Lab 3:
Data Acquisition, Creation, and Queries

Due: Aug 25 2015
Objectives

• Learn how to create a new dataset
• Learn how to georeference an image
• Learn about joins and relates
• Learn how to query your data in various ways
• Learn how to access data that resides online in GIS Internet Mapping Services and with national organizations
Overview: Task and Data:

Task 1-3 (Display XY Data & Related): Campus.zip (GauchoSpace)

Task 4 (Georeferencing & Digitizing): tl_2009_51059_edges (GauchoSpace) and the campus map image (George Mason U)

Task 5-6 (Join & Query): Countris_2007.shp (from Lab1) and cntry_ipc2008.dbf (from Lab1)

Task 7-8 (adding data from online & Query feature using location): ESRI_Quake_Rec_FS (from ArcGIS Online)

Task 9 (building a map using data from National Atlas): NationalAtlas (GauchoSpace)
1. Building a Map of a Campus with GPS Data and Building Footprints.

Background Information about the data:
• In the Buildings table, the Number field contains the building identification number that was assigned to each building by the university.
• Each GPS record is a participant in a study designed to determine if students, staff, and faculty eat lunch at eateries near their department.
• The points were collected outside of four popular eateries on campus between the hours of 11:15 a.m. and 1:00 p.m. during a summer school session.
• Data collectors with GPS units collected a point from every person who exited an eatery and was willing to provide the data collector with the name of the building that contained their department.
2. Display the Coordinates Contained in the GPS Table
3. Associating Information Contained in Multiple Tables with a Relate

• Connecting two tables can be accomplished with a **join** or a **relate** and is determined by **cardinality**.
• There are four basic types of cardinality: **one-to-one**, **one-to-many**, **many-to-one**, and **many-to-many**.
• One-to-One and Many-to-one = Join
• One-to-Many and Many-to-Many = Relate

➢ Building-to-GPSPoints: One-to-Many
4. Creating Data from Scratch

• Georeferencing an Image

Key ➔ find the control points; More control points, more accurate!
4. Creating Data from Scratch

• Digitizing an Image
5. Associating Information Contained in Multiple Tables with a Join

• Countris_2007.shp and cntry_ipc2008.dbf both have only one record for each country → one-to-one → join

• Potential key field (common field on both tables)?
  → FIPS_CNTRY
6. Querying the Attributes of Your Data

• Use query tool to search records, and explain why the spatial outlier exists.
7. Adding Data from Online GIS Servers

Add data from ArcGIS Online into your map. The dialog that appears only shows data which can be added into your map as a layer. Sign in to ArcGIS Online to see data you’ve uploaded and data in groups you belong to.
8. Query Features by Location
9. Obtaining Data from the National Atlas

• Download the data from Gaucho Space.
• Define the projection based on metadata
• Create a map of Milk cows as a percentage of all cattle and calves using the M141_02 file in the table

• In the future, www.NationalAtlas.gov is a good source for data.
Tip:

On page 13, we ask you to search for “Fairfax Campus Map PDF” and find the 7th of the list. However, the image map we want might not be the 7th in your list.

Instead, use [http://info.gmu.edu/MasonParkingMap10.pdf](http://info.gmu.edu/MasonParkingMap10.pdf) to find the map!

To make sure you select the right one, I paste a screenshot of the map in next slide.

In that map, you could clearly read the name of streets!
Submissions

• 1. Your answers Word doc (appropriately named). e.g. RuiZhuLab4.docx
• 2. One UCSB GPS Map.
• 3. One George Mason University Map.
• 4. One Milk Cows Map

Note: Image formats [e.g., JPG, PNG] for maps
Lab 3 Due:

2 p.m. Aug 25 2015
(Next Tuesday)