• HW 5 - questions?
• Today Chapter 5: Queries
• SQL Query - some advanced cases (class ex.)
• Follow along: copy data\follow along\ch5A_class_ex folder in your student folder. Open mxd file in ArcMap and open ArcCatalog
• Saving selections in layers
• Interactive selection
• Tutorial ch 5: 1 - 17
• HW 6: ch6 1,2,3,5 (today) 6,7,9 (after Thursday)
SQL Attribute Queries (2)

- class exercise data in data\follow along\ch5A_class_ex (Iowa cities as polygons)
- “grab only those records for which <statement> is true”
- Result: new selection (light blue)
- Note Selection Method, (New, Add, Remove, Select)
- Copy/Paste (Ctrl-C/Ctrl-V) as temp. store
- Check for correct syntax first (Verify), then Apply
- use Help to get examples of more complex queries
String ("word") queries

- String values (words) need to be in single quotes
- Use Get Unique Values for overview of possible values
- *Exactly same:* \("ZIP" = '50010', "Capital" = 'Y' *
- *Anything but (not):* \("FIPS" <> '17015' *
- Wildcard ("Joker") characters (need to use LIKE relation!) :
  - % means: **one or more letters**
  - ex: \("COUNTY\_NAME" LIKE 'Q%' \) => Quincy
  - _ (underscore) means: **exactly one** letter
  - "Name" LIKE '_ob': => Rob, Bob but not Bobby
Word query examples

• SQL Error (AND, OR, ...): Check each piece, then assemble

• In Iowa_cities.shp, how many cities:
  • that are county seats (CO_SEAT)?
  • that are county seats in counties (COUNTY) starting with D?
  • with city names (NAME) starting with D or ending with y?
  • in counties (COUNTY) with exactly 3 (three) letters?
Gotcha Warning: AND vs OR (try it now)

Incorrect

“.... get all features for CO and for IA ...”

“State” = ‘CO’

AND

“State” = ‘IA’

“... get all counties with 50,000 to 90,000 people ...”

“POP2000” ≥ 50000

OR

“POP2000” < 90000

Correct

“State” = ‘CO’

OR

“State” = ‘IA’

“POP2000” ≥ 50000

AND

“POP2000” < 90000
Creating layers from selections

- After a query - save selected features
- Creates a new layer with only the selected features
- Give the new (selection) layer a proper name

New layer still refers to the original feature class with all the features.

In ArcMap it appears to contain only the selected features.
Creating a new feature file from selection

- Make a new from currently selected features:
- R-Click on layer: Data - Export Data
- All features or selected-only
- Shape file: Save as .shp
- GeoDB feature class
  Save inside an existing GeoDB
SQL AND/OR trickery

• in iowa_cities.shp, how many cities
  • have between 5000 and 10,000 people (POP_98) or are county seats? (need to use () ! )

• What happens if we re-arrange the ()? Note 0 for POP_98 ?

• Save as Selection layer
• Save as shapefile
Notes on SQL syntax differences

• Syntax for **Shapefile** is
  • ‘ ‘ as Field delimiter
  • NOT Case sensitive (‘bob’, ‘BOB’, ‘bOB’ are all equal)
  • Wildcards: %, _

• Syntax for **Geodatabases** is
  • [ ] as Field delimiters ( [Age] )
  • Case sensitive (‘BOB’ is different from ‘Bob’ !)
  • Wildcards: *, ?
Definition query

• Very important: Here, result is **not** just a selection!
• “Show me **only** where <expression> is true”
• think: “getting rid of some stuff for a while”
• Layer: Properties > definition query
• Make “cities that are county seats” a definition query
Interactive Selection

Select Features tool

Click on feature to select

Hold down shift key to select more than one feature

Draw a rectangle that passes through features to be selected.

Default selection method: new selection
But: you can again add, remove or sub-select
Selectable Layers

Which layer(s) are valid for interactive selection?

All layers selectable  Only States selectable

If you can select something - check if it's a selectable layer
Select by Graphics

1) Use Drawing toolbar to create graphic (polygon)
2) Then Select by Graphics
Wrap-up

• Tutorial ch 5: 1 - 17 (13-17 about SQL)
• HW 6: ch6 (due Oct 7):
  • ex. 1,2,3 (layer from selection), 5: after today
  • ex. 6,7,9 (after next lecture)
• next lecture: spatial select + examples of maps from mini proj.1 (color)