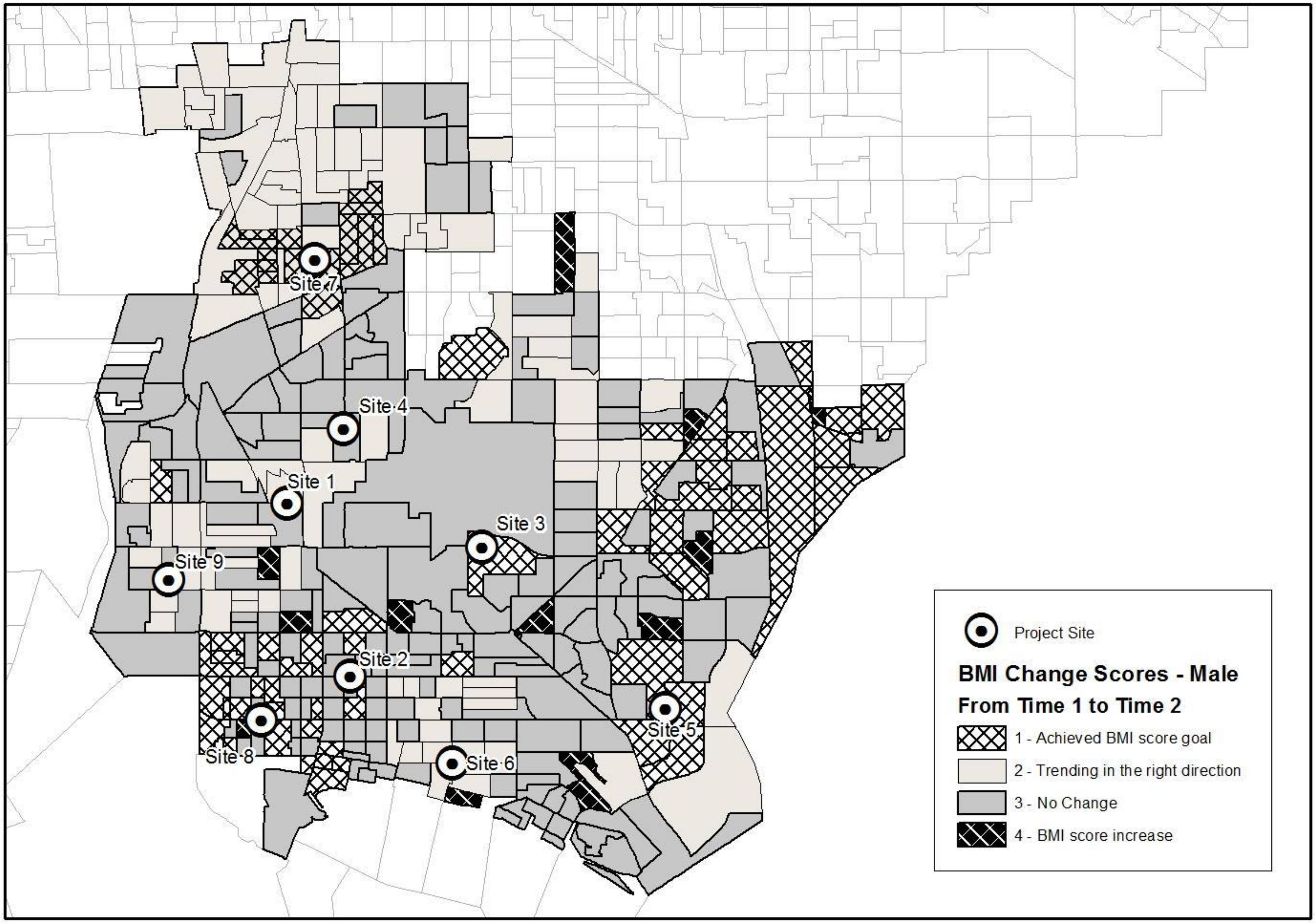
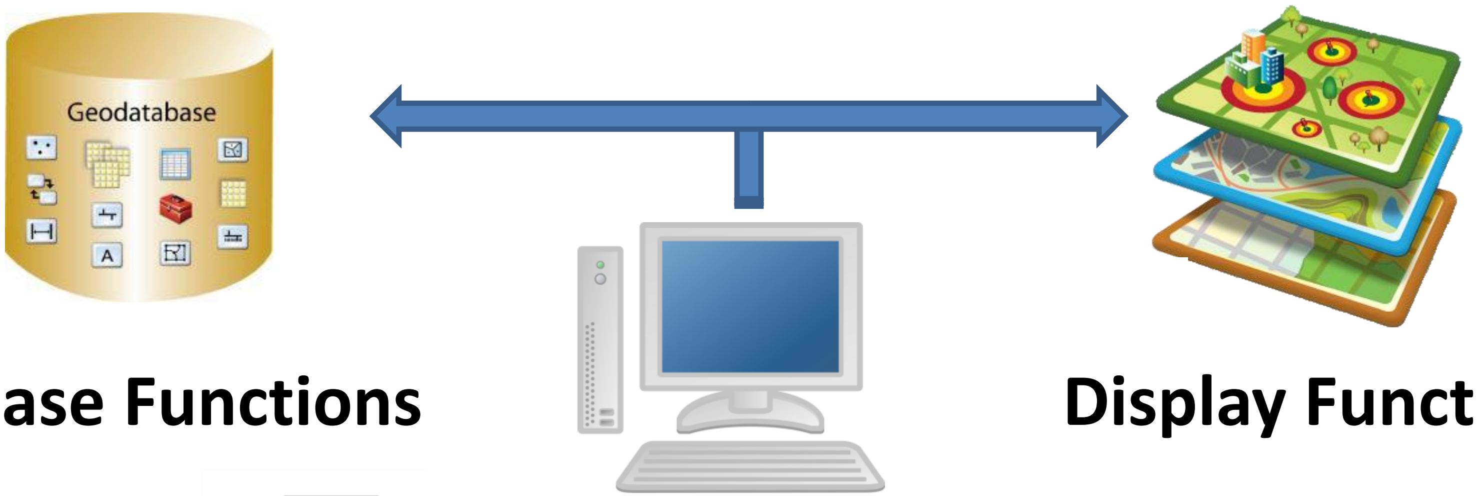
iversity, 175 East 12th Street, Claremont, CA 91711, USA



Analysis

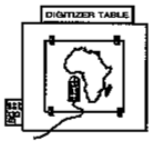

Site 1
Site 2
Site 3
Site 4
Site 5
Site 6
Site 7
Site 8
Site 9
Project Site
BMI Change Scores - Male
From Time 1 to Time 2
1 - Achieved BMI score goal
2 - Trending in the right direction
3 - No Change
4 - BMI score increase

Fundamental components of GIS


Geodatabase

Database Functions

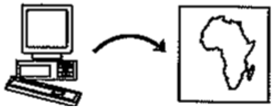
- Collection


DIGITIZER TABLE

- Storage

- Management

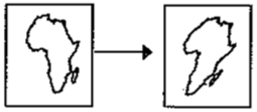
- Retrieval



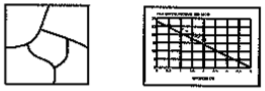
Display Functions

Operational Functions

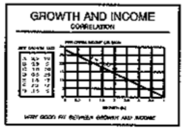
- Changing



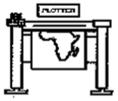
- Analysis



- Modeling


GROWTH AND INCOME
CORRELATION

- Display

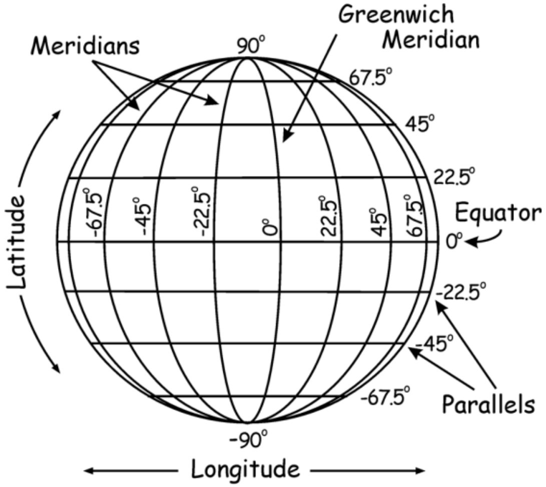


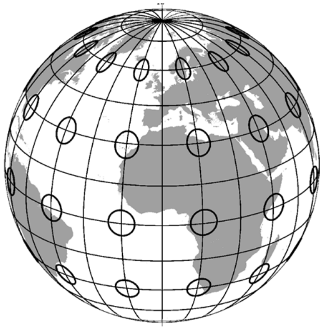
Storage

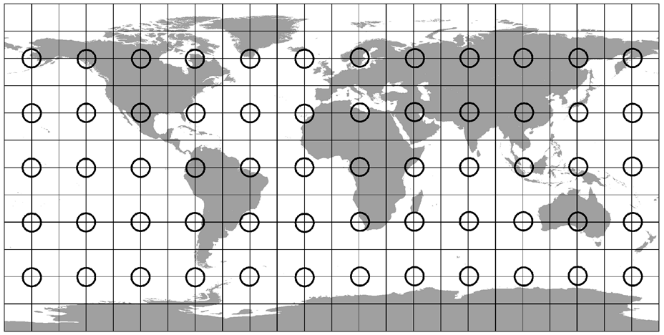
- Absolute locations **BEST**
  - Fixed with respect to an origin, a “zero” point
  - GIS rely on absolute locations
  - GPS
- Relative locations
  - Addresses

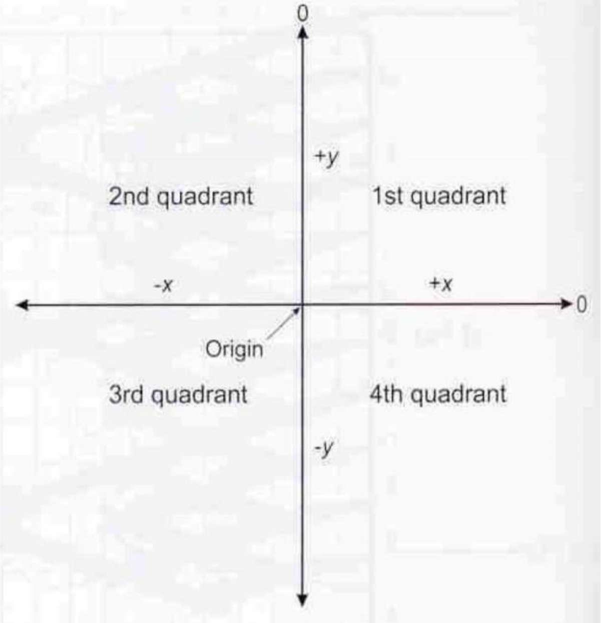
Storage

- Geographic Coordinates
  - Latitude and Longitude
  - Cartesian Coordinates


Greenwich Meridian
Meridians
90°
67.5°
45°
22.5°
Equator
0°
-22.5°
-45°
-67.5°
Parallels
-90°
Longitude
Latitude
-67.5°
-45°
-22.5°
0°
22.5°
45°
67.5°

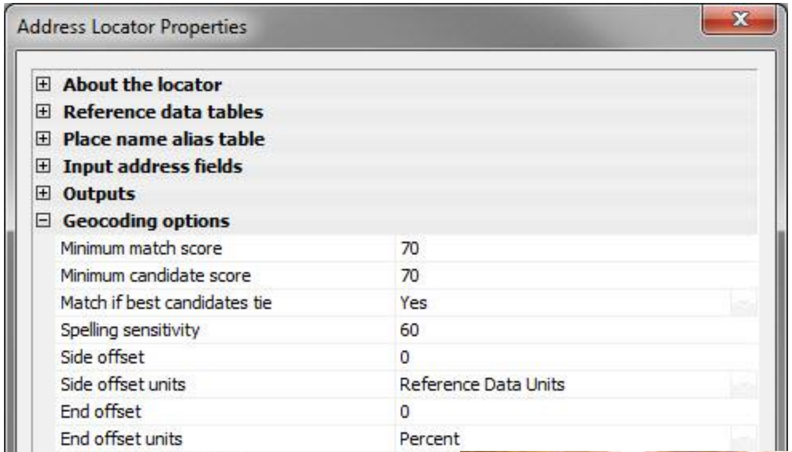





0
+y
2nd quadrant
1st quadrant
-x
+x
0
Origin
3rd quadrant
4th quadrant
-y

Collection Methods

- Digitizing
- GPS Collection
- Geocoding



Address Locator Properties

- **About the locator**
- **Reference data tables**
- **Place name alias table**
- **Input address fields**
- **Outputs**
- **Geocoding options**

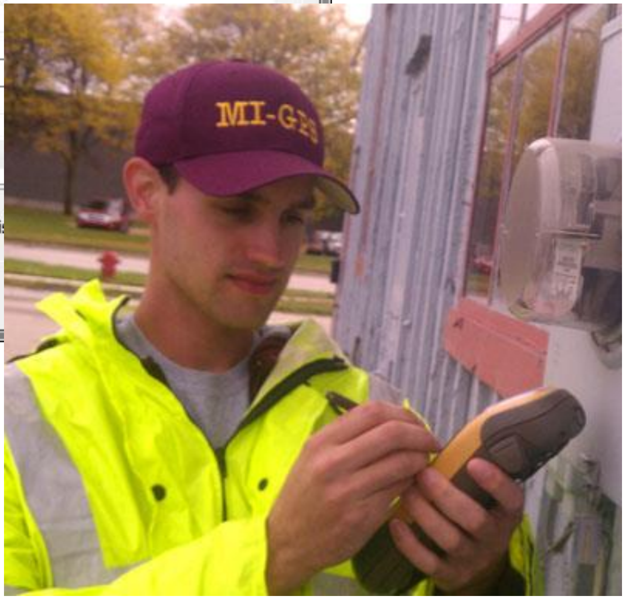
Minimum match score	70
Minimum candidate score	70
Match if best candidates tie	Yes
Spelling sensitivity	60
Side offset	0
Side offset units	Reference Data Units
End offset	0
End offset units	Percent
Intersection connectors	
Match without house number	No
Match with no zones	Yes
Left side value	L
Right side value	R

- **Performance**

Match with no zones

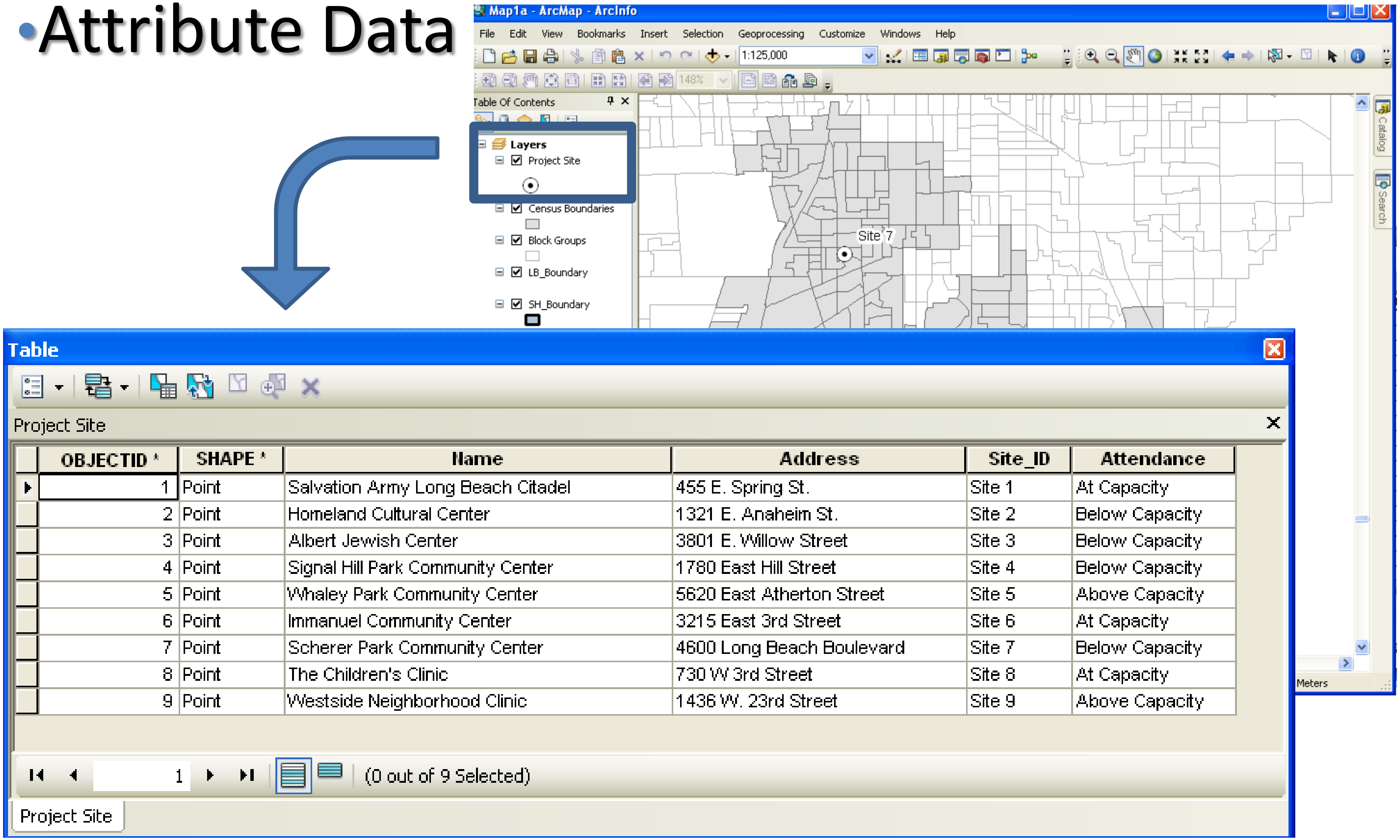
Searching and matching input addresses with no zone i
(Note that performance may be affected).

About locator properties



Storage

- Attribute Data


Map1a - ArcMap - ArcInfo
File
Edit
View
Bookmarks
Insert
Selection
Geoprocessing
Customize
Windows
Help
1:125,000
148%
Table Of Contents
Layers
Project Site
Census Boundaries
Block Groups
LB_Boundary
SH_Boundary
Site 7
Catalog
Search
Meters
Table
Project Site

OBJECTID *	SHAPE *	Name	Address	Site_ID	Attendance
1	Point	Salvation Army Long Beach Citadel	455 E. Spring St.	Site 1	At Capacity
2	Point	Homeland Cultural Center	1321 E. Anaheim St.	Site 2	Below Capacity
3	Point	Albert Jewish Center	3801 E. Willow Street	Site 3	Below Capacity
4	Point	Signal Hill Park Community Center	1780 East Hill Street	Site 4	Below Capacity
5	Point	Whaley Park Community Center	5620 East Atherton Street	Site 5	Above Capacity
6	Point	Immanuel Community Center	3215 East 3rd Street	Site 6	At Capacity
7	Point	Scherer Park Community Center	4600 Long Beach Boulevard	Site 7	Below Capacity
8	Point	The Children's Clinic	730 W 3rd Street	Site 8	At Capacity
9	Point	Westside Neighborhood Clinic	1436 W. 23rd Street	Site 9	Above Capacity

1 (0 out of 9 Selected)

Project Site