

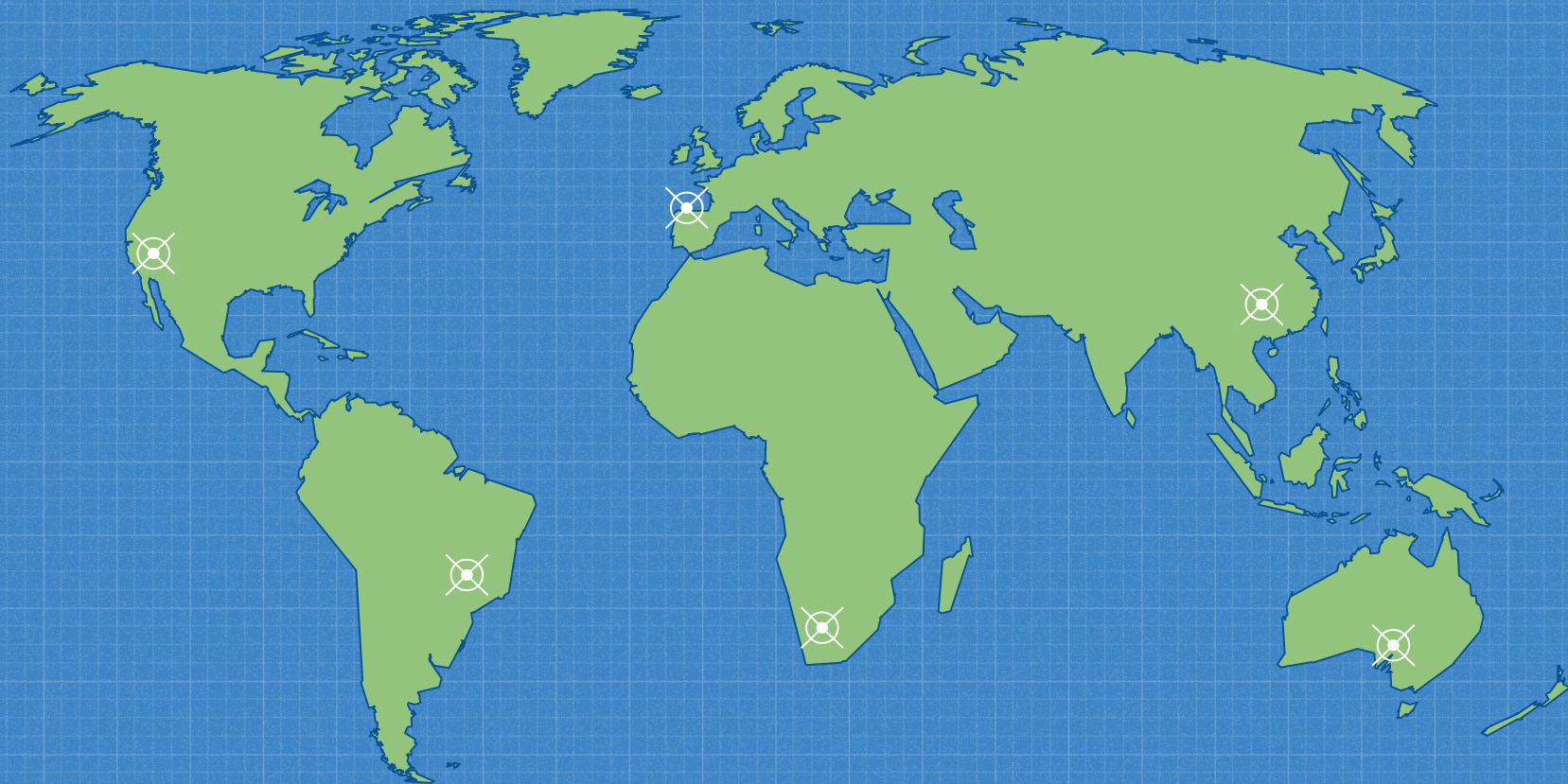


# Infrastructure for **GEOSPATIAL PROCESSING**

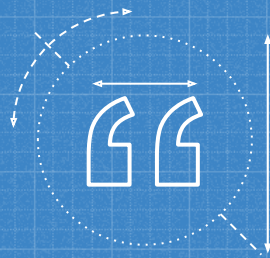
MARIAMA DIALLO AND KATE POLLEY



# SPATIAL DATABASES: A COMPLEMENT TO COMP 375







**Any Data that can be  
mapped.**

-Esri



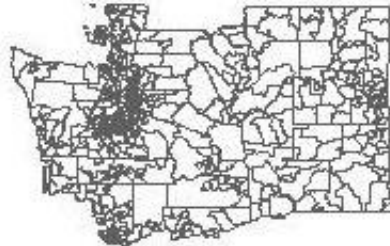
# Spatial Data Types



cities • *Points*



railroads • *Lines*



zipcodes • *Polygons*



# SPATIAL DATABASE

GEOMETRY	LATITUDE	LONGITUDE	COORDINATE REFERENCE SYSTEM



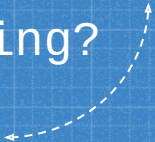


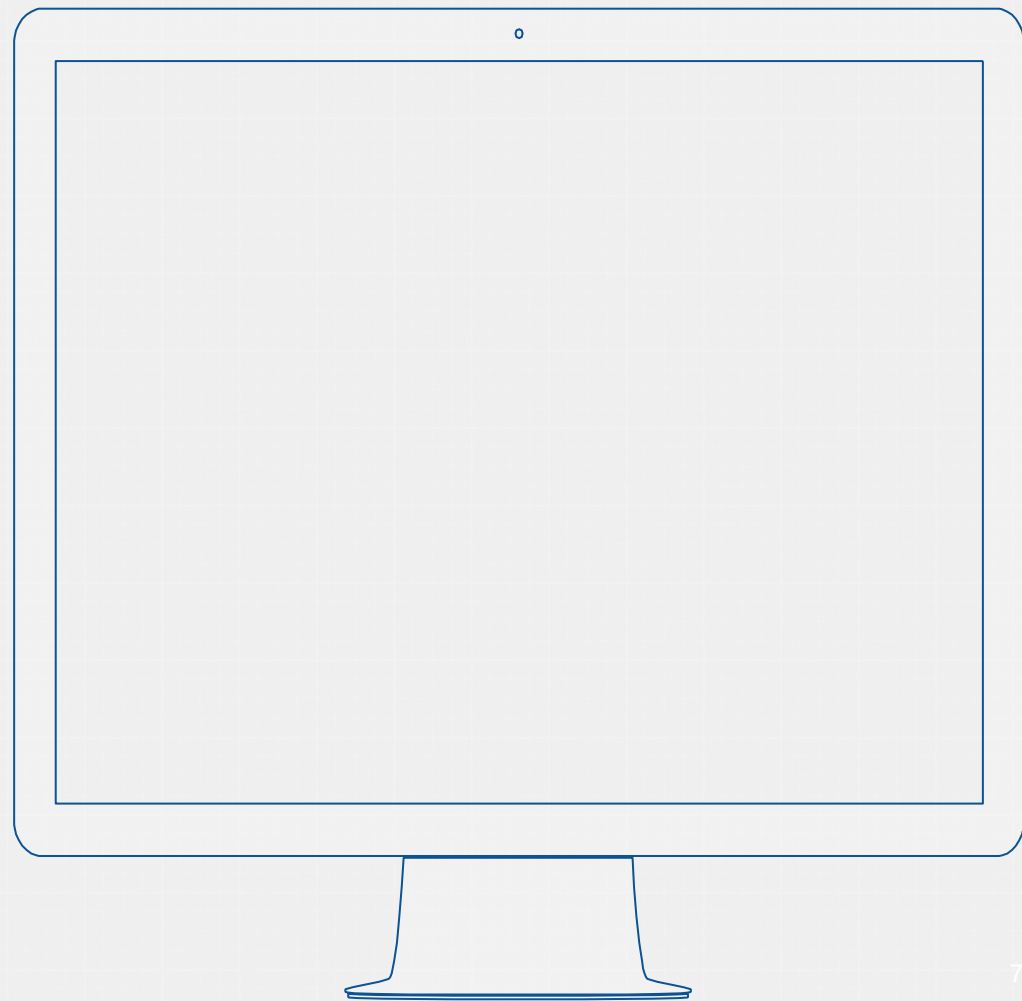
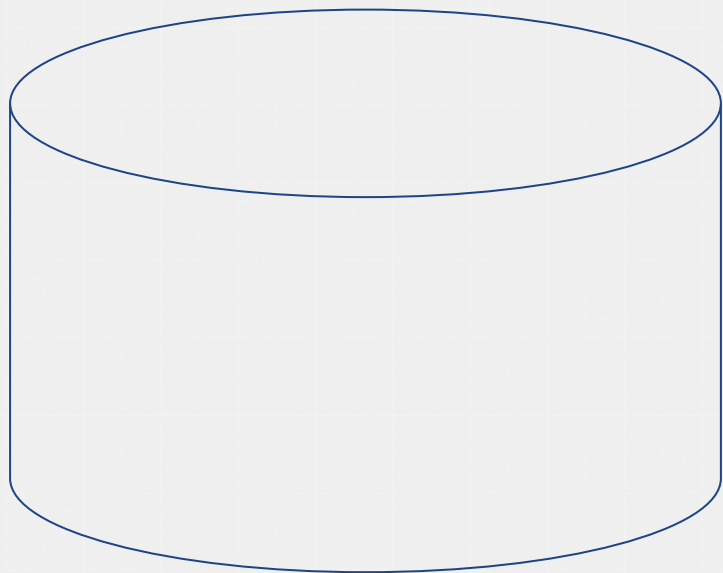
# 2

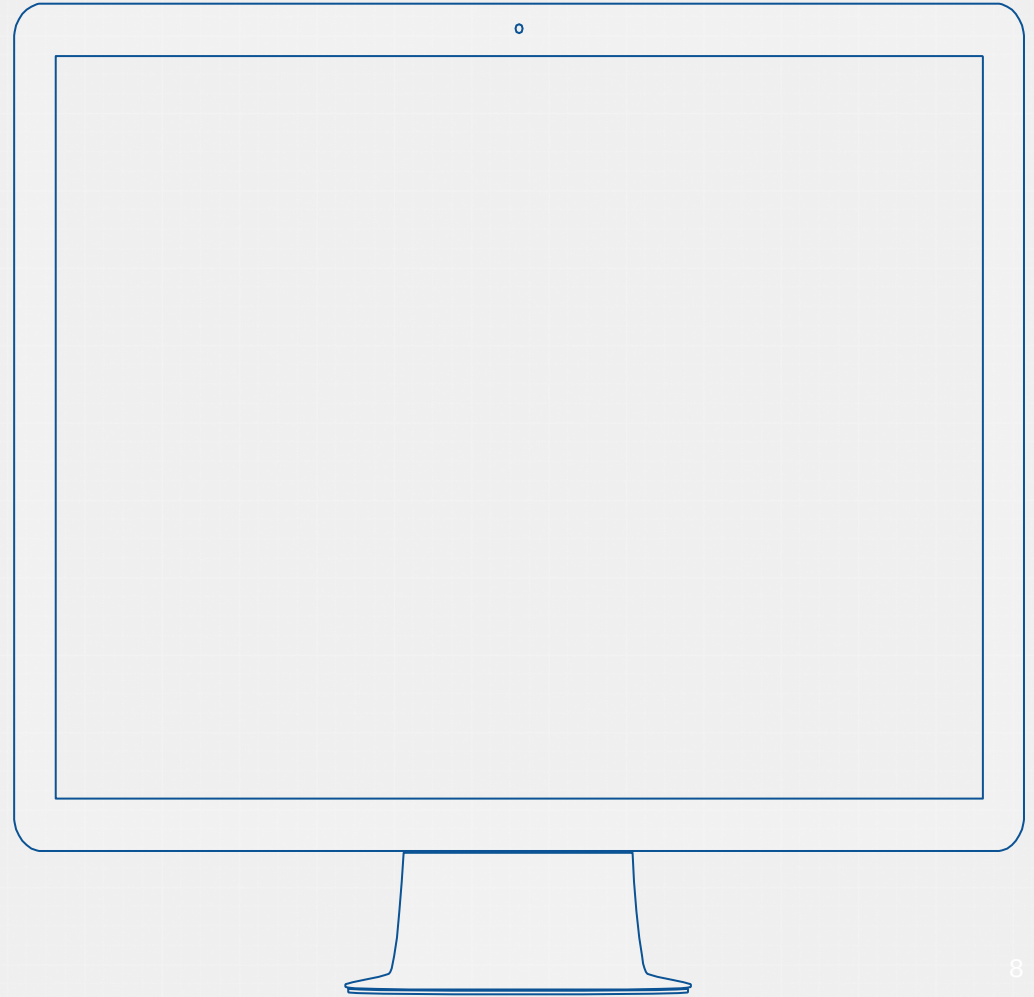
## INFRASTRUCTURE



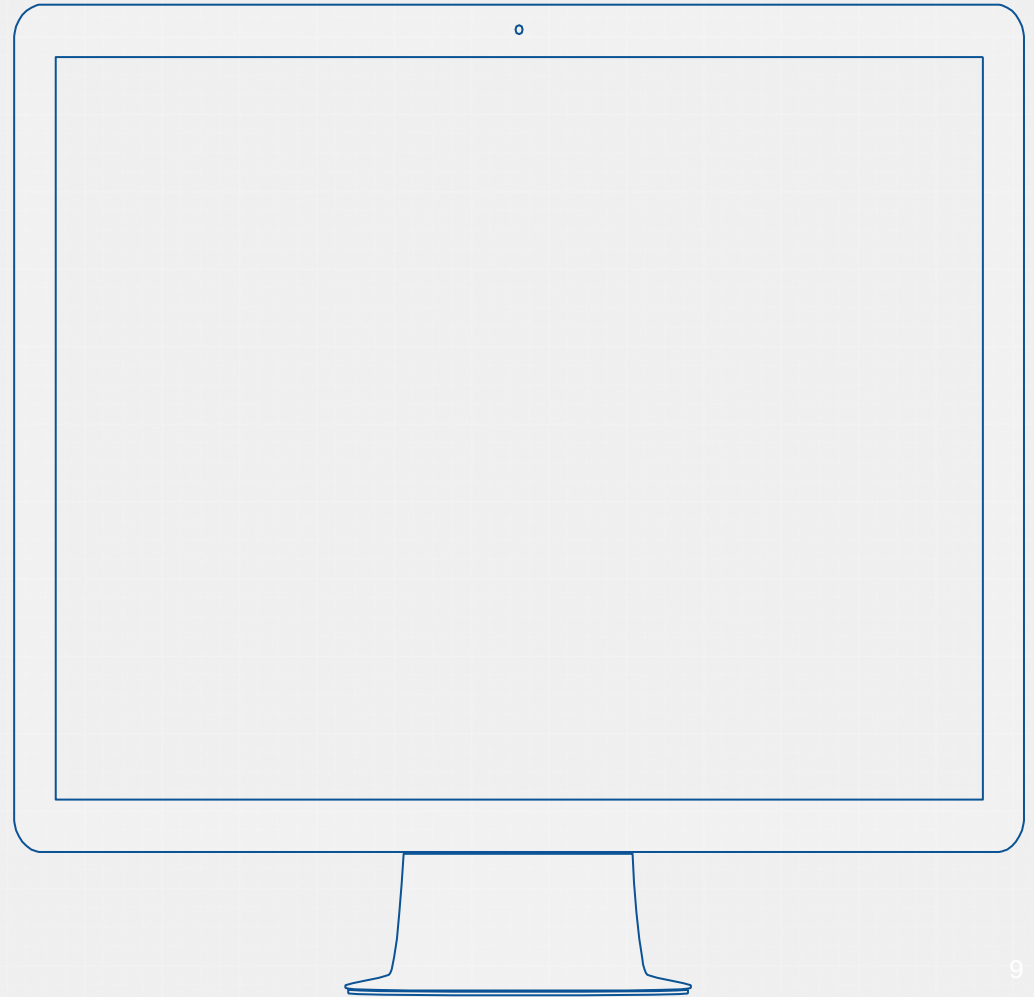
What tools did we use for  
geospatial processing?

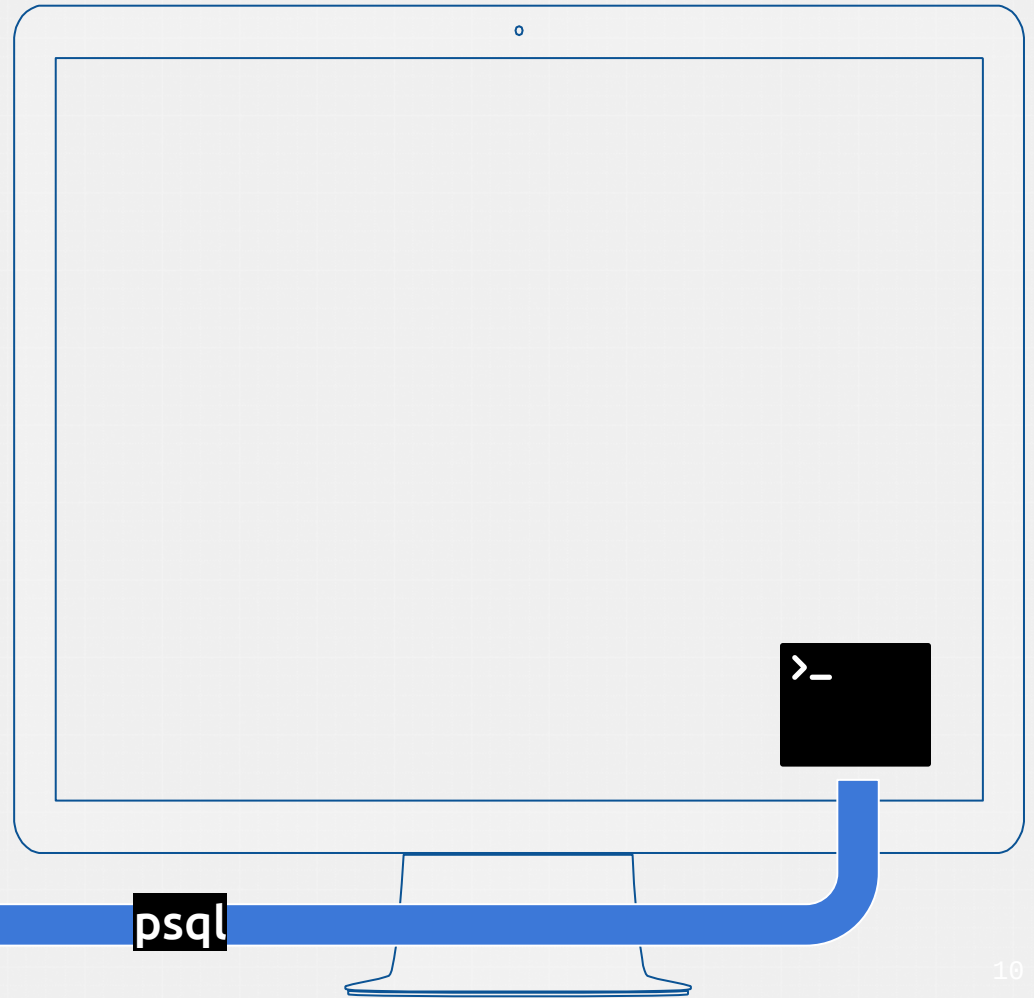




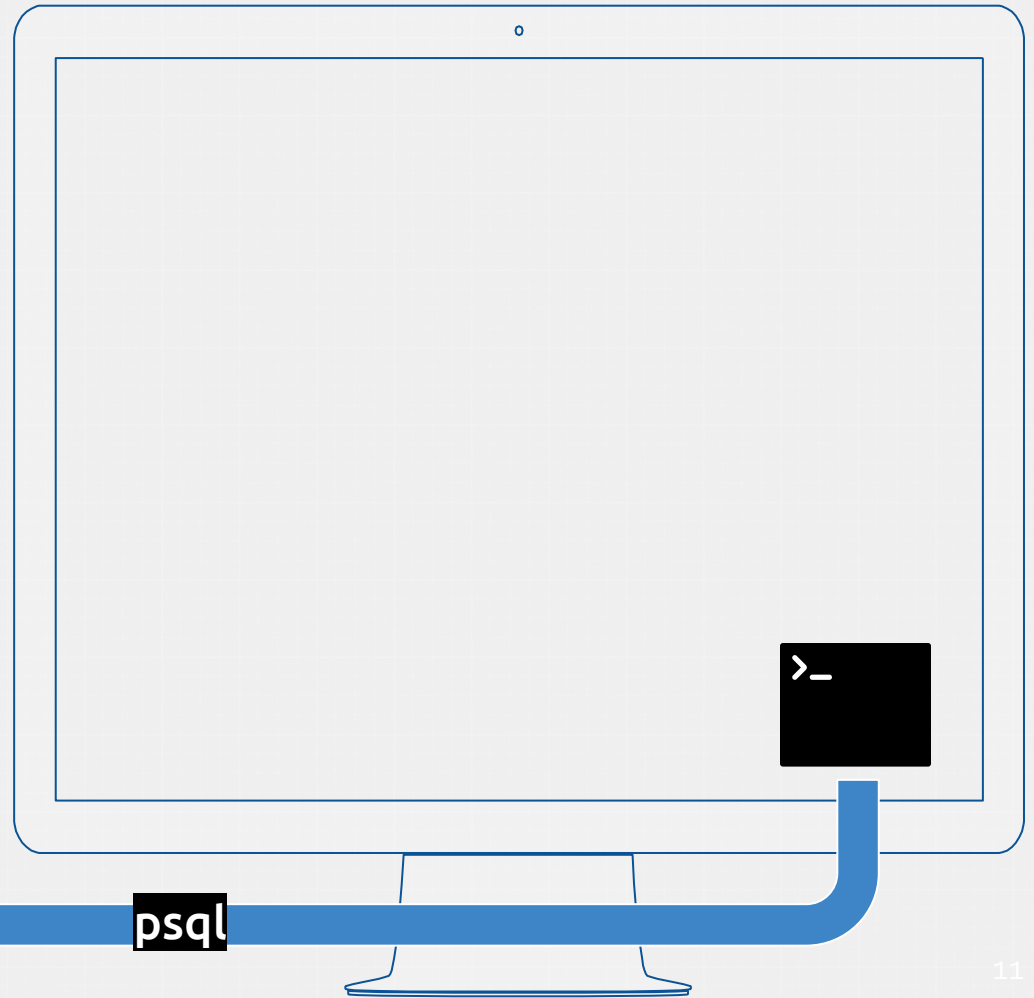


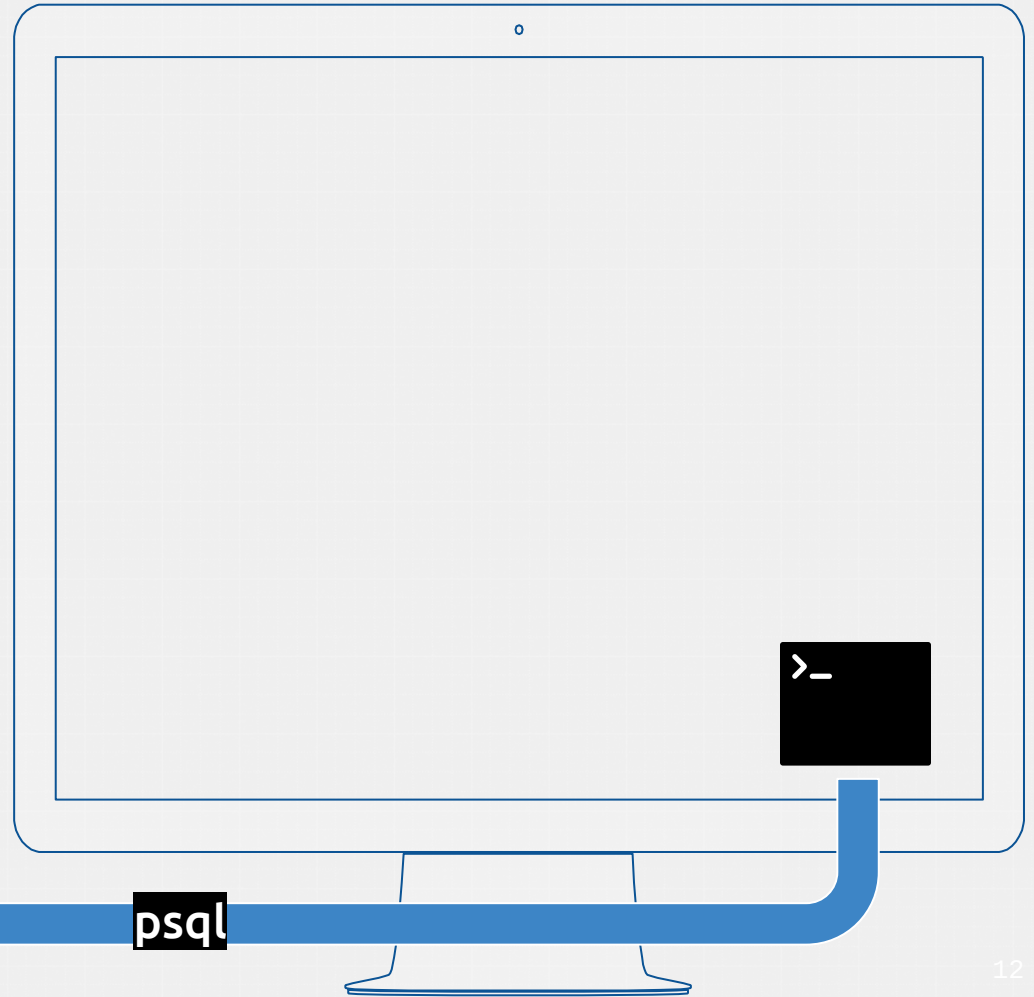




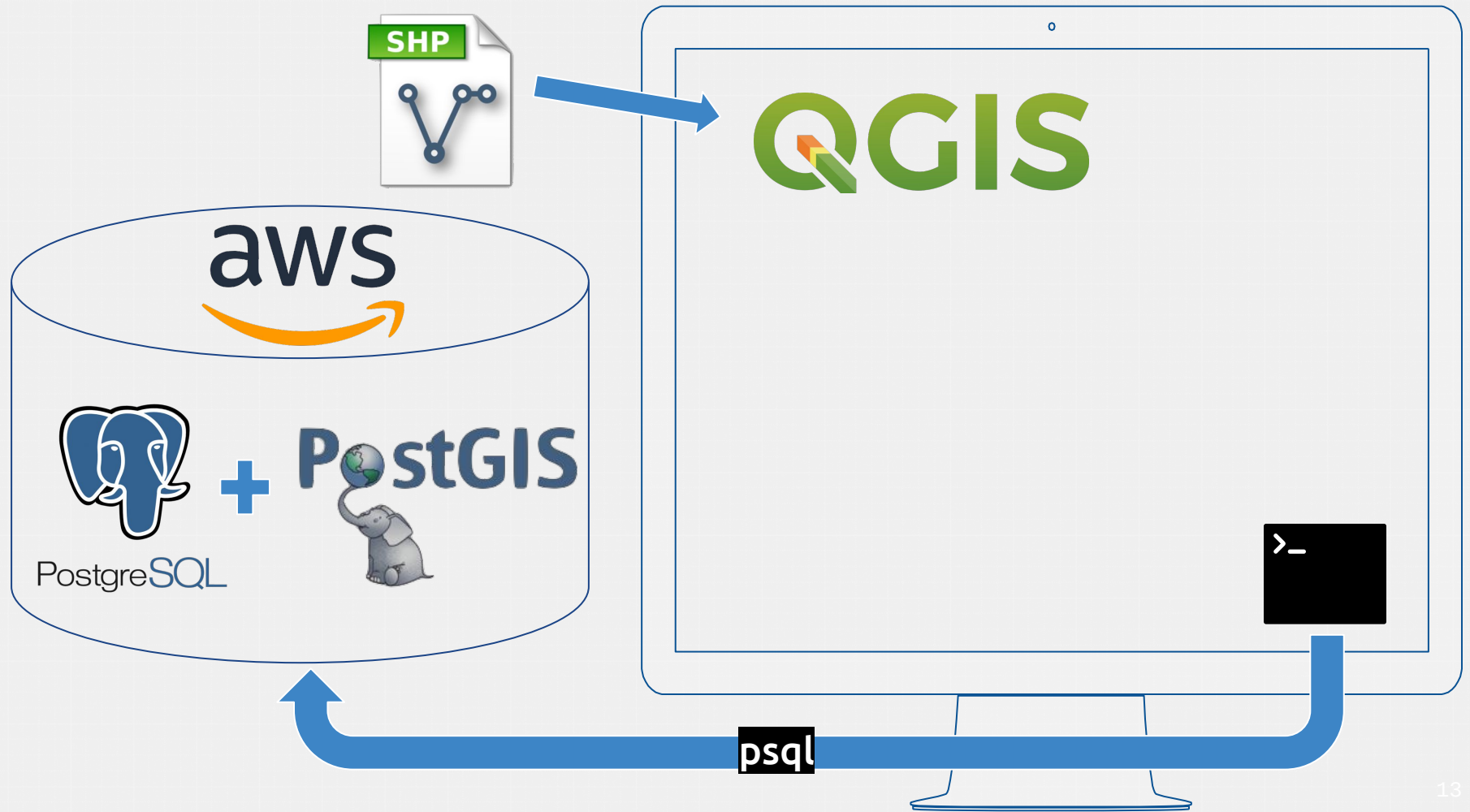


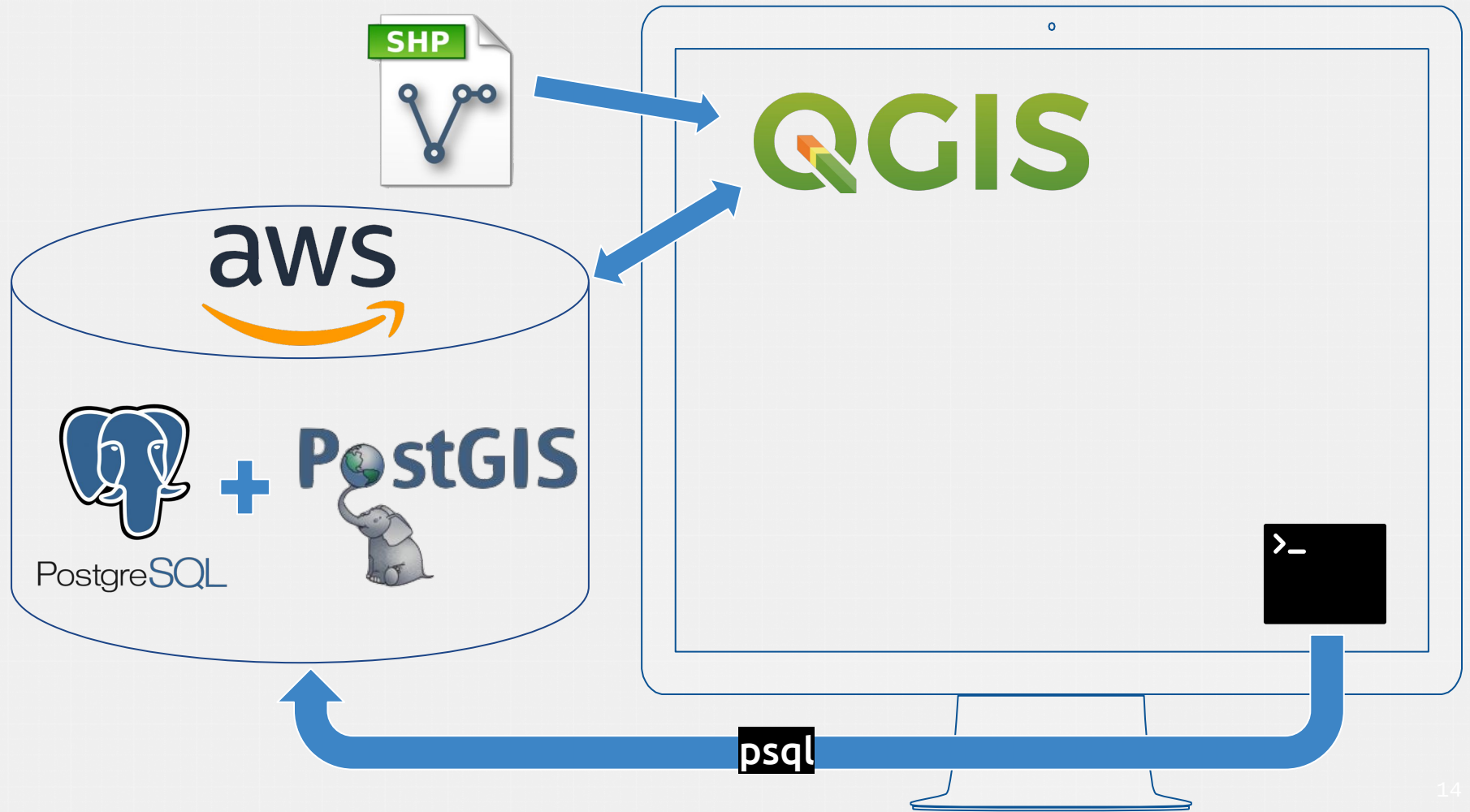




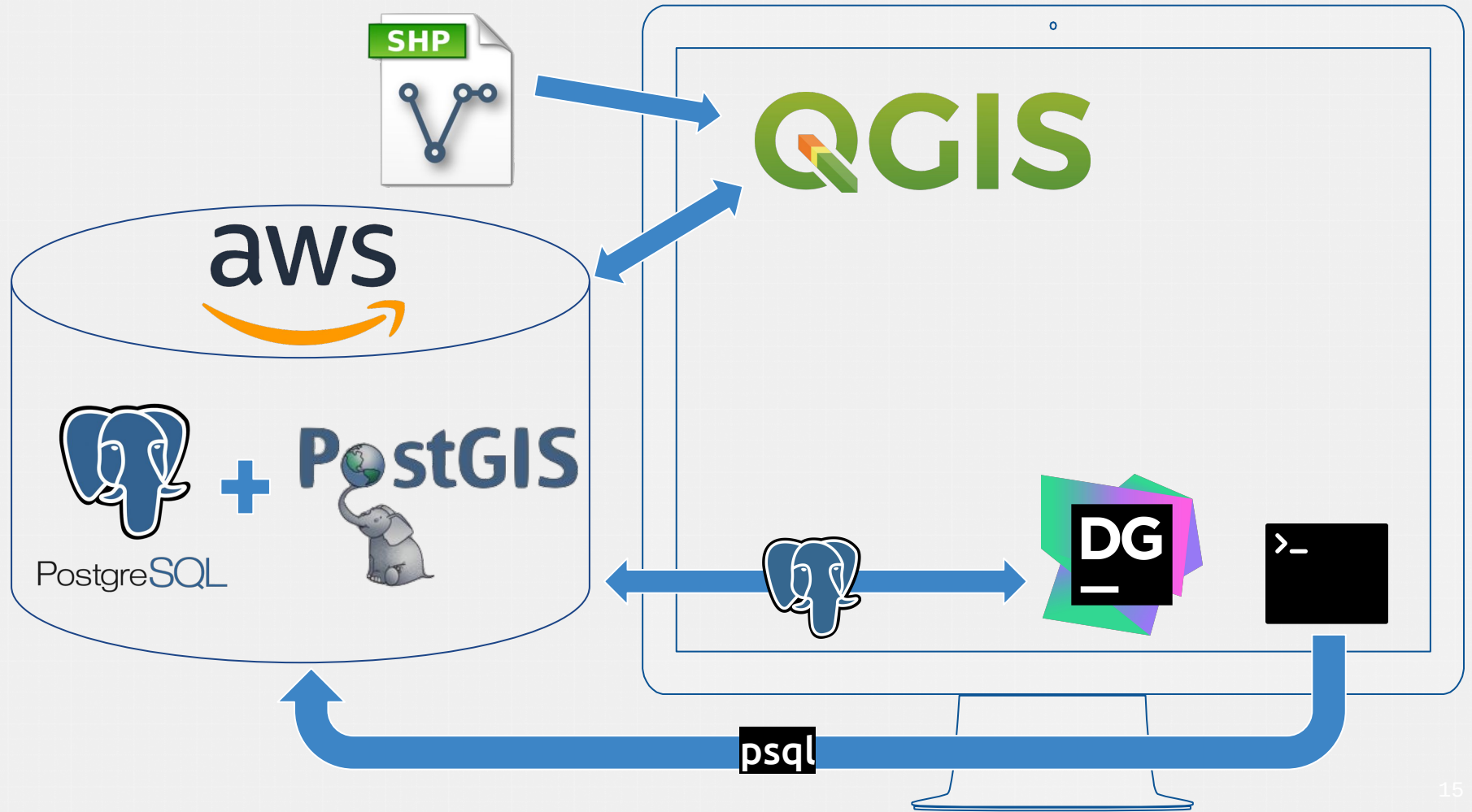


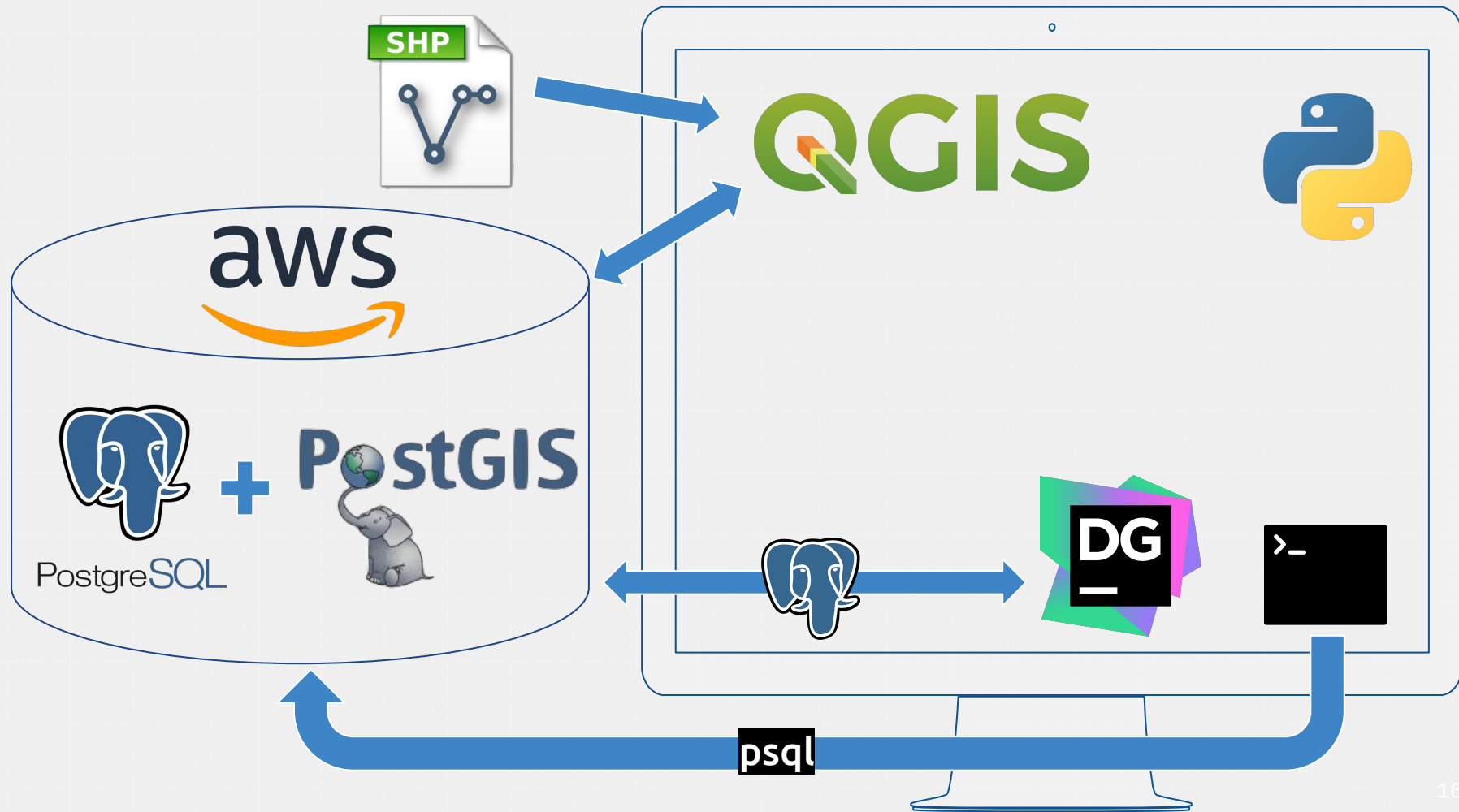




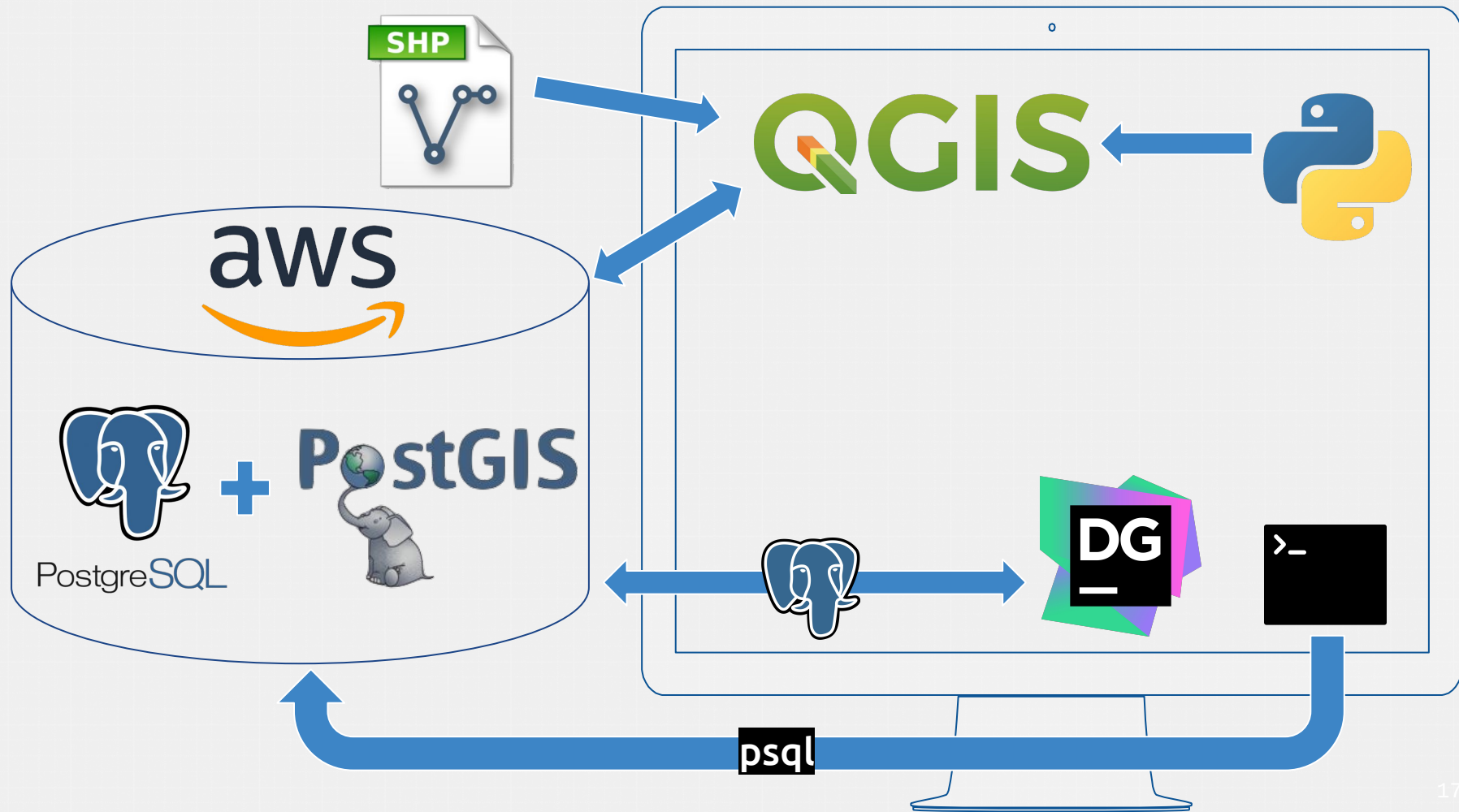


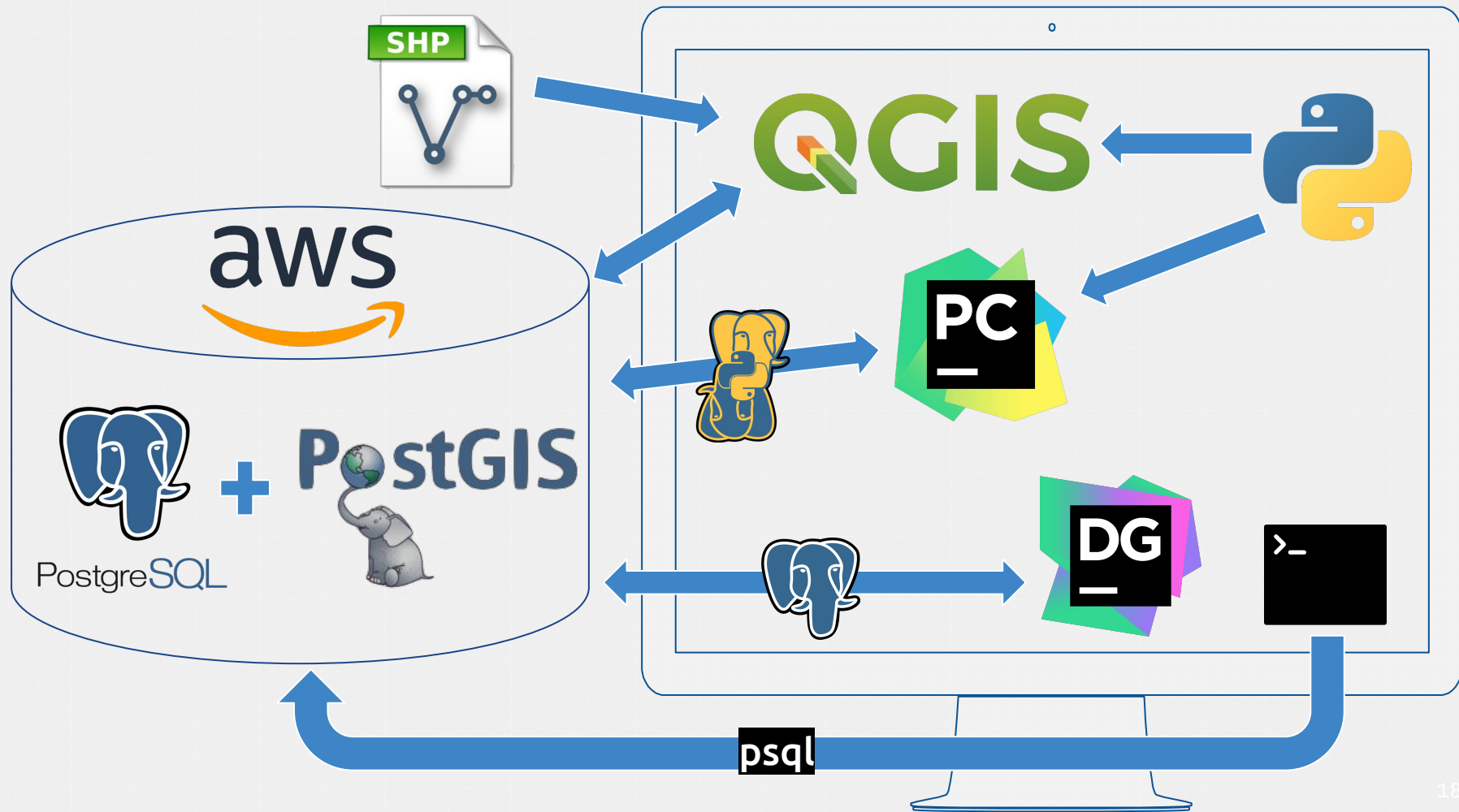

















# 3

## APPLICATIONS



What problems did we  
address with these tools?







# Spatial Data Analysis: Unemployment Rate



learn systems



obtain data



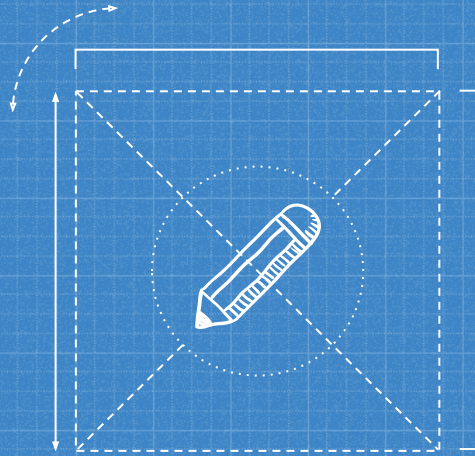
perform analysis



# Tables

Year	GEO_ID	NAME	unempRate
2015	0500000US3600	Albany County, N	4.1
2015	0500000US3600	Allegany County,	5.2
2015	0500000US3600	Bronx County, Ne	8.3
2015	0500000US3600	Broome County,	4.6
2015	0500000US3600	Cattaraugus Cou	4.9
2015	0500000US3601	Cayuga County,	4.5
2015	0500000US3601	Chautauqua Cou	4.5
2015	0500000US3601	Chemung County	3.1
2015	0500000US3601	Chenango Count	4.1
2015	0500000US3601	Clinton County, N	3.8
2015	0500000US3602	Columbia County	4.1
2015	0500000US3602	Cortland County,	3.9





# Slope

X-Years

y-unempRate



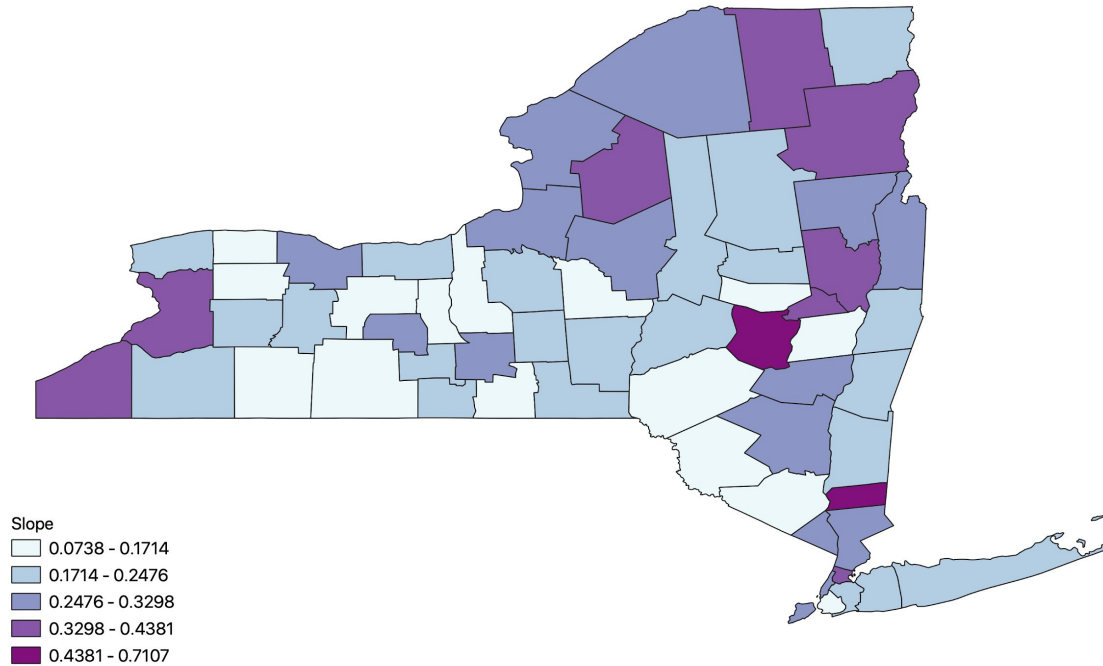
## Final Table

GEO_ID	NAME	slope
0500000US3602	Dutchess County	0.2071428571
0500000US3604	Jefferson County	0.275
0500000US3609	Schoharie Count	0.5416666667
0500000US3605	Monroe County, I	0.2857142857
0500000US3603	Fulton County, N	0.2107142857
0500000US3607	Otsego County, M	0.225
0500000US3606	New York County	0.2952380952
0500000US3610	Tioga County, Ne	0.1011904762
0500000US3601	Cayuga County,	0.1619047619
0500000US3607	Orleans County,	0.1285714286
0500000US3600	Albany County, N	0.07380952381
0500000US3600	Allegany County,	0.09880952381



# Final Map

Change in Unemployment Rate  
Since 2010







# Montgomery Unemployment Rate





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### Unemployment Strikeforce

BUSINESS

MAY 3, 2015

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JOHNSTOWN – The New York state Department of Labor has assigned its Unemployment Strikeforce to take aim at Montgomery County's longterm unemployment problem.

New York state Department of Labor official Paul Nelson said Montgomery County has been chosen to be a part of a 10-county program aimed at reducing unemployment, with a specific focus on long-term unemployed people, those who've been unemployed longer than 27 weeks. The other counties in the program include: the Bronx, Brooklyn, Jefferson, Lewis, St. Lawrence, Franklin, Oswego and Steuben counties.

Nelson said the strikeforce initiative originally began with only four counties, the Bronx, Brooklyn, Jefferson and Lewis, but was expanded after the success of the fall 2014 and 2015 programs.

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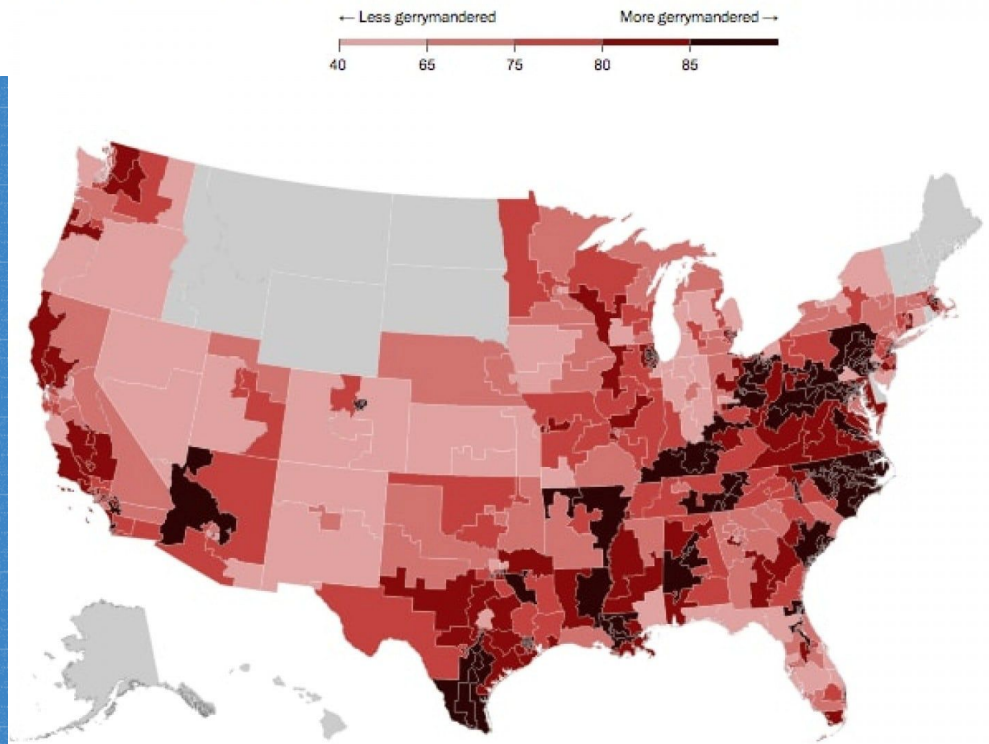


# Spatial Data Analysis: Gerrymandering



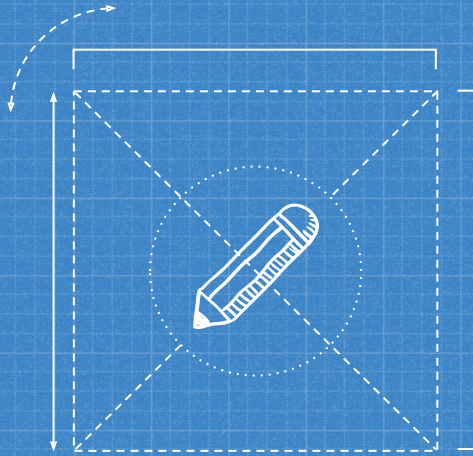
# America's most gerrymandered congressional districts

Gerrymander index scores, 113th Congress



Christopher Ingraham, The Washington Post





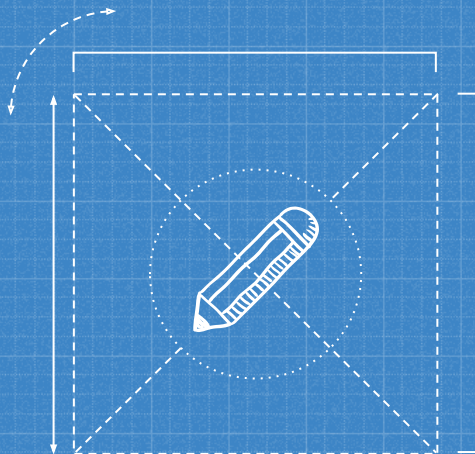
# COMPACTNESS

area of district

---

area of circle with same perimeter as district





# GERRYMANDER INDEX

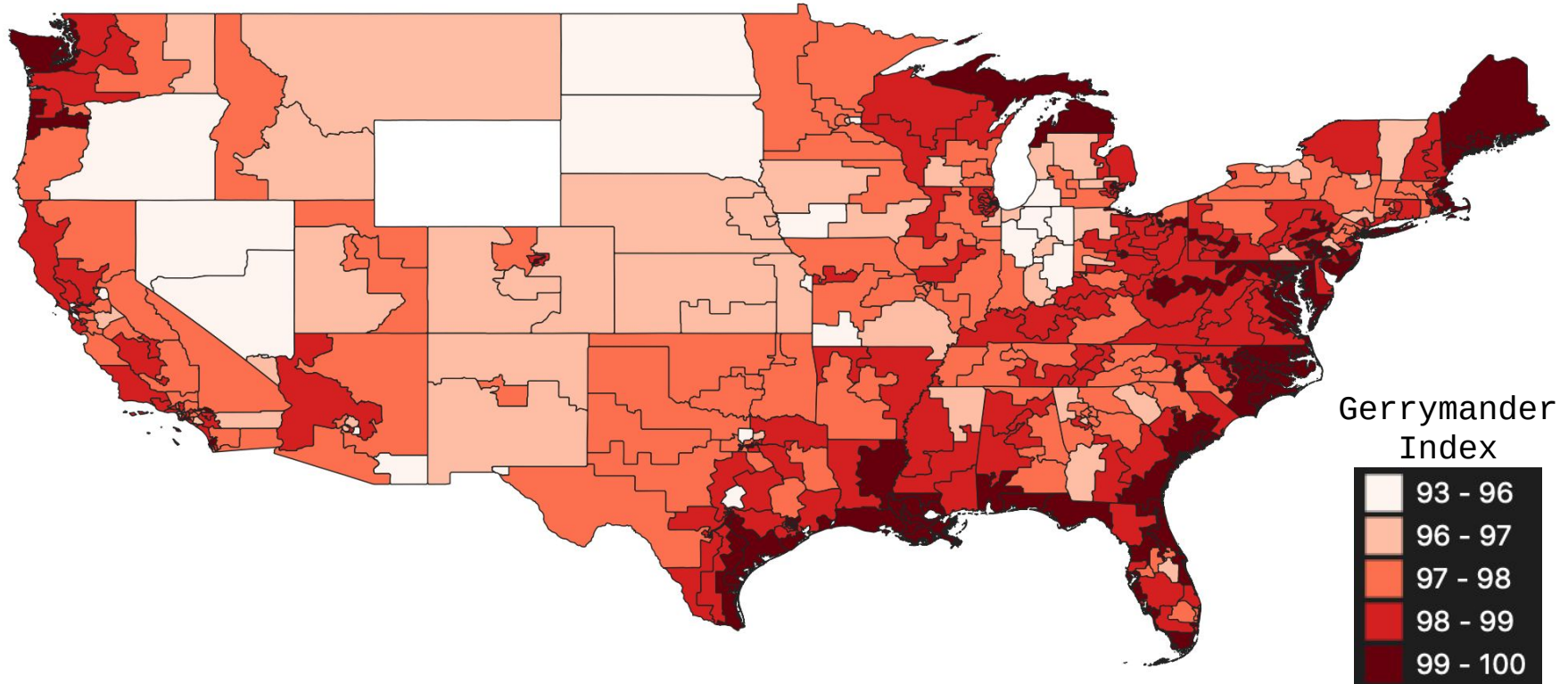
SCORE OUT OF 100

original definition: unknown

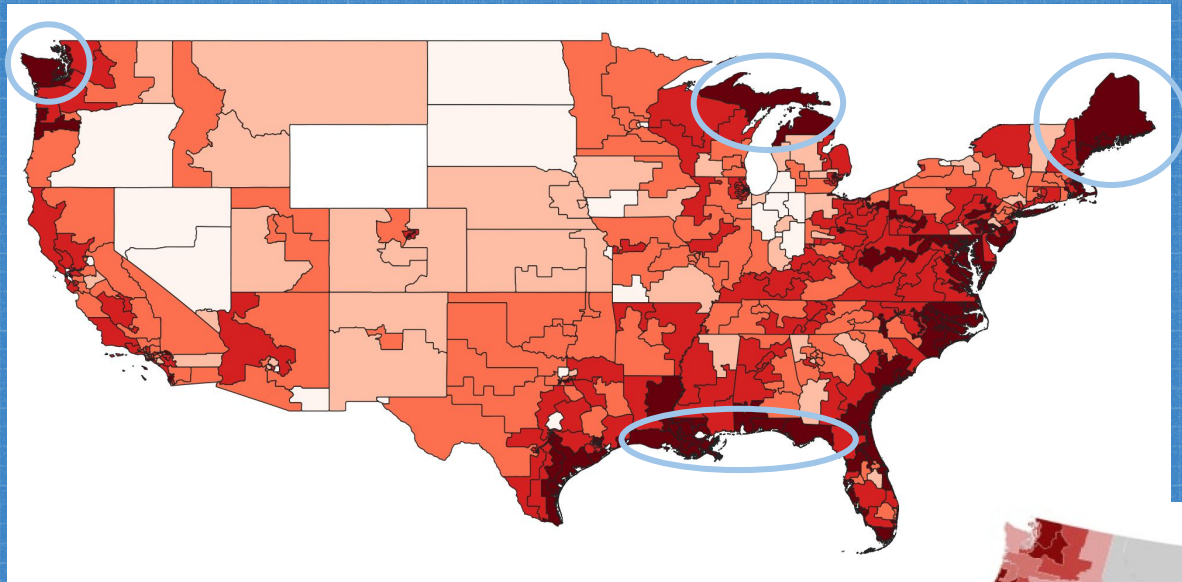
recreation attempt:  $100 - 100 * \text{compactness}$



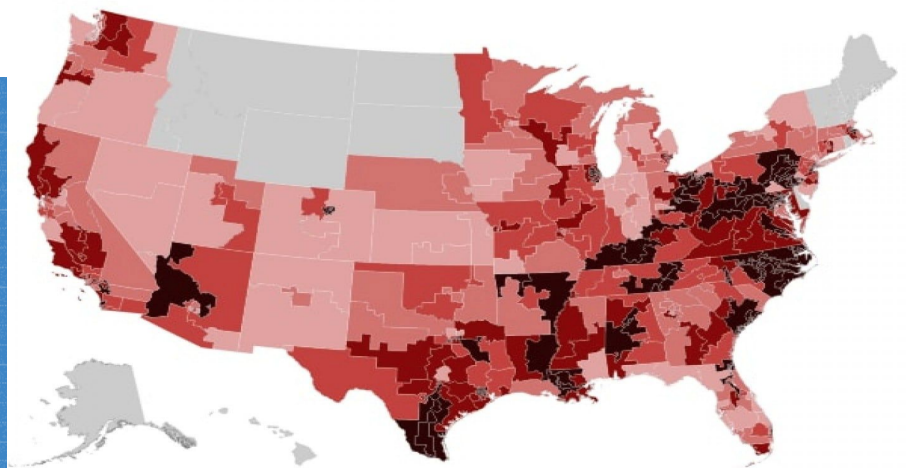
# Recreating Compactness with PostGIS, QGIS, Python







The Coastline Problem





# Thank You

ANY QUESTIONS?