

GEO 309 – Intro to GIS

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Topics

- Discussion - Agrawal
- Attribute analysis
 - Schemas
 - SQL
 - Select by attribute
 - Attribute joins
 - Field calculations

Discussion - Agrawal

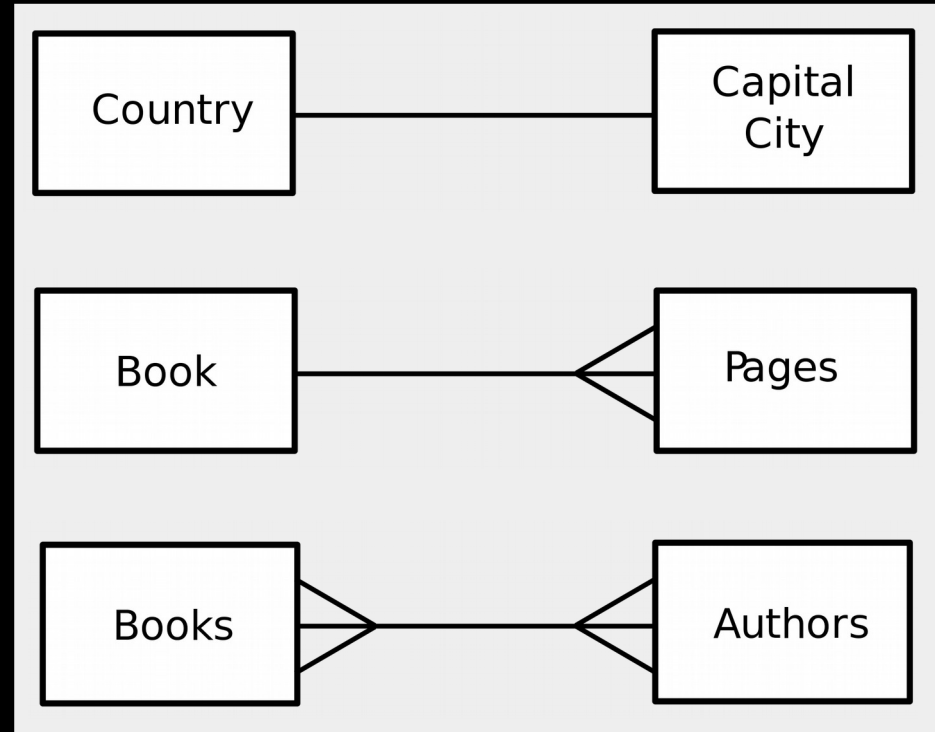
- Agrawal, A. 2002. Indigenous knowledge and the politics of classification. *International Social Science Journal* 54: 287-97.

Attribute Analysis

- Schema
 - Relationship between tables in a database
 - Database tables
 - Fields (columns)
 - Records (rows)
 - Keys
 - Primary
 - Primary/Foreign
 - Foreign

Attribute Analysis

- Schema
 - Field Names
 - Letters
 - Numbers
 - Underscores
 - Relationships
 - One-to-one
 - One-to-many
 - Many-to-many



dimDate	
PK	<u>DateKey</u>
	FullDate CalendarYear Month Day MonthNumber DayOfWeek

dimGeography	
PK	<u>GeographyKey</u>
	GeographyBusinessKey Country State City

factMeasures	
PK,FK1 PK,FK2	<u>DateKey</u> <u>UserKey</u>
FK3 FK4	GeographyKey DemographicKey Weight

dimDemographic	
PK	<u>DemographicKey</u>
	DemographicBusinessKey Gender AgeGroup IncomeRange EducationLevel

dimUser	
PK	<u>UserKey</u>
	UserFullName UserGender UserDataOfBirth UserAge UserCurrentDemographicKey UserCountry UserState UserCity UserCurrentGeographyKey



Attribute Analysis

- Schema
 - Query
 - Algorithmic expression to select features
 - View
 - The result of a stored query
 - A subset of data

Attribute Analysis

- SQL
 - Structured Query Language
 - Developed in the 1970s
 - For use with RDBMS
 - Several variants
 - PostgreSQL, MySQL, MS SQL, Oracle

Attribute Analysis

- SQL Syntax
 - Query – a statement sent to the database
 - Statement – how you want the subset of data
 - Clauses – the sections of your statement
 - Predicates – specifies the limits of a query
 - Expressions – specific item or modification of an item

```
UPDATE clause {UPDATE country  
  
SET clause   {SET population = expression population + 1  
  
WHERE clause {WHERE expression name = 'USA';  
                                predicate
```

} statement

Attribute Analysis

- Select by Attribute
 - Using a query expression
 - Attribute table
 - Data view



	STATEFP10	COUNTYFP10	TRACTCE10	GEOID10	NAME10	NAMELSAD10	MTFCC10	FUNCSTAT10	ALAND10	AWATER10	INTPTLAT10	INTPTLON10
1	21	071	920200	21071920200	9202	Census Tra...	G5020	S	132485727	2725279	+37.6613806	-082.6787068
2	21	071	920100	21071920100	9201	Census Tra...	G5020	S	32373311	1269658	+37.7016406	-082.7518235
3	21	217	920300									
4	21	217	920400									
5	21	121	930601									
6	21	071	920800									
7	21	071	920600									
8	21	071	920300									
9	21	107	971100									
10	21	107	970100									
11	21	107	970300									
12	21	107	970500									
13	21	217	920500									
14	21	217	920100									
15	21	217	920200									
16	21	107	971000									
17	21	067	001700									
18	21	067	001800									
19	21	067	001900									
20	21	067	002200									
21	21	107	970600									
22	21	107	970700	21107970700	9707	Census Tra...	G5020	S	204043442	8458702	+37.3253899	-087.4049428
23	21	107	970800	21107970800	9708	Census Tra...	G5020	S	11294529	302358	+37.2877855	-087.4883013
24	21	067	001600	21067001600	16	Census Tra...	G5020	S	1925880	0	+38.0366984	-084.4614781
25	21	097	950200	21097950200	9502	Census Tra...	G5020	S	214311596	2214684	+38.4686378	-084.4306139

Select by Expression - KY_CensusTract

Expression Function Editor

= + - / * ^ || () '\n'

Search...

Show Help

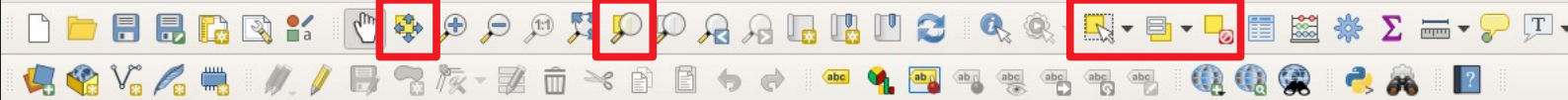
- Aggregates
- Arrays
- Color
- Conditionals
- Conversions
- Date and Time
- Fields and Values
- Fuzzy Matching
- General
- Geometry
- Map Layers
- Maps
- Math
- Operators
- Rasters
- Record and Attributes
- String
- Variables

Output preview:

Help

Select features

Close

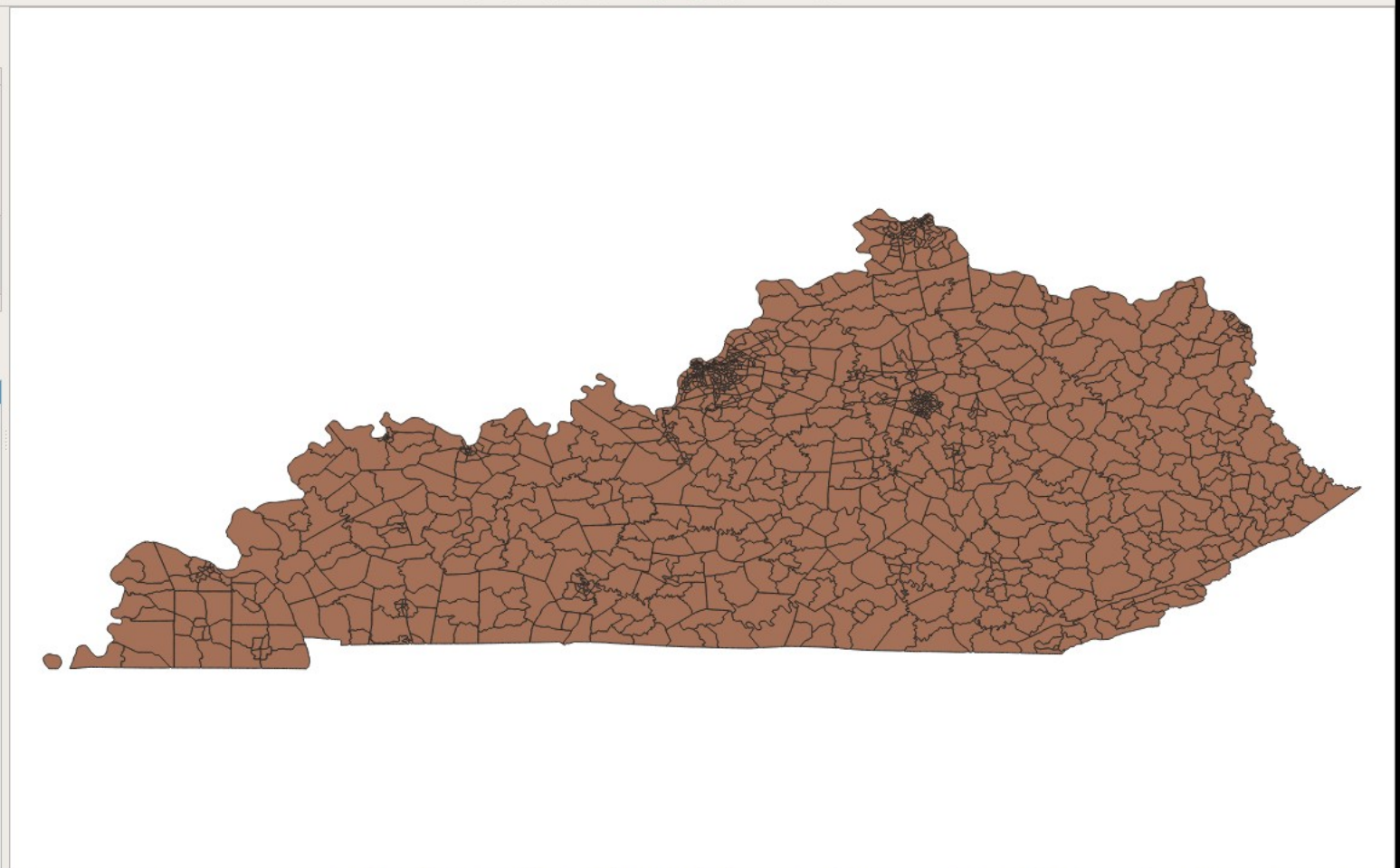


Browser

- ★ Favorites
 - Home
 - /
 - GeoPackage
 - SpatiaLite
 - PostGIS
 - MSSQL
 - DB2
 - WMS/WMTS
 - XYZ Tiles
 - WCS

Layers

- ☒ KY_CensusTract

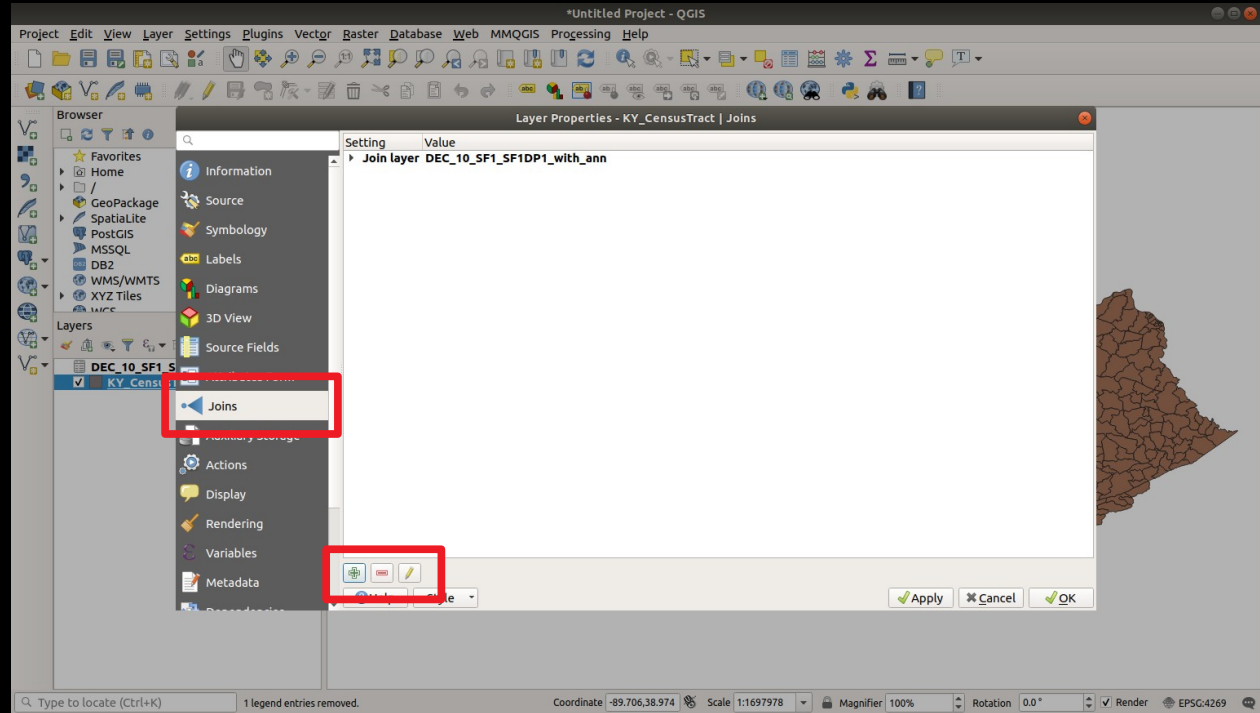


Attribute Analysis

Demo

Attribute Analysis

- Attribute Joins
 - Joining tabular data to a vector layer

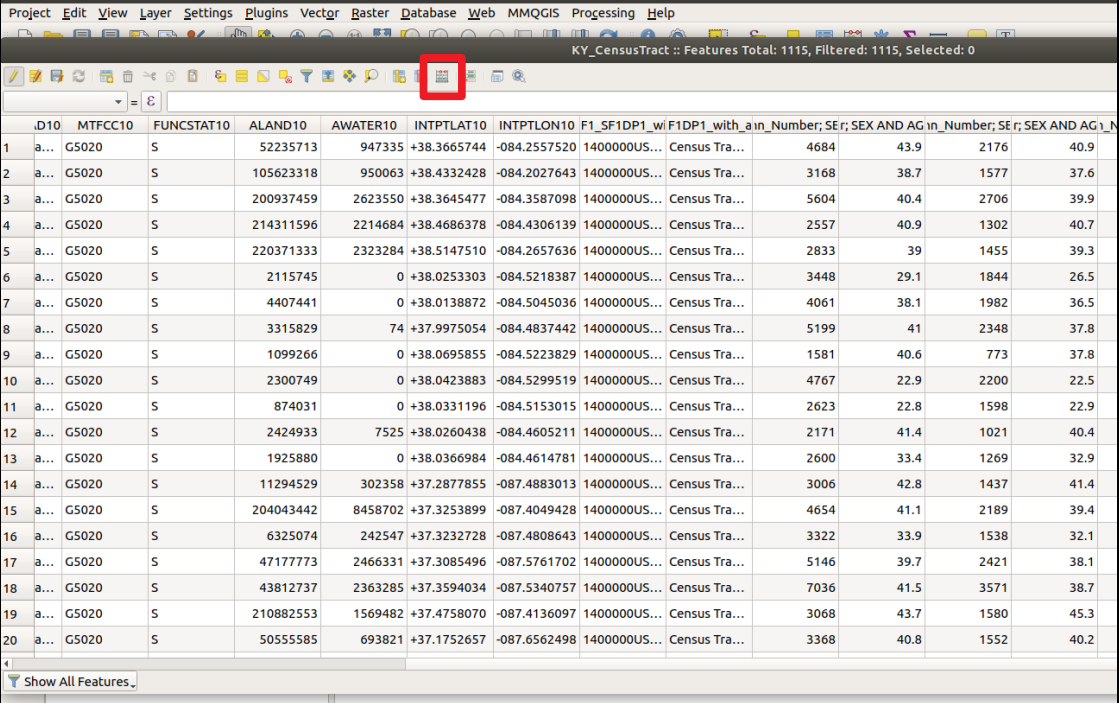


Attribute Analysis

Demo

Attribute Analysis

- Field Calculations
 - Using expressions to create new fields in your data table
 - Follow criteria for normalization and transformation of spatial data



Project Edit View Layer Settings Plugins Vector Raster Database Web MMQGIS Processing Help

KY_CensusTract :: Features Total: 1115, Filtered: 1115, Selected: 0

	D10	MTFCC10	FUNCSTAT10	ALAND10	AWATER10	INTPTLAT10	INTPTLON10	F1_SF1DP1_wi	F1DP1_with_a	in_Number; SE	SEX AND AG	in_Number; SE	SEX AND AG	in
1	a...	G5020	S	52235713	947335	+38.3665744	-084.2557520	1400000US...	Census Tra...	4684	43.9	2176	40.9	
2	a...	G5020	S	105623318	950063	+38.4332428	-084.2027643	1400000US...	Census Tra...	3168	38.7	1577	37.6	
3	a...	G5020	S	200937459	2623550	+38.3645477	-084.3587098	1400000US...	Census Tra...	5604	40.4	2706	39.9	
4	a...	G5020	S	214311596	2214684	+38.4686378	-084.4306139	1400000US...	Census Tra...	2557	40.9	1302	40.7	
5	a...	G5020	S	220371333	2323284	+38.5147510	-084.2657636	1400000US...	Census Tra...	2833	39	1455	39.3	
6	a...	G5020	S	2115745	0	+38.0253303	-084.5218387	1400000US...	Census Tra...	3448	29.1	1844	26.5	
7	a...	G5020	S	4407441	0	+38.0138872	-084.5045036	1400000US...	Census Tra...	4061	38.1	1982	36.5	
8	a...	G5020	S	3315829	74	+37.9975054	-084.4837442	1400000US...	Census Tra...	5199	41	2348	37.8	
9	a...	G5020	S	1099266	0	+38.0695855	-084.5223829	1400000US...	Census Tra...	1581	40.6	773	37.8	
10	a...	G5020	S	2300749	0	+38.0423883	-084.5299519	1400000US...	Census Tra...	4767	22.9	2200	22.5	
11	a...	G5020	S	874031	0	+38.0331196	-084.5153015	1400000US...	Census Tra...	2623	22.8	1598	22.9	
12	a...	G5020	S	2424933	7525	+38.0260438	-084.4605211	1400000US...	Census Tra...	2171	41.4	1021	40.4	
13	a...	G5020	S	1925880	0	+38.0366984	-084.4614781	1400000US...	Census Tra...	2600	33.4	1269	32.9	
14	a...	G5020	S	11294529	302358	+37.2877855	-087.4883013	1400000US...	Census Tra...	3006	42.8	1437	41.4	
15	a...	G5020	S	204043442	8458702	+37.3253899	-087.4049428	1400000US...	Census Tra...	4654	41.1	2189	39.4	
16	a...	G5020	S	6325074	242547	+37.3232728	-087.4808643	1400000US...	Census Tra...	3322	33.9	1538	32.1	
17	a...	G5020	S	47177773	2466331	+37.3085496	-087.5761702	1400000US...	Census Tra...	5146	39.7	2421	38.1	
18	a...	G5020	S	43812737	2363285	+37.3594034	-087.5340757	1400000US...	Census Tra...	7036	41.5	3571	38.7	
19	a...	G5020	S	210882553	1569482	+37.4758070	-087.4136097	1400000US...	Census Tra...	3068	43.7	1580	45.3	
20	a...	G5020	S	50555585	693821	+37.1752657	-087.6562498	1400000US...	Census Tra...	3368	40.8	1552	40.2	

Show All Features

Field Calculator

☐ Only update 0 selected features

☒ **Create a new field** ☐ **Update existing field**

☐ Create virtual field

Output field name:

Output field type: **Whole number (integer)**

Output field length: Precision:

Expression **Function Editor**

Output preview:

Search... [Show Help](#)

- row_number
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Attribute Analysis

Demo