



LEADING CAUSES OF DEATH IN THE UNITED STATES

CENTER FOR DISEASE CONTROL (CDC) – NATIONAL CENTER FOR HEALTH STATISTICS (NCHS)

**WHAT IS THE LEADING CAUSE OF
DEATH IN THE UNITED STATES,
AND WHICH STATES WILL BE AT
THE GREATEST RISK IN 2019?**

RESULTS TO BE USED FOR FUTURE RESOURCE ALLOCATION



What is the leading cause of death in the United States?



What is the current trend for the leading cause of death?

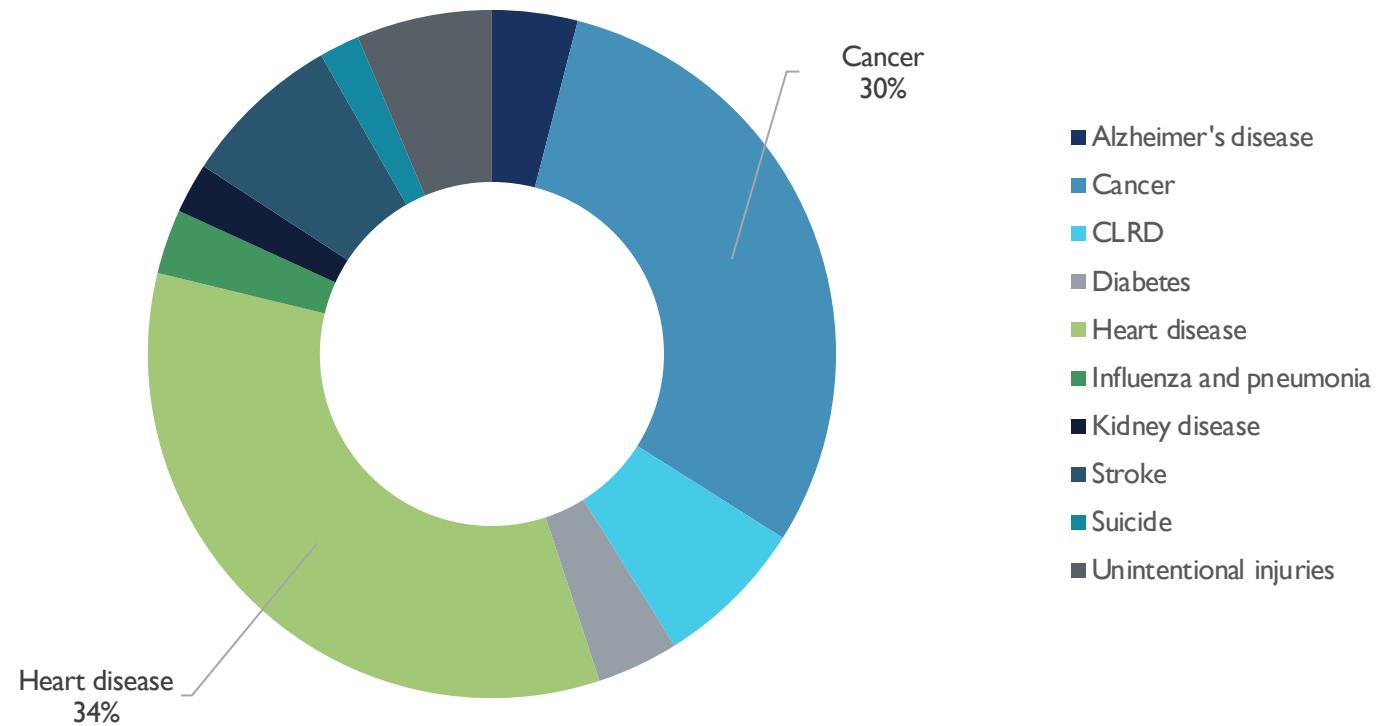


Which factors have the greatest impact on the mortality rate?



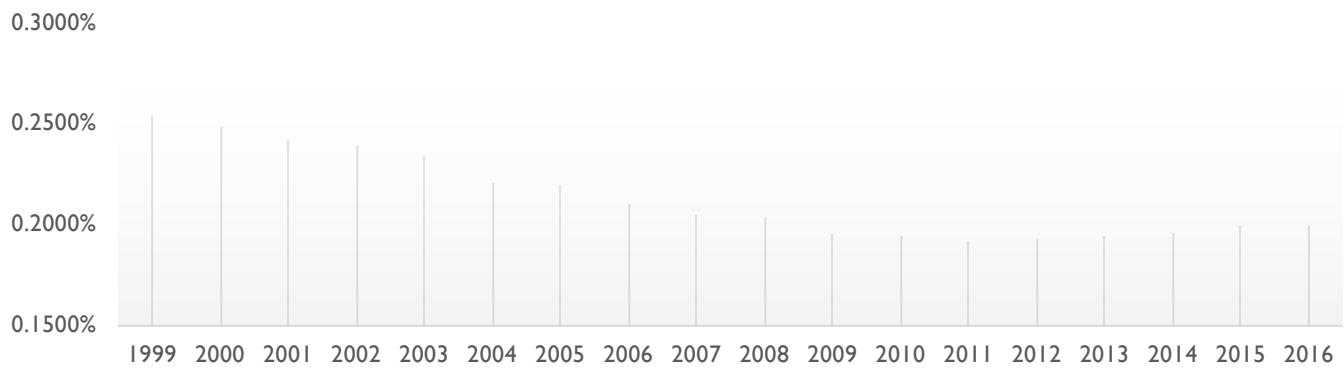
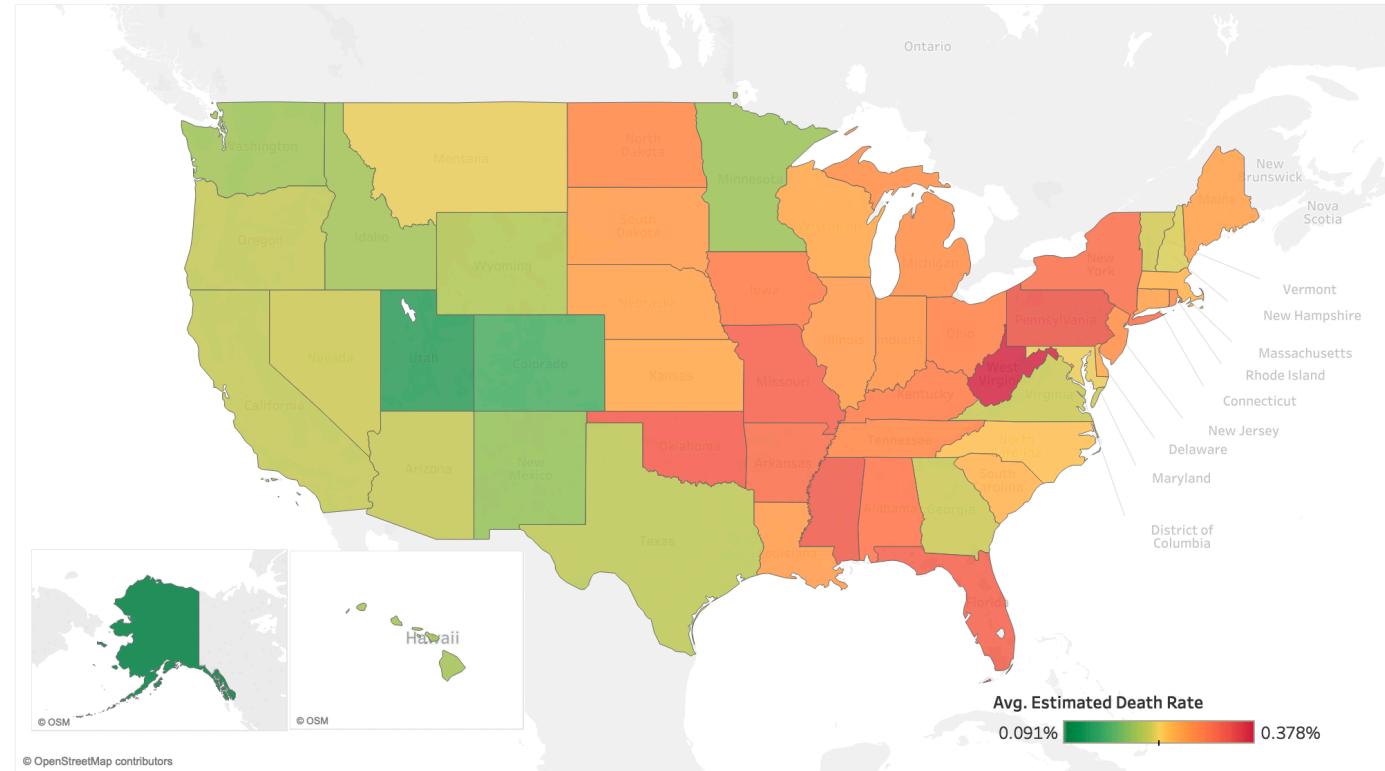
Which states should be treated as high risk?

Leading Causes of Death (1999 – 2016)

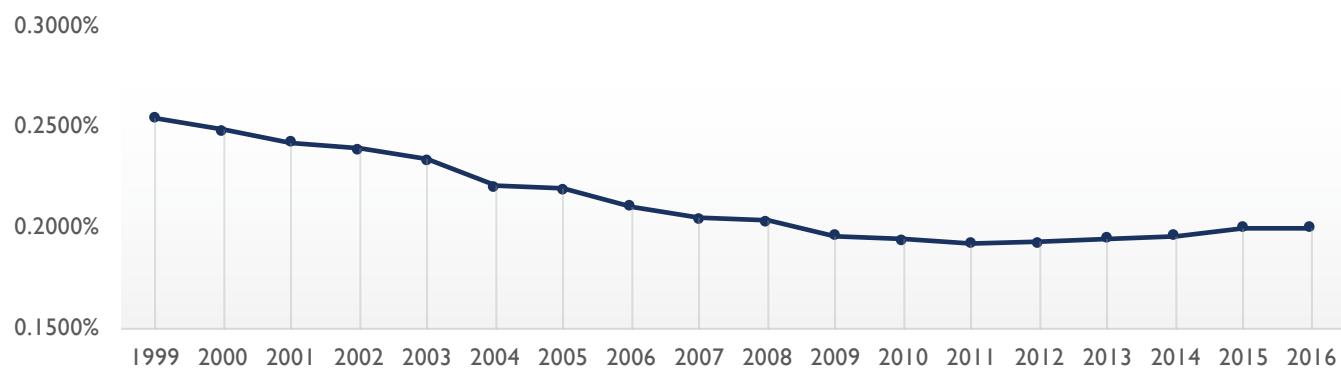
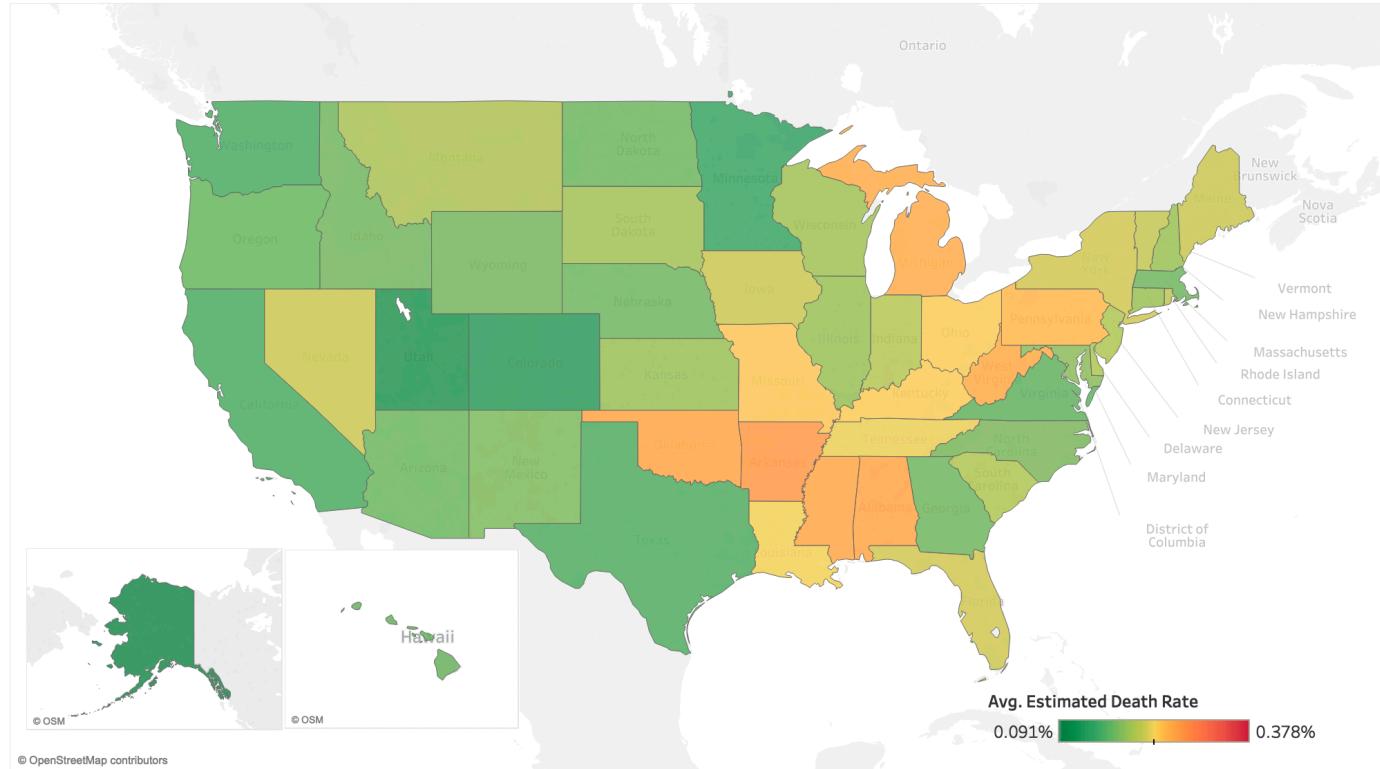


Source: Center for Disease Control (CDC) – National Center for Health Statistics (NCHS)

WHAT IS THE
LEADING CAUSE
OF DEATH IN THE
UNITED STATES?



WHAT IS THE
CURRENT
TREND FOR
THE LEADING
CAUSE OF
DEATH?



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POPULATION DEMOGRAPHICS

CDC – NCHS



ALCOHOL CONSUMPTION

**NATIONAL INSTITUTE ON ALCOHOL
ABUSE AND ALCOHOLISM**



SMOKING

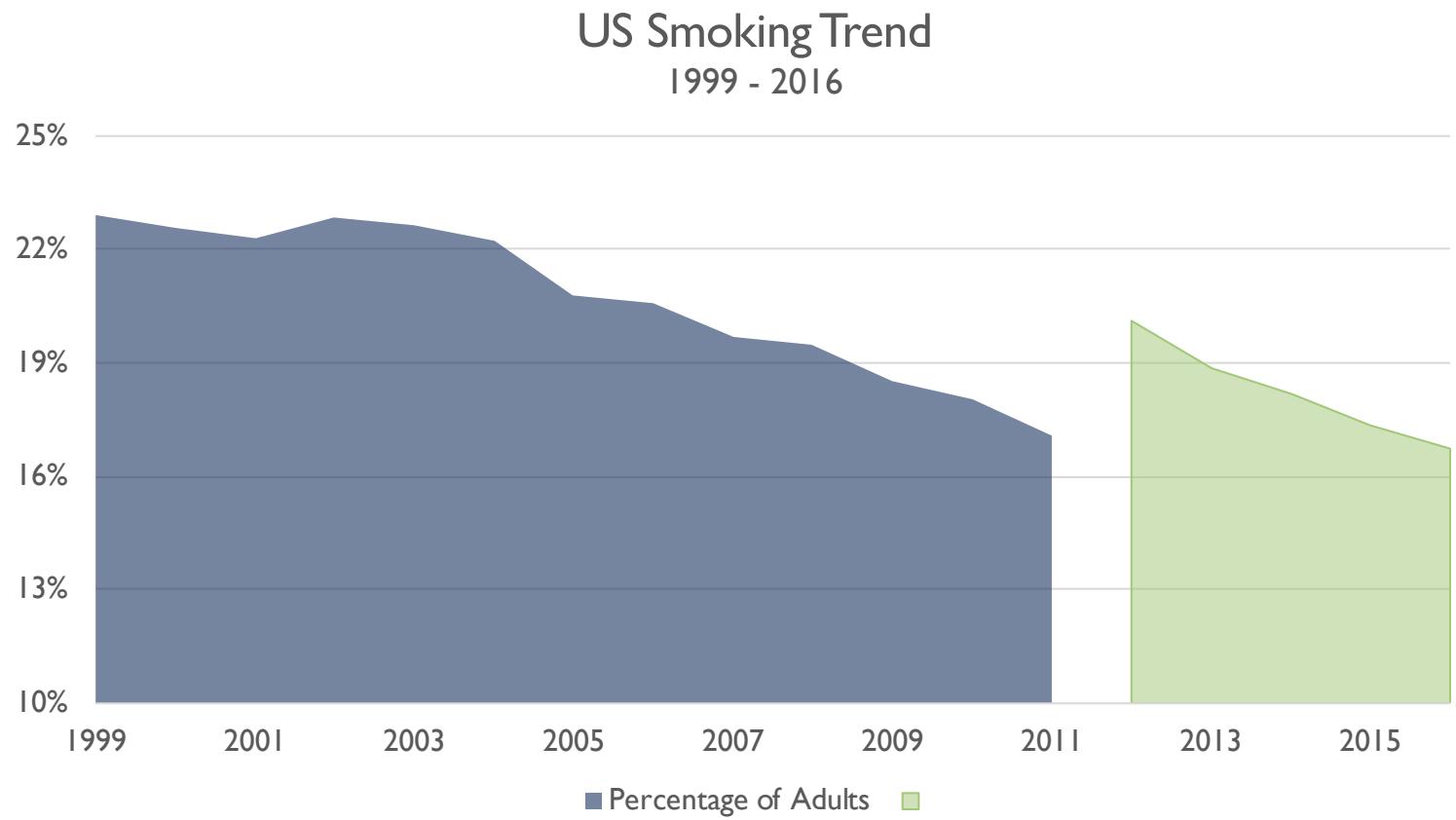
UNITED HEALTH FOUNDATION

WHICH FACTORS HAVE THE GREATEST IMPACT ON THE MORTALITY RATE?

DATA SOURCES



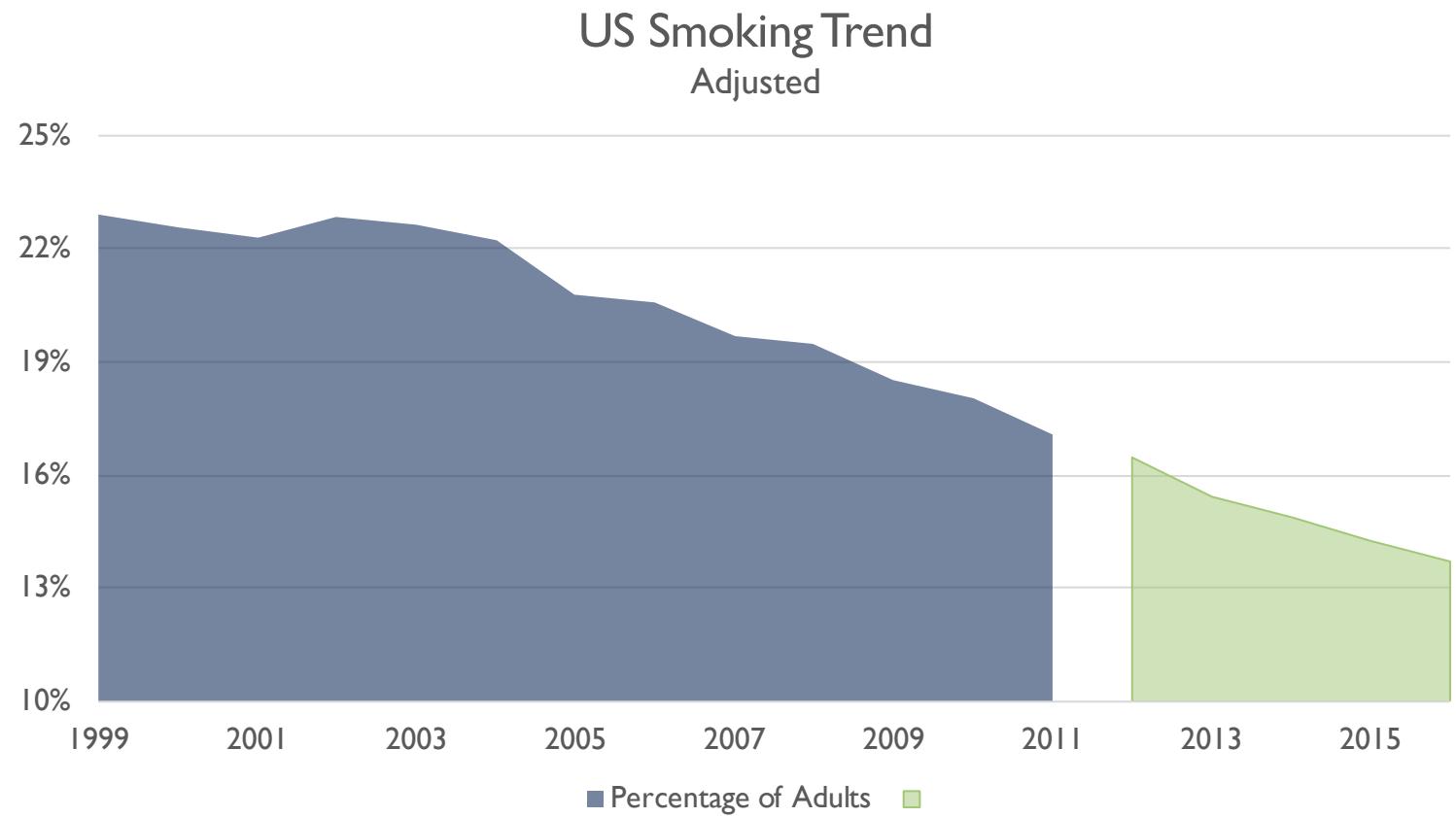
SMOKING
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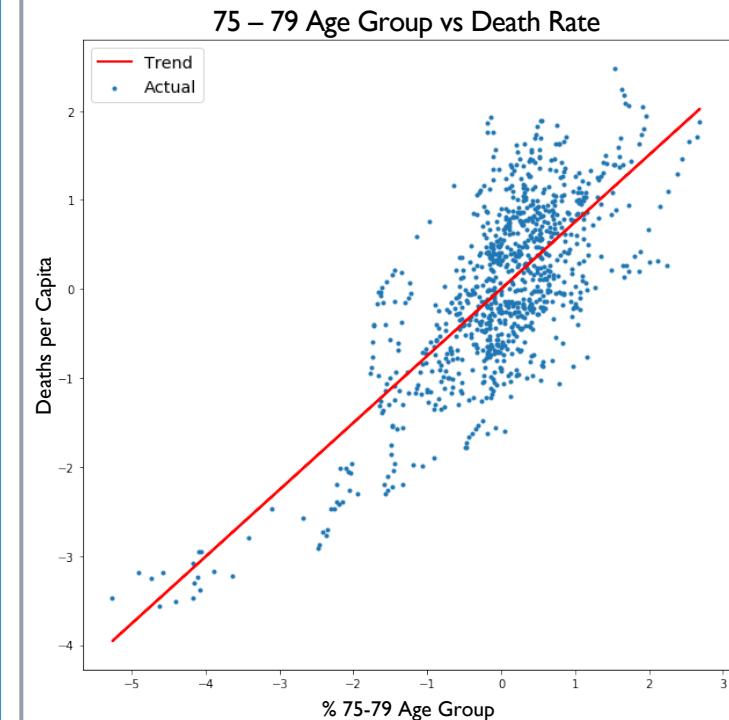
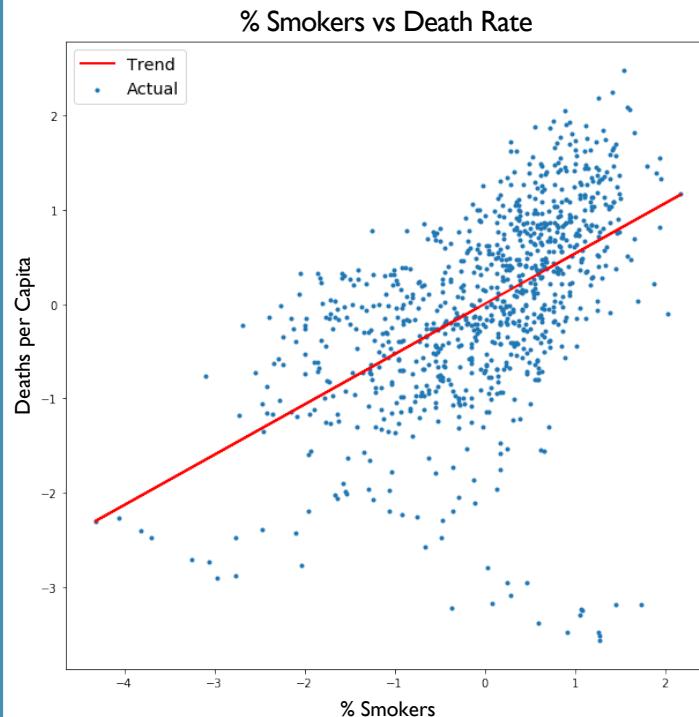
DATA SOURCES



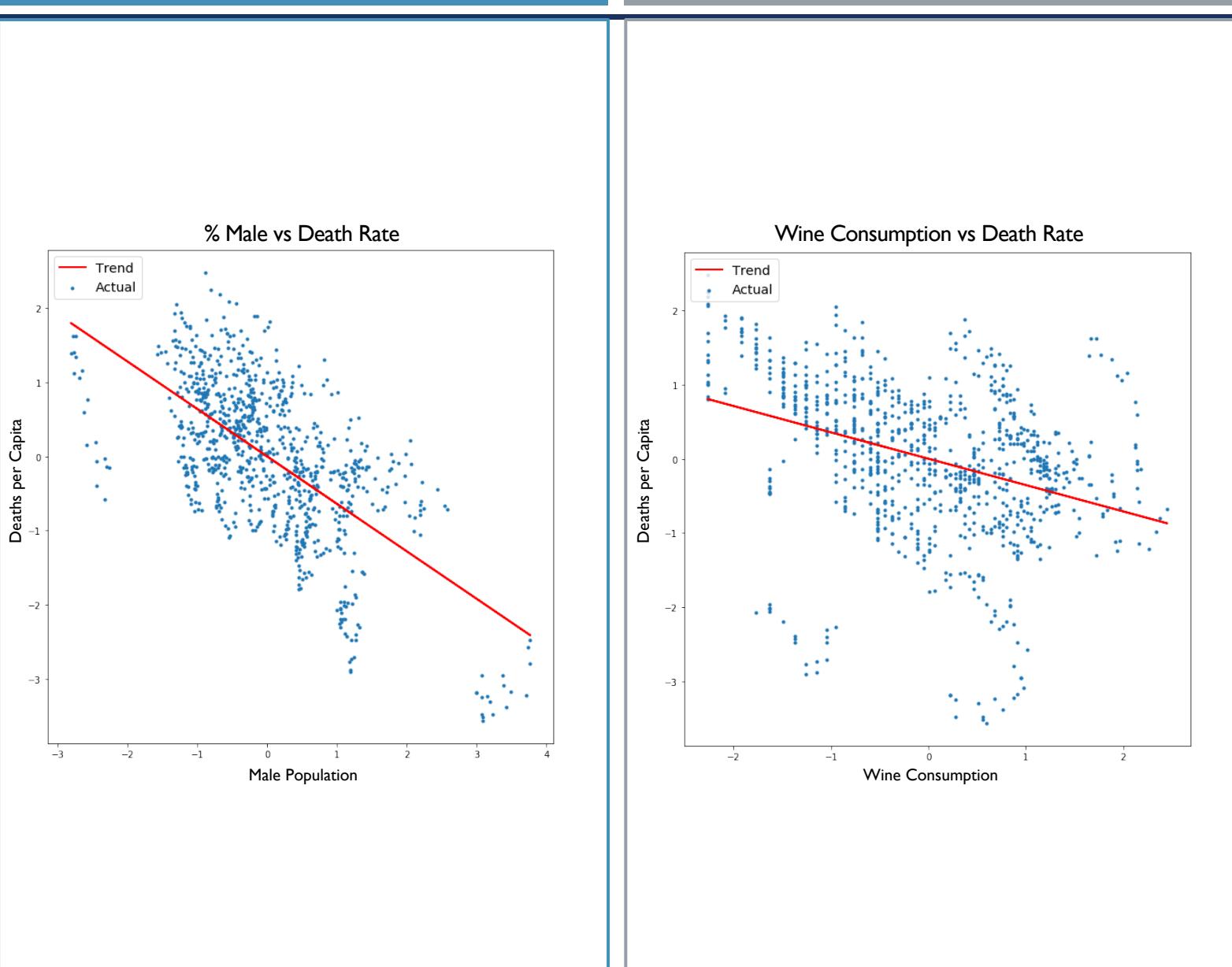
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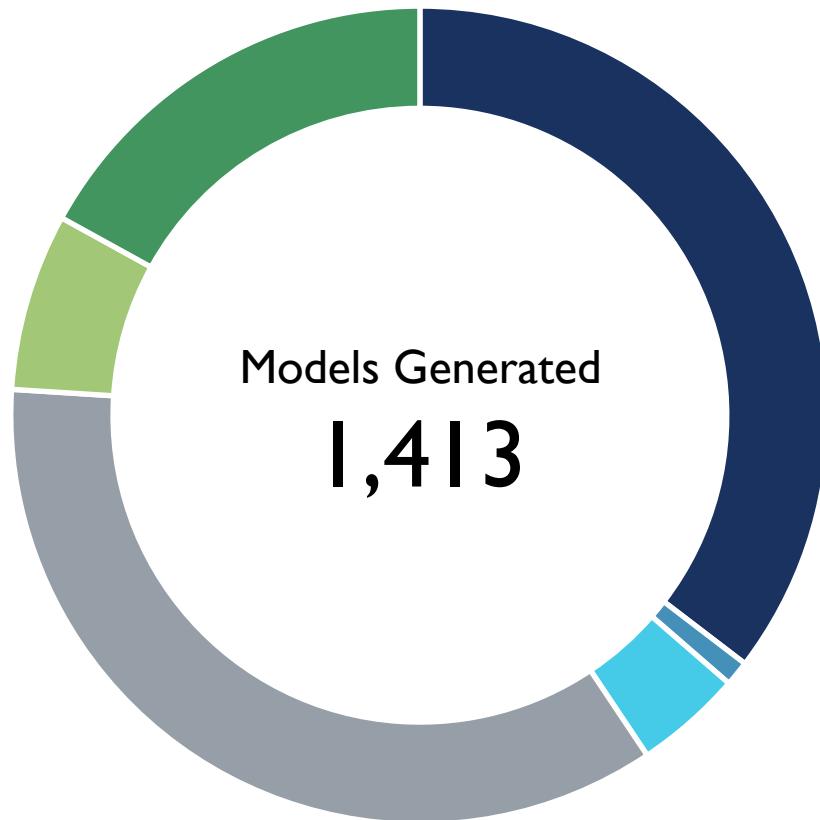
FEATURE ENGINEERING



3 - 5 YEAR
LAGGED PREDICTIONS



HIGH-RISK DEFINED AS
TOP 33% OF ALL RESULTS

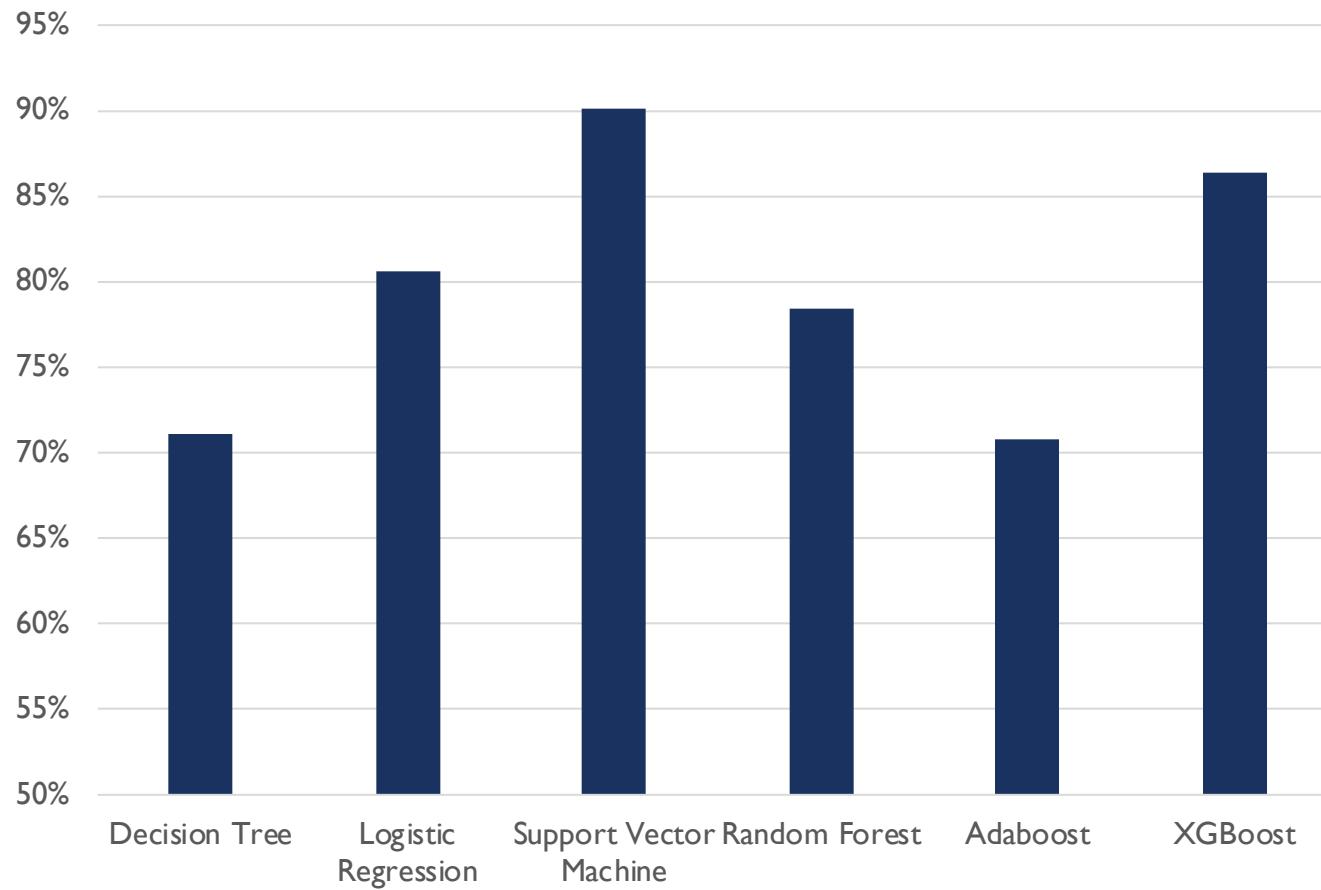


- Decision Tree
- Random Forest
- Adaboost
- XGBoost
- Logistic Regression
- Support Vector Machine

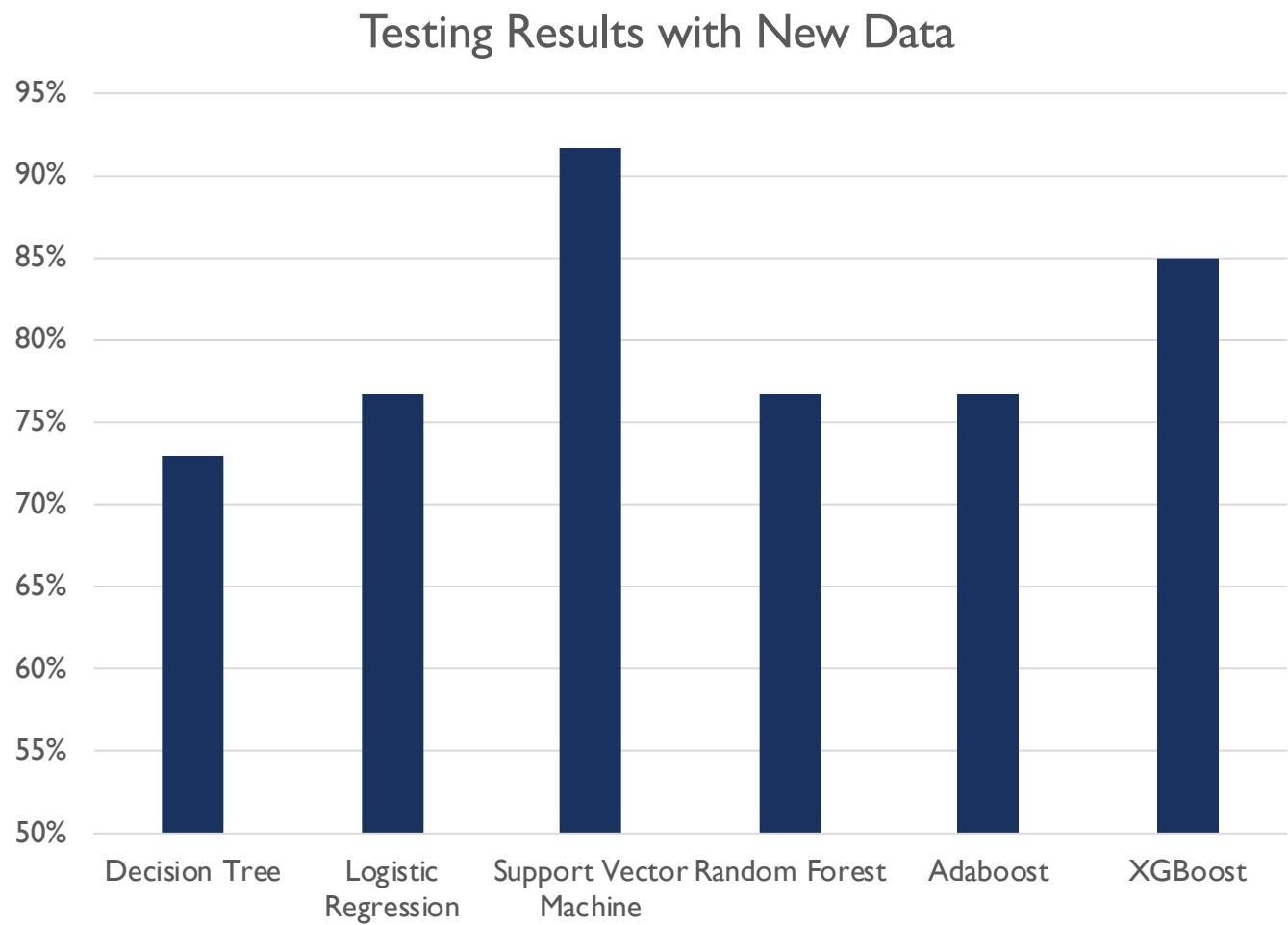
MAKING
PREDICTIONS
INTO THE
FUTURE

MODEL PERFORMANCE

Training Results with Cross-Validation

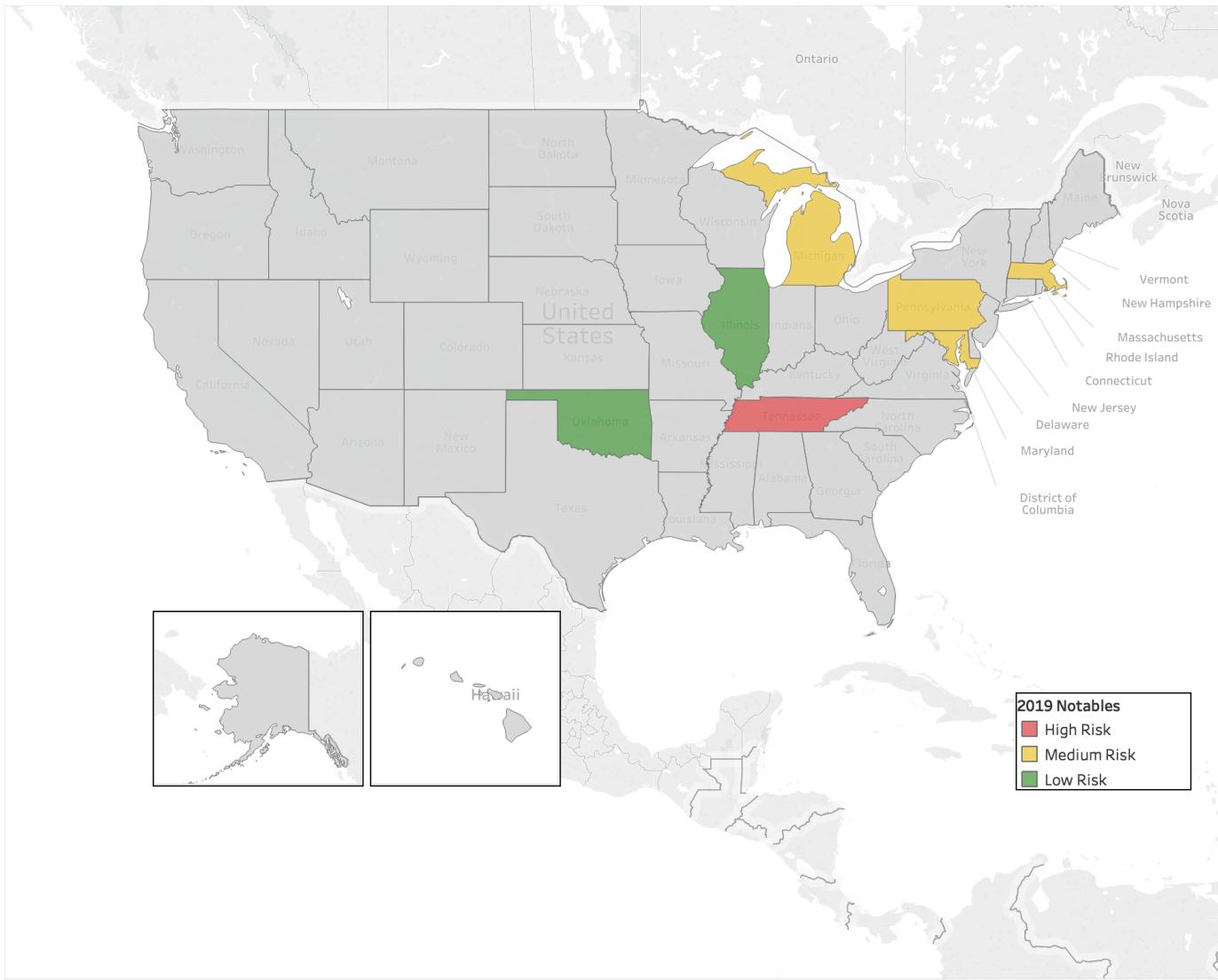


MODEL PERFORMANCE



2016

2019



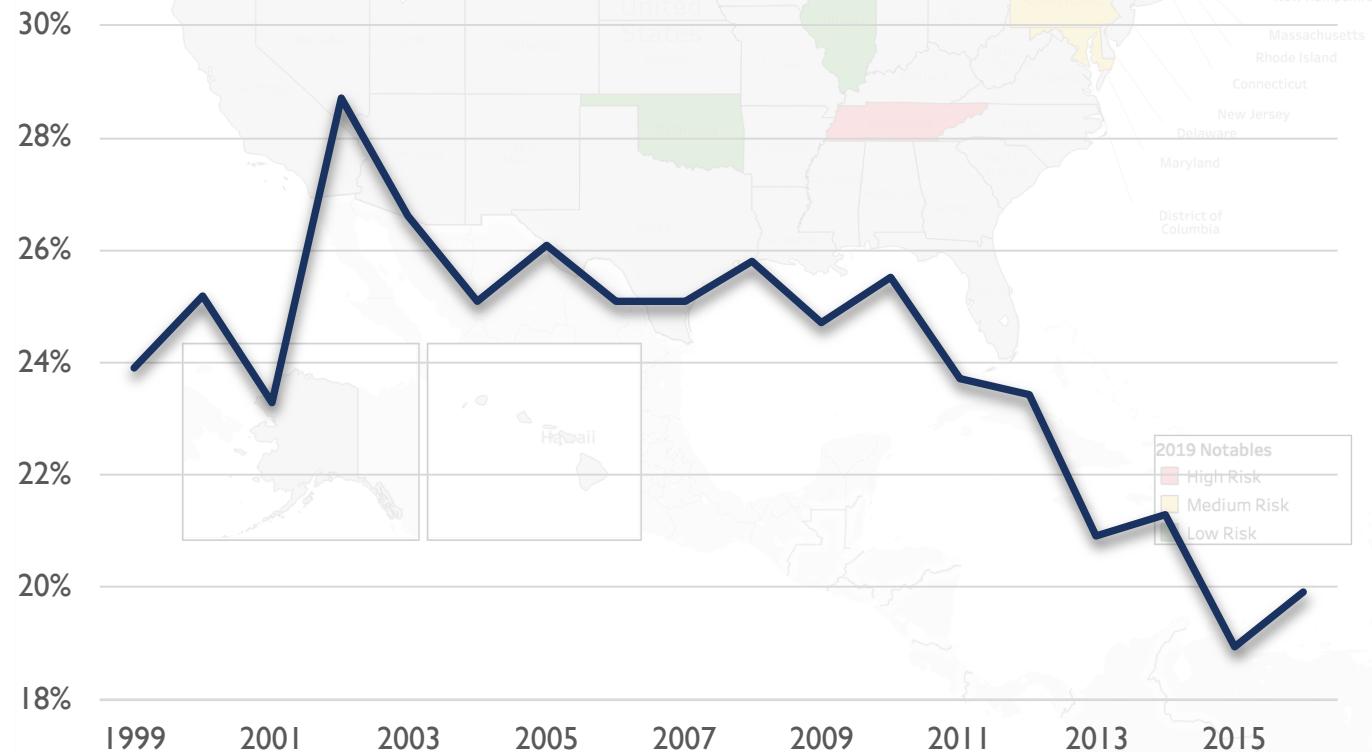
MODEL PREDICTIONS

2016

2019

Oklahoma

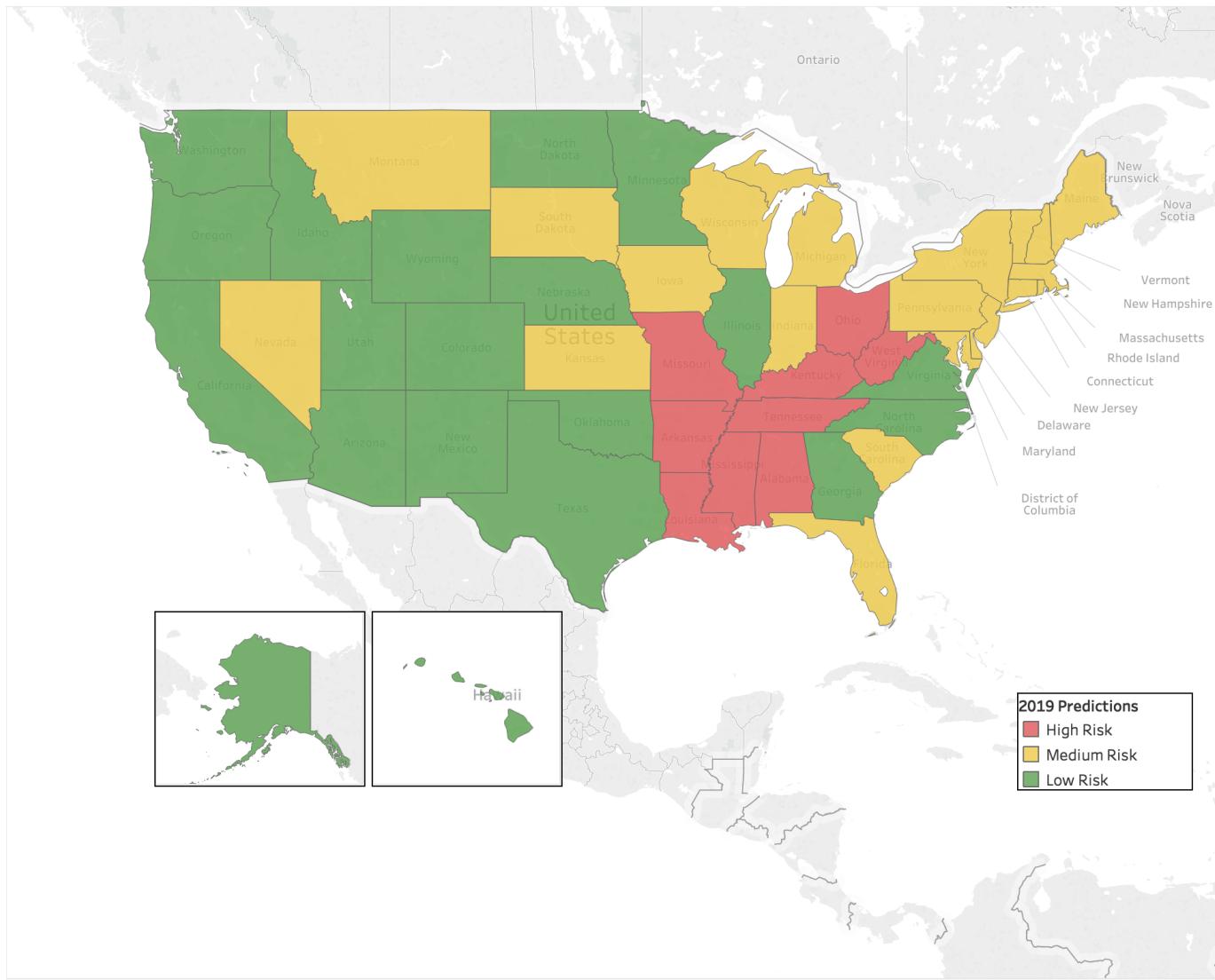
- High-Risk to Low-Risk in 3 Years
- Dramatically Reduced Smoking Rate
- Certified Healthy Oklahoma Program



MODEL PREDICTIONS

2016

2019

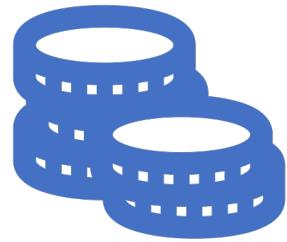


MODEL PREDICTIONS

2019 High-Risk States

Alabama	Missouri
Arkansas	Ohio
Kentucky	West Virginia
Louisiana	Tennessee
Mississippi	

RECOMMENDATIONS



Reallocate Funds from
Illinois & Oklahoma



Anti-Smoking Ad
Campaigns



Run Awareness Campaigns
for Women & Retirees

NEXT STEPS



Investigate Primary
Results Drivers by State



Gather More Behavioral
and Socioeconomic Data



Perform Similar Analysis
for Cancer



QUESTIONS