Alexis Kedo

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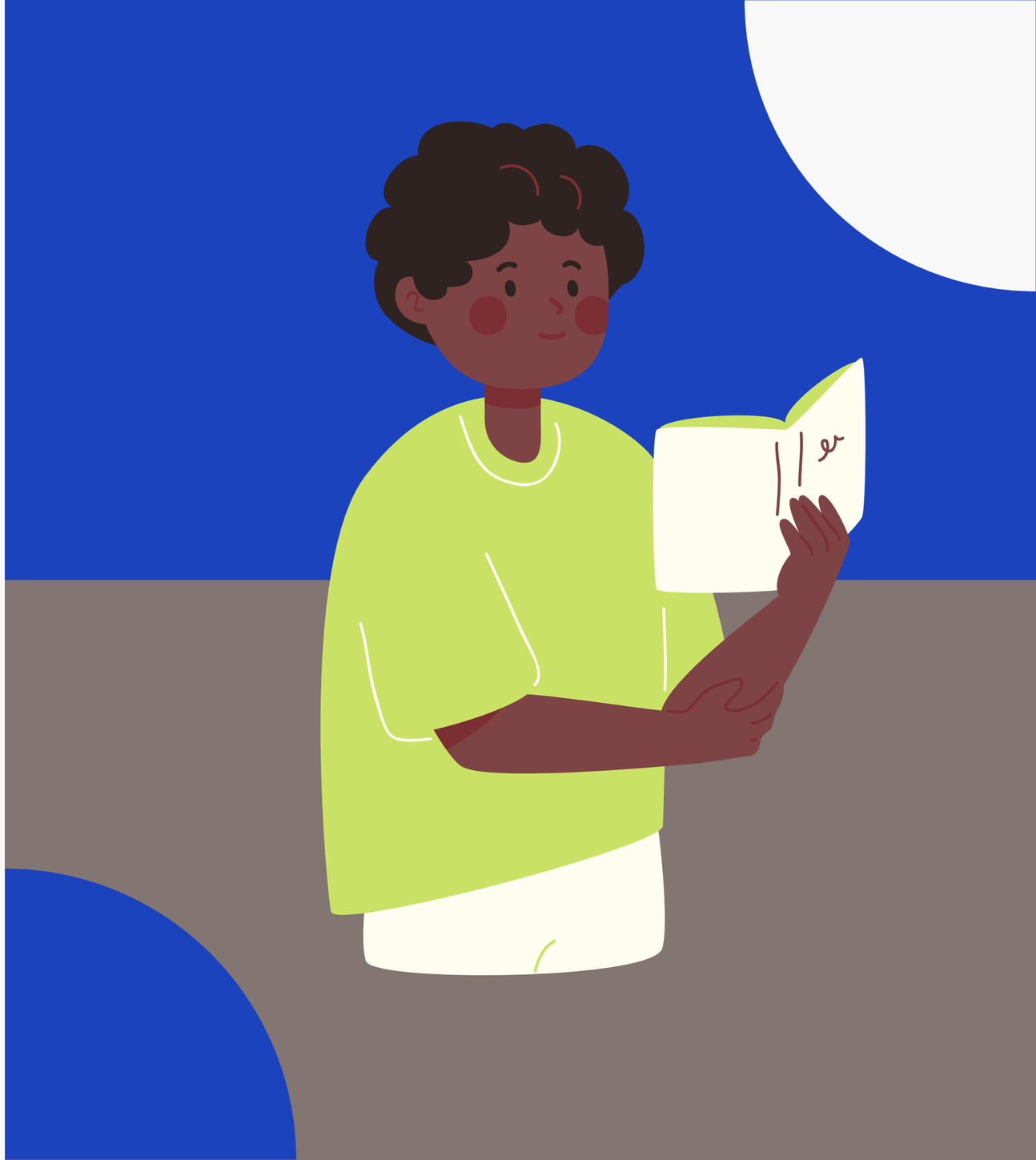
School District Spending & Impact on Literacy

Summary

An analysis of available federal, state, and local spending data ($ amounts) and student achievement levels in reading (percentages) from the 2018-2019 school year.

We analyzed how well this data can predict the likelihood that a district has a reading proficiency rate of 50% or more.



Our Research Question

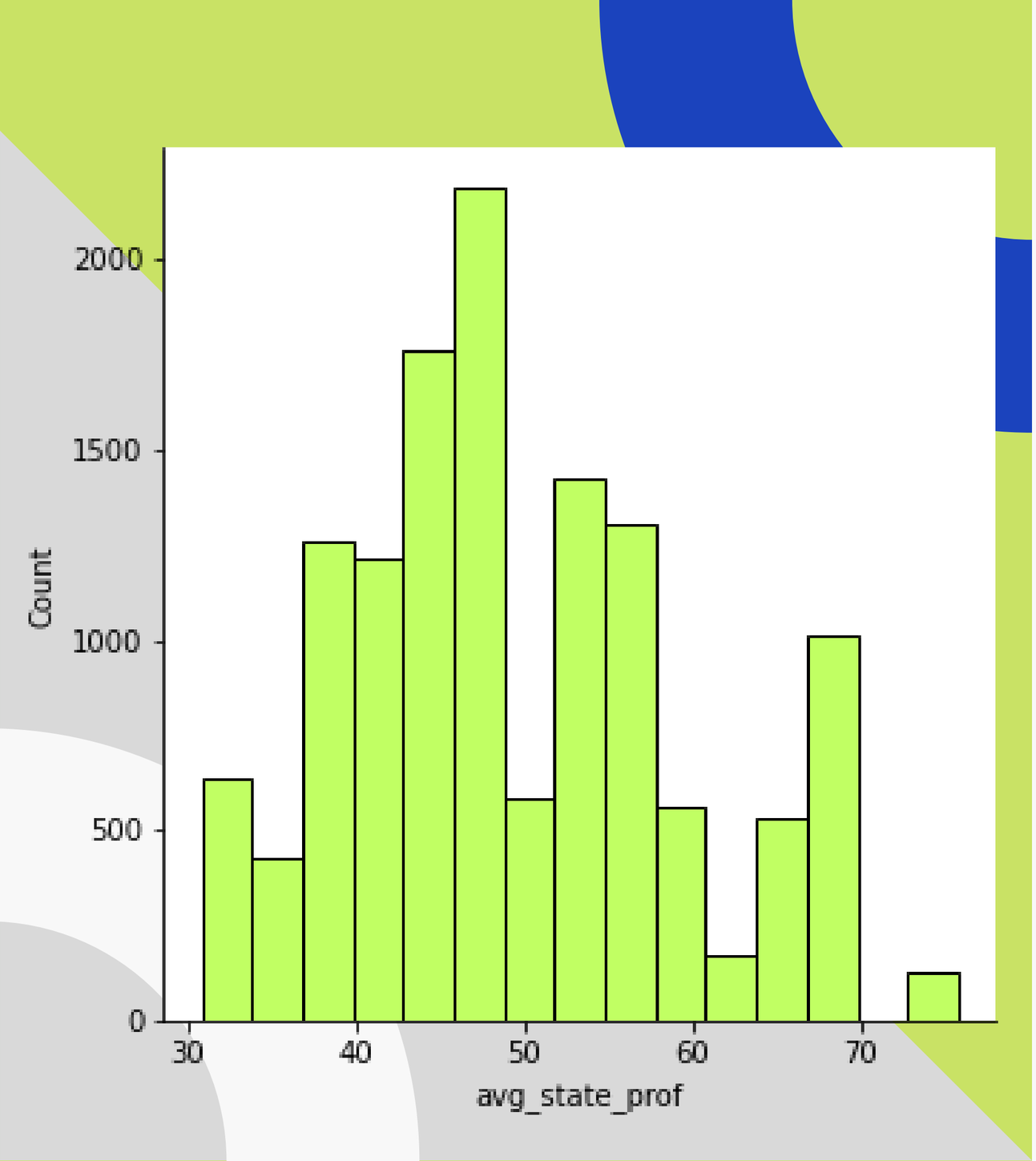
How sure can we be that, when we're increasing various levels of annual funding to a school district, we're having an actual impact on reading achievement for that year?

Data and Methods

District-level funding info available from all 50 states, as well as self-reporting reading scores aggregated by the U.S. Department of Education.

The data contained information from over 11,000 school districts. We eliminated districts where scores were suppressed to protect privacy.

We conducted a "classification" analysis, where we categorized each district as either **above** or **below** a 50% proficiency level.

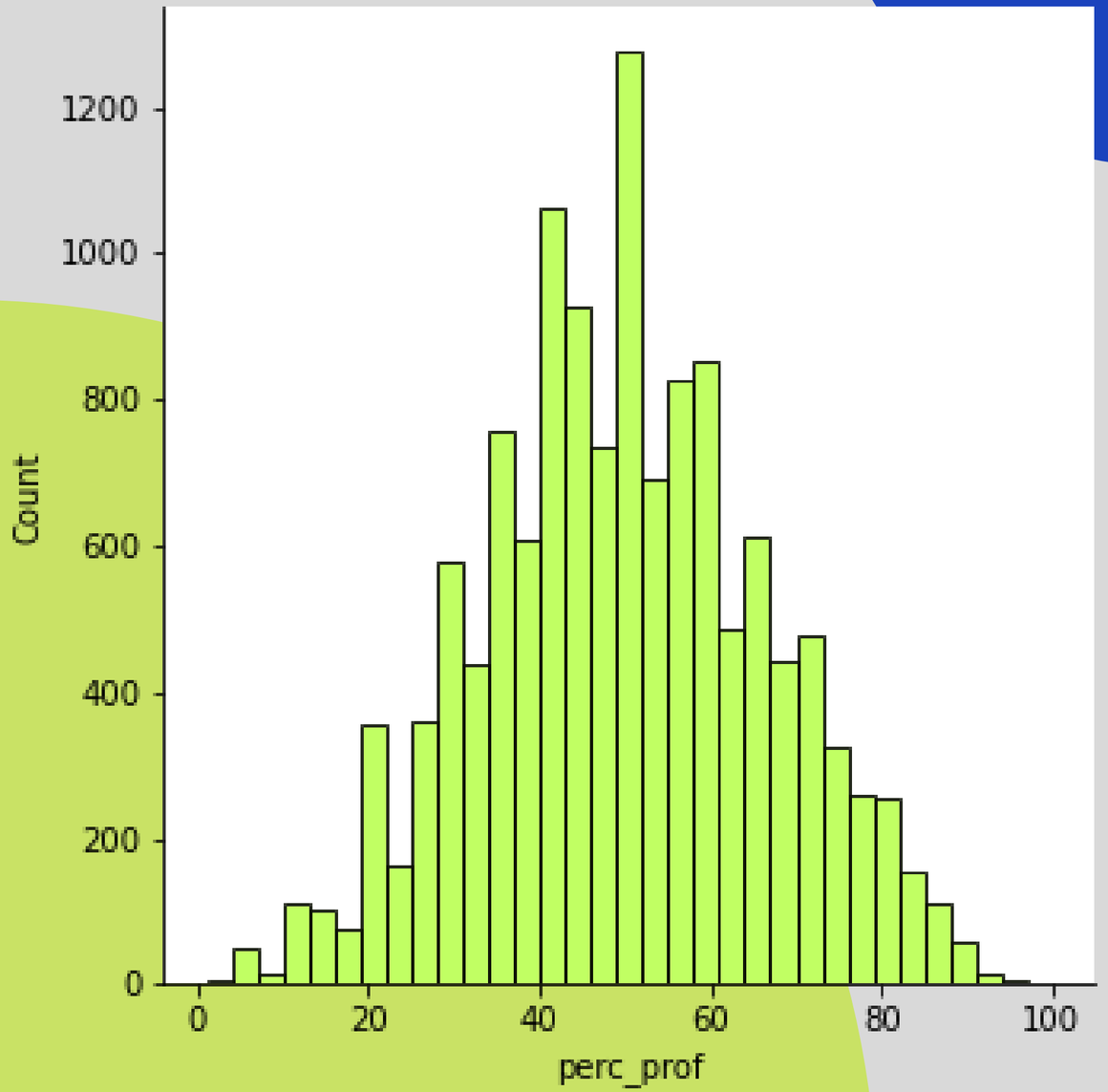


Preliminary Results

State reading proficiency levels for all districts, all ages, nationwide, tend to skew below 50%, with over 2,000 school districts reporting a reading proficiency score of 48%.

Preliminary Results

When we divide reading scores by district, they are more evenly distributed. Most districts report a student reading proficiency level of 50%, or right around 50%.



Our Variables:

- **Average proficiency** for the state in which the district is located
- Total amount of **Title I** funding a district receives
- Total **local revenue** for a district ($)
- Total **state revenue** for a district ($)
- Total **federal revenue** for a district ($)
- Combined **total revenue** ($)
- Total current spending on **instruction** ($)
- **Per pupil total** current spending ($)
- **Per pupil** spending on **instruction** ($)
- Per pupil spending on **student support** ($)
- Per pupil spending on **teacher salaries** ($)
- Total contributions from **property taxes** ($)
- Percentage of a district budget from **taxes** (%)

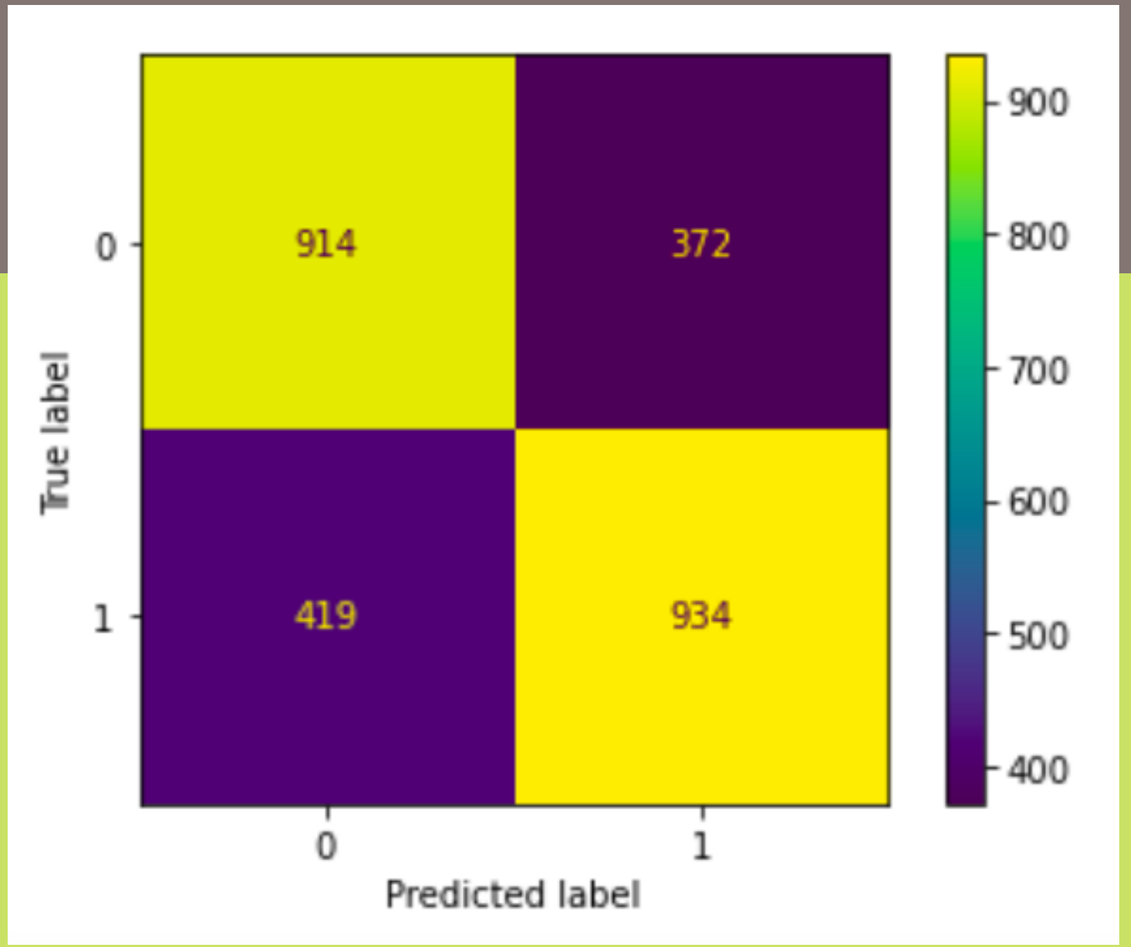
Rationale

- Sought to minimize lower-performing districts being mistakenly labeled as "proficient"
- This may mean that some districts with a higher proficiency rate may be mis-labeled as low-performing

Results

- Our "best" model was able to accurately classify over 70% of the districts in the dataset.

- However, over 372 low-performing districts were still mis-labeled as high-performing.



Conclusion

- The more variables we added, the more precise and more accurate our model became.
- However, this makes it more difficult to discern the extent to which any single funding source impacts reading achievement.
- Broadly speaking, dialing any one funding source up or down may have only an ambiguous impact on literacy.

Next Steps

- Transform any "total amount" variables to per-pupil ratios to enhance their potential predictive power
- Gather non-fiscal data points (student: teacher ratio, class sizes, teachers' years of experience)
- Combine and examine impact of funding trends and assessment results over time

Thank You!

alexiskedo@gmail.com
Git Hub: alexiskedo