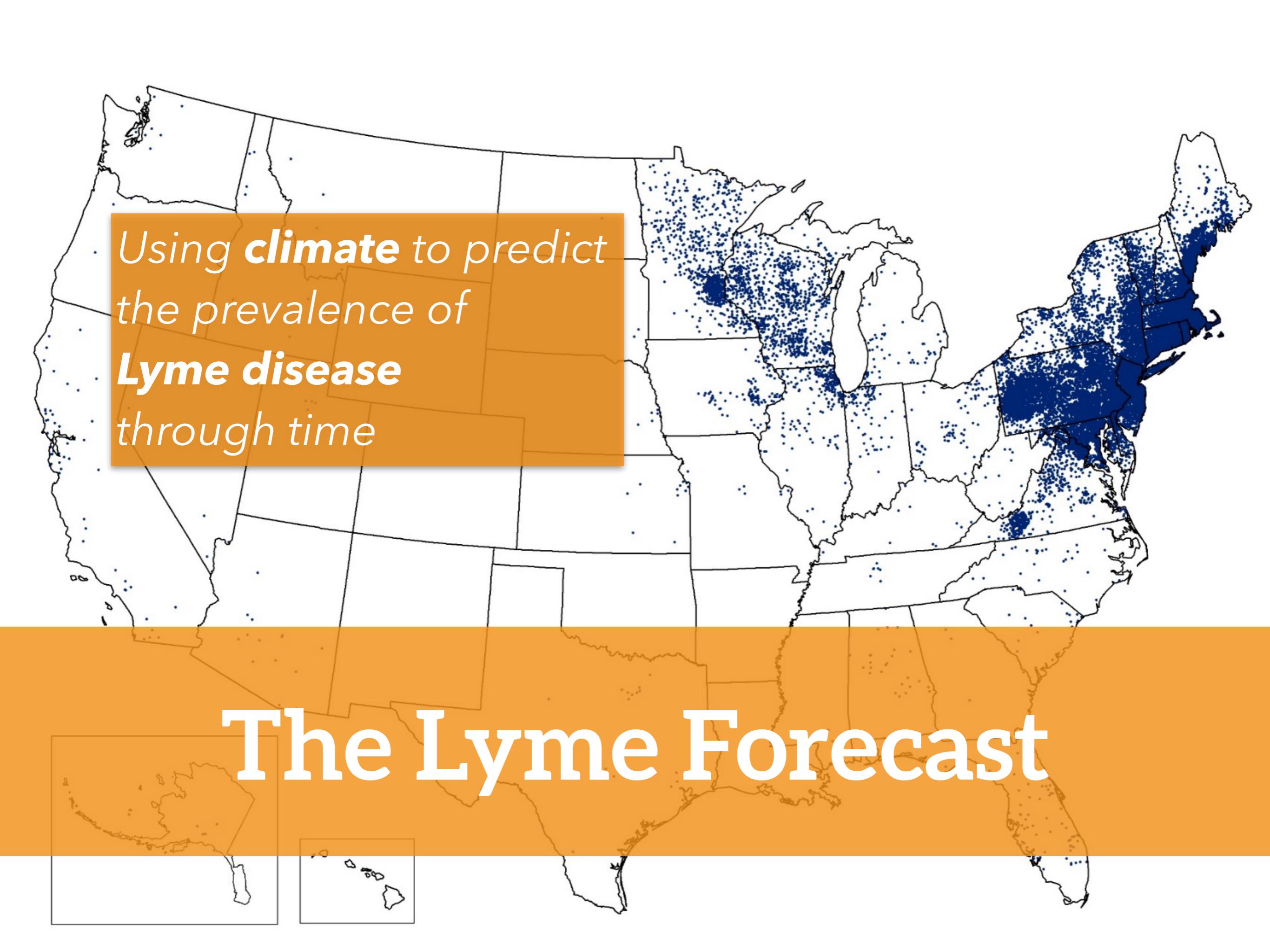


The map of the United States displays the distribution of Lyme disease cases across different states. The density of blue dots representing cases is highest in the Northeastern and Great Lakes regions, with a significant concentration also in the upper Midwest. The western United States shows much lower incidence, indicated by sparse blue dots.

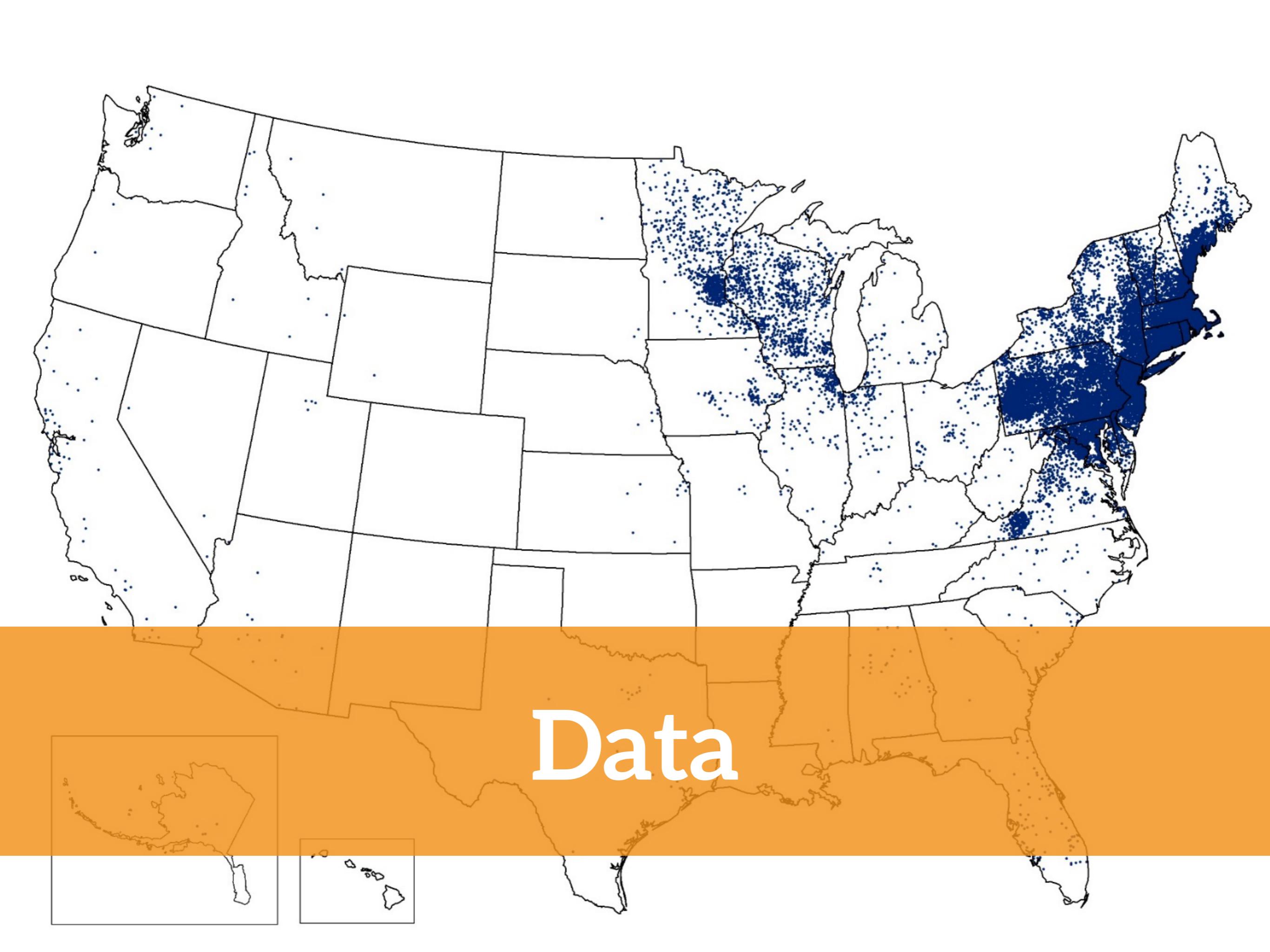
The Lyme Forecast



A map of the United States where states are shaded in orange or blue based on Lyme disease prevalence. States like New England, the Northeast, and parts of the Midwest and West Coast are heavily shaded blue, indicating higher prevalence. Other states like the Great Plains and some in the West are shaded orange.

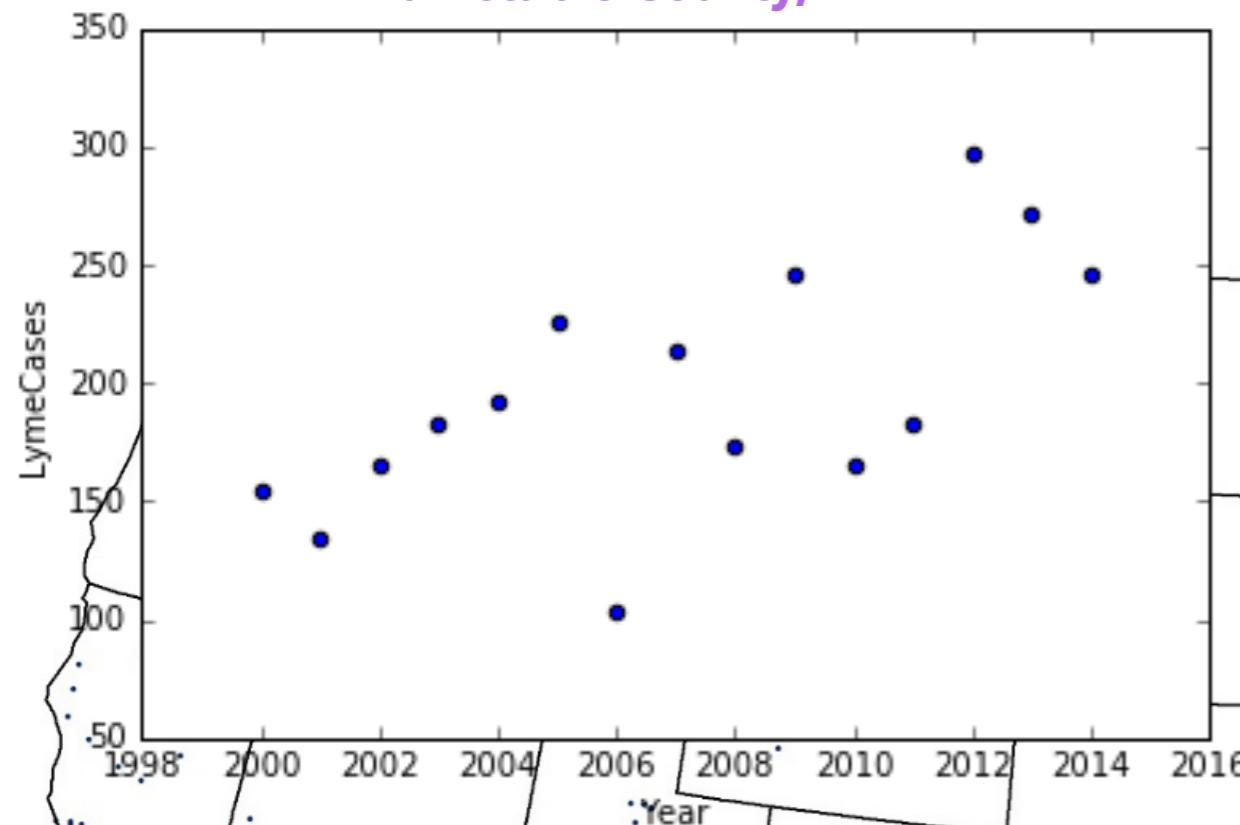
*Using **climate** to predict
the prevalence of
Lyme disease
through time*

The Lyme Forecast

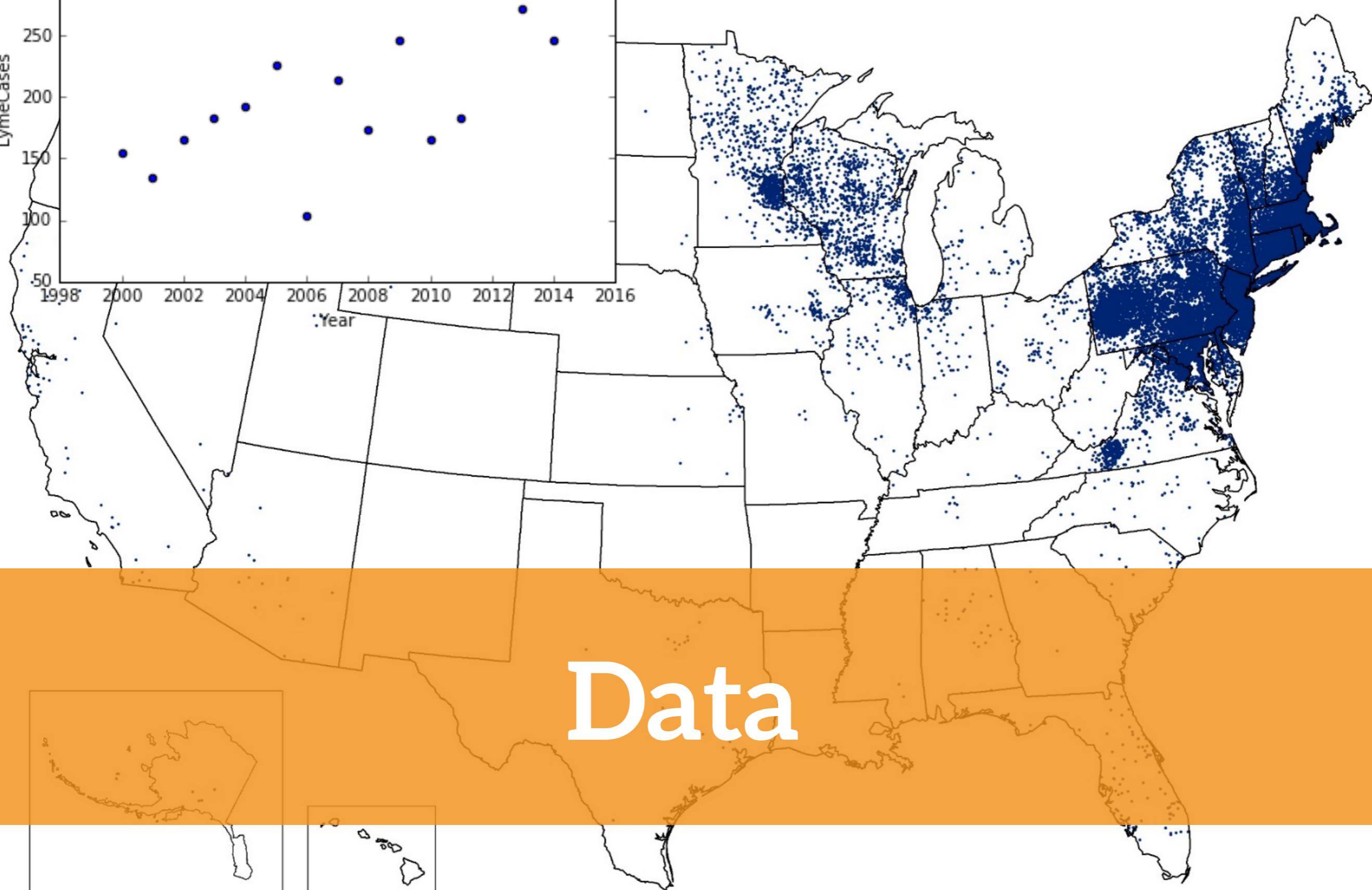
A map of the United States where data points are represented by small blue dots. The density of these dots varies across the country, with higher concentrations in the Northeast, around the Great Lakes, and in the West Coast states. The map is overlaid with state boundaries. In the bottom left corner, there are two smaller maps: one showing a detailed view of the Southwestern United States and another showing the state of Hawaii.

Data

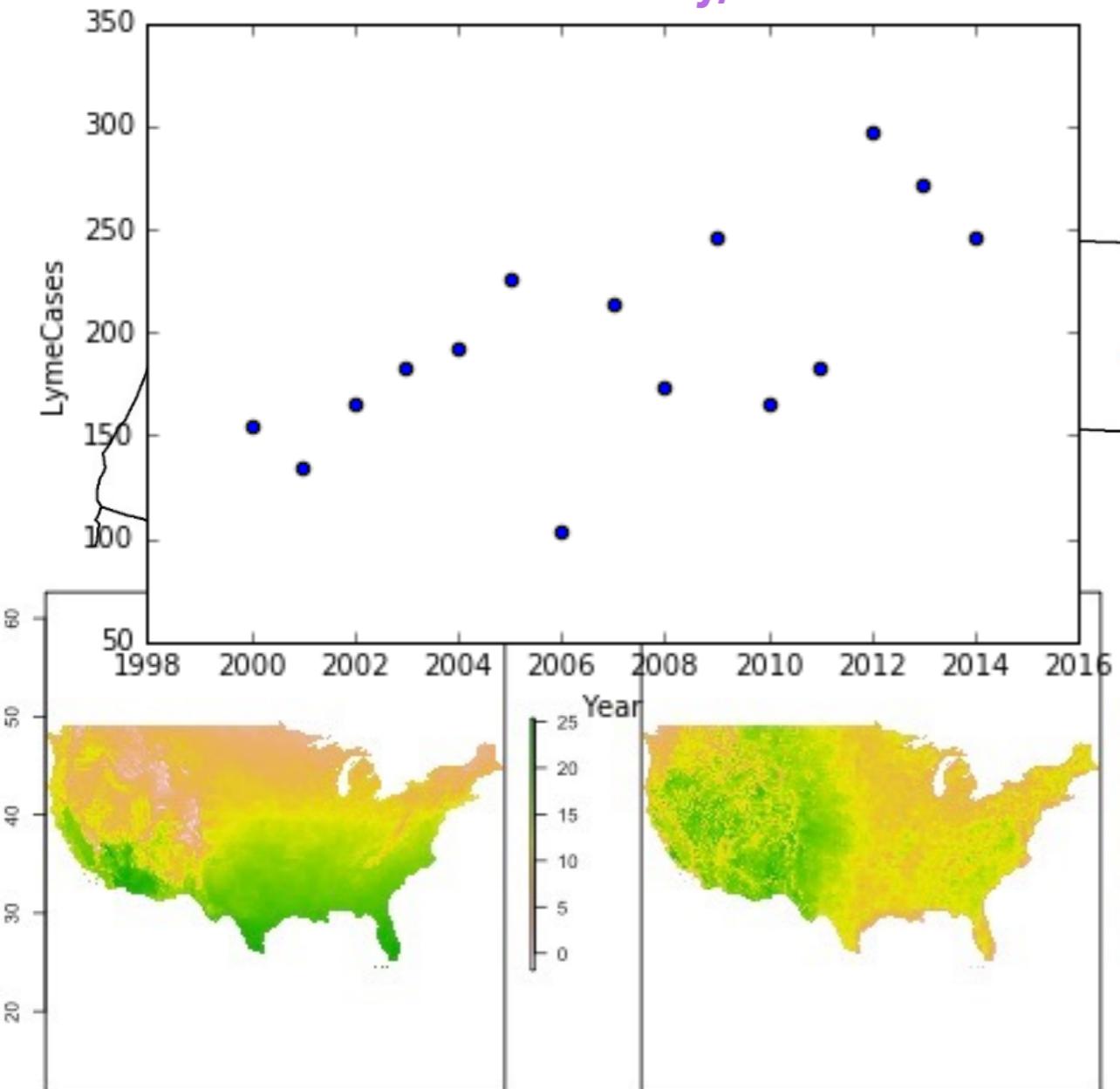
Barnstable County, MA



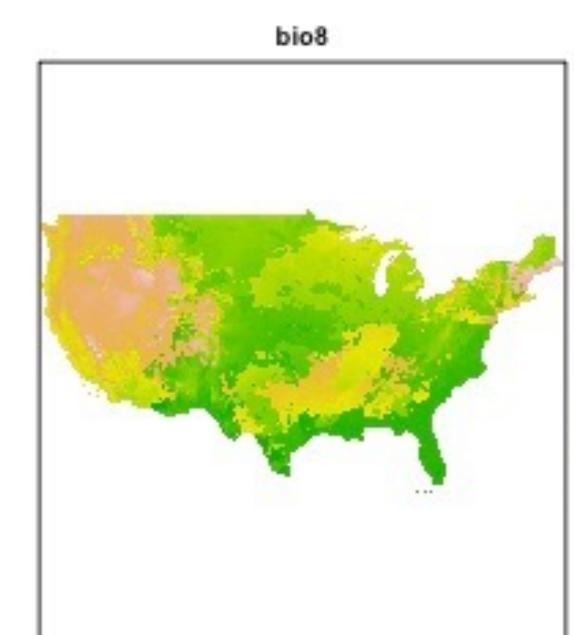
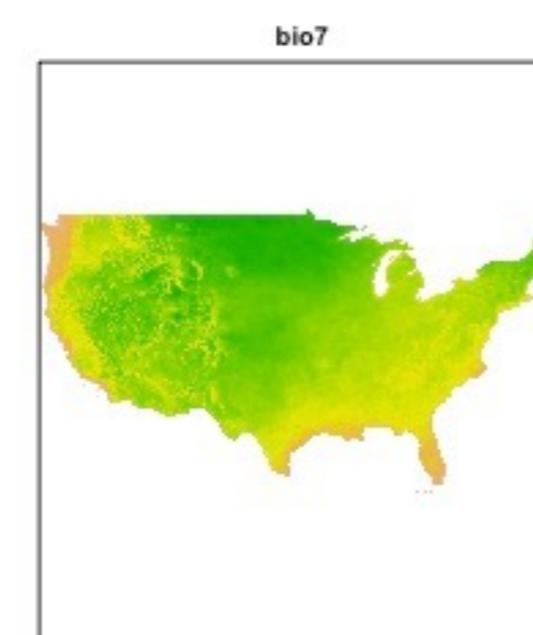
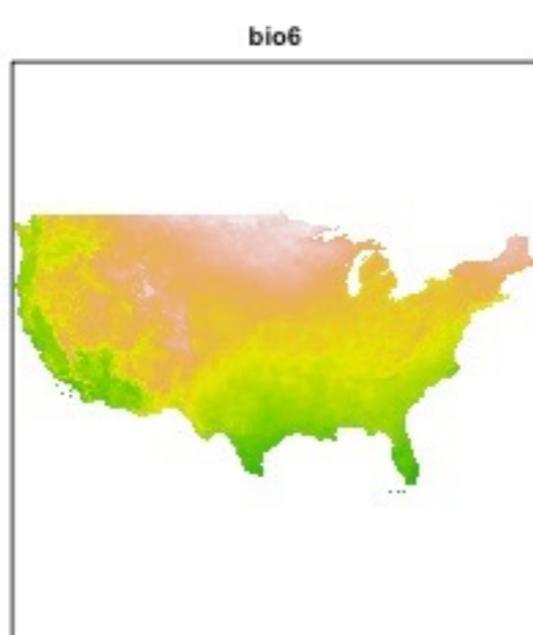
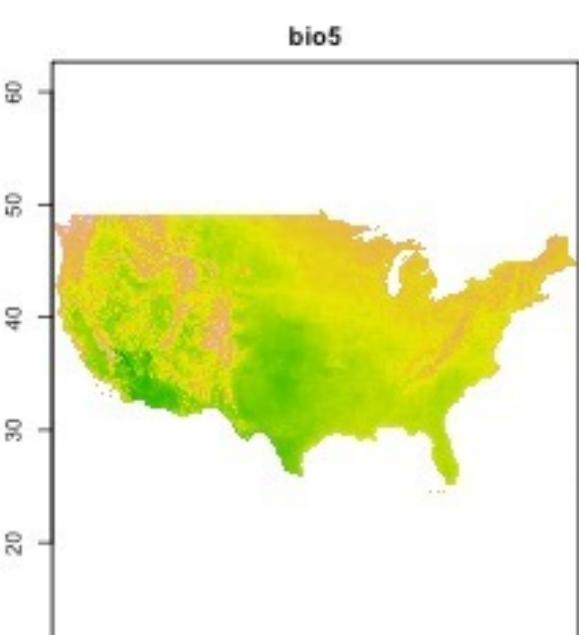
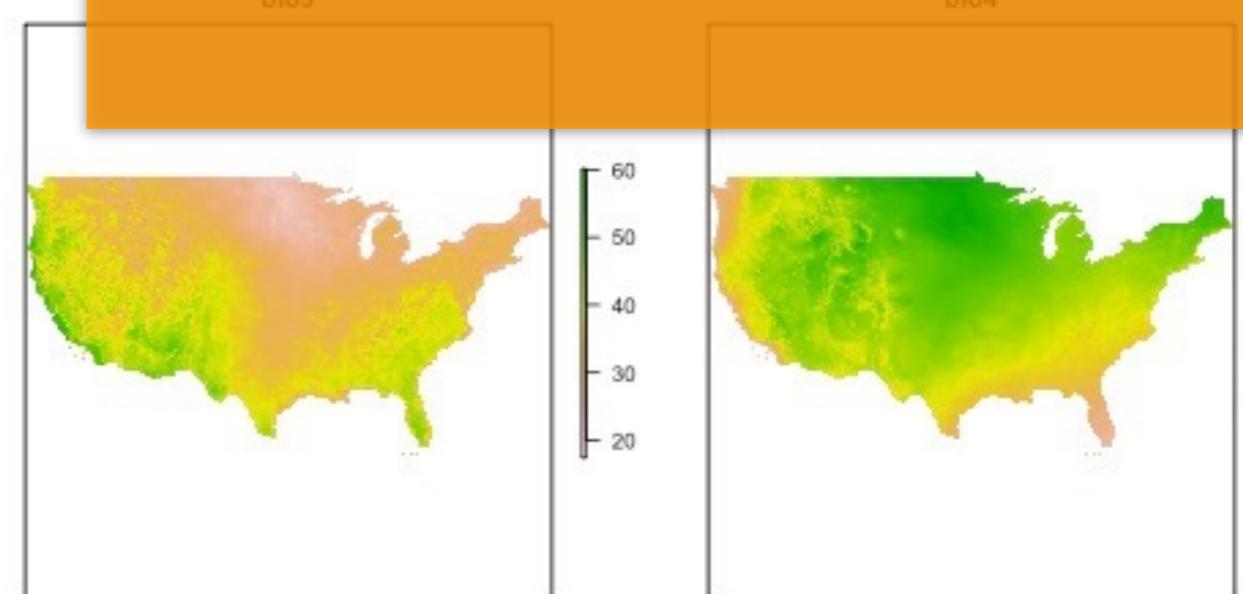
Data



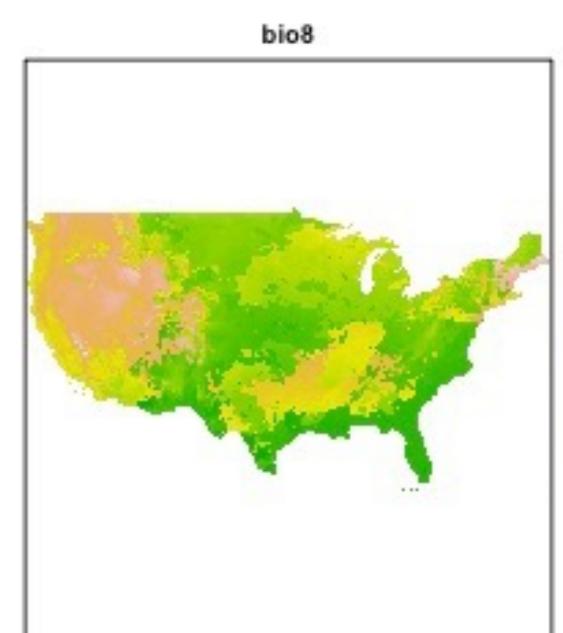
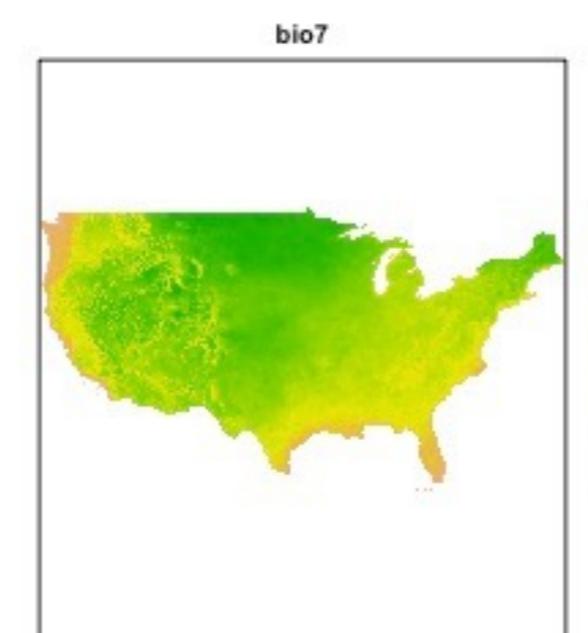
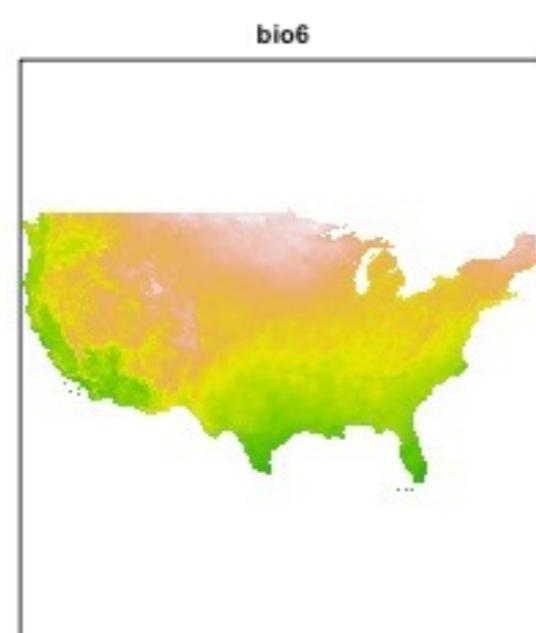
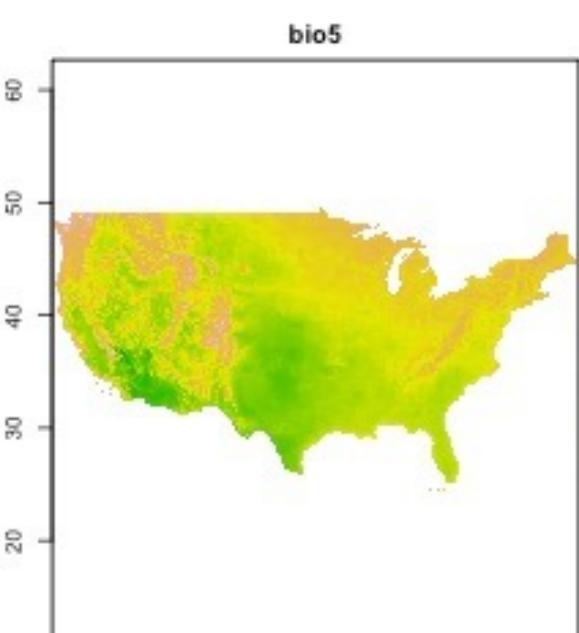
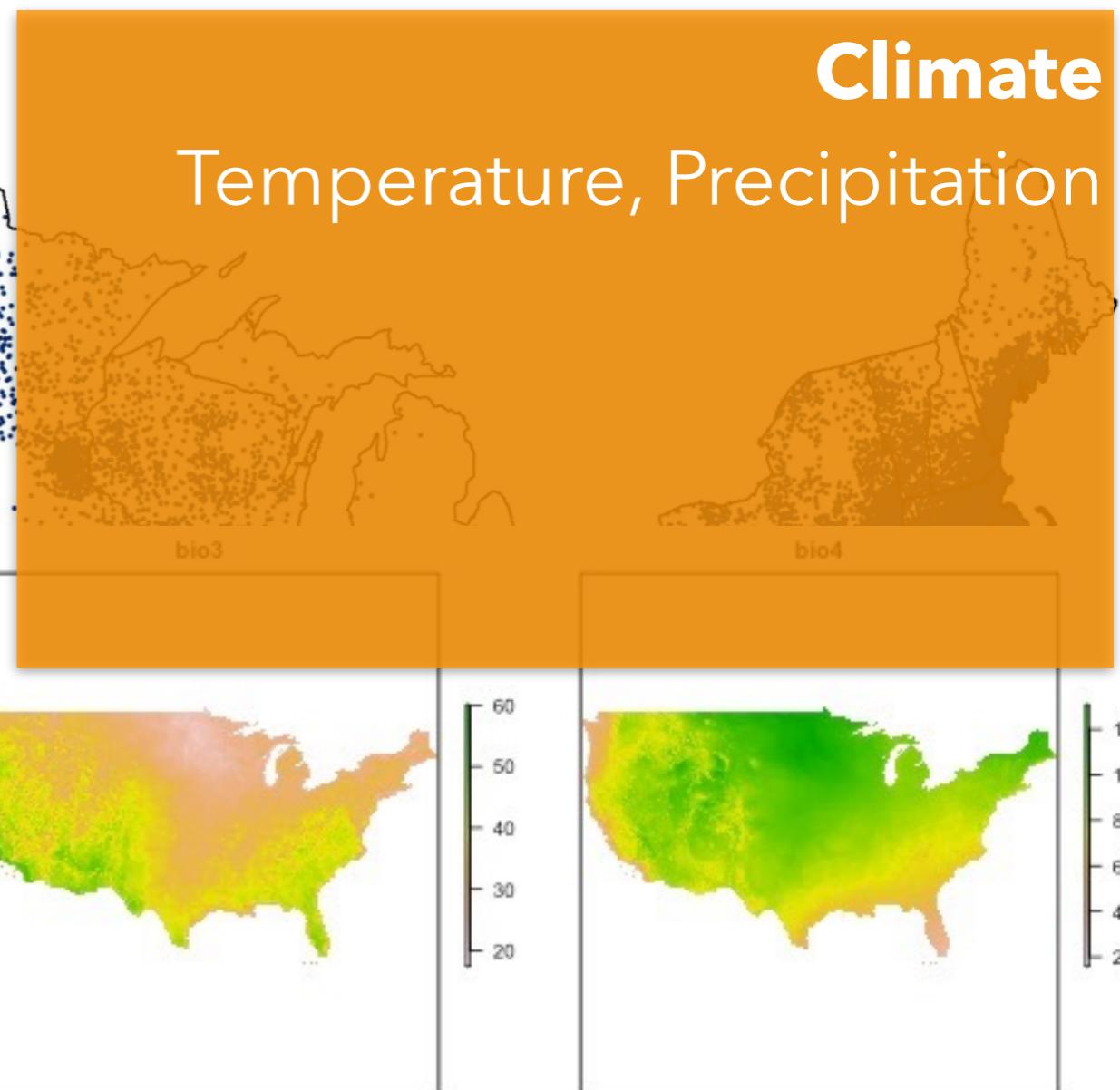
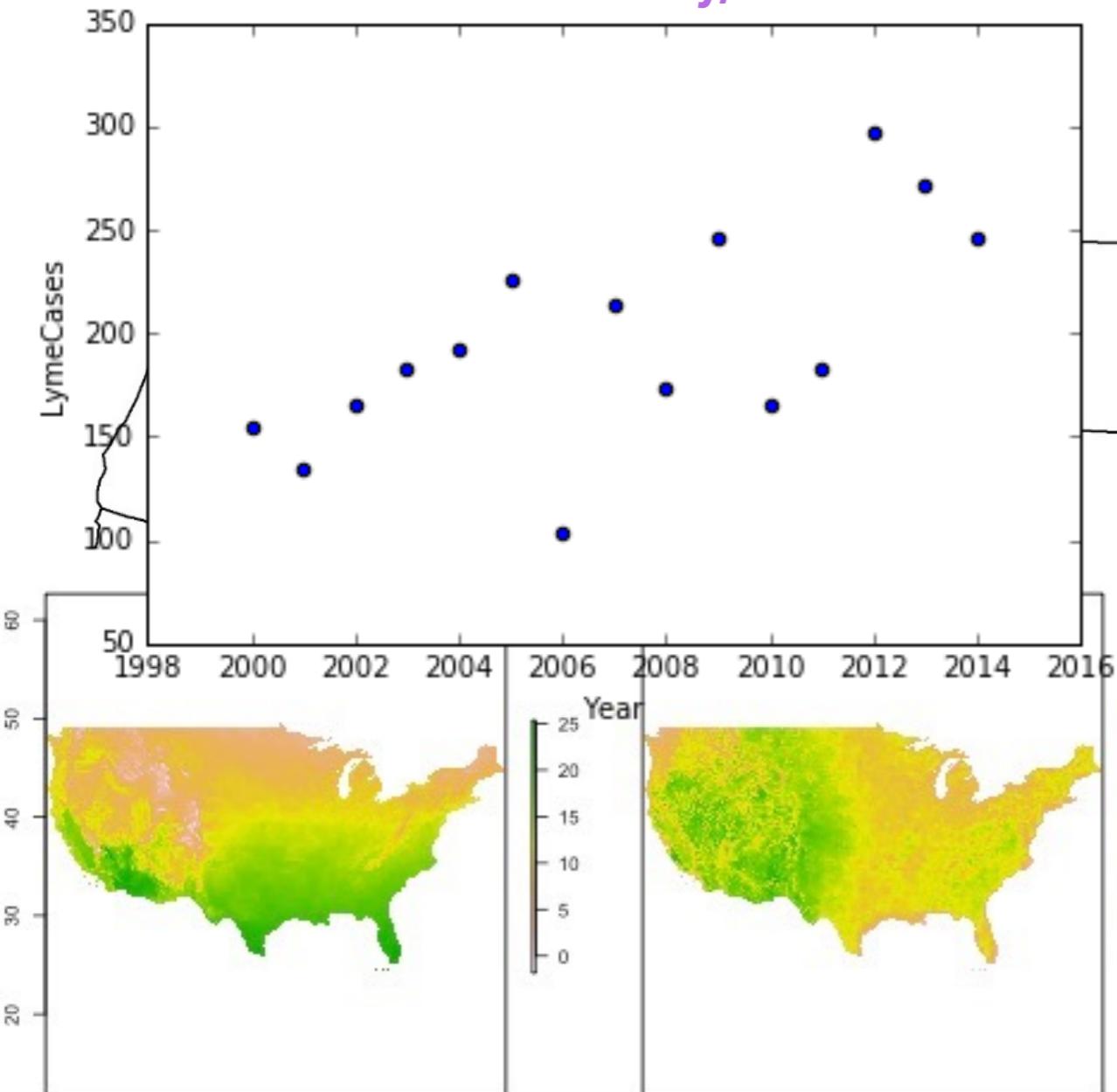
Barnstable County, MA



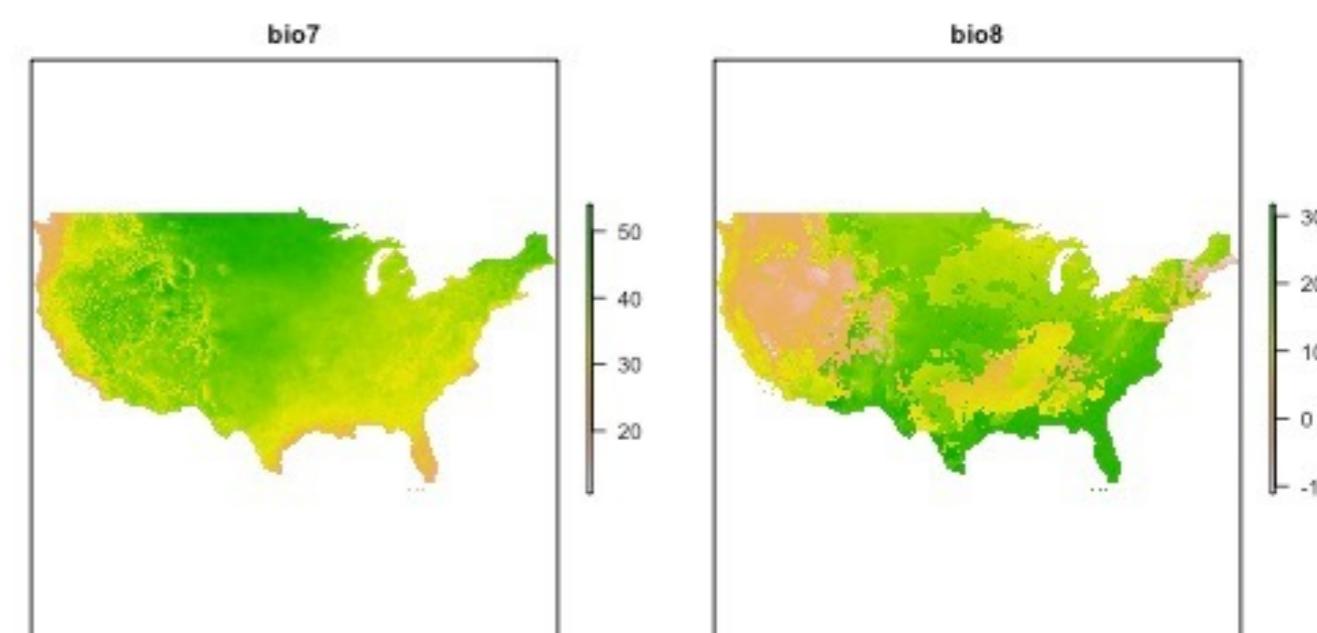
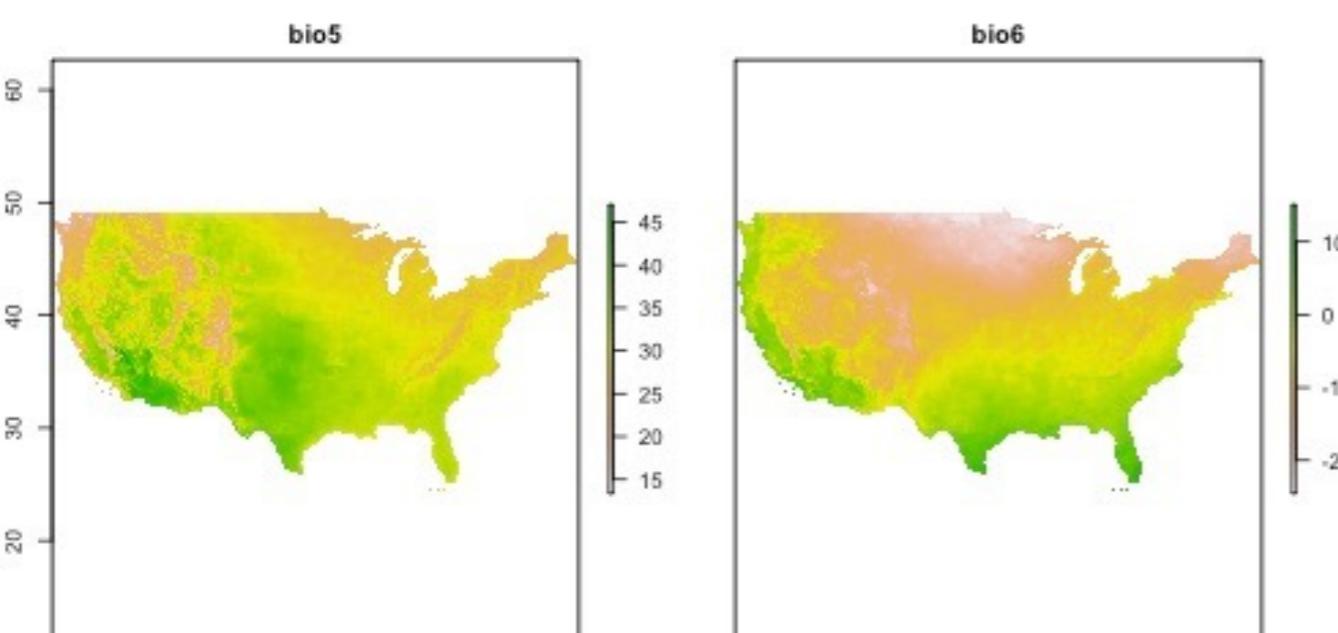
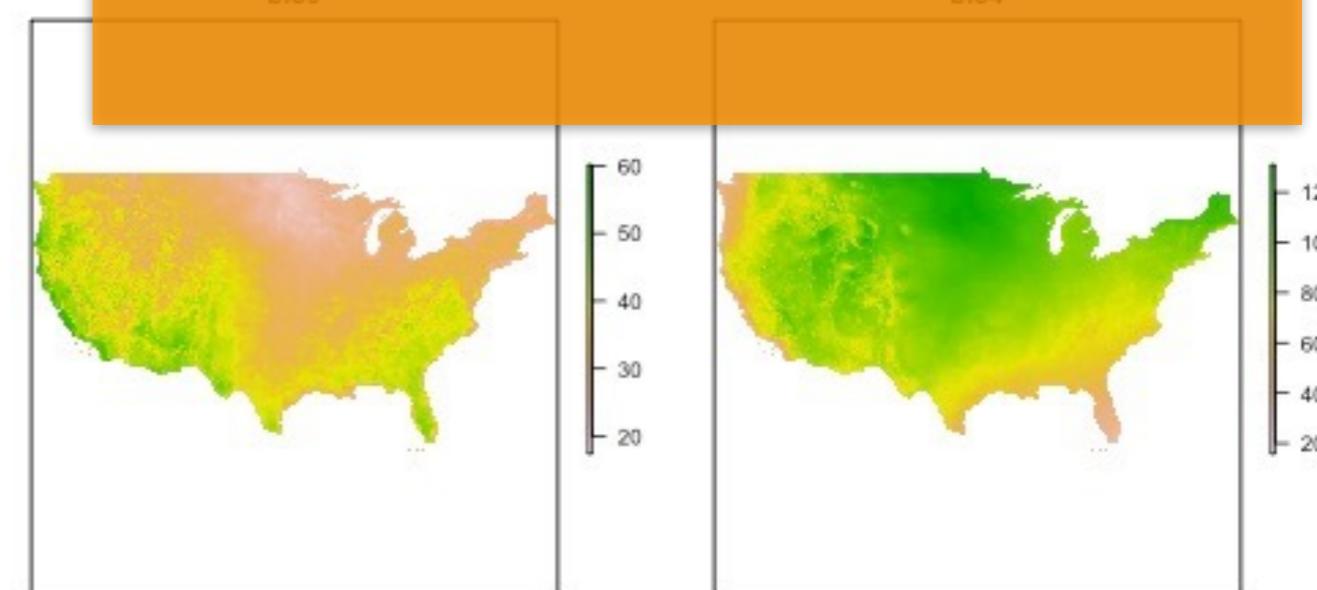
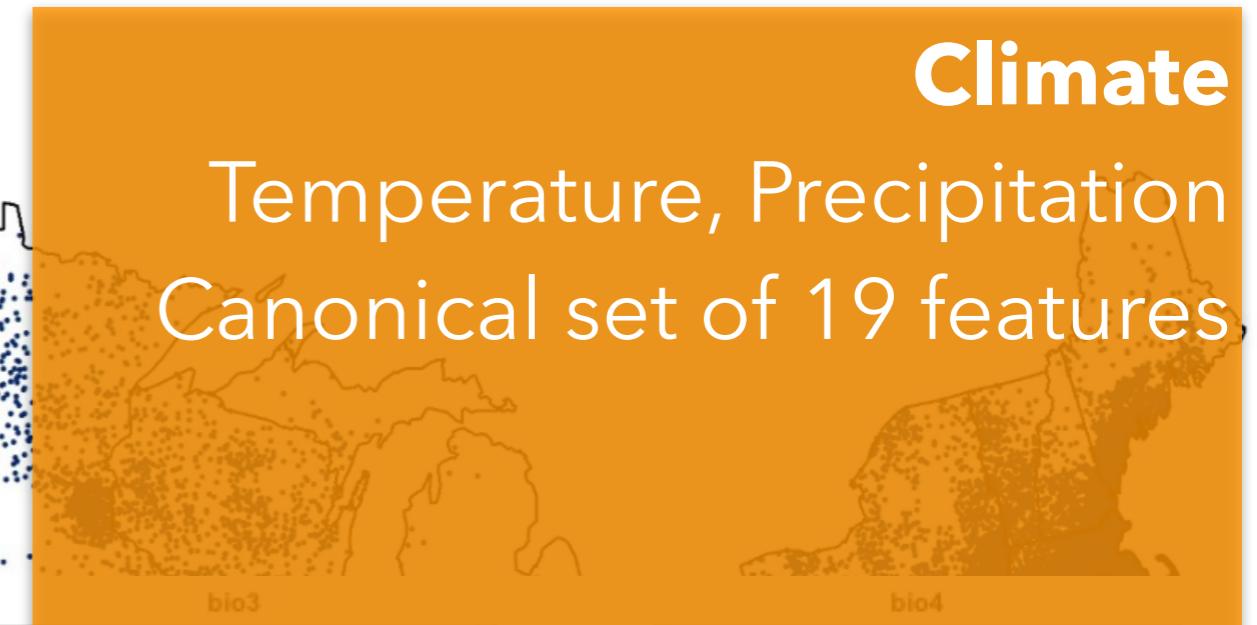
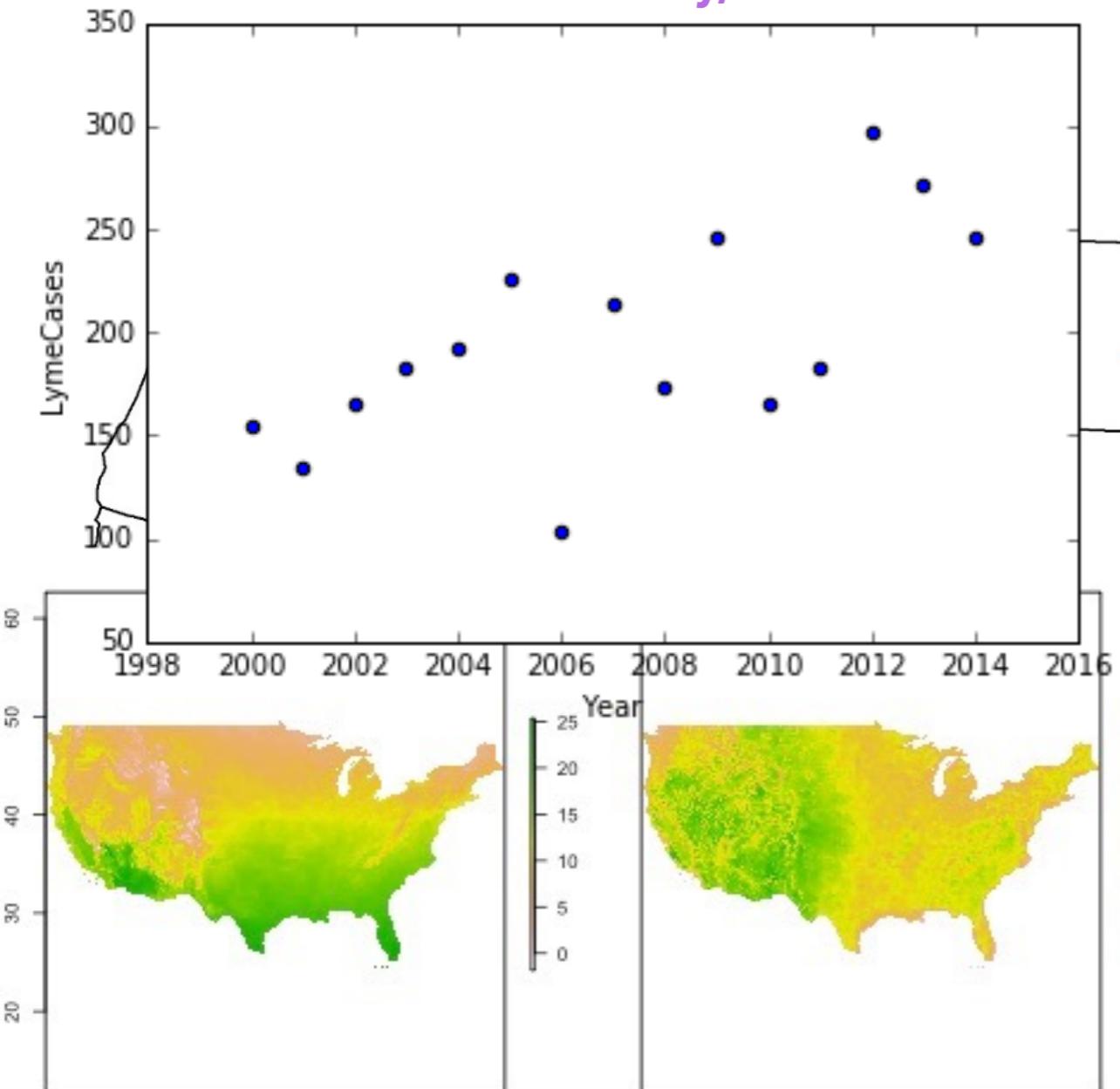
Climate



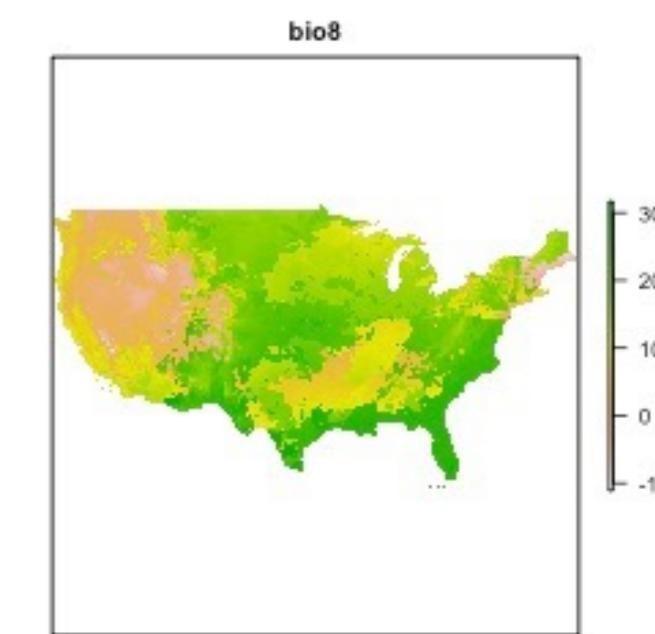
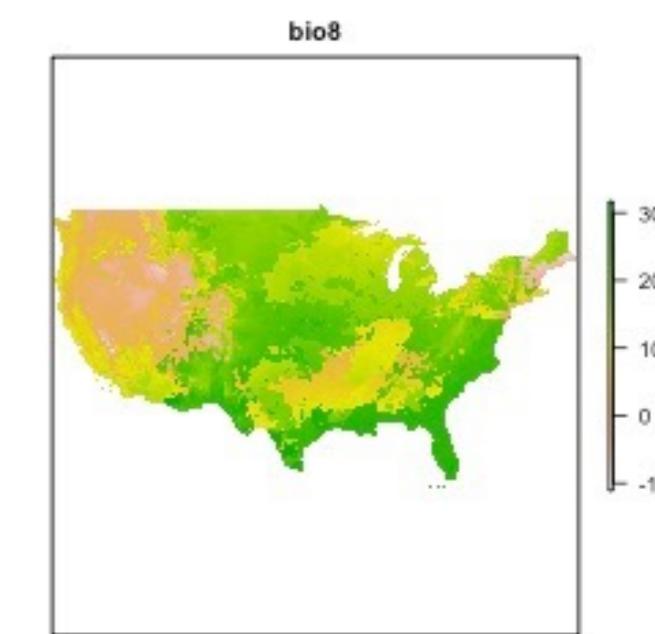
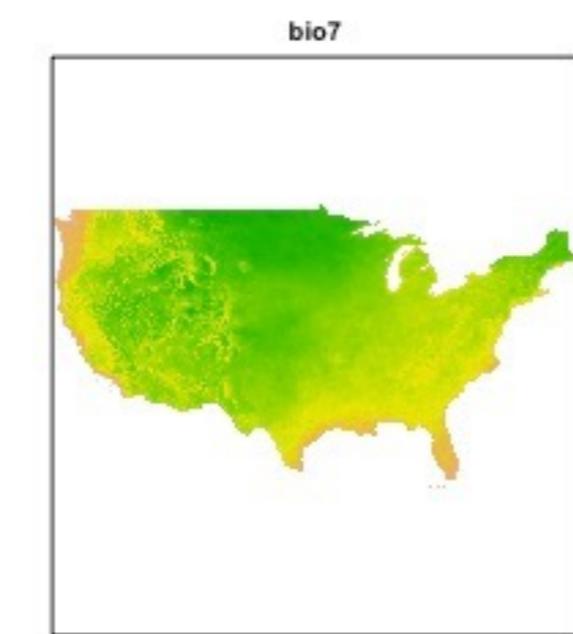
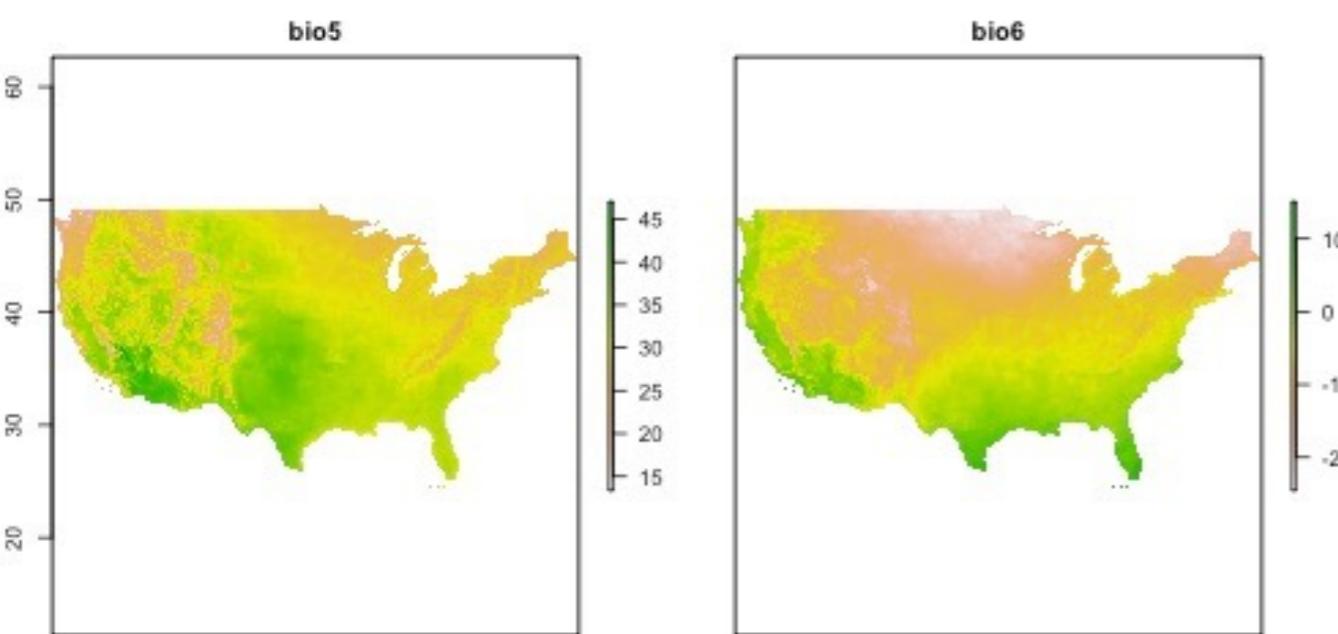
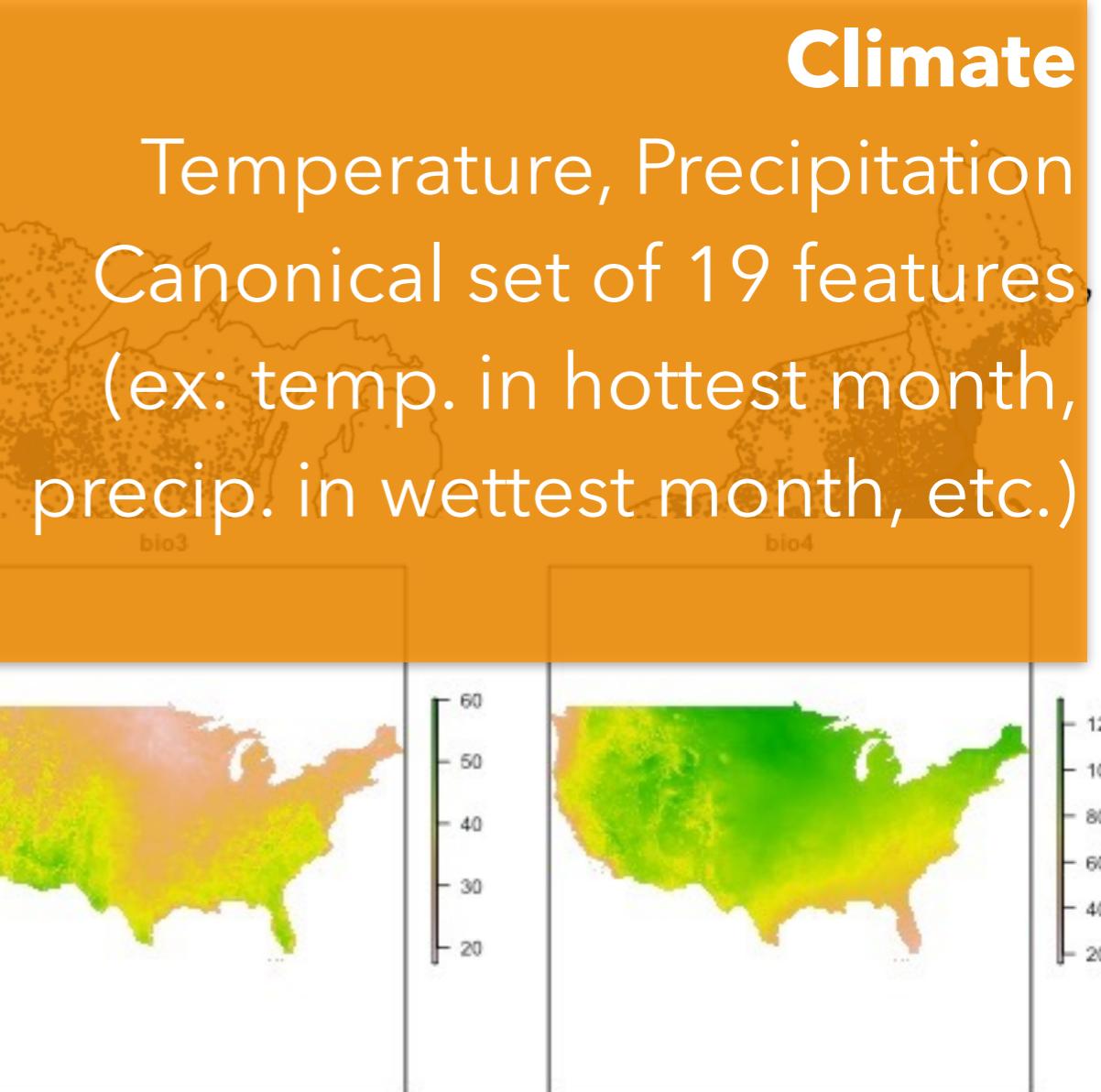
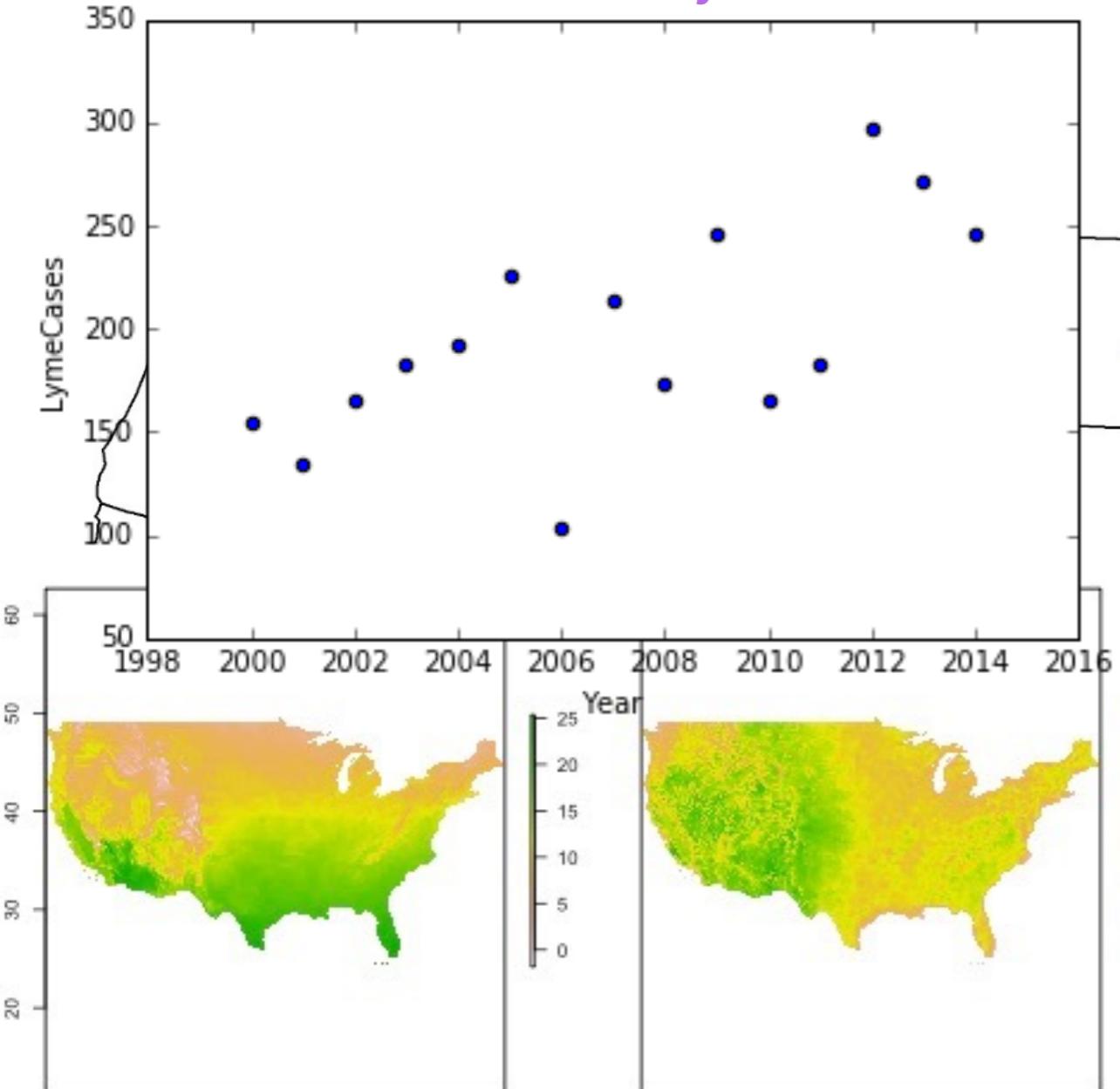
Barnstable County, MA



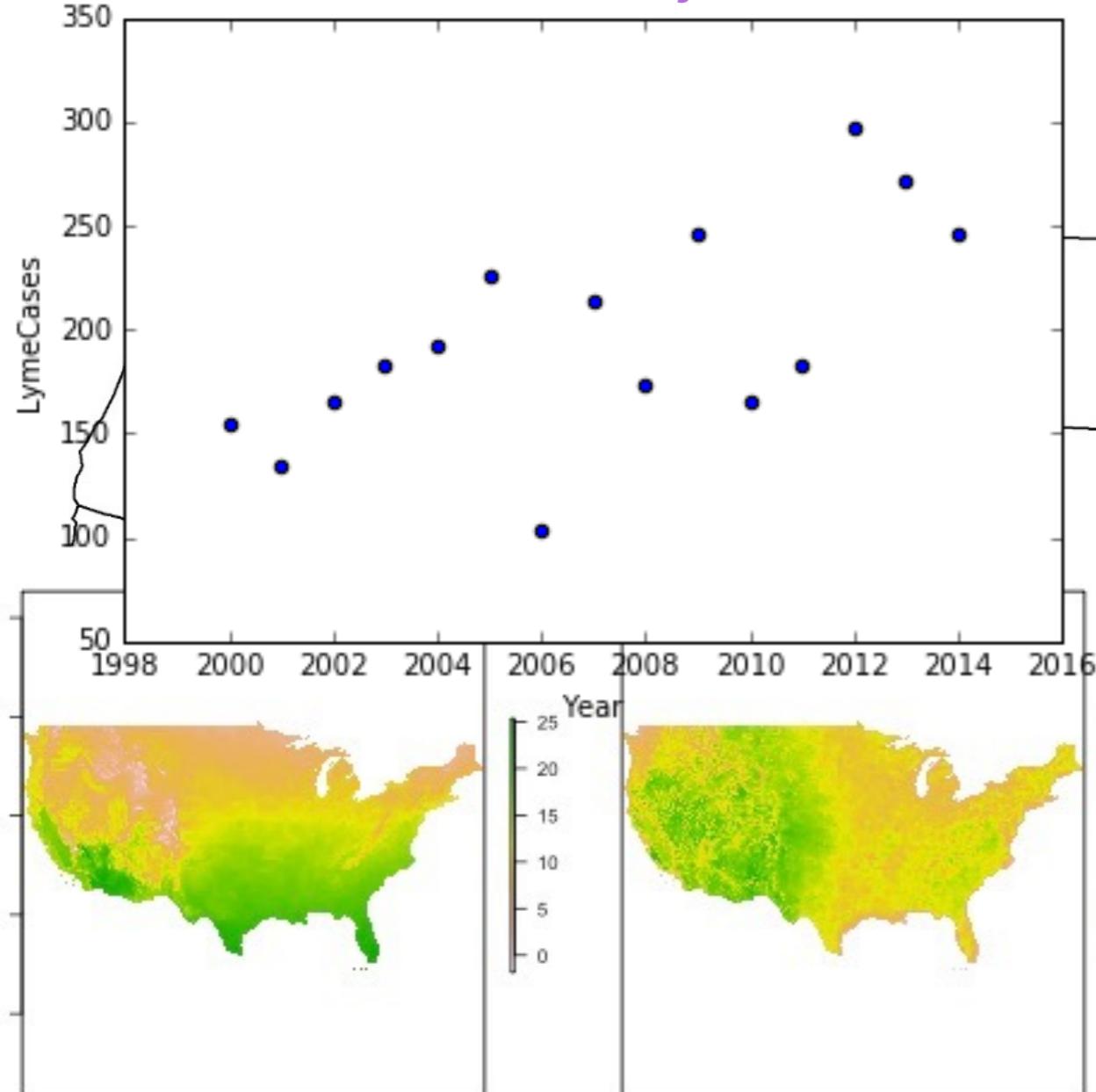
Barnstable County, MA



Barnstable County, MA



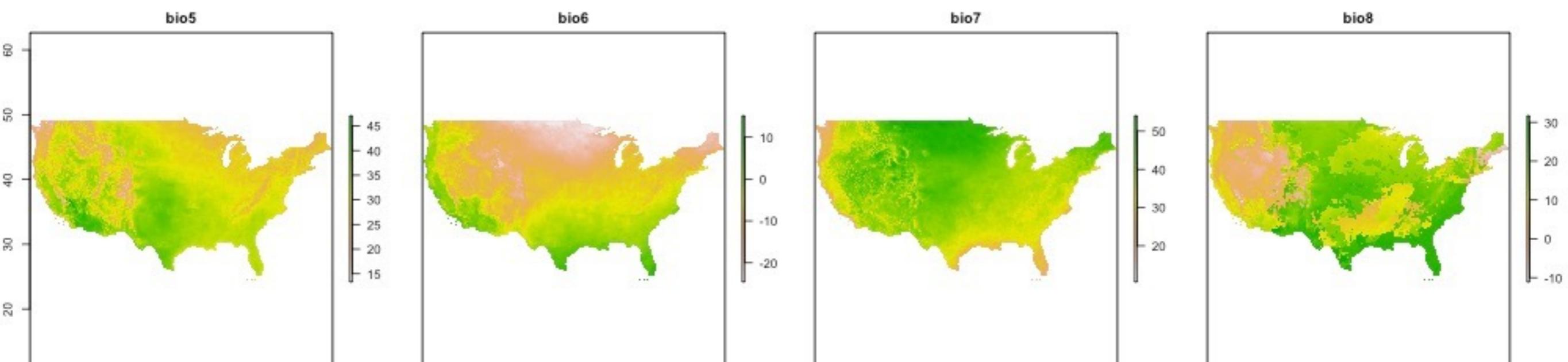
Barnstable County, MA

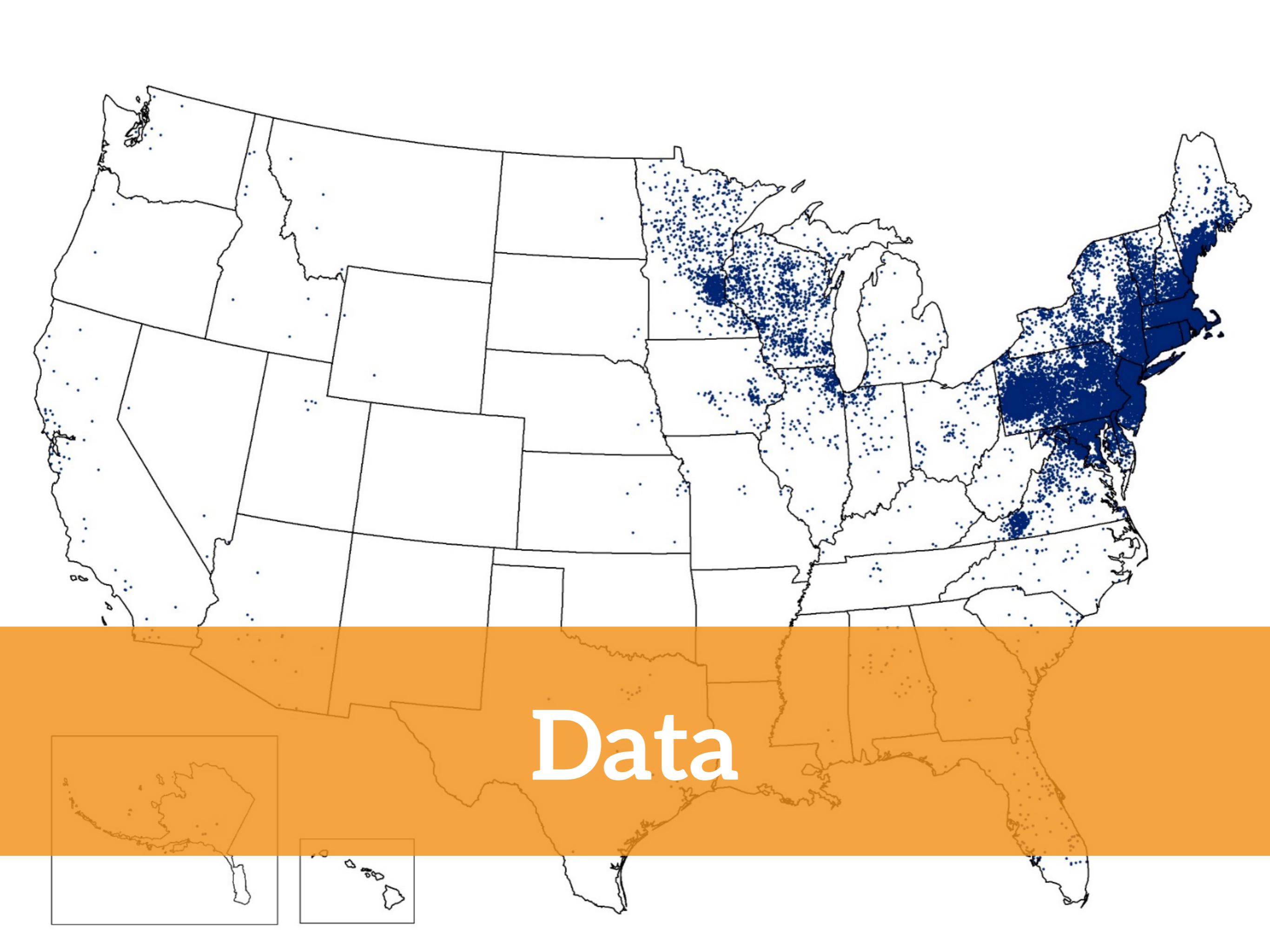


Climate

Temperature, Precipitation
Canonical set of 19 features
(ex: temp. in hottest month,
precip. in wettest month, etc.)

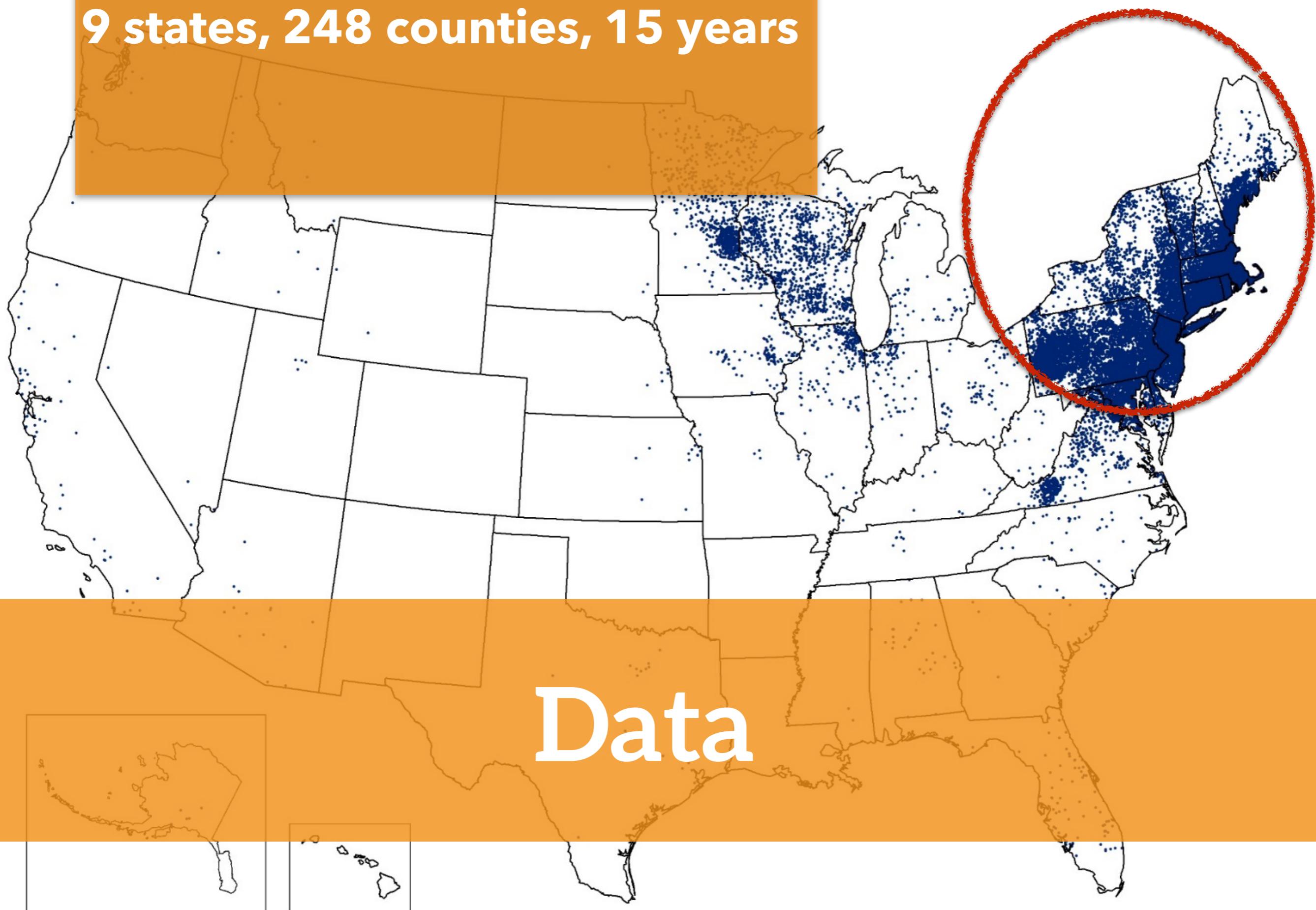
Population count/density



A map of the United States where data points are represented by small blue dots. The density of these dots varies across the country, with higher concentrations in the Northeast, around the Great Lakes, and in the West Coast states. The map is overlaid with state boundaries. In the bottom left corner, there are two smaller maps: one showing a detailed view of the Southwestern United States and another showing the state of Hawaii.

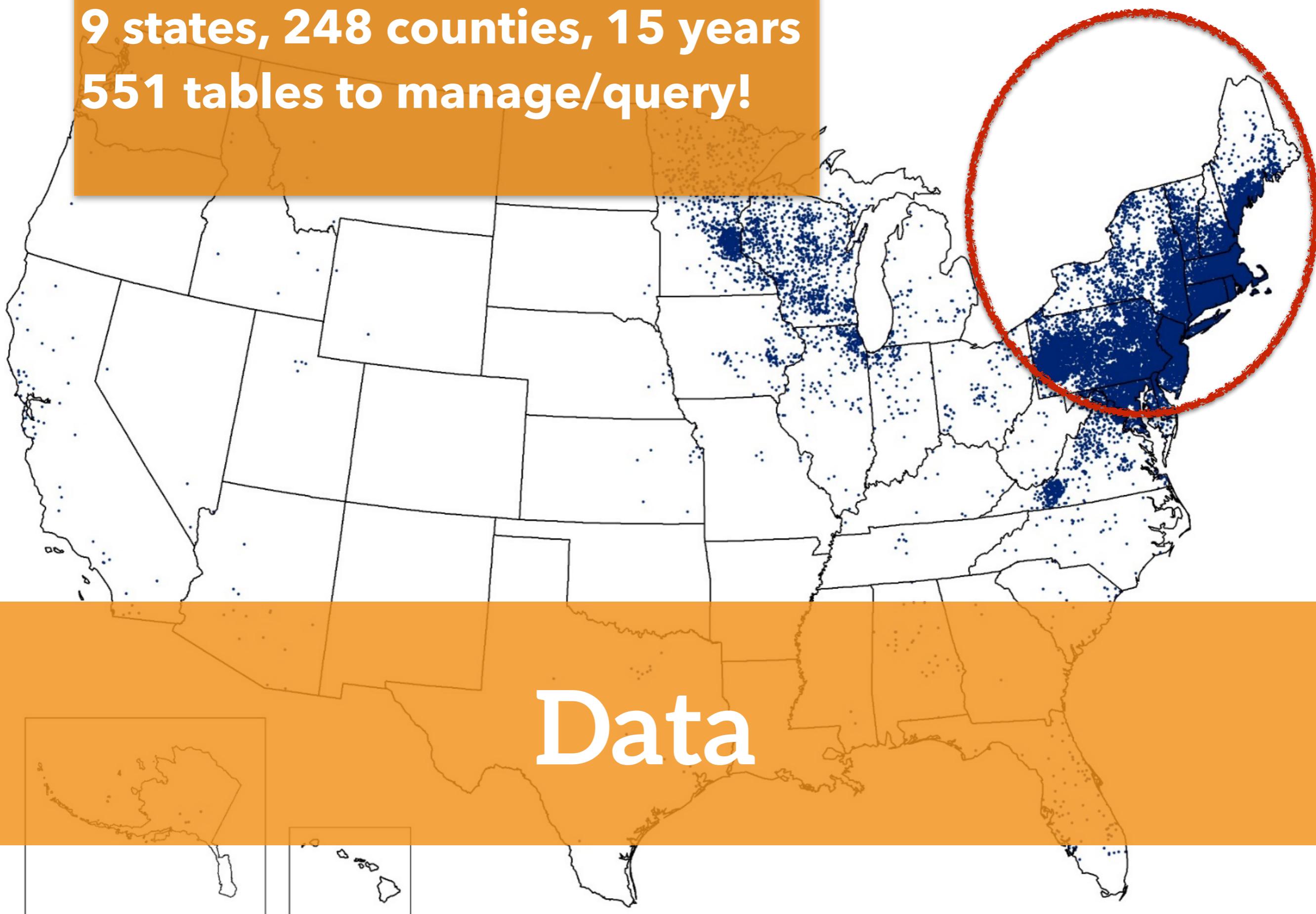
Data

9 states, 248 counties, 15 years



**9 states, 248 counties, 15 years
551 tables to manage/query!**

Data

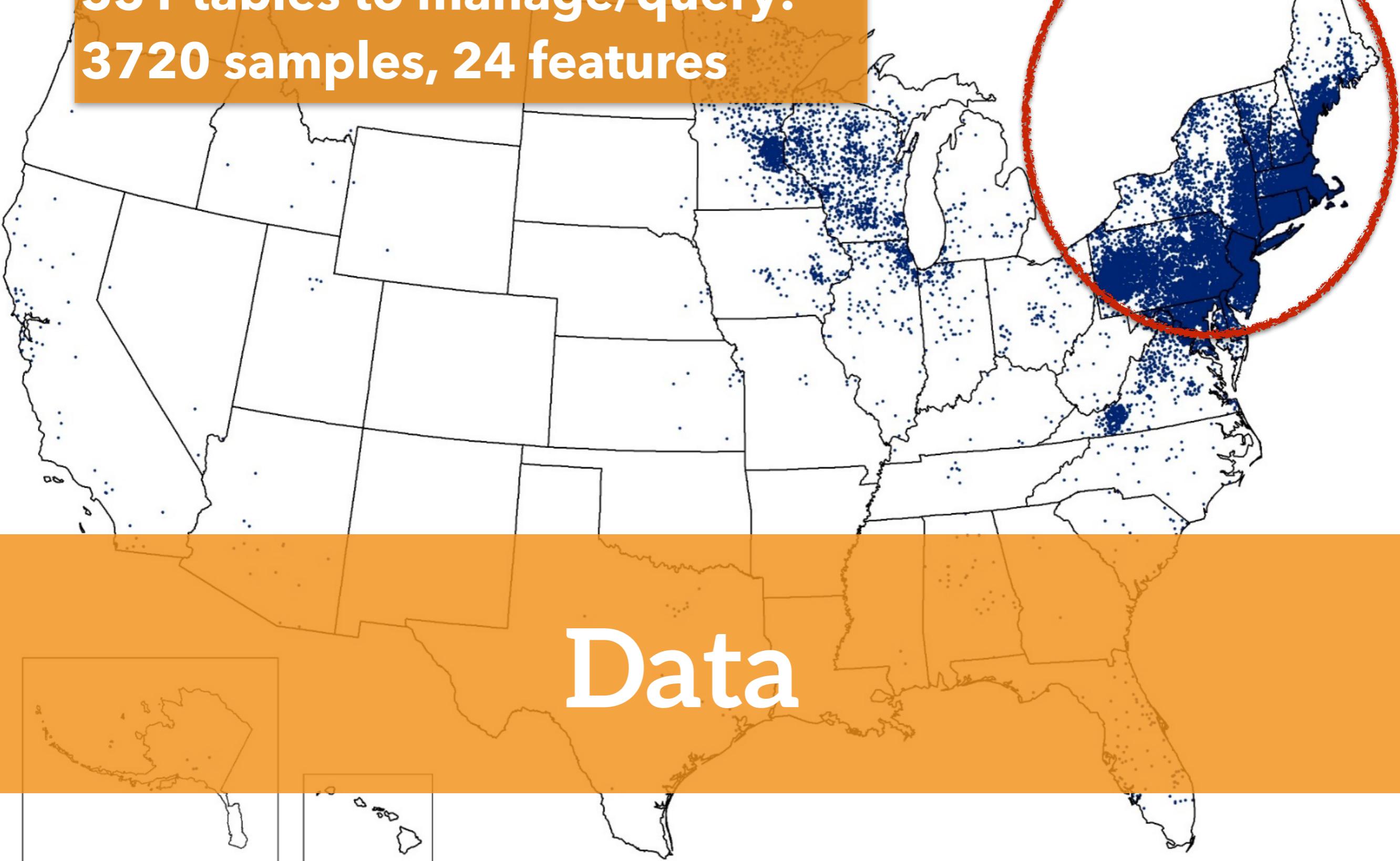


9 states, 248 counties, 15 years

551 tables to manage/query!

3720 samples, 24 features

Data

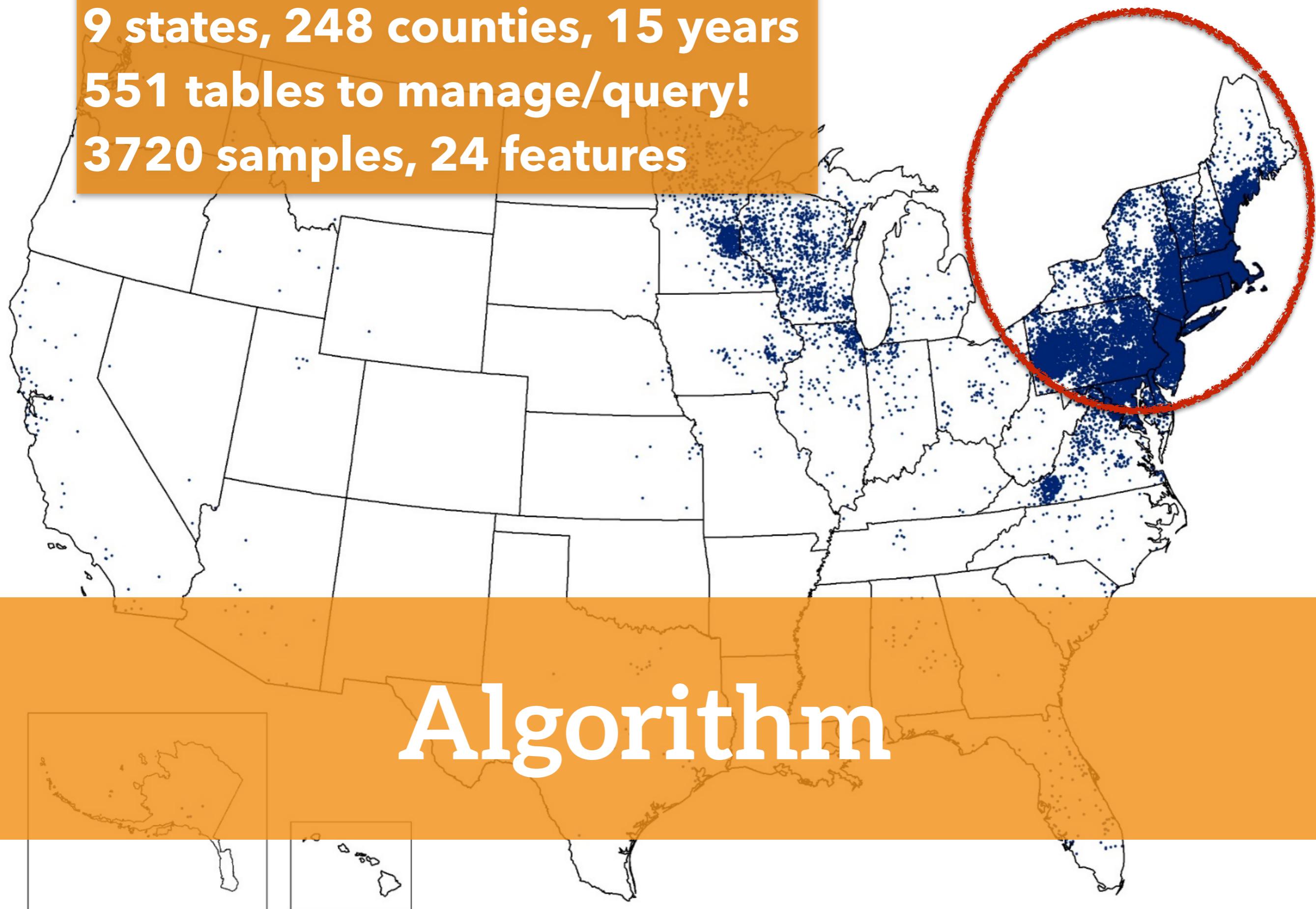


9 states, 248 counties, 15 years

551 tables to manage/query!

3720 samples, 24 features

Algorithm



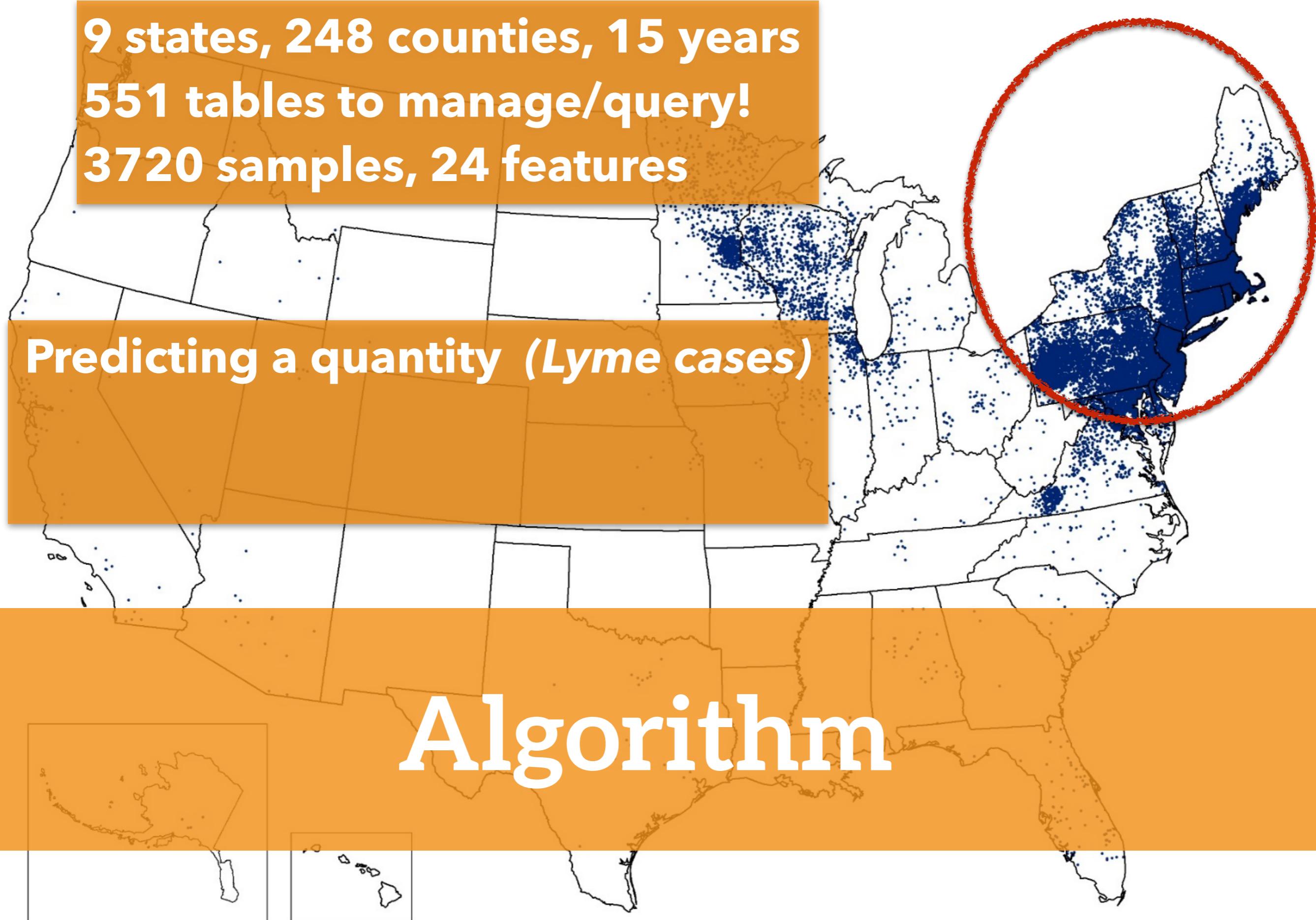
9 states, 248 counties, 15 years

551 tables to manage/query!

3720 samples, 24 features

Predicting a quantity (Lyme cases)

Algorithm



9 states, 248 counties, 15 years

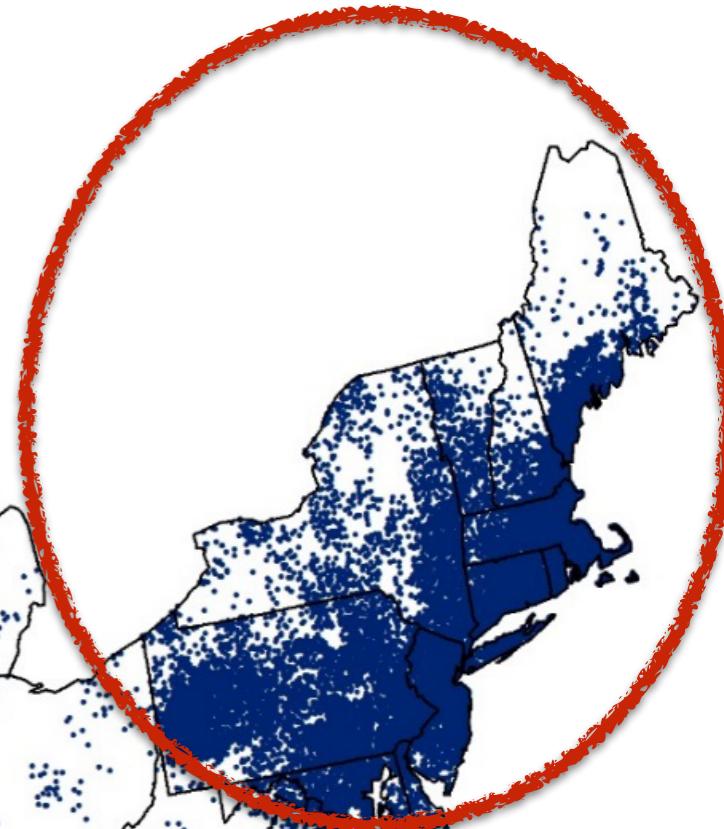
551 tables to manage/query!

3720 samples, 24 features

Predicting a quantity (Lyme cases)

Lots of continuous climate features

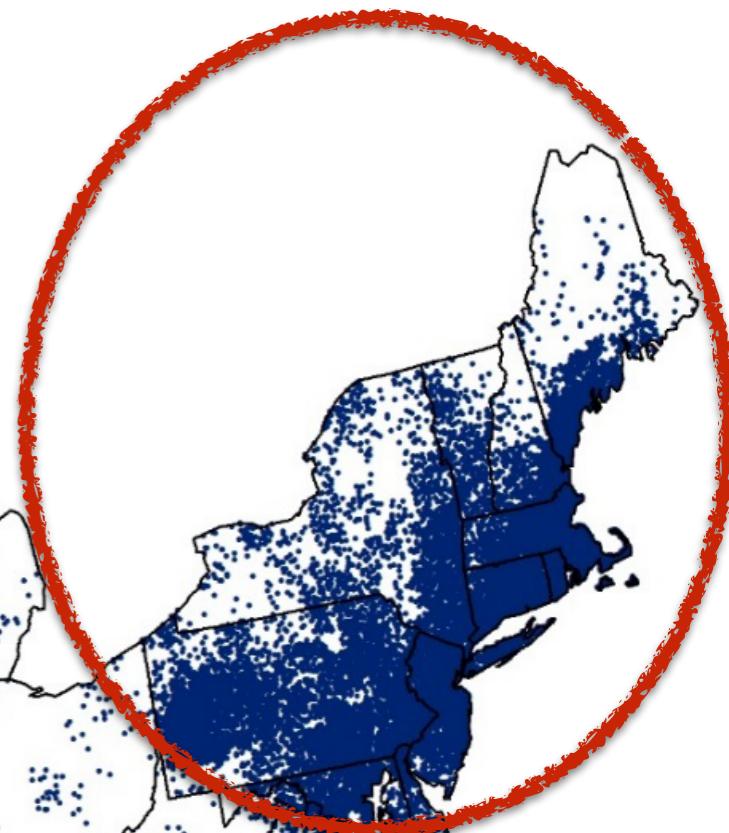
Algorithm



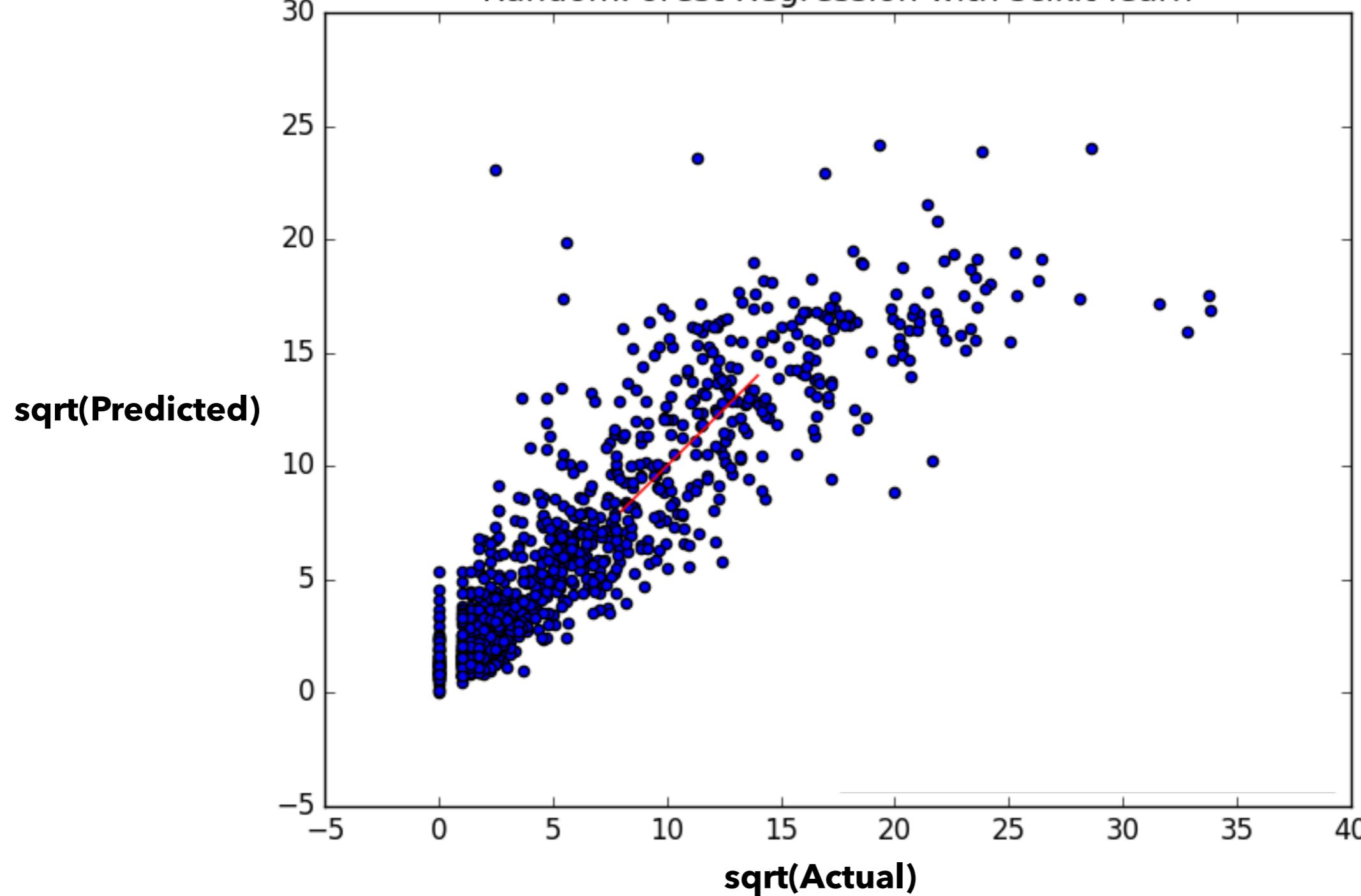
9 states, 248 counties, 15 years
551 tables to manage/query!
3720 samples, 24 features

Predicting a quantity (Lyme cases)
Lots of continuous climate features
Random Forest Regressor

Algorithm



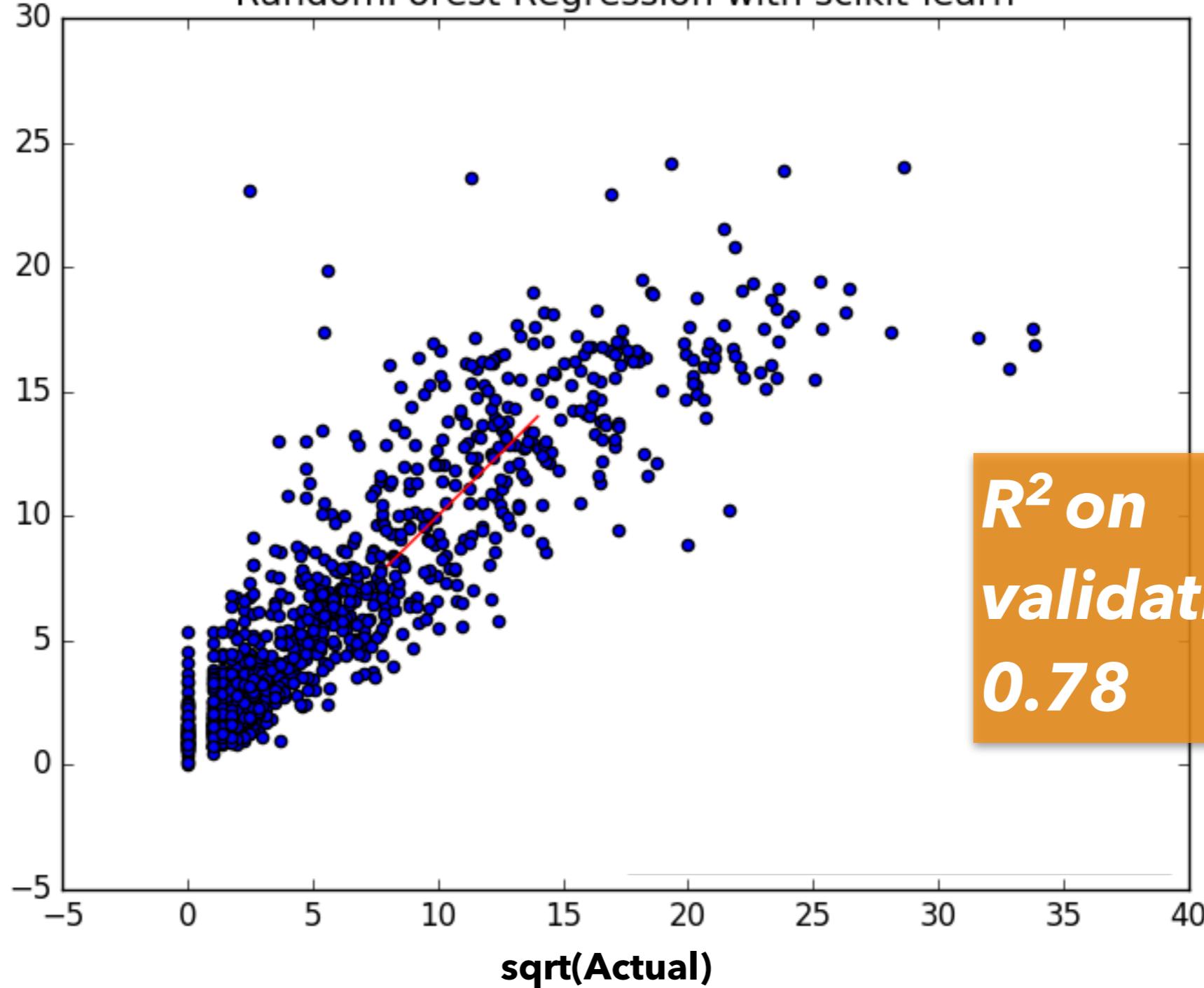
RandomForest Regression with scikit-learn



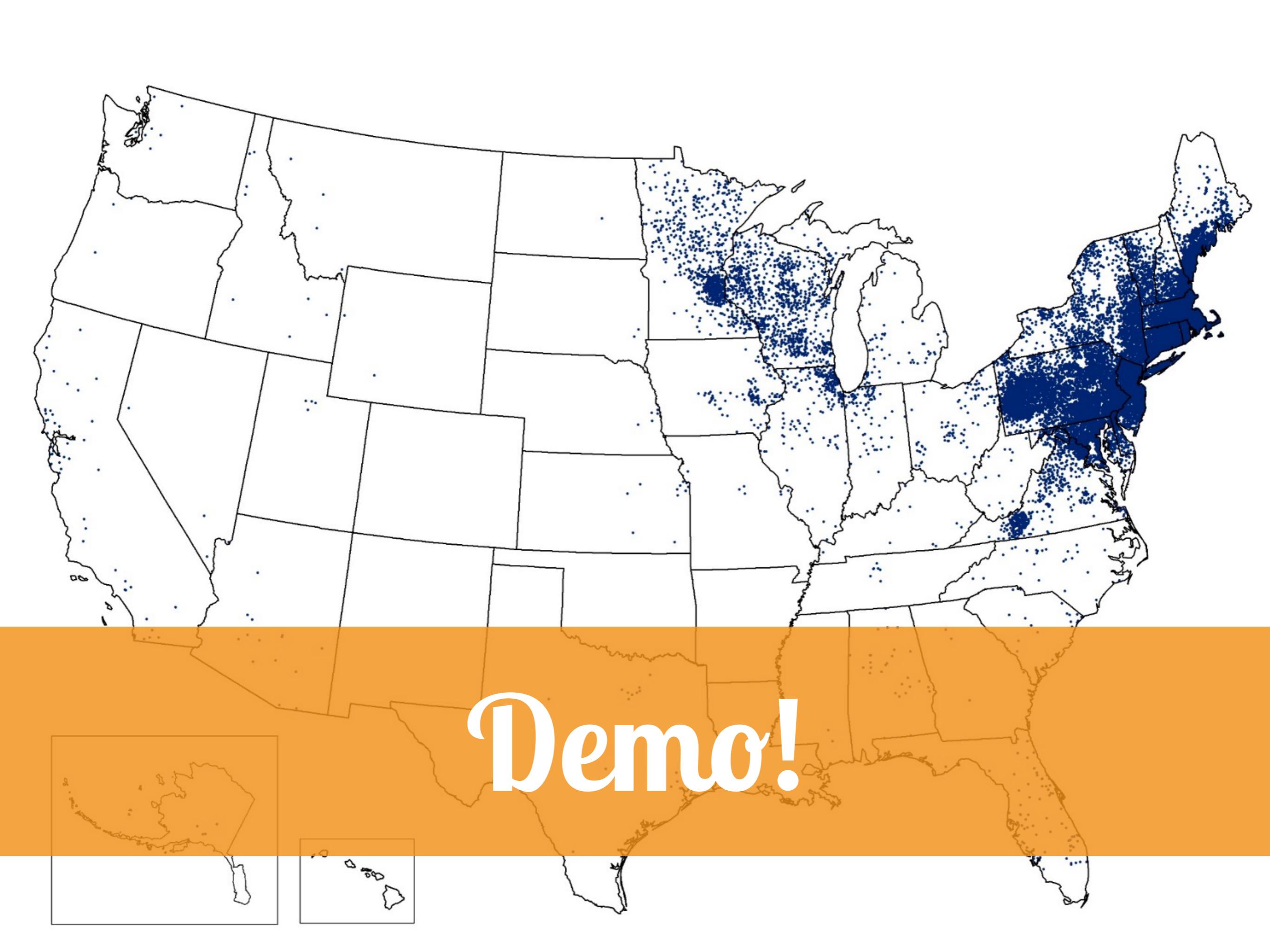
Lyme disease

RandomForest Regression with scikit-learn

sqrt(Predicted)



Lyme disease



Demo!

Roger Shaw

Ph.D. University of Texas at Austin

Roger Shaw

Ph.D. University of Texas at Austin
Ecology, Evolution, and Behavior

Roger Shaw

Ph.D. University of Texas at Austin
Ecology, Evolution, and Behavior
B.A. Swarthmore College

Roger Shaw

Ph.D. University of Texas at Austin
Ecology, Evolution, and Behavior
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Biology

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Ph.D. University of Texas at Austin
Ecology, Evolution, and Behavior
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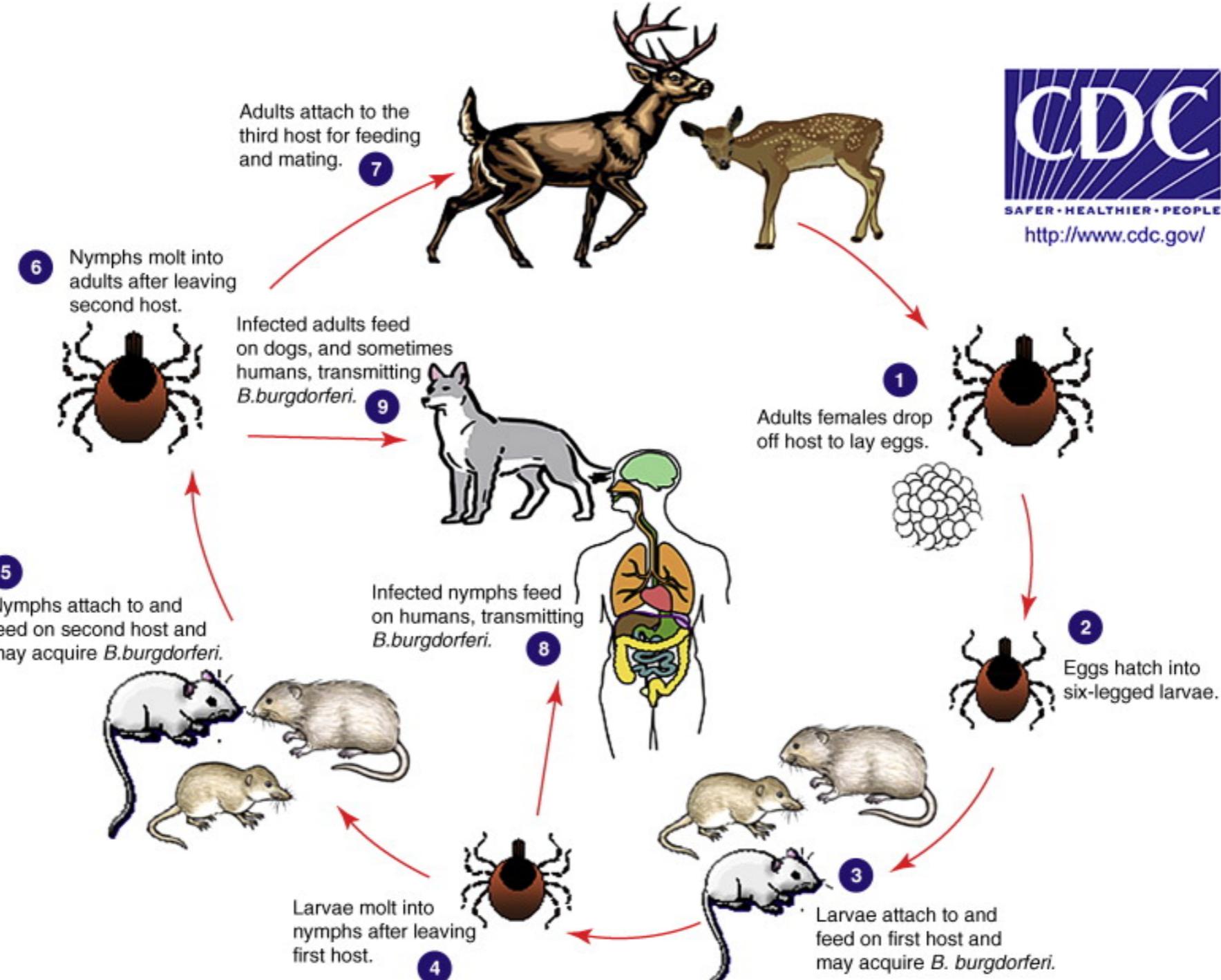


Ph.D. University of Texas at Austin
Ecology, Evolution, and Behavior
B.A. Swarthmore College
Biology

Roger Shaw

- Annual Mean Temperature
- Mean Diurnal Range
- Isothermality
- Temperature Seasonality
- Max Temperature of Warmest Month
- Min Temperature of Coldest Month
- Temperature Annual Range
- Mean Temperature of Wettest Quarter
- Mean Temperature of Driest Quarter
- Mean Temperature of Warmest Quarter
- Mean Temperature of Coldest Quarter
- Annual Precipitation
- Precipitation of Wettest Month
- Precipitation of Driest Month
- Precipitation Seasonality
- Precipitation of Wettest Quarter
- Precipitation of Driest Quarter
- Precipitation of Warmest Quarter
- Precipitation of Coldest Quarter

Bioclim



Lyme disease