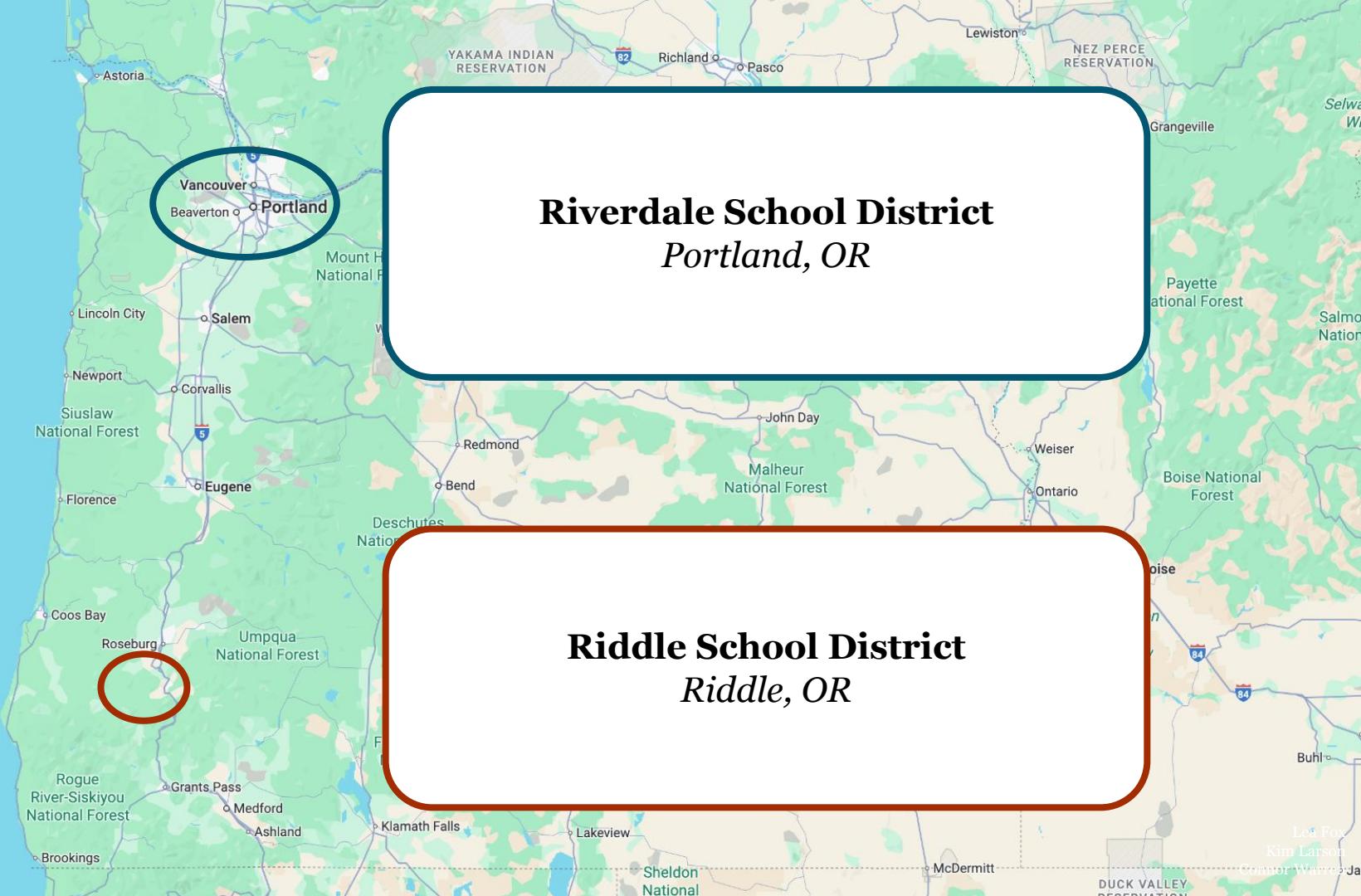


The background image is an aerial photograph of a university campus during sunset. The sky is filled with warm, orange and yellow hues. In the foreground, there are several modern buildings with green roofs and some older brick structures. A large, open grassy area with a circular path or fountain is visible. In the distance, a range of hills or mountains is visible under the setting sun.

Privilege & Academic Success

By Lea Fox, Kim Larson, Connor Warren



Riverdale School District

Portland, OR

Riddle School District

Riddle, OR

Privilege Differences



Riddle School District
Riddle, OR



Riverdale School District
Portland, OR

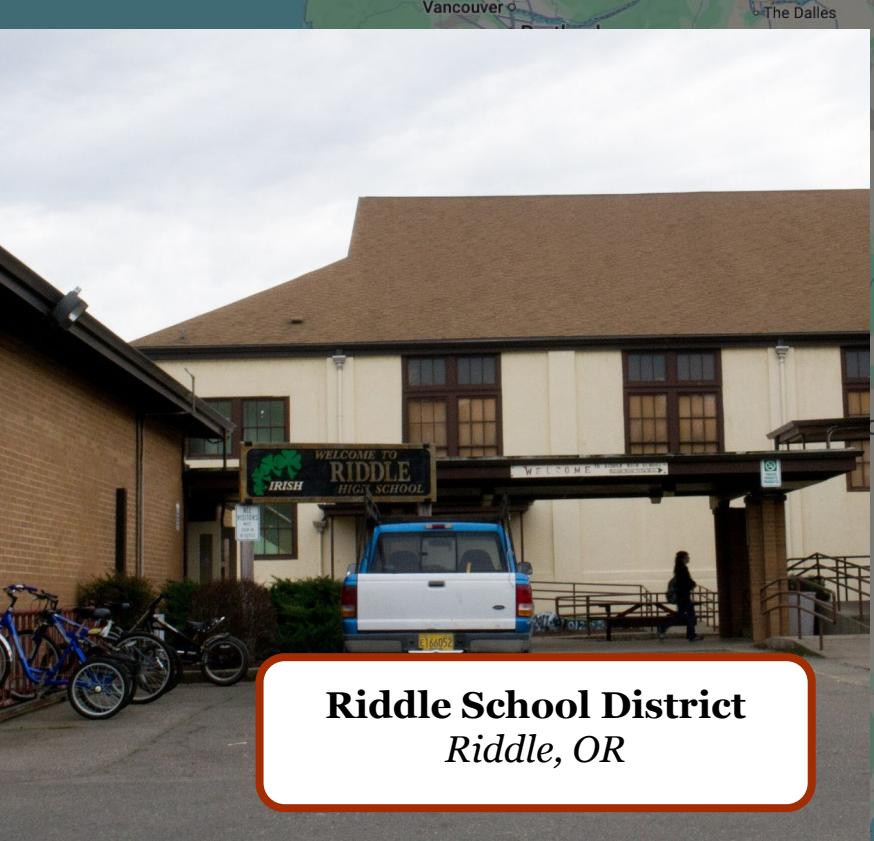
Area Deprivation Index (ADI)

About the ADI:

- Created by the University of Wisconsin School of Medicine and Public Health to understand cardiovascular health outcome differentials in 1990
- Uses seventeen income, education, employment and housing quality indicators from the American Community Survey (ACS) by the US. Census
- Areas with greater economic background disadvantage are ranked higher



Success Differences



Riddle School District
Riddle, OR



Riverdale School District
Portland, OR

Academic Proficiency in Oregon

Levels

1. Not proficient at all
2. Likely not proficient
3. Aligned with standards
4. Exceeds standards

Proficient Percentage weighs scores of 3s and 4s over total

District Differences



Riddle School District
Riddle, OR

Graduation Rate	65%
Math Proficiency	23%
Reading Proficiency	44%
Science Proficiency	38%

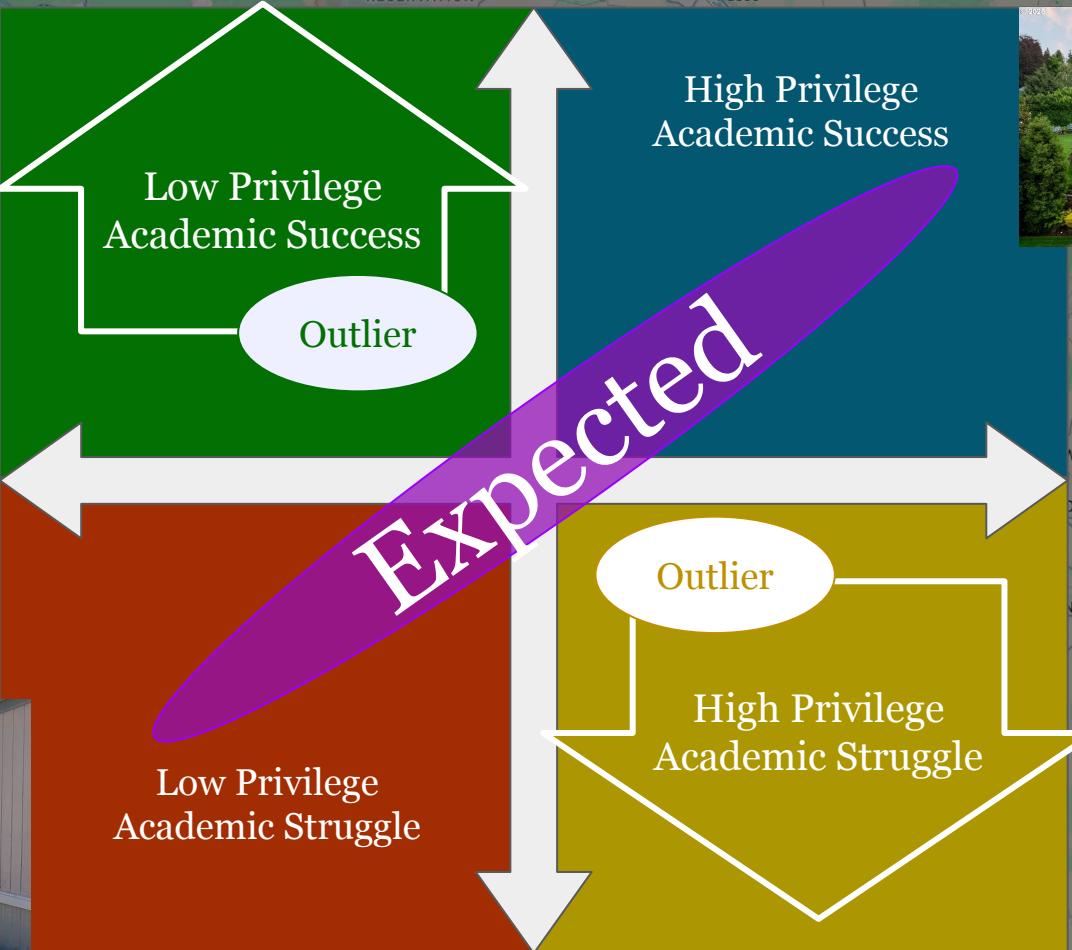
ADI: SNAP recipients	95.1%
Median Home Value	92.6%
Single Parent	75.2%



Riverdale School District
Portland, OR

Graduation Rate	84%
Math Proficiency	71%
Reading Proficiency	79%
Science Proficiency	61%

ADI: SNAP recipients	0.4%
Median Home Value	0.0%
Single Parent	5.2%





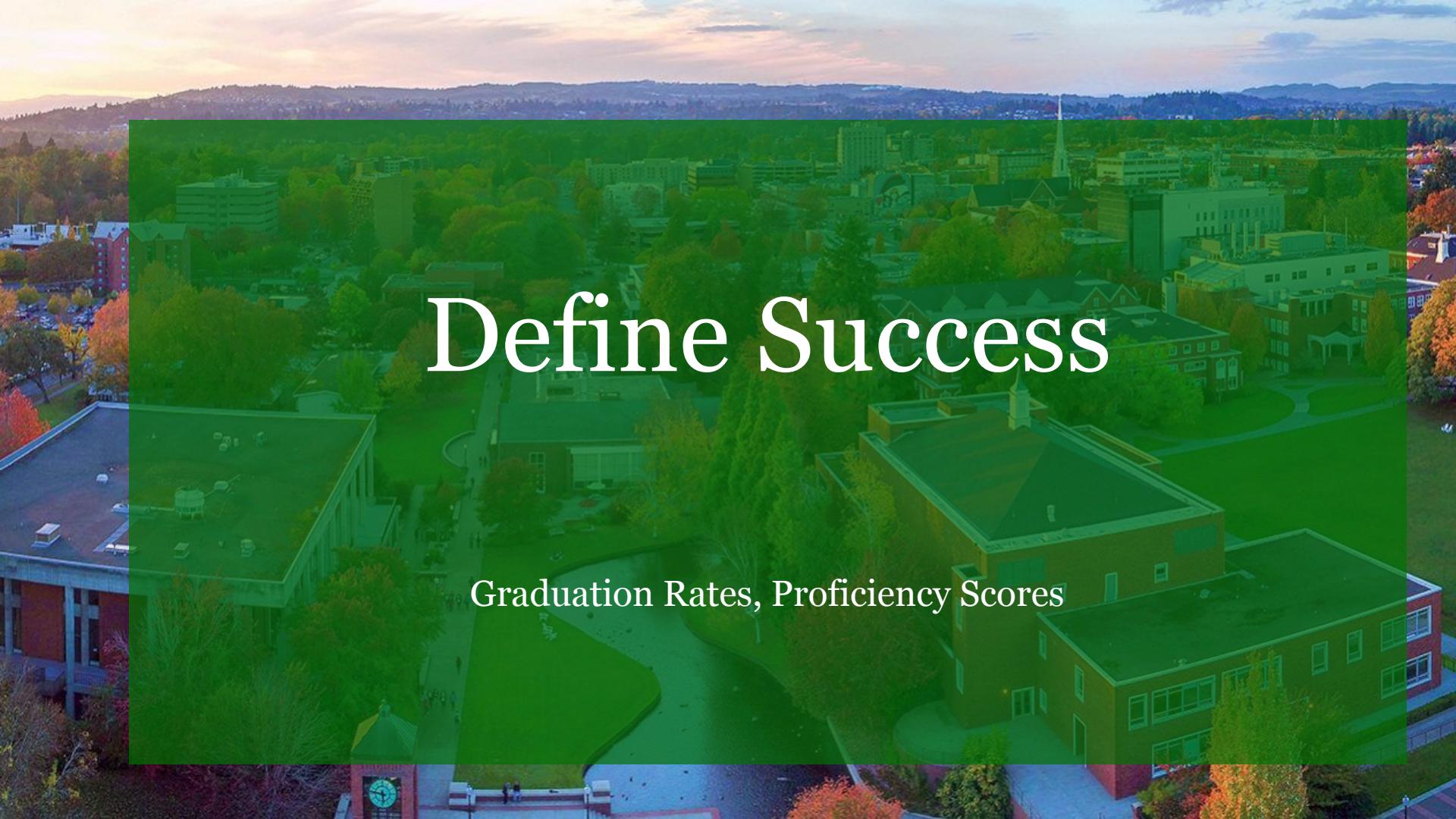
Overperformers

Our Objective:

Uncover what is behind the outliers.



Underperformers

An aerial photograph of a university campus during sunset. The sky is filled with warm orange and yellow hues. In the foreground, there are several modern buildings with green roofs and some older brick structures. A large, open green lawn with a curved path leads towards the center of the campus. In the background, there are more buildings and a range of hills or mountains under the setting sun.

Define Success

Graduation Rates, Proficiency Scores


$$\left(\frac{Graduation}{RateQuartile} \right) * \left[\left(\frac{Math}{Proficiency} \right) + \left(\frac{Reading}{Proficiency} \right) + \left(\frac{Science}{Proficiency} \right) \right]$$


District Differences



Riddle School District
Riddle, OR

Math Proficiency	1
Reading Proficiency	1
Science Proficiency	4
Sum:	6
Graduation Quartile	x1
Score:	6



Riverdale School District
Portland, OR

Math Proficiency	4
Reading Proficiency	4
Science Proficiency	4
Sum:	12
Graduation Quartile	x4
Score:	48

Riverdale School District

Success Score: 48



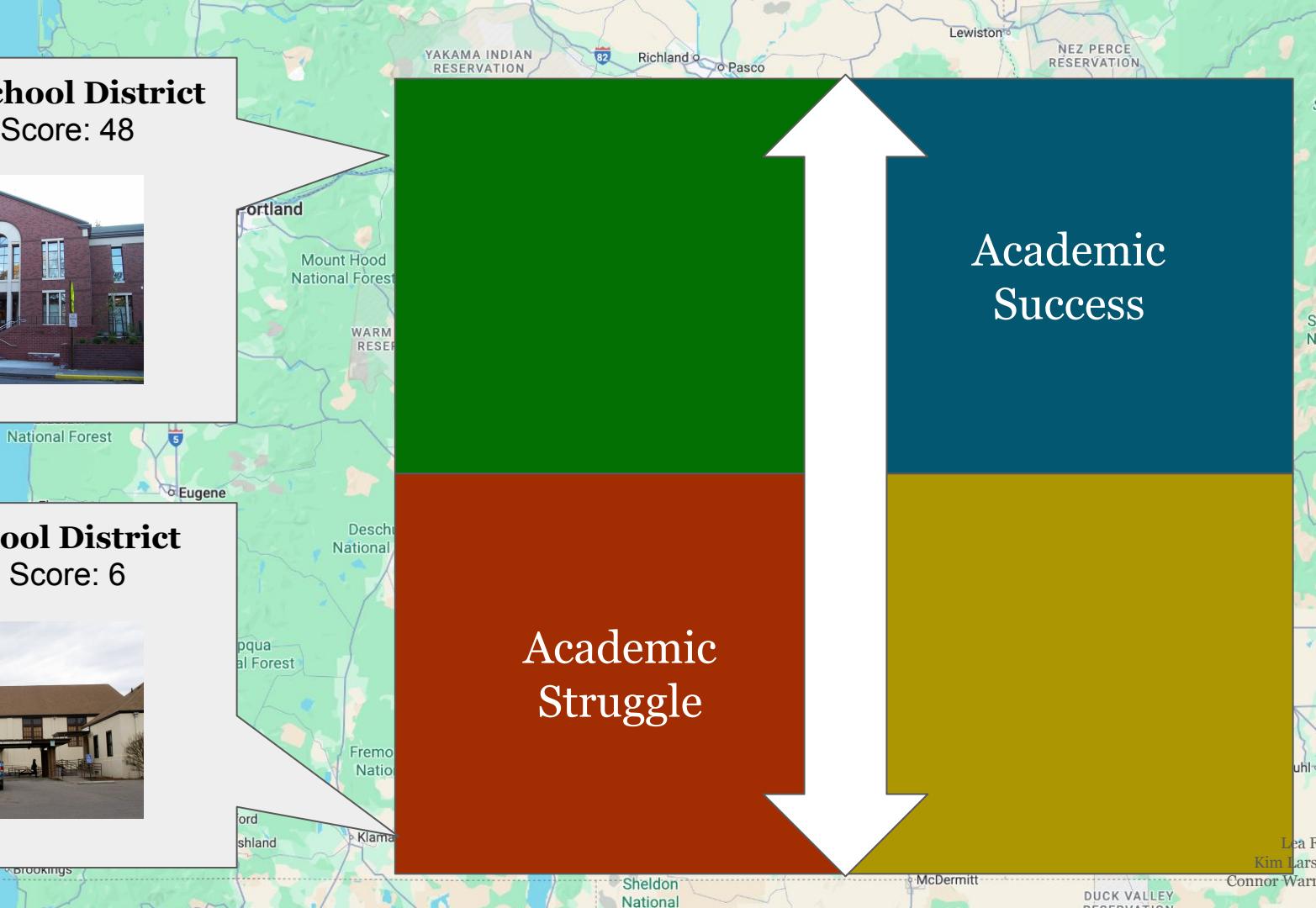
Riddle School District

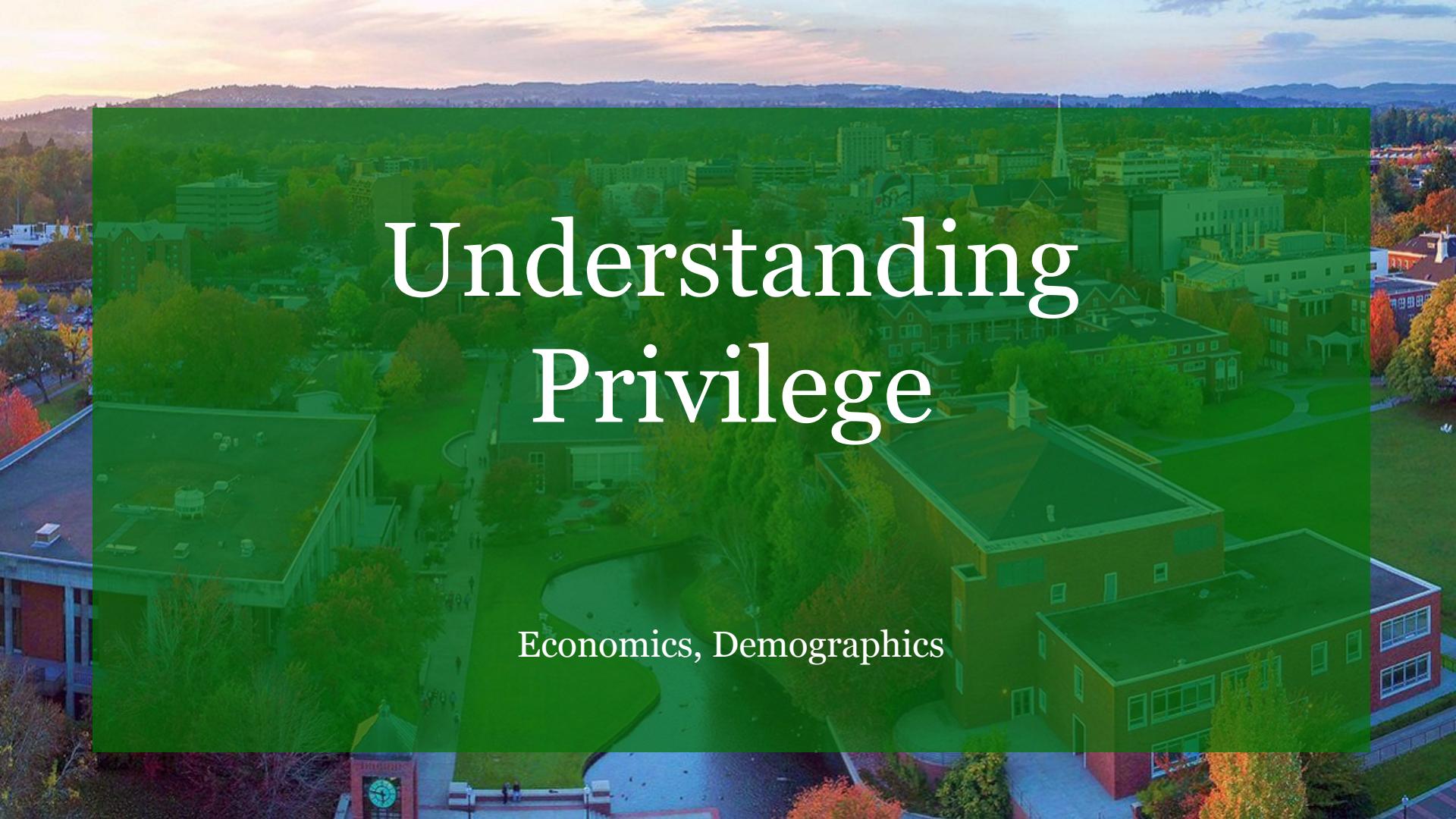
Success Score: 6



Academic
Struggle

Academic
Success



An aerial photograph of a university campus during sunset. The sky is filled with warm orange and yellow hues. In the foreground, there's a large green lawn with several modern buildings, some with red roofs. A paved walkway leads towards the center of the campus. In the background, a range of mountains is visible under the setting sun. The overall atmosphere is peaceful and scenic.

Understanding Privilege

Economics, Demographics

The background of the slide is a photograph of a city skyline during sunset or sunrise. The sky is filled with warm, orange and yellow hues. In the foreground, there's a mix of modern and older buildings, including a prominent red brick building with white-framed windows. A river or canal runs through the city, with several bridges visible across it. The surrounding area is dotted with green trees, some of which have autumn-colored leaves. The overall atmosphere is peaceful and scenic.
$$100\% - \left(\begin{array}{c} \text{Average} \\ \text{Area Deprivation Index} \\ \text{Factors} \end{array} \right) = \text{Privilege Score}$$

Privilege Differences

Riddle School District *Riddle, OR*

Poverty (all ages)	94.7%
Poverty (children)	97.1%
SNAP recipients	95.1%
Median Family Income	88.6%
Median Household Income	90.2%
No Vehicle	96.3%
Median Home Value	92.6%
Owner Occupied	91.4%
Housing Crowded Moderate	85.7%
Housing Crowded Severe	21.1%
Single Parent	75.2%
Married Couple	70.7%
ADI Score	83.2%

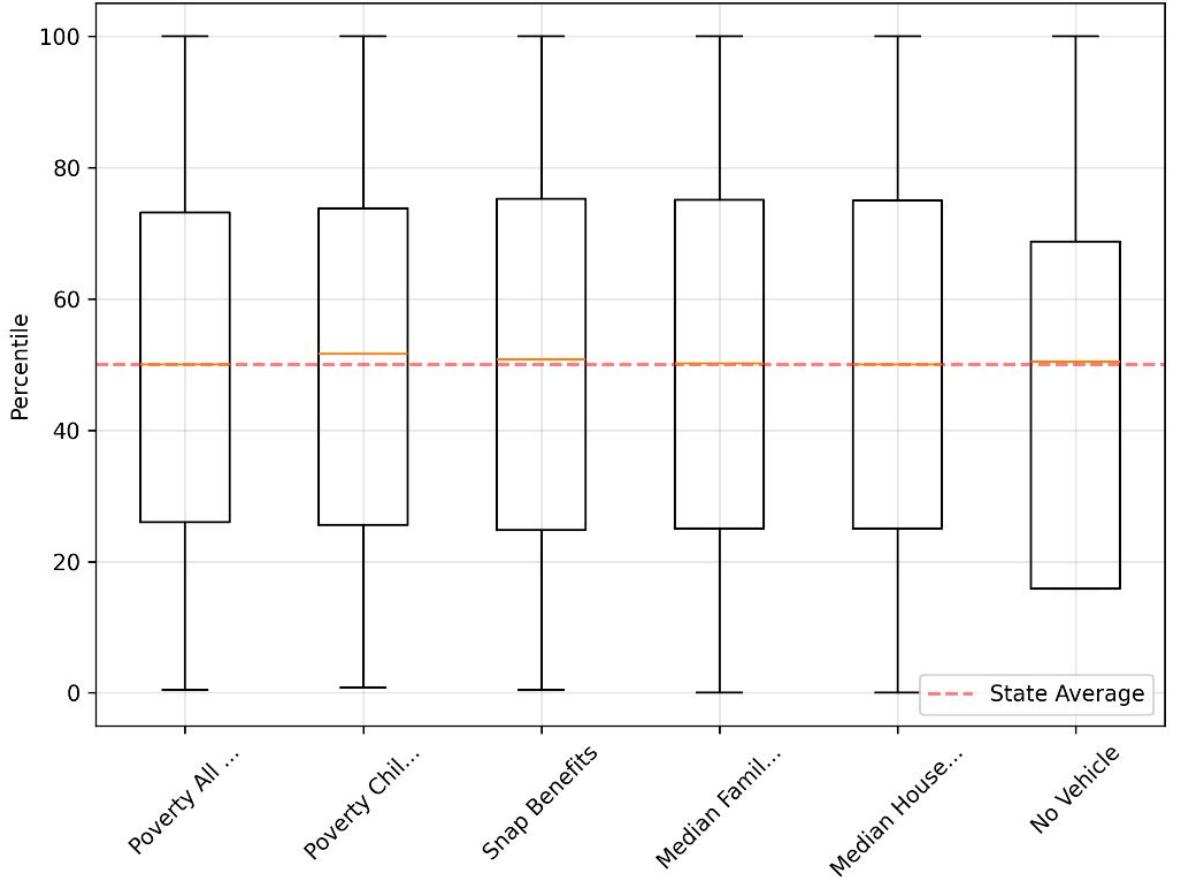
Privilege Index: **16.7%**

Riverdale School District *Portland, OR*

Poverty (all ages)	2.8%
Poverty (children)	3.6%
SNAP recipients	0.4%
Median Family Income	0.0%
Median Household Income	0.0%
No Vehicle	50.4%
Median Home Value	0.0%
Owner Occupied	0.0%
Housing Crowded Moderate	3.6%
Housing Crowded Severe	59.3%
Single Parent	5.2%
Married Couple	3.6%
ADI Score	10.7%

Privilege Index: **89.2%**

ADI Component Distributions (Higher = More Deprived)



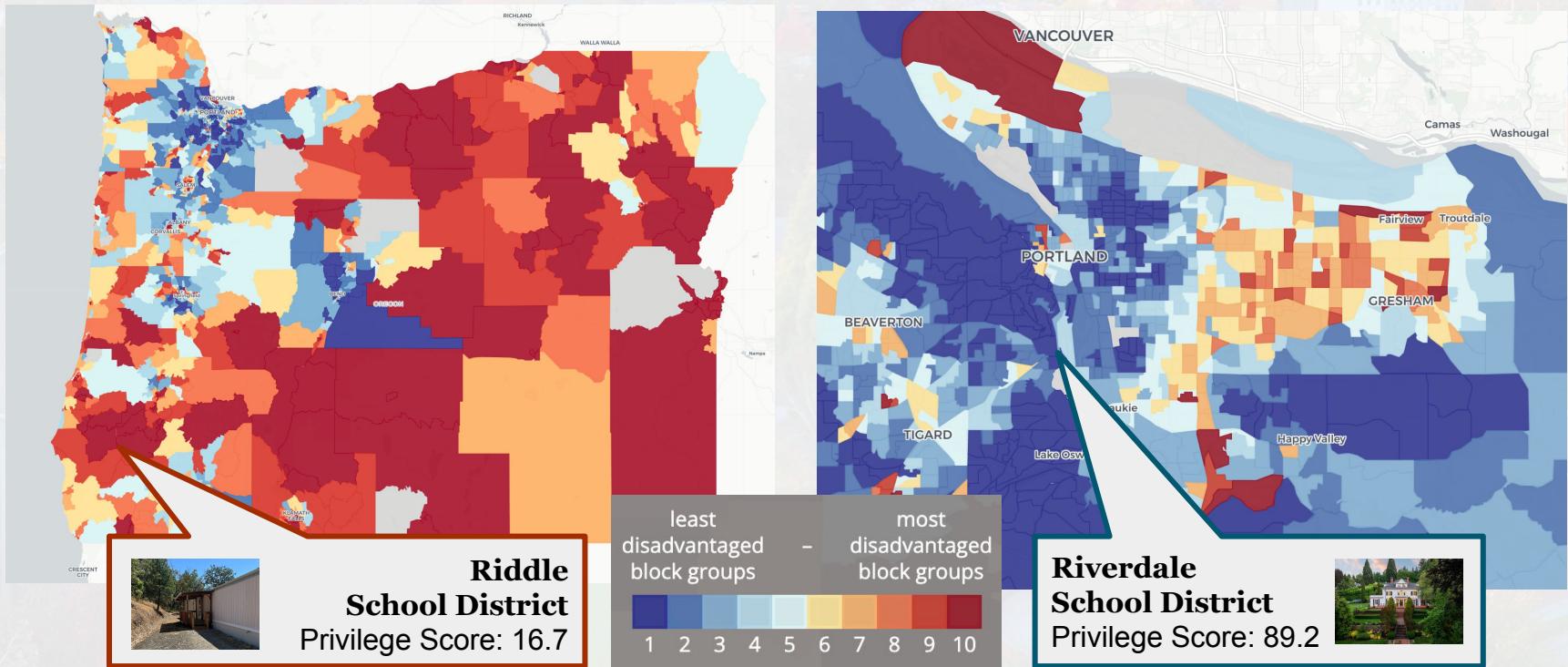
Riddle School District
ADI: 83.2



Riverdale School District
ADI Score: 10.7



Area Deprivation Index (ADI)



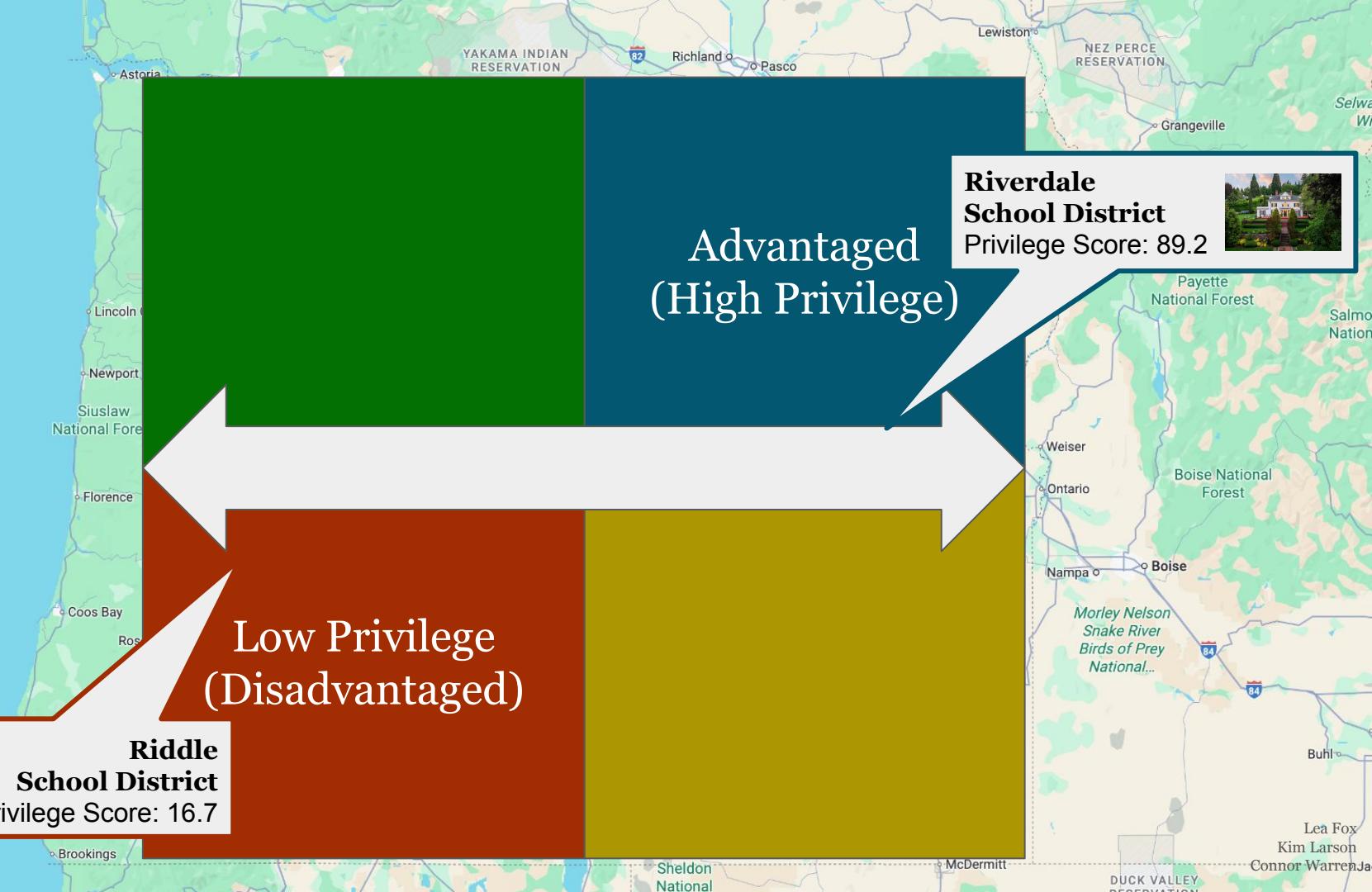


**Riddle
School District**
Privilege Score: 16.7

Low Privilege
(Disadvantaged)

Advantaged
(High Privilege)

**Riverdale
School District**
Privilege Score: 89.2

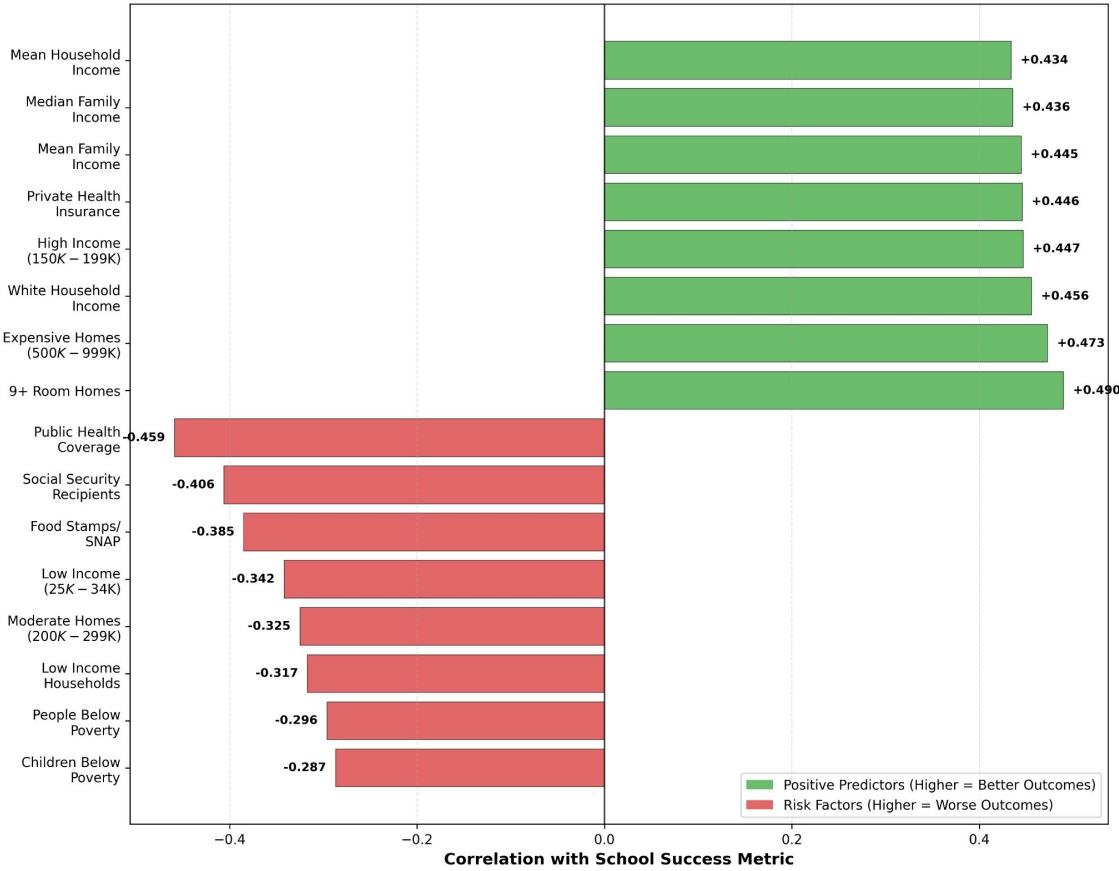


The background image is a wide-angle aerial photograph of a university campus during sunset. The sky is filled with warm, orange and yellow hues. In the foreground, there are several modern buildings with green roofs, a central quad with a fountain, and a large, paved walkway. The campus is surrounded by lush green trees and rolling hills in the distance under a clear blue sky.

Relationship between Privilege & Success

Exploring the patterns and correlations

Top Demographic Predictors of School Success
Oregon School Districts (2014-2018)

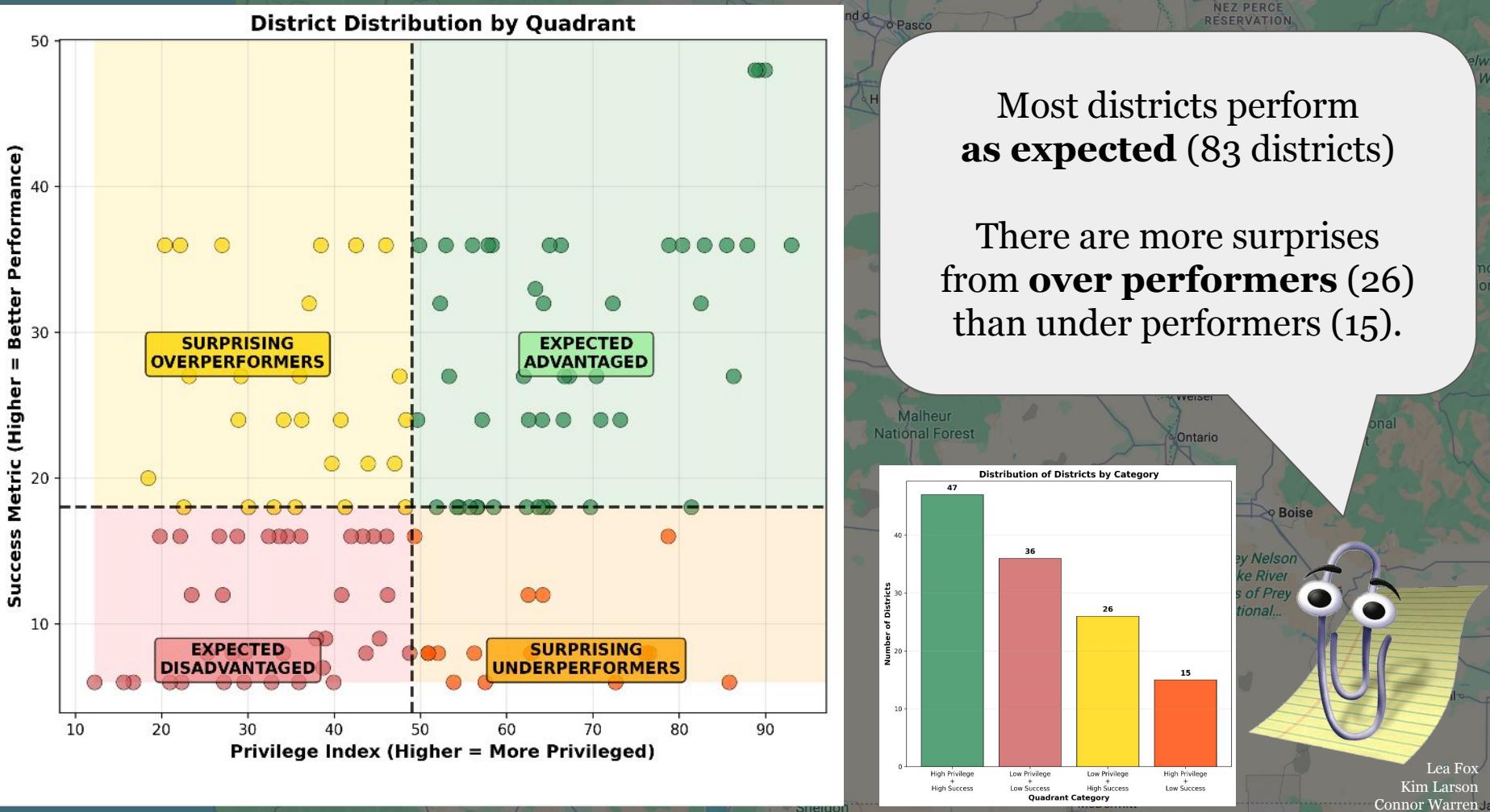


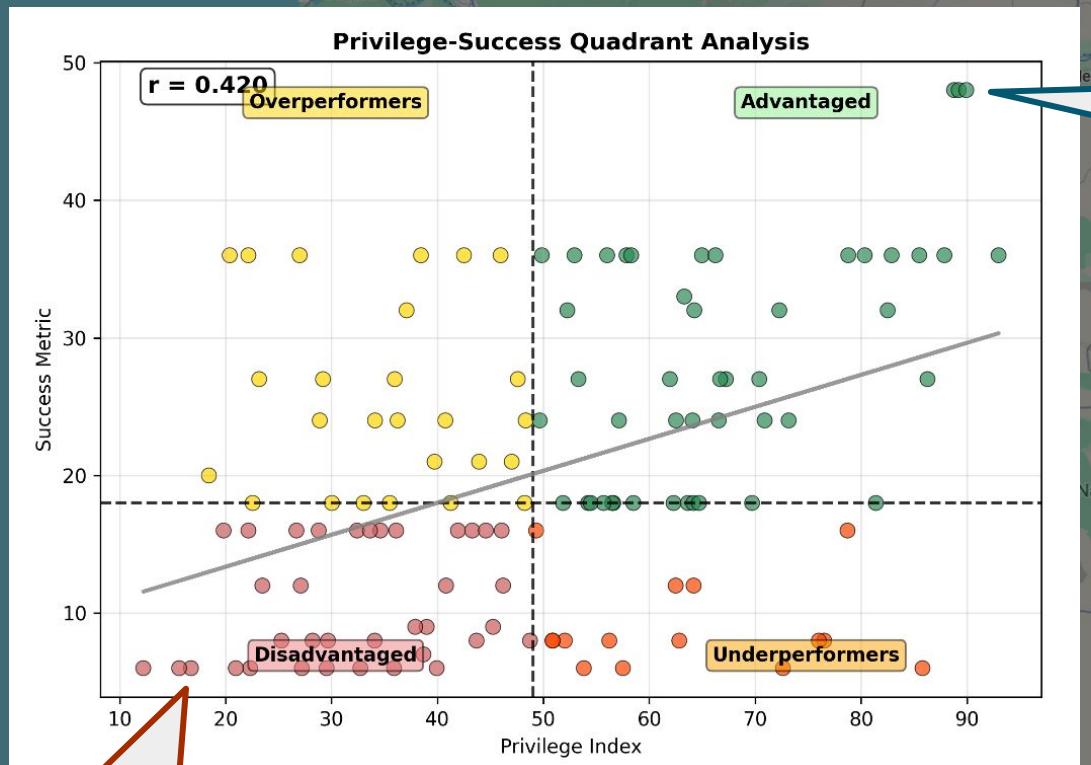
If Household Income is high,
so are success scores. ▲

If Public Health Coverage is high,
success scores are lower. ▼



Lea Fox
Kim Larson
Connor Warren Ja





Riddle School District
Privilege 16.7%
Success 6

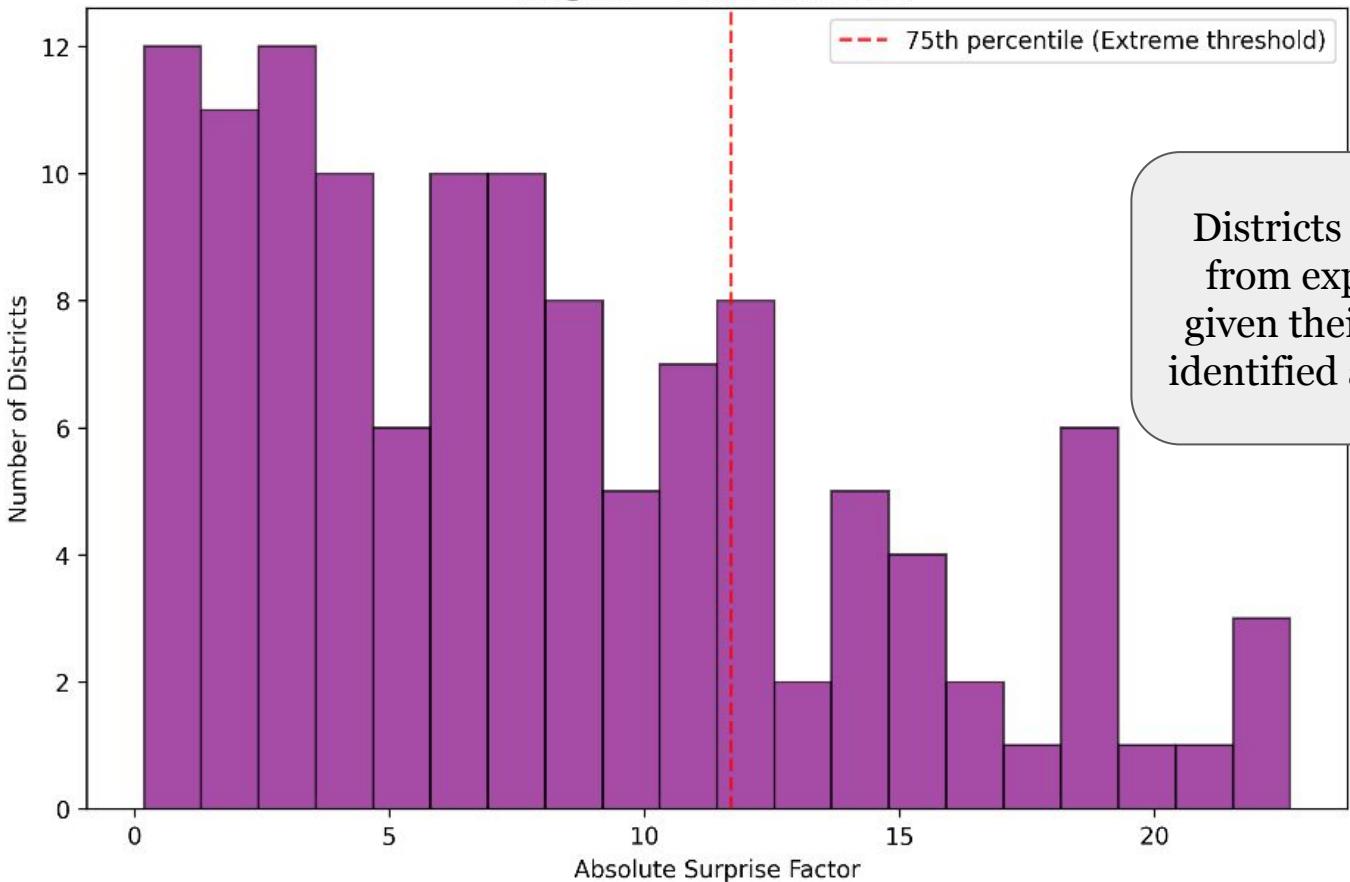
Riverdale School District
Privilege 89.2
Success 48

When fitted with a linear regression line,
 $r=0.420$ indicates that
the Privilege Index explains **17.6%**
of the Success Metric variance.

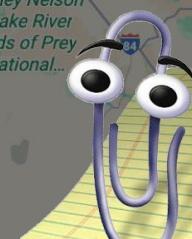


Lea Fox
Kim Larson
Connor Warren Ja

Absolute Surprise Factor Distribution (Higher = More Extreme)



Districts deviating the furthest from expected success scores given their privilege levels were identified as “Extreme Surprises”



Lea Fox
Kim Larson
Connor Warren

The background image shows an aerial view of a university campus during sunset. The sky is filled with warm orange and yellow hues, transitioning into cooler blues and purples. In the foreground, there are several modern buildings with green roofs and some older brick structures. A large, open green lawn with a winding path leads towards the center of the campus. In the distance, a city skyline with various buildings and hills is visible under the colorful sky.

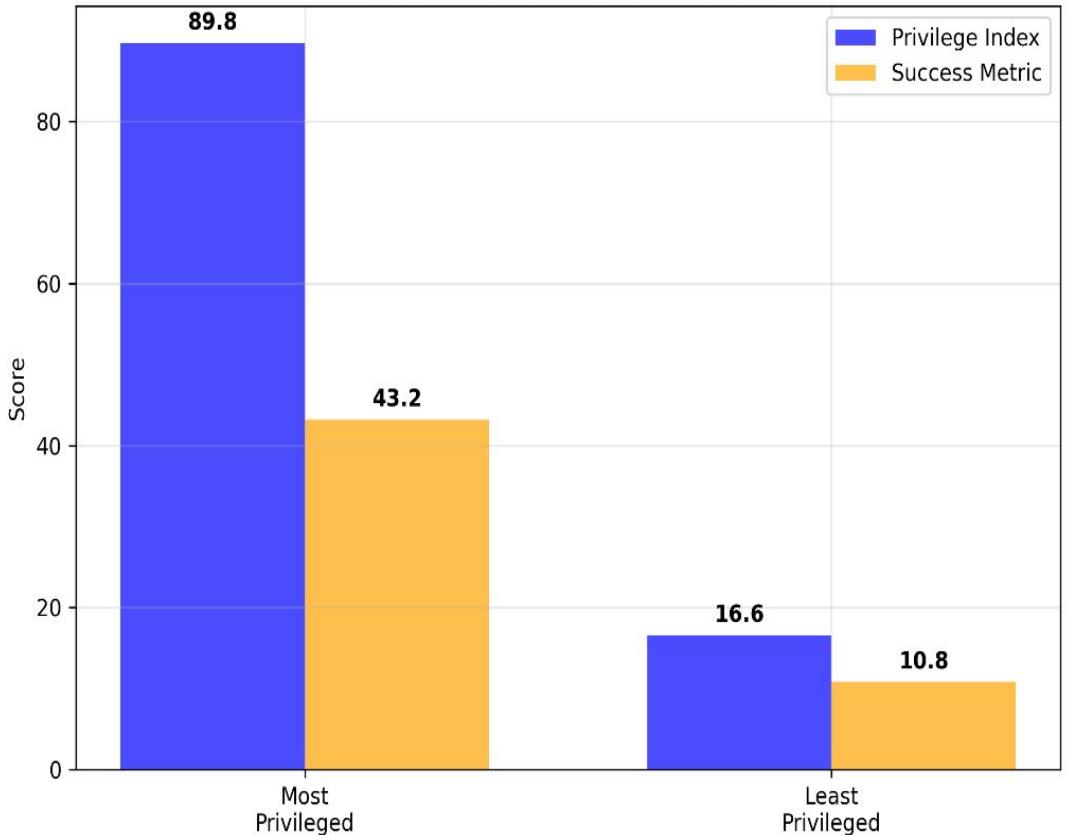
Low Privilege
Academic Success

Surprises: Outlier Results

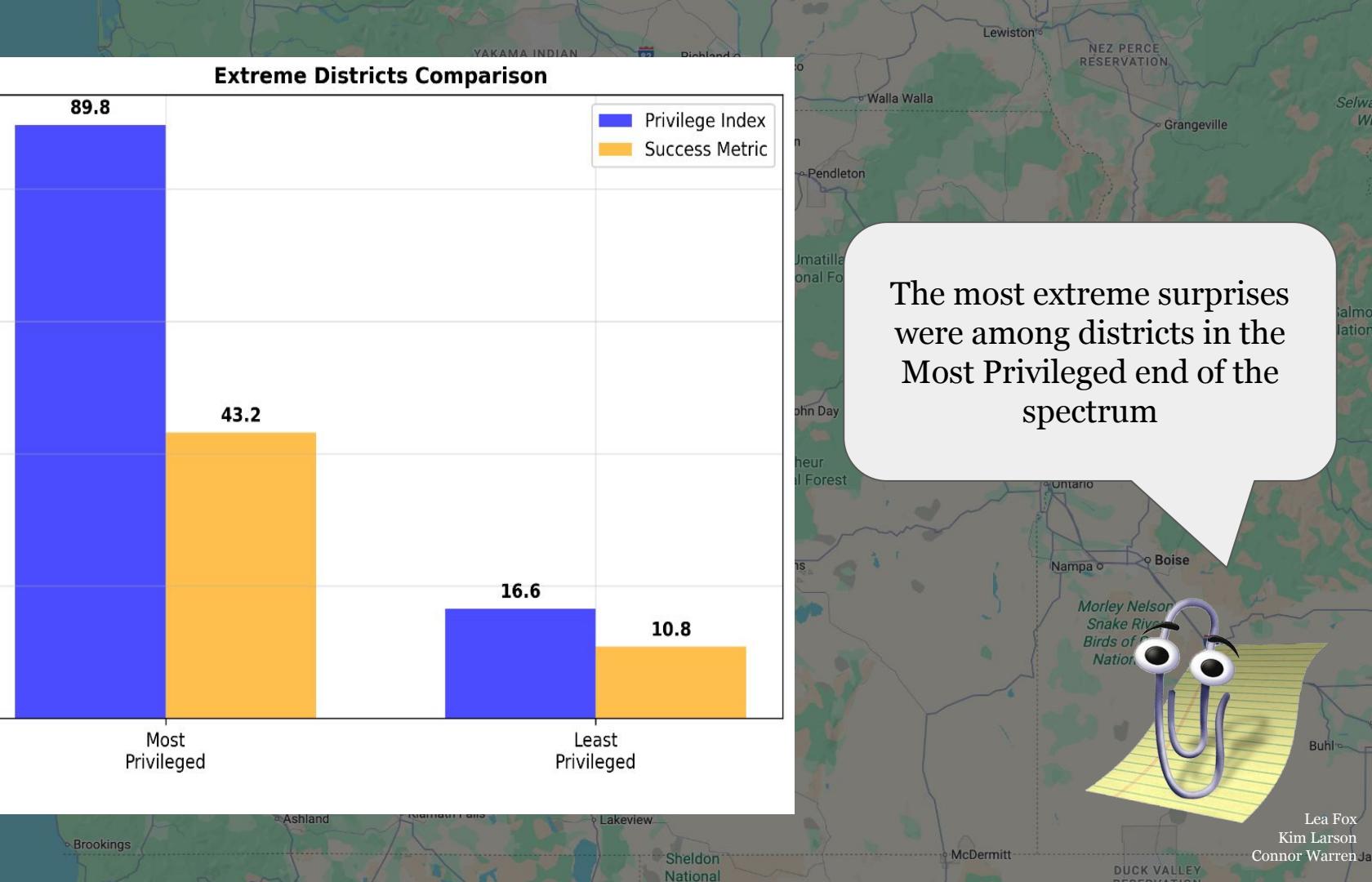
A large yellow downward-pointing arrow is positioned on the right side of the slide, pointing towards the text 'High Privilege Academic Struggle'.

High Privilege
Academic Struggle

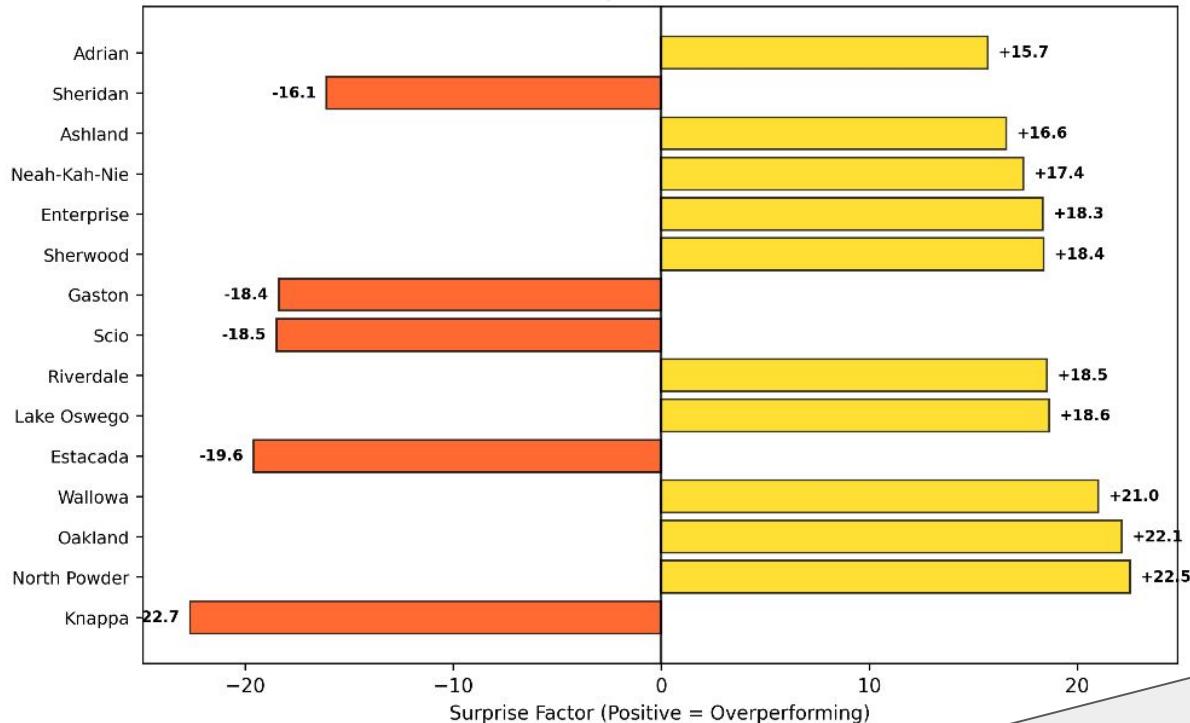
Extreme Districts Comparison



The most extreme surprises were among districts in the Most Privileged end of the spectrum



Top 15 Most Extreme Districts (Surprise Factor)

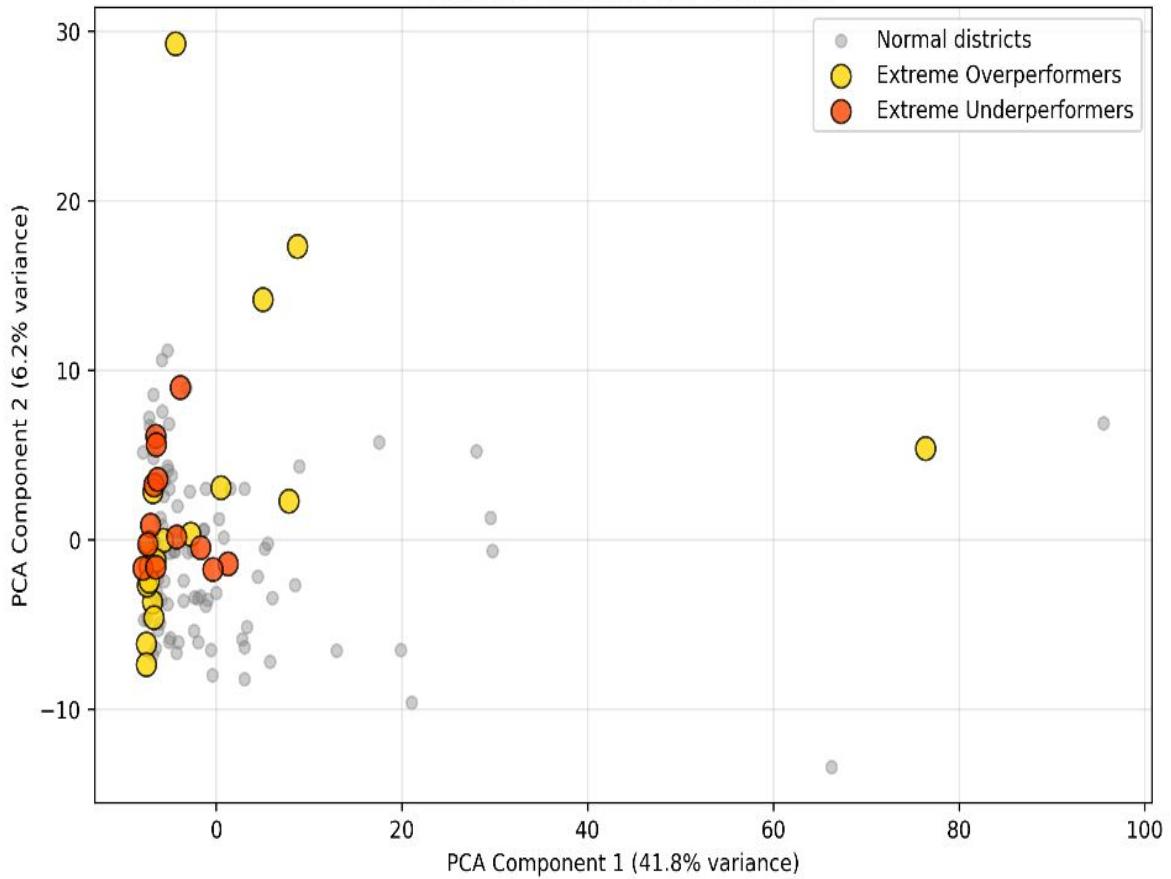


These districts were the strongest outliers.

They had the most surprising success scores given their privilege levels.



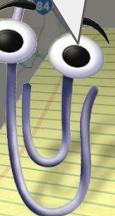
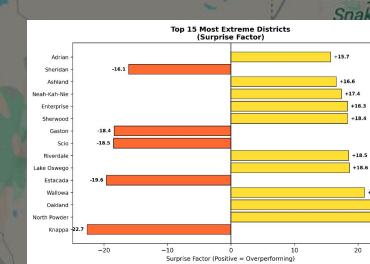
Extreme Districts in PCA Space



Principal Component Analysis (PCA) results:

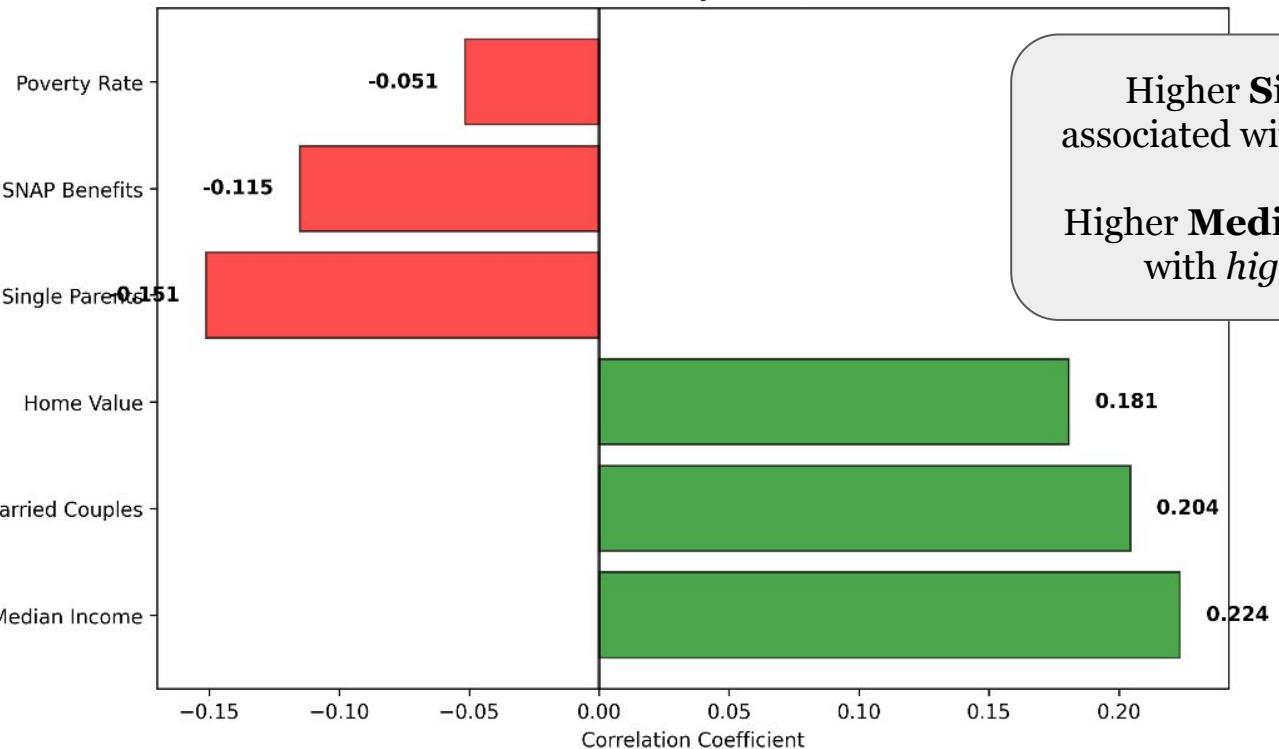
Underperformers were tightly clustered, indicating there is *low variability* in underlying feature patterns.

Overperformers were scattered, indicating there is high variability in underlying feature patterns.



Lea Fox
Kim Larson
Connor Warren
Ja

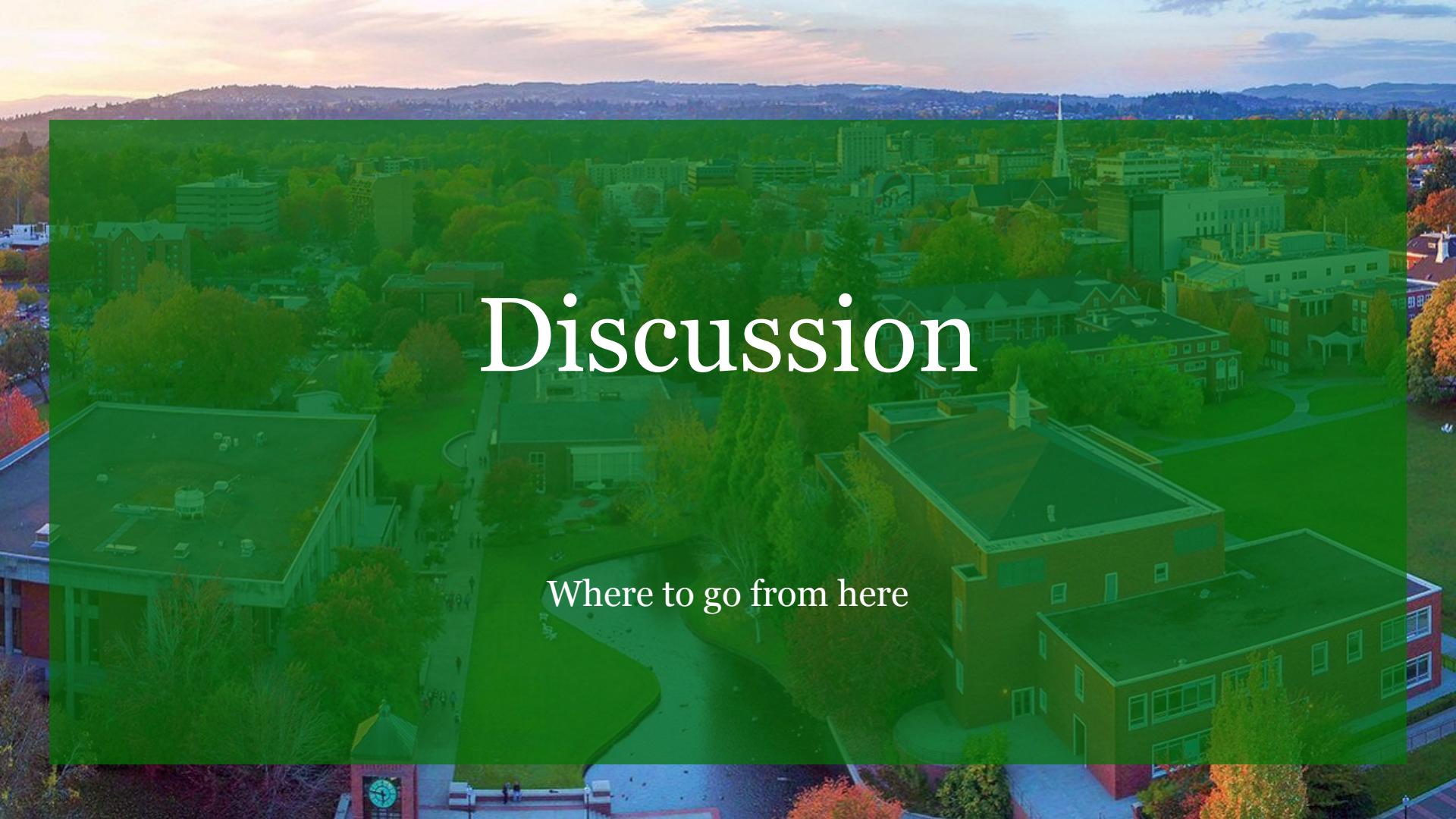
Demographic Correlations with Absolute Surprise Factor



Higher **Single Parent Rates** are associated with *lower* surprise factors. ▼

Higher **Median Incomes** are associated with *higher* surprise factors. ▲



An aerial photograph of a university campus during sunset. The sky is filled with warm orange and yellow hues. In the foreground, there's a large green lawn with several buildings. On the left, a modern building with a flat roof and a central entrance is visible. To its right is a larger, more traditional-looking building with multiple gables and a chimney. A paved walkway leads from the center-left towards the background. In the middle ground, there are more buildings, some with red roofs, and a prominent church steeple rising above the trees. The background features a range of hills or mountains under the setting sun.

Discussion

Where to go from here

Future Research

Expand on:

- Include district spend per student to the model
- Include urbanity of a district (urban, suburban, rural)
- Include time series data to reveal trends



An aerial photograph of a university campus during sunset. The sky is filled with warm orange and yellow hues. In the foreground, there are several modern buildings with green roofs and some older brick structures. A large, open green lawn with a circular path or pond in the center is visible. In the background, more buildings and trees are scattered across rolling hills under the setting sun.

Academic Success & Privilege

Questions? Feedback?



YAKAMA INDIAN
RESERVATION

Richland o Pasco

Lewiston



Academic Success

Advantaged

Lincoln
Newport
Siuslaw
National Forest
Florence
Coos Bay
Ros



Disadvantaged

Academic Struggle



Sheldon
National



Lea Fox
Kim Larson
Connor Warren

Selwa
W

geville

Payette
National
Salmo
Nation

Boise National
Forest

Morley Nelson
Snake River
Birds of Prey
National...

Buhl
Lea Fox
Kim Larson
Connor Warren