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Connecting People to Policy

THE ROLE OF GEOGRAPHIC INFORMATION SYSTEMS (GIS) IN REDISTRICTING

HALEY PROEHL

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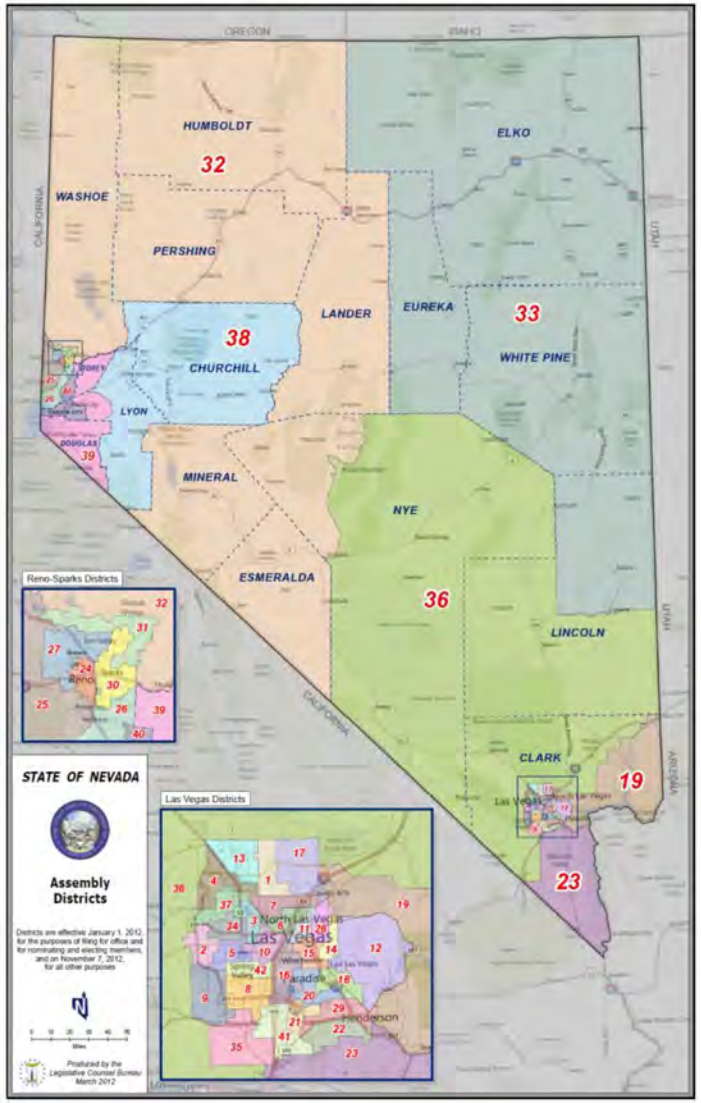
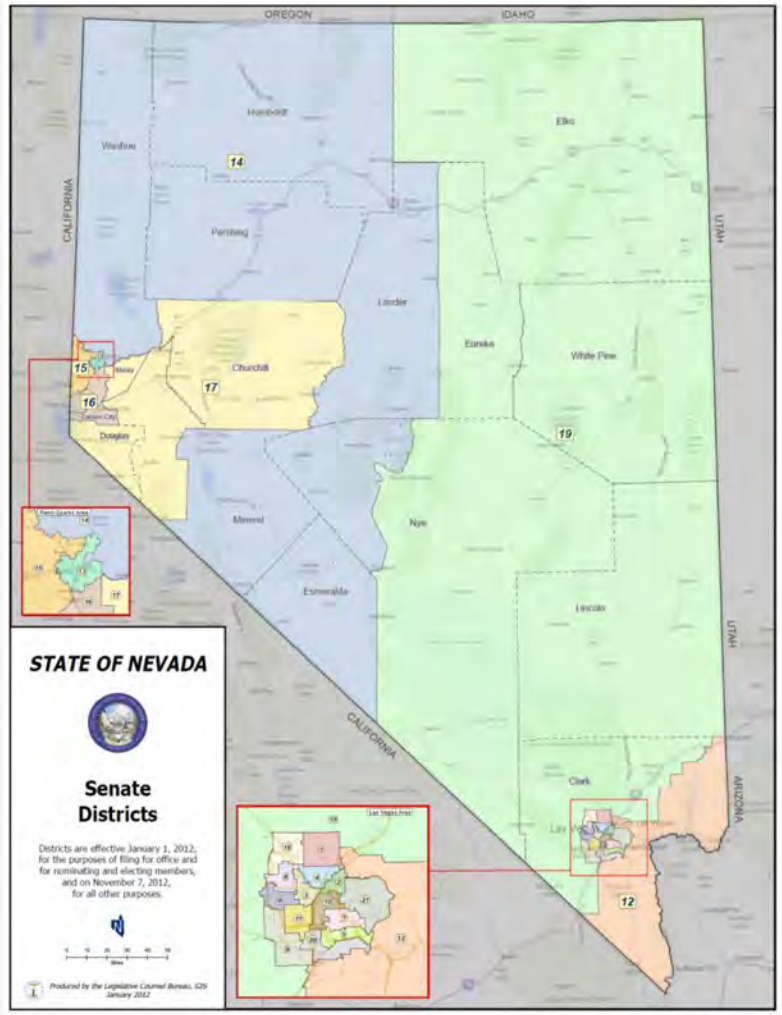
GIS: THE TECHNICAL COMPONENT OF REDISTRICTING

- A geographic information system (GIS) is a platform for displaying and analyzing location-based data.
- Essentially a mapping software that connects geography with data.





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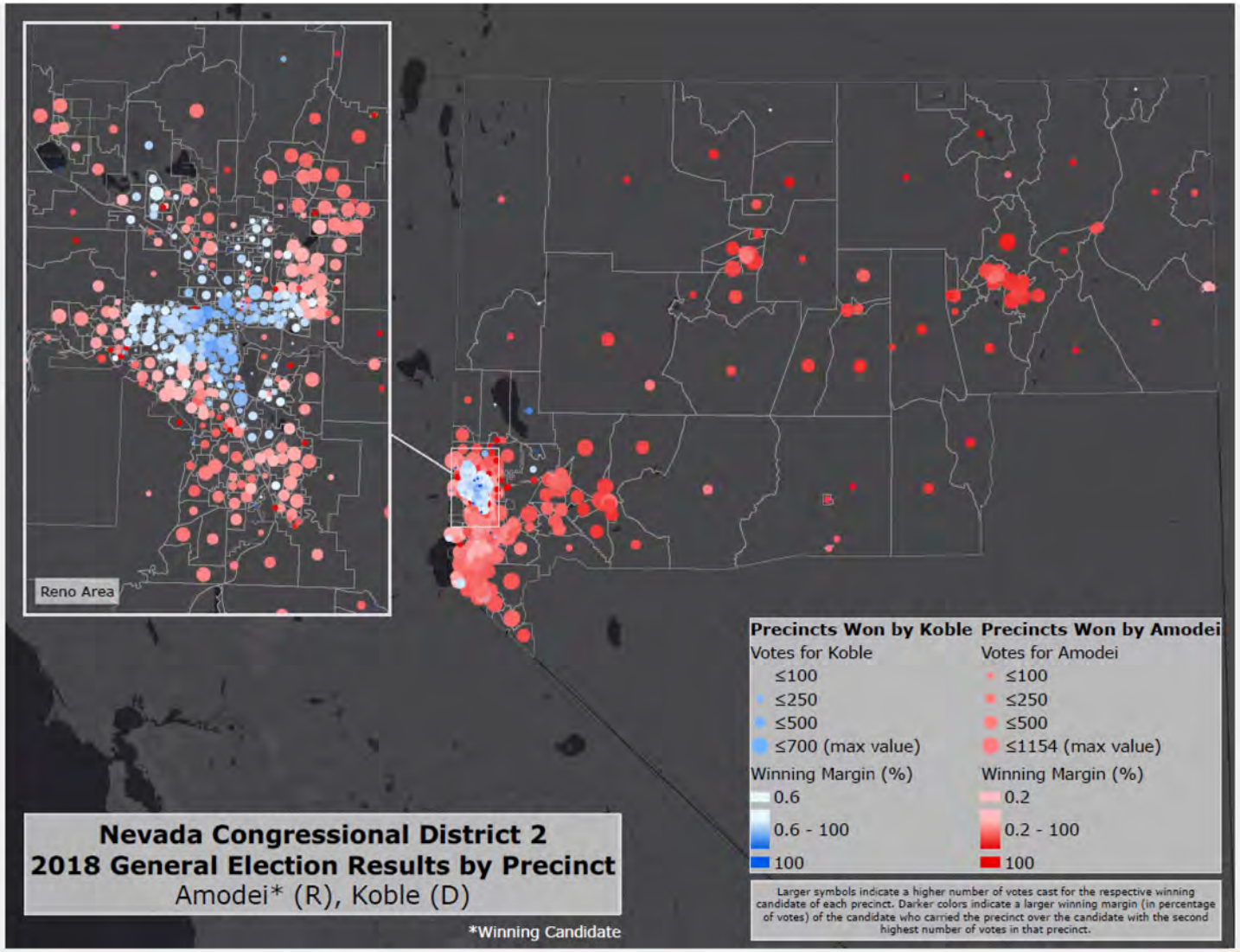
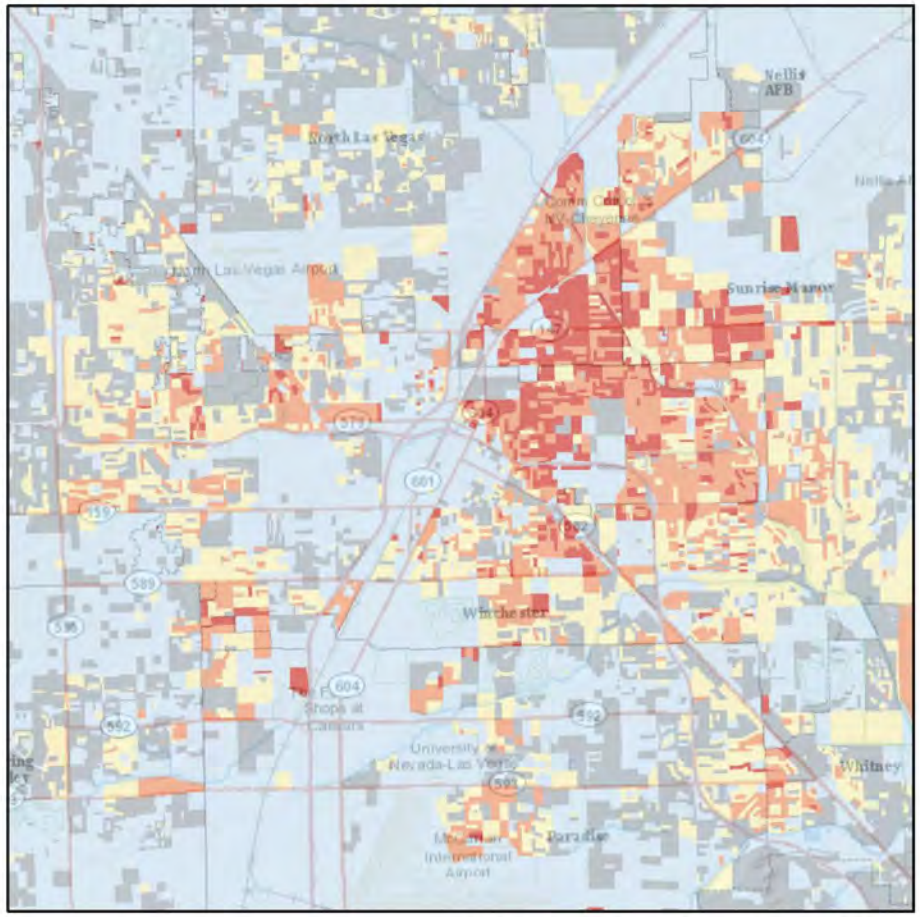
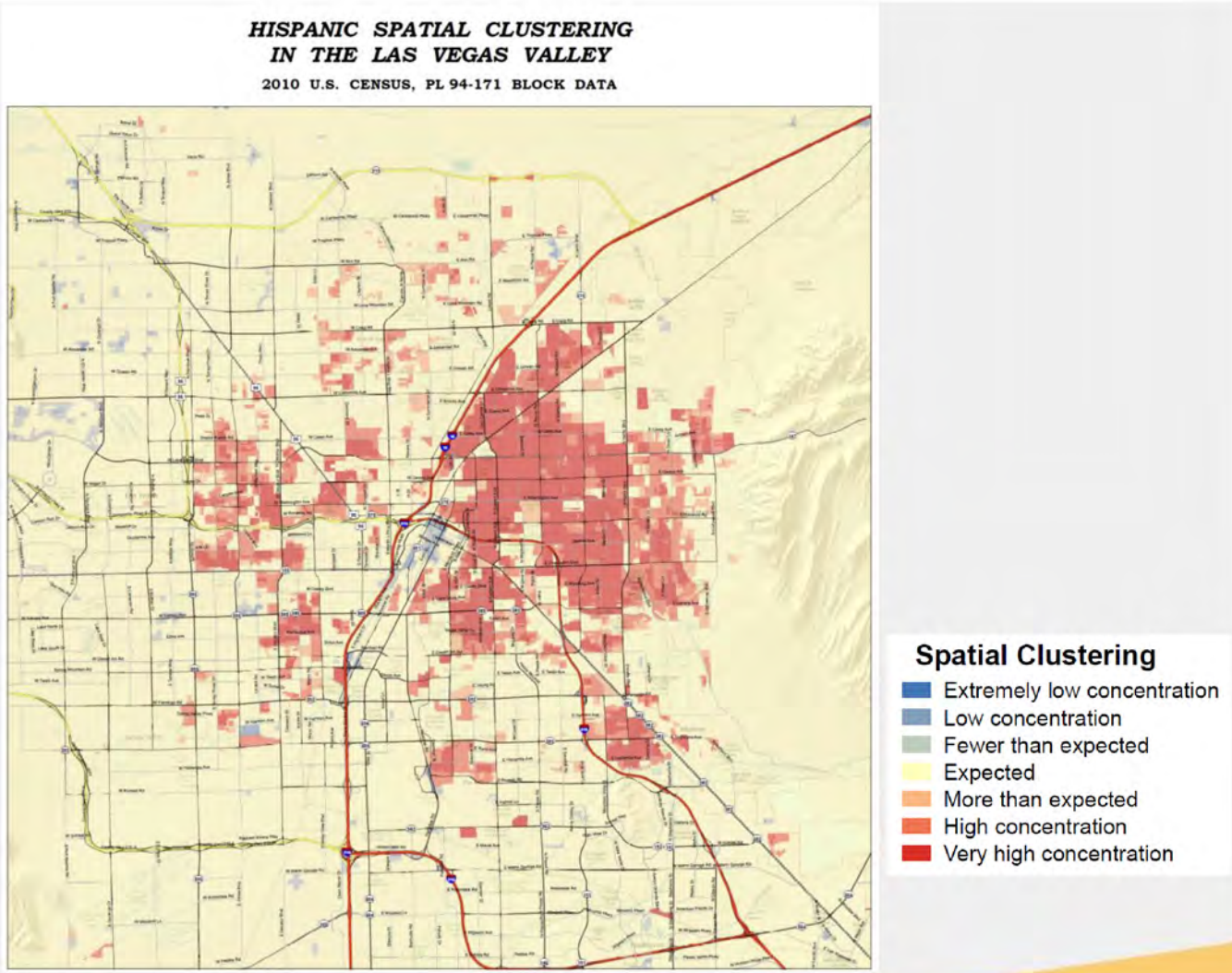
GIS EXAMPLES



GIS EXAMPLES





REDISTRICTING TECHNOLOGY HAS COME A LONG WAY

1980

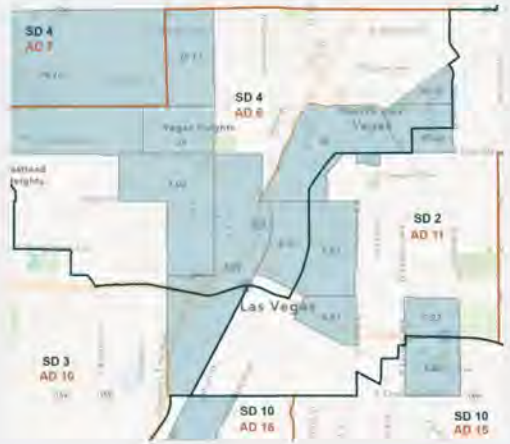
- Paper maps
- GIS was mainframe only
- Had to wait overnight to see impact of drafted plan
- Created handful of plans during legislative sessions

1990

- Limited PCs
- PC GIS systems first used
- Viewing results of district characteristics depended on processing speed
- Created 100s of plans during legislative sessions

2000 and 2010

- PCs widely used
- GIS software created specifically for redistricting
- Immediate results of district characteristics
- Ability to create 1000s of plans during legislative sessions



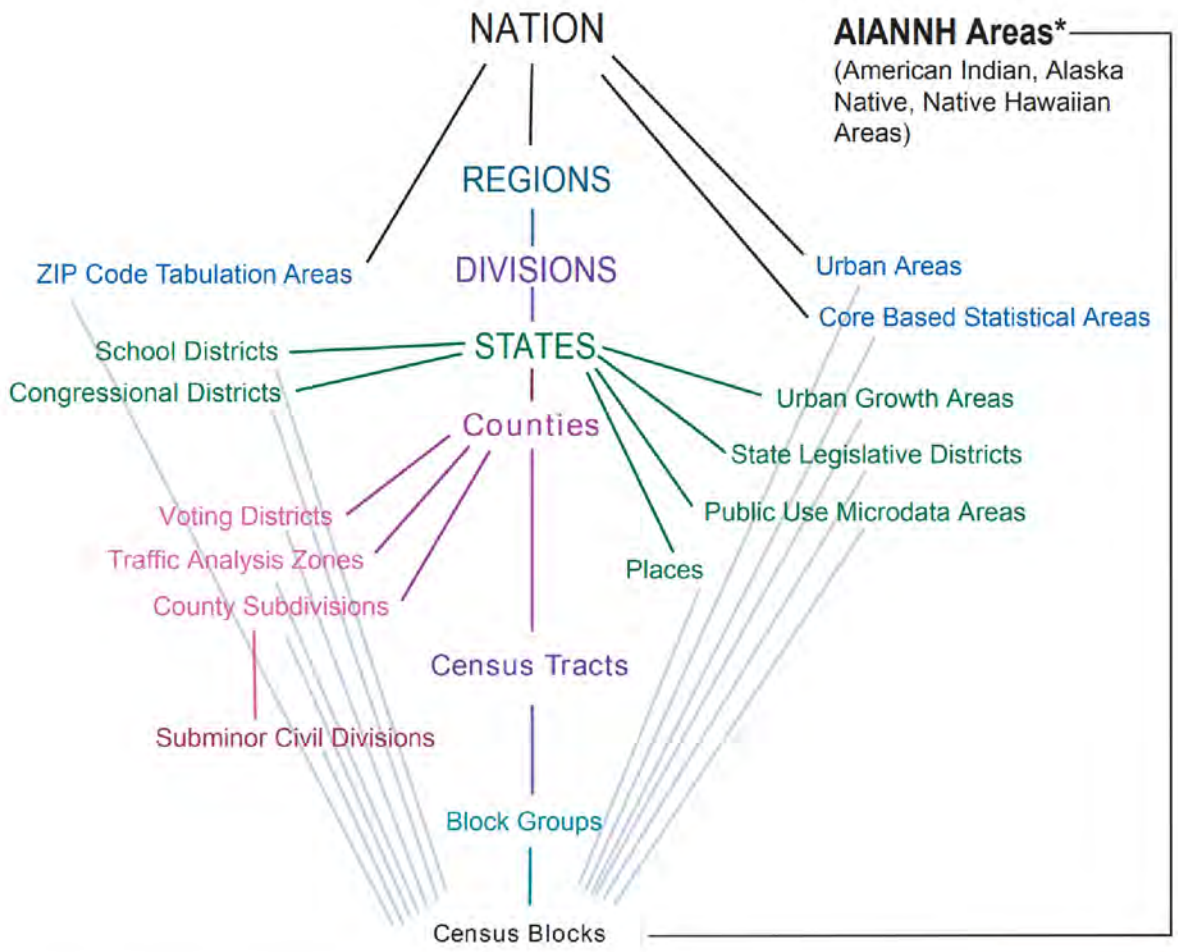
Information from Election Data Services

GIS INPUTS FOR REDISTRICTING

1. GEOGRAPHY

- The Census Bureau releases geography boundary files, known as **TIGER files,** every December.
  - Topologically Integrated Geographic Encoding and Referencing database
- TIGER file format is a shapefile, which requires GIS software to view.

County, block, and voting district (precinct) geographies are especially important to redistricting.



Census Bureau Geographic Hierarchy

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GIS INPUTS FOR REDISTRICTING

2. POPULATION DATA

- **PL94-171** Redistricting Data Summary Files from the 2020 Census (table format).
  - Total population, race, Hispanic/Latino ethnicity, and voting age.
- Expected to be delivered to Nevada in February 2021. NOTE: Nevada will request the early delivery of its census data.
- Each geographic unit from the TIGER files has corresponding PL94-171 data.
  - Connected through GEOID

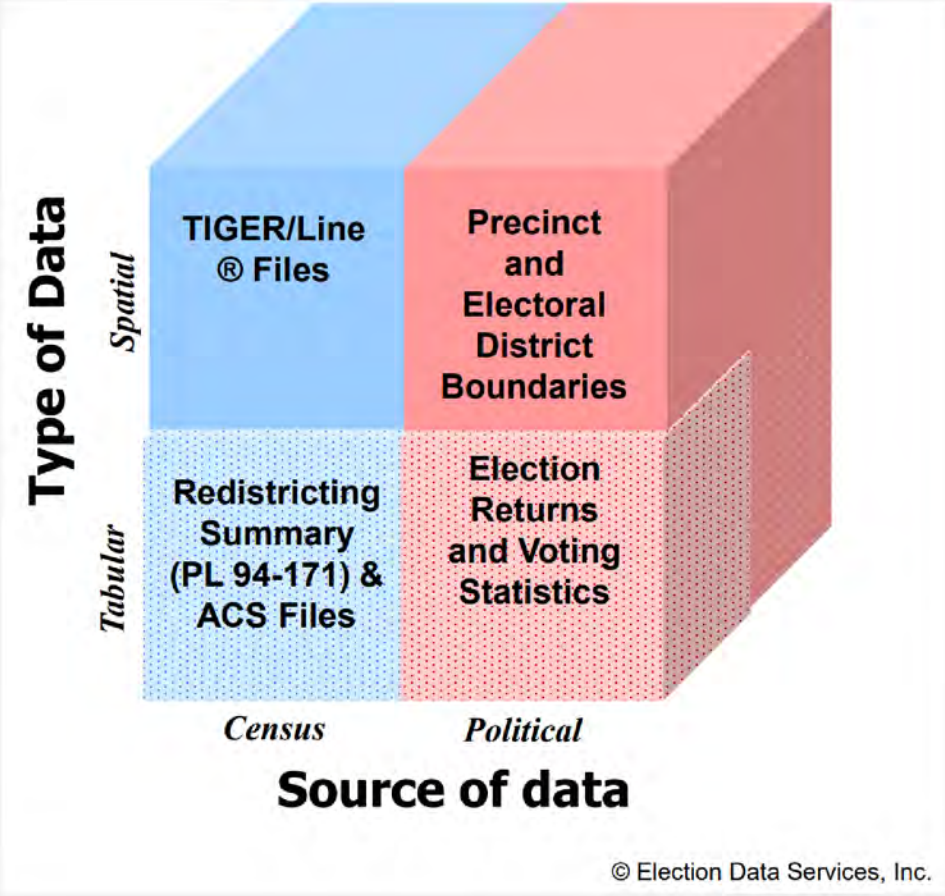
GEOID10	NAME10	MTFCC10	TAPERSONS	TA1RACE	TAWHITEALN	TABLACKALN	TAAMINDALN	TAASIANALN	TANHPOALN
320310029011001	Block 1001	G5040	47	47	47	0	0	0	0
320310029011002	Block 1002	G5040	5	5	5	0	0	0	0
320310029011003	Block 1003	G5040	39	39	35	3	0	1	0
320310029011004	Block 1004	G5040	31	31	31	0	0	0	0
320310029011005	Block 1005	G5040	55	55	53	0	0	1	0
320310029011006	Block 1006	G5040	31	31	31	0	0	0	0
320310029011007	Block 1007	G5040	53	53	46	0	4	3	0
320310029011008	Block 1008	G5040	30	29	26	0	0	3	0
320310029011009	Block 1009	G5040	26	26	20	3	0	0	0
320310029011010	Block 1010	G5040	53	53	22	7	3	0	0
320310029011011	Block 1011	G5040	97	97	84	0	0	0	0
320310029011012	Block 1012	G5040	86	83	66	7	0	0	0
320310029011013	Block 1013	G5040	91	91	67	5	0	2	0
320310029011014	Block 1014	G5040	79	79	64	0	0	2	0
320310029011015	Block 1015	G5040	69	67	49	0	0	4	2
320310029011016	Block 1016	G5040	83	83	69	2	0	2	0
320310029011017	Block 1017	G5040	127	122	101	4	1	6	0
320310029011018	Block 1018	G5040	84	81	65	0	5	0	0
320310029011019	Block 1019	G5040	109	105	80	7	2	3	0
320310029011020	Block 1020	G5040	72	65	44	1	0	0	0
320310029011021	Block 1021	G5040	27	21	17	0	0	0	0
320310029012000	Block 2000	G5040	55	51	45	0	2	3	0
320310029012001	Block 2001	G5040	28	28	28	0	0	0	0
320310029012002	Block 2002	G5040	0	0	0	0	0	0	0
320310029012003	Block 2003	G5040	0	0	0	0	0	0	0
320310029012004	Block 2004	G5040	189	187	142	0	1	16	6
320310029012005	Block 2005	G5040	51	48	29	1	1	1	6
320310029012006	Block 2006	G5040	51	49	45	4	0	0	0
320310029012007	Block 2007	G5040	188	174	126	7	6	3	0
320310029012008	Block 2008	G5040	96	90	59	3	1	0	12
320310029012009	Block 2009	G5040	111	105	90	2	2	0	0

PL94-171 data imported into ArcGIS

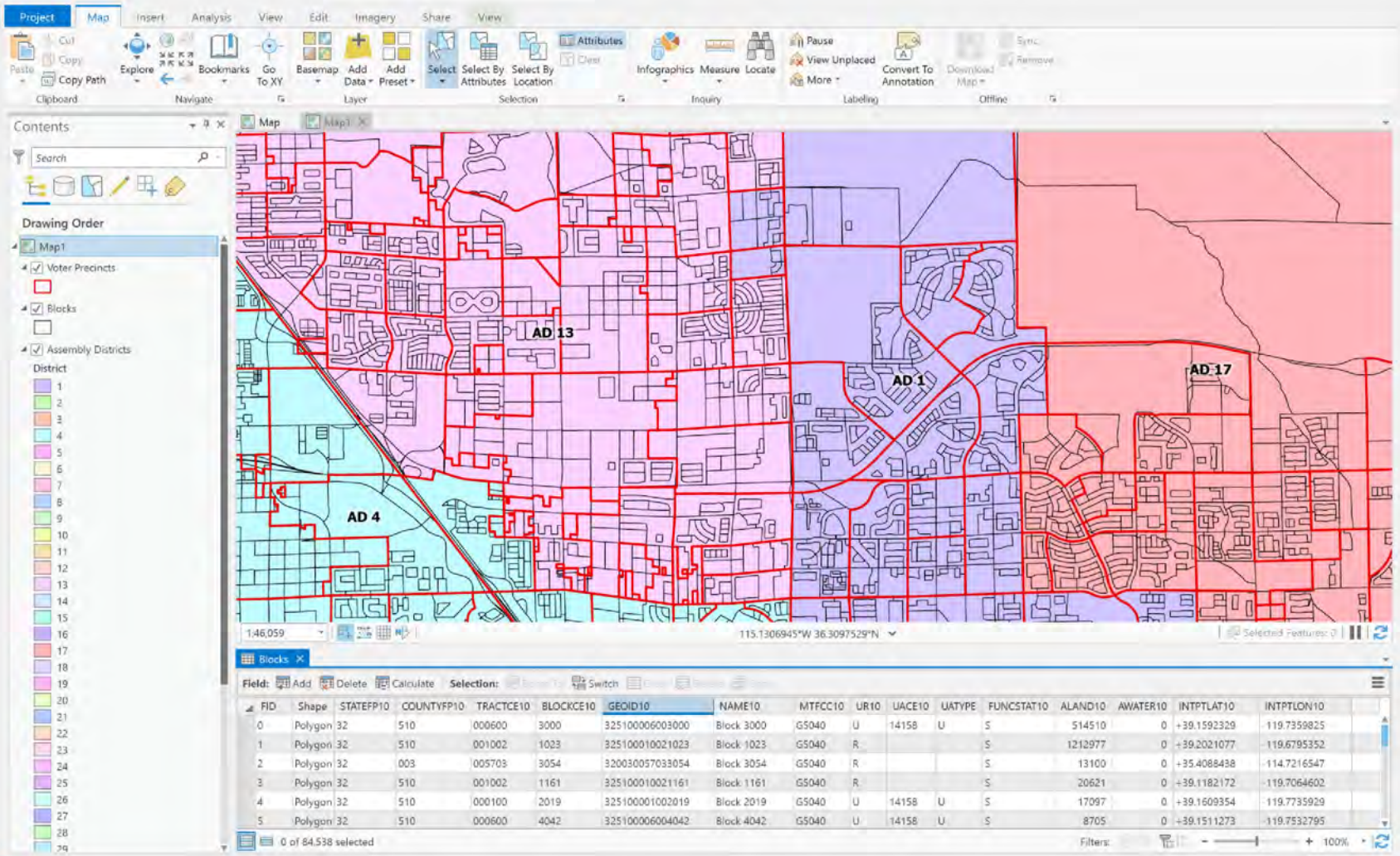
GIS INPUTS FOR REDISTRICTING

Other data inputs include:

- Voter registration data
- Election results



ARCGIS PRO DESKTOP SOFTWARE



Nevada has roughly:

- 84,500 blocks
- 2,000 precincts

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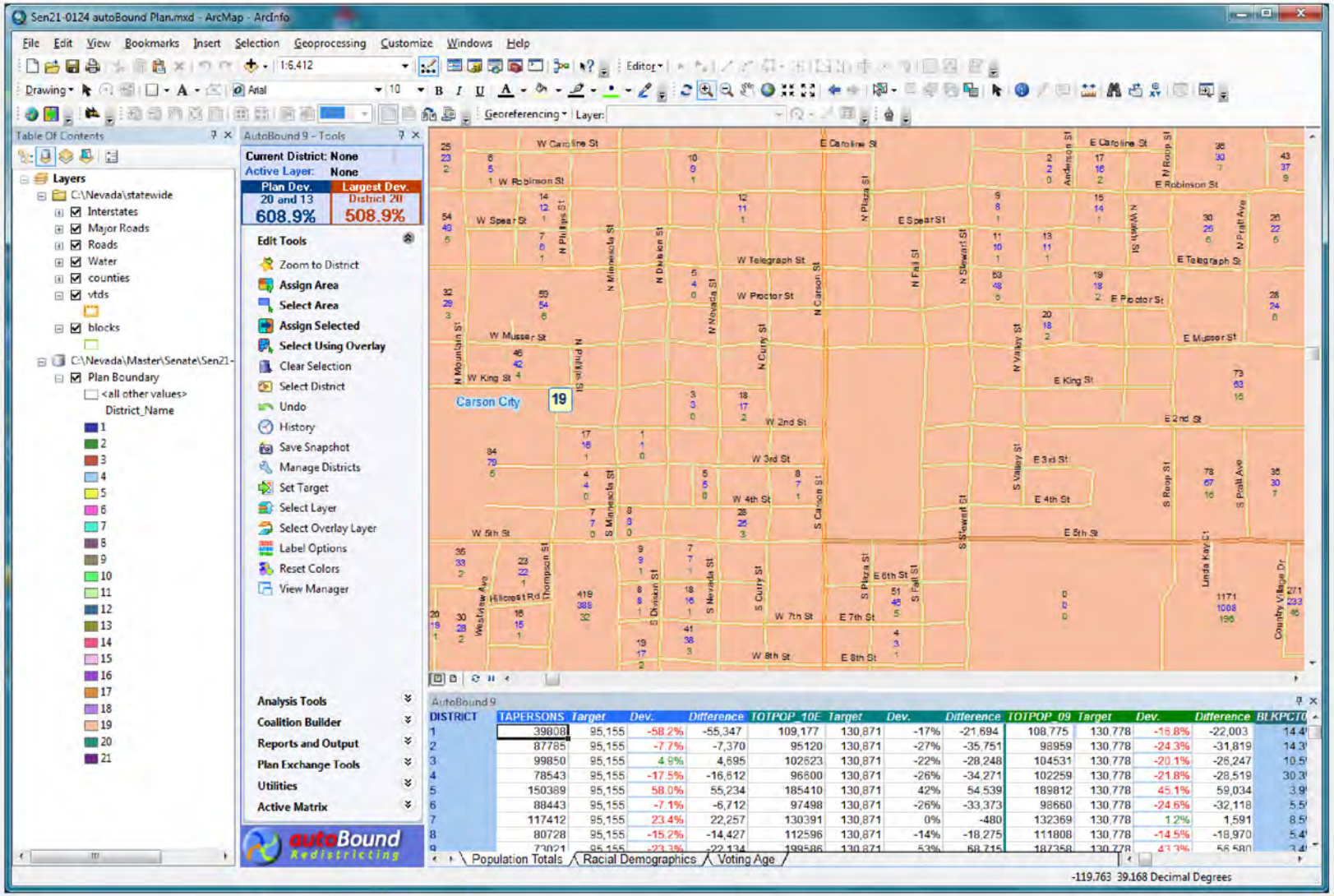
GIS SOFTWARE SPECIFIC TO REDISTRICTING



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2020 CENSUS REDISTRICTING DATA PROGRAM

- Census Redistricting Data Office and nonpartisan state liaison, LCB.
- The program provides states the opportunity to specify the small geographic areas (using GIS software) for which they want to receive decennial population counts for the purpose of redistricting.
  - i.e. census blocks, voting precincts
- Participation in program is not mandatory, but ensures the most accurate data as possible is returned to states after the 2020 Census.

2020 CENSUS REDISTRICTING DATA PROGRAM

- Phase 1: Block Boundary Suggestion Project (BBSP)- Early 2016-May 2017
  - LCB submitted suggestions for block boundaries considering changes to linear features since 2010 (i.e. new roads, etc.).
  - Emphasis on reducing the number of unnecessary empty blocks in rural areas.

- Phase 2: Voting District Project (VTD)- initial identification completed May 2019, verification taking place now until March 31, 2020
  - Submitted most current voter district boundaries for data tabulation purposes.
  - Approximately 2,000 voter districts in NV
    - 1,200 in Clark Co.
    - 550 in Washoe Co.

2020 CENSUS REDISTRICTING DATA PROGRAM

- Phase 3: Census Bureau conducts Census on April 1, 2020 and delivers PL 94-171 data back to states no later than April 1, 2021
  - Last redistricting cycle, Nevada received the PL 94-171 data in late February 2011. Nevada will request early delivery of its census data.

- Phases 4 & 5: Collection of post-2020 redistricting plans and evaluation of program

For more information: www.census.gov/rdo

Questions?

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