

Influencing High School Graduation Rates

Presented by: Helen Levy-Myers, Athena's Workshop
GASP! Government Advances in Statistical Programming
October 24, 2018

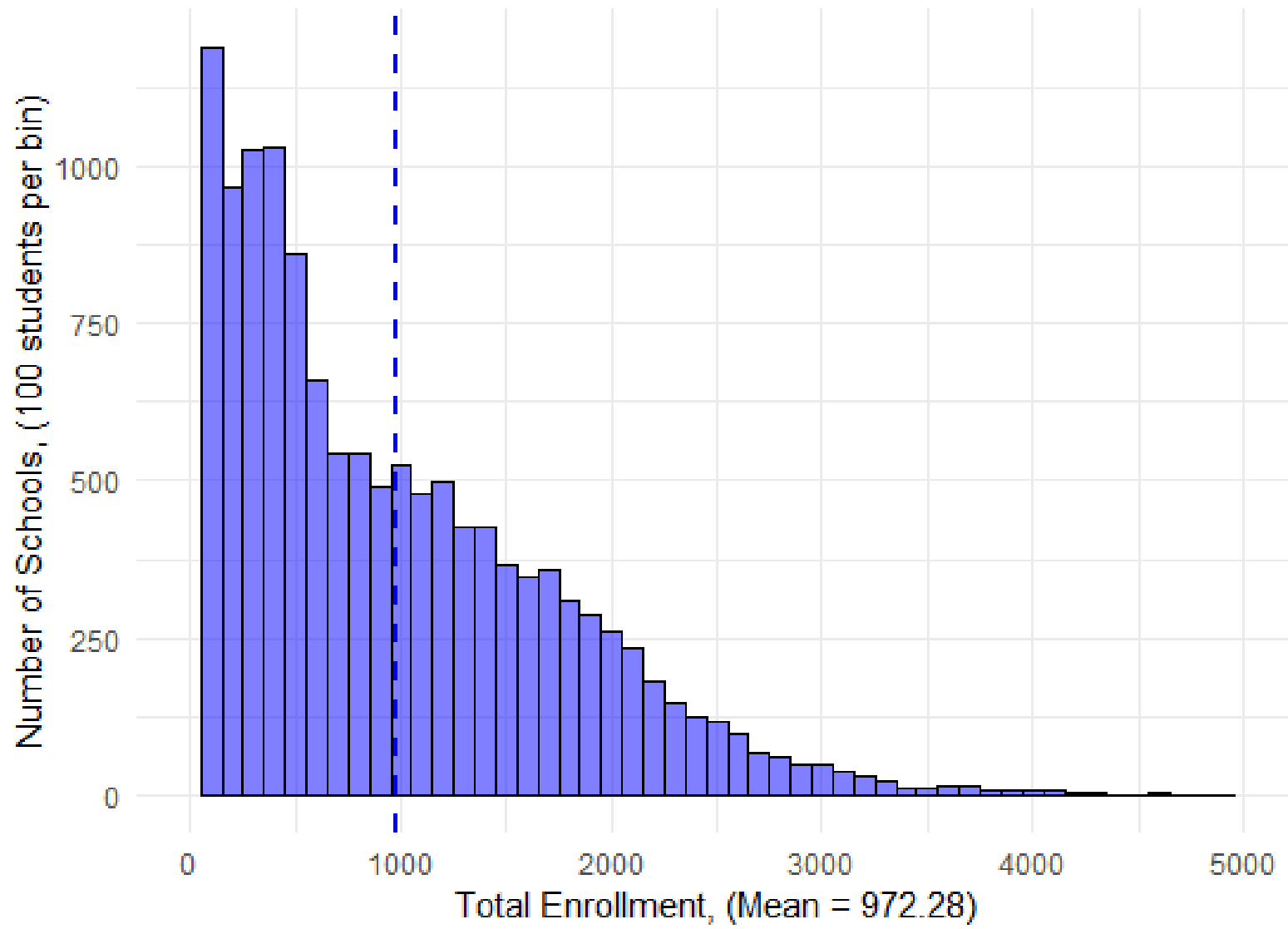


Data

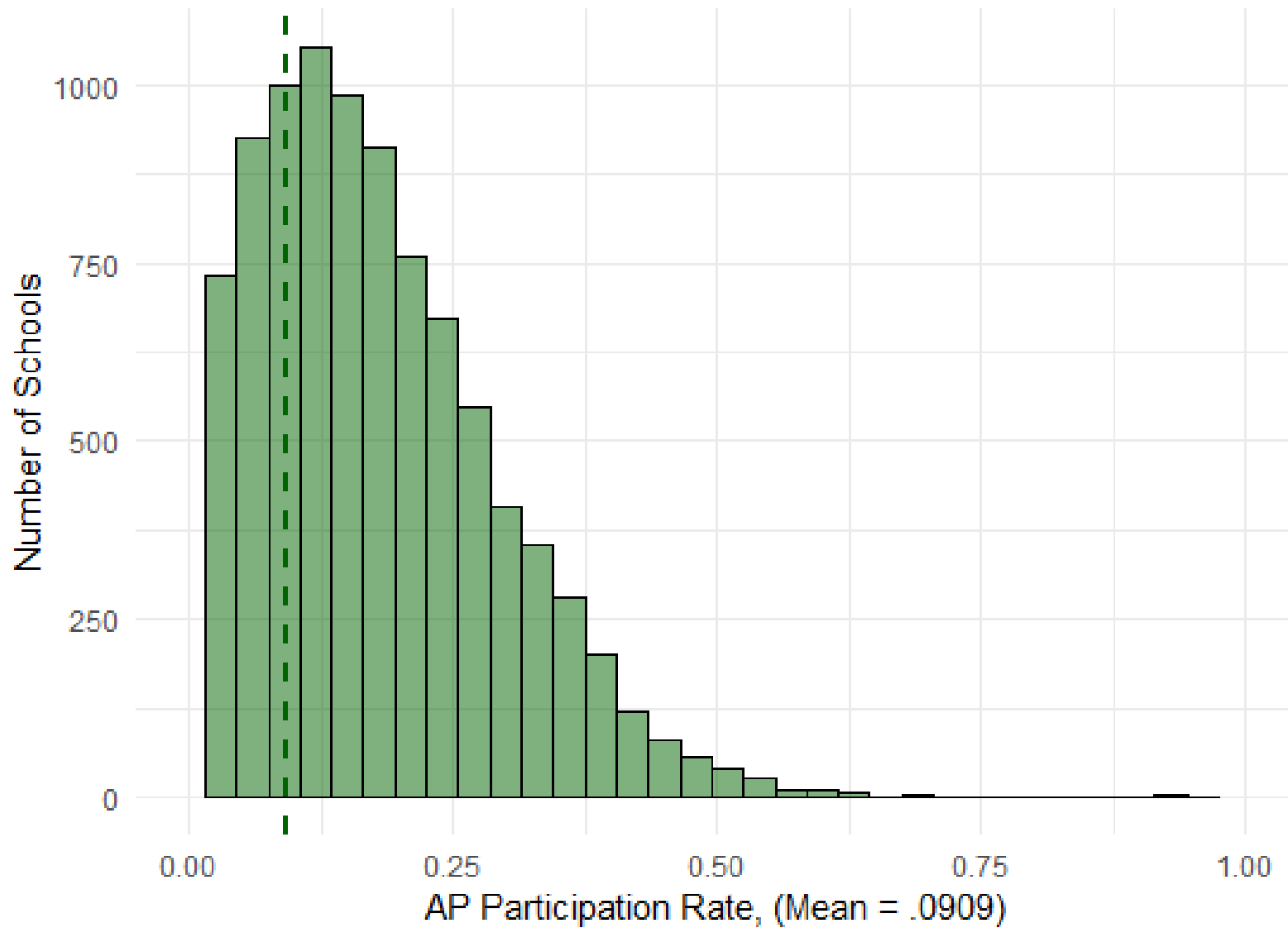
- ▶ Graduation data
 - ▶ 23,090 observations (high schools)
 - ▶ 28 variables - state name, NCES ID, graduation rate by male and female, cohort size, enrollment, etc.
- ▶ OCR data
 - ▶ 96,360 observations (pre-schools, elementary, middle, high schools, juvenile justice, alternative, charters, etc.)
 - ▶ 1,836 variables, bullying, teacher certification, absenteeism, sports participation, AP class, suspensions, expulsions, gender, ethnicity, disability, LEP, etc. subsets.
- ▶ Data examined totals for each variable.



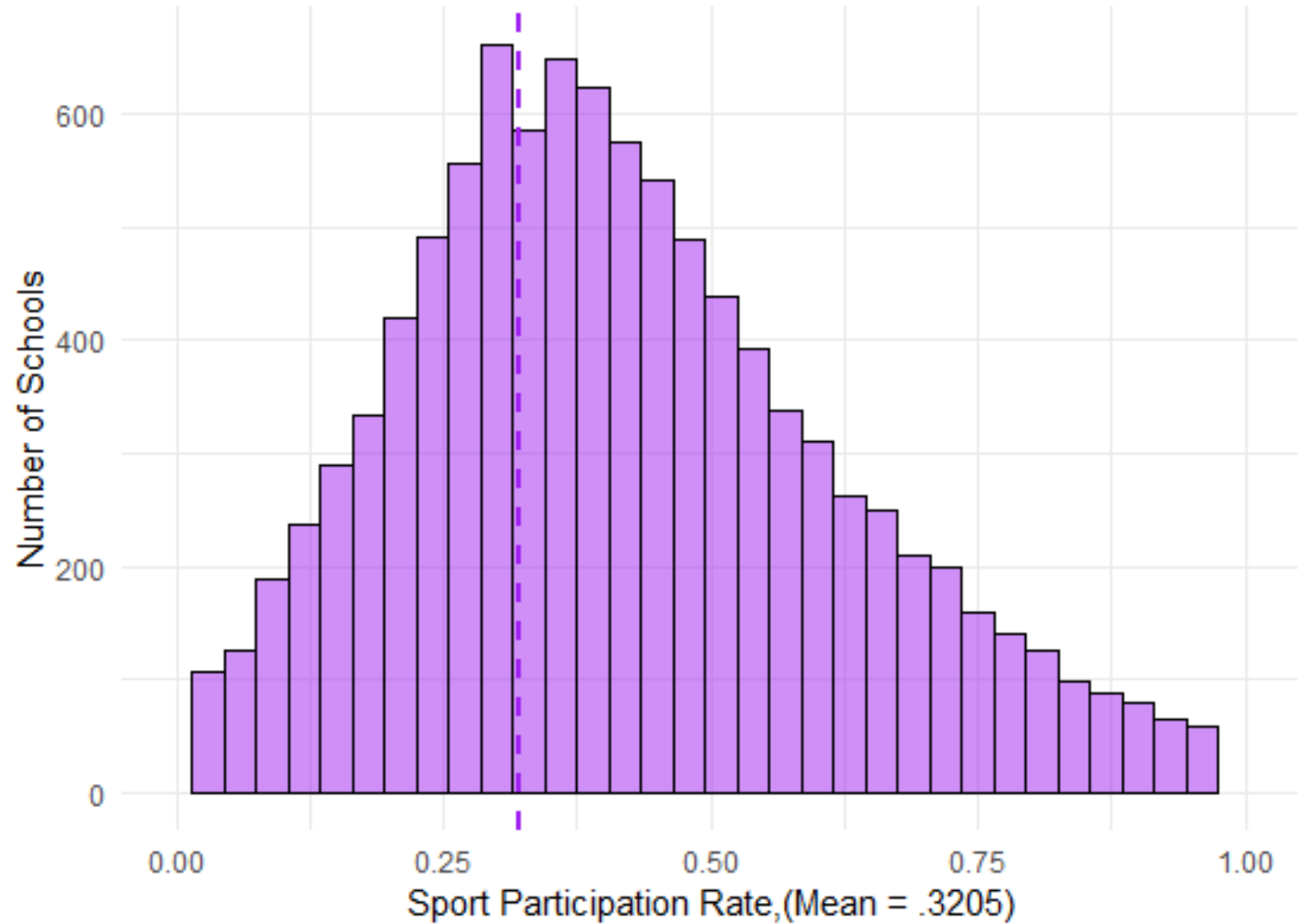
2015-16 School Enrollment



2015-16 AP Participation Rate

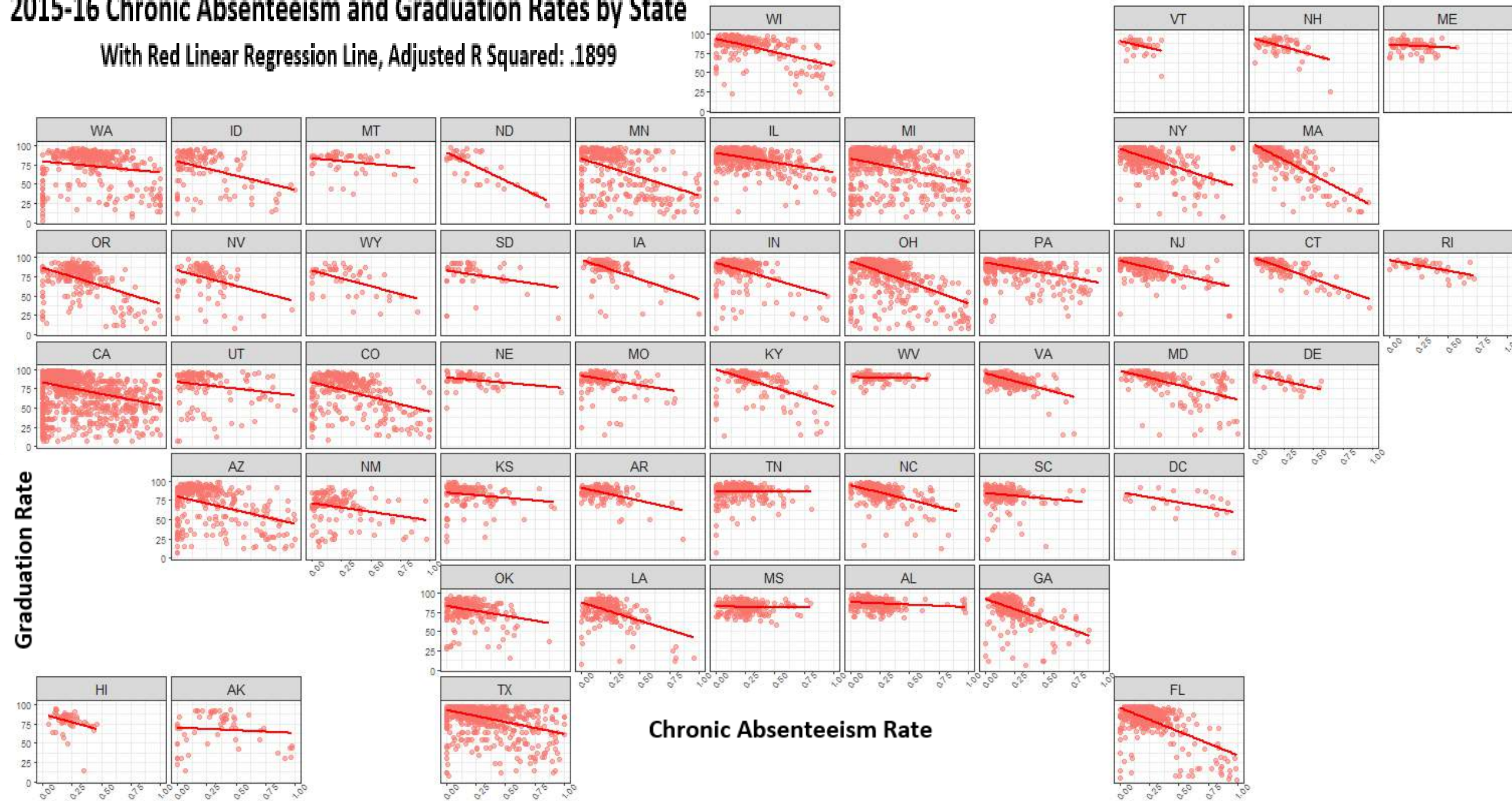


2015-16 Sport Participation Rate



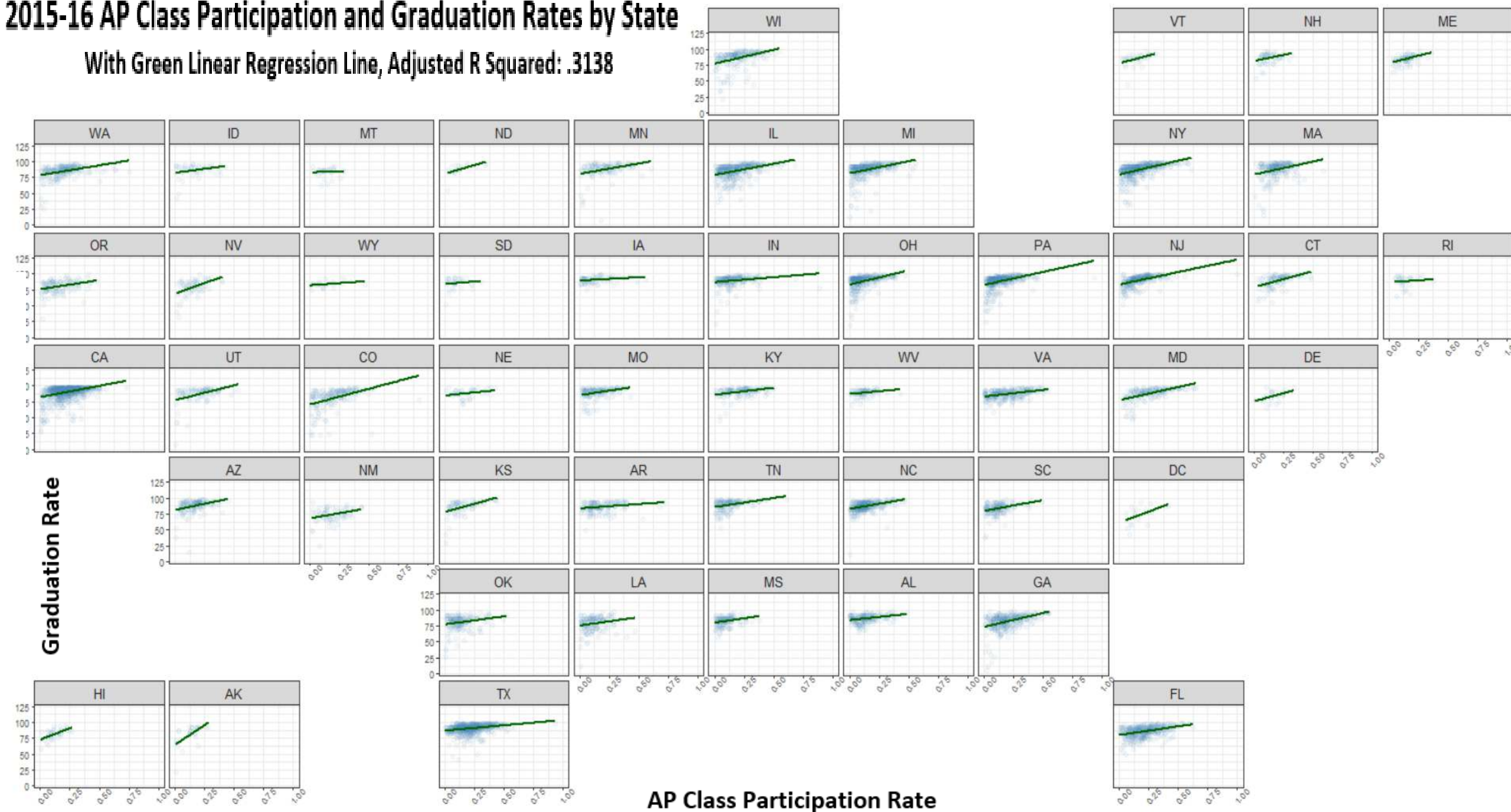
2015-16 Chronic Absenteeism and Graduation Rates by State

With Red Linear Regression Line, Adjusted R Squared: .1899



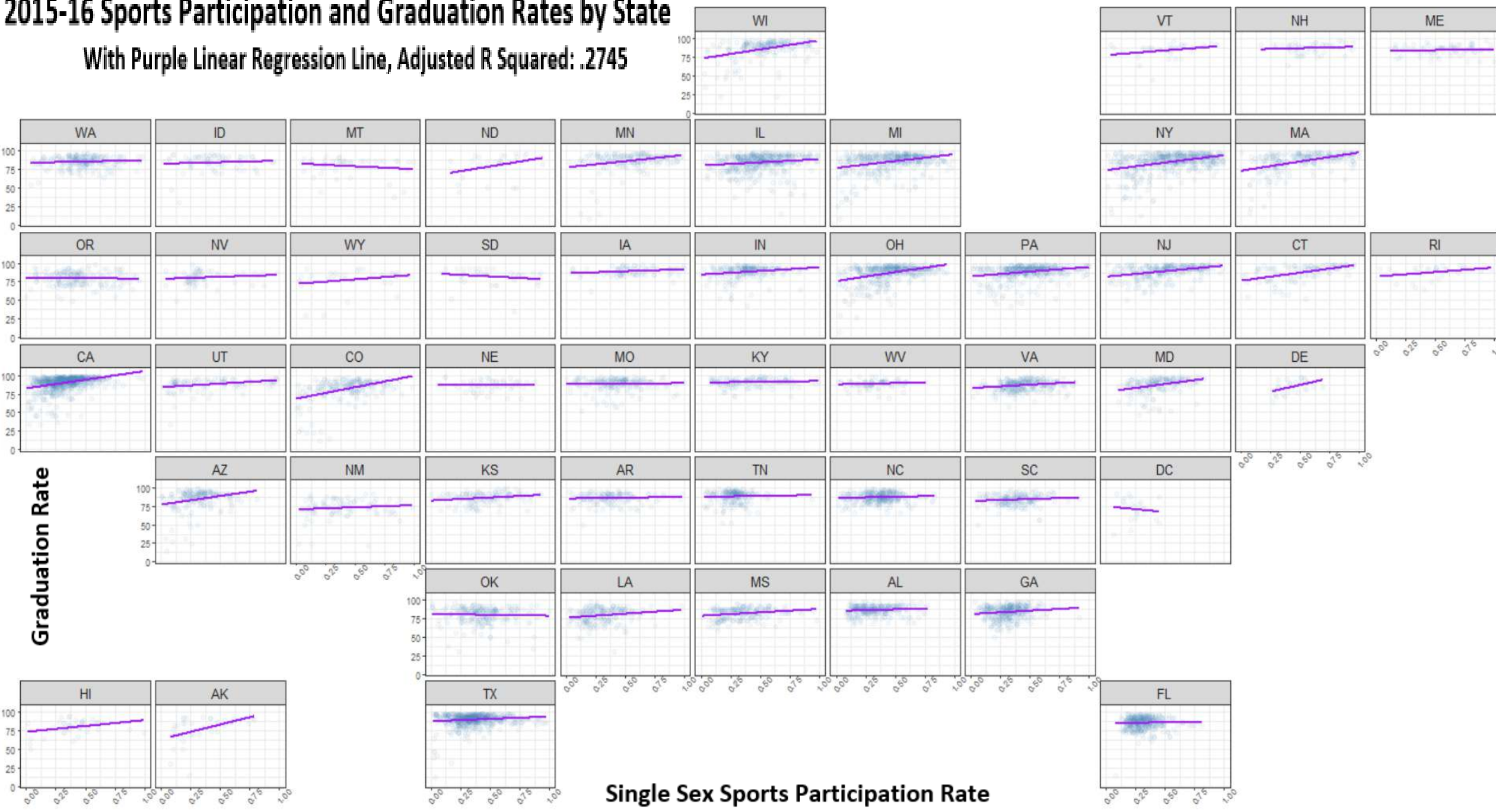
2015-16 AP Class Participation and Graduation Rates by State

With Green Linear Regression Line, Adjusted R Squared: .3138

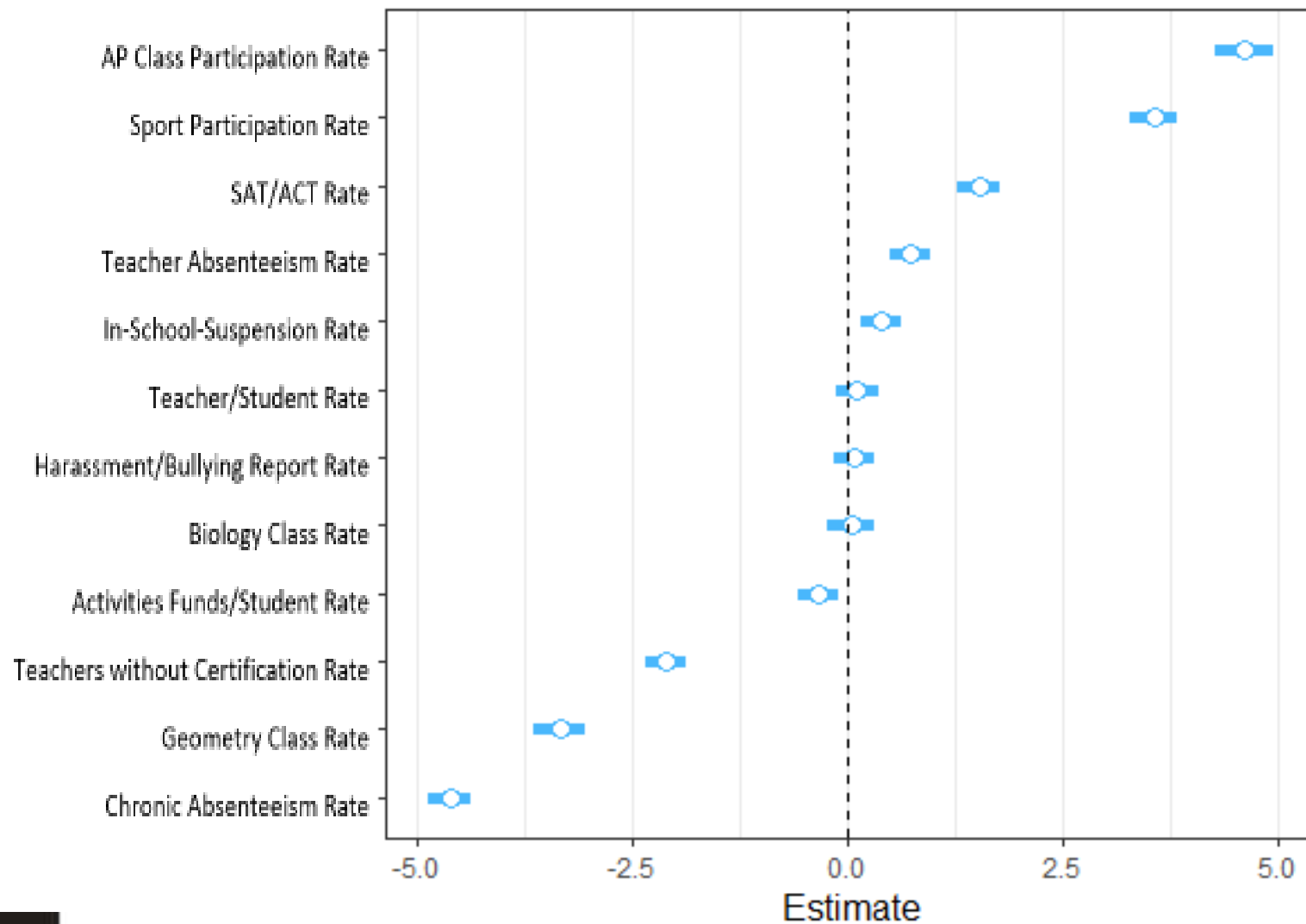


2015-16 Sports Participation and Graduation Rates by State

With Purple Linear Regression Line, Adjusted R Squared: .2745



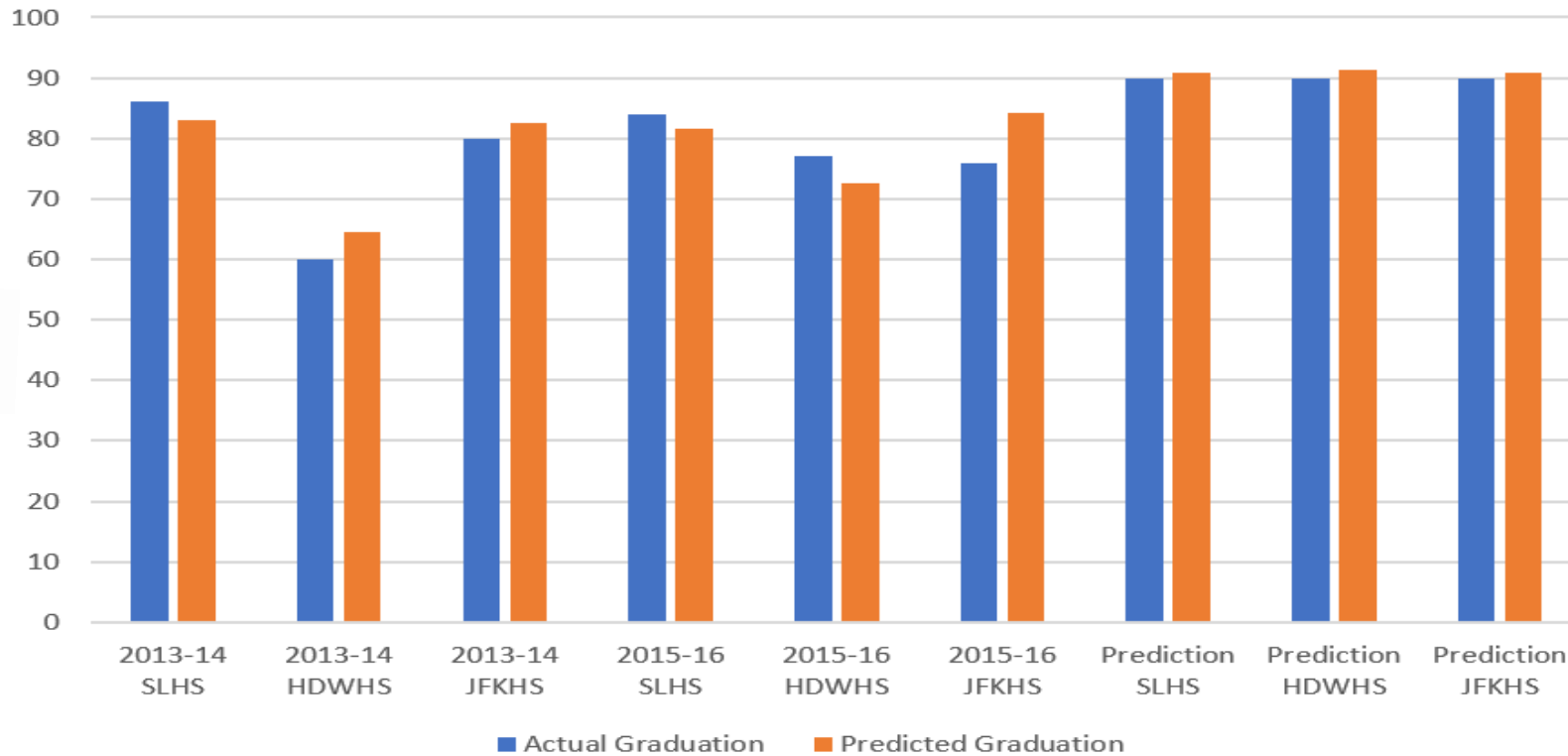
95% Confidence Intervals



Graduation Rates

Actual vs. Model Prediction

```
GradPredictionModel2 <- lm(GRAD_RATE ~ (ChrAbsentRate + APRate + SportRate), data = JoinModel1516)
grad1516predict2 <- predict(GradPredictionModel2, newdata = newData1516a, interval = "confidence")
Residual standard error: 14.22 on 13061 degrees of freedom
Multiple R-squared: 0.2824, Adjusted R-squared: 0.2822
F-statistic: 1713 on 3 and 13061 DF, p-value: < 2.2e-16
```

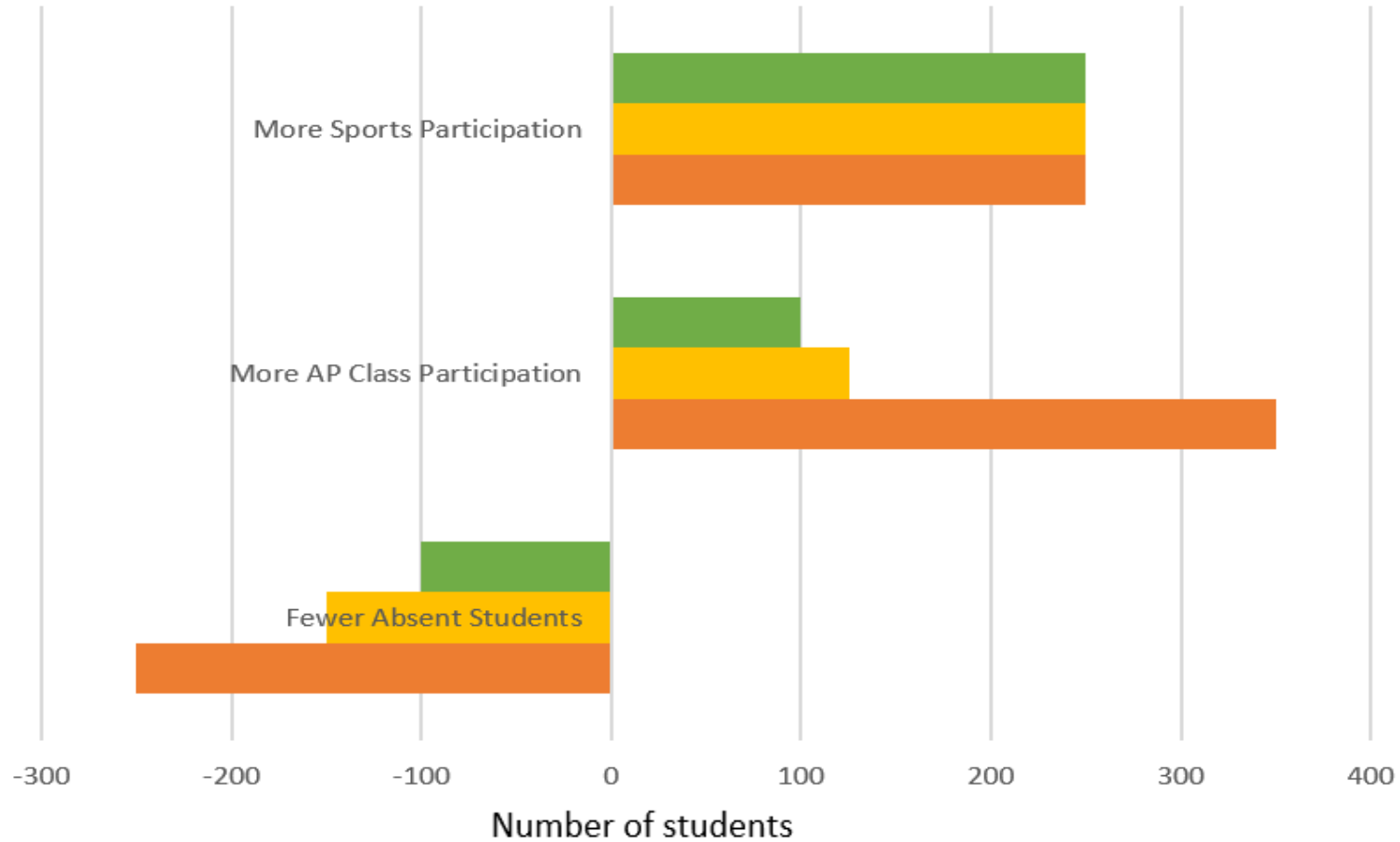


Schools:
South Lakes High School (Fairfax County Public Schools, VA)
H.D. Woodson High School (District of Columbia Public Schools, DC)
John F. Kennedy High School (Montgomery County Schools, MD)



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Changes to Achieve 90% Graduation



- John F. Kennedy High School (Montgomery County Schools, MD)
- H.D. Woodson High School (District of Columbia Public Schools, DC)
- South Lakes High School (Fairfax County Public Schools, VA)



Data Sources

- ▶ <https://www2.ed.gov/about/inits/ed/edfacts/data-files/acgr-sch-sy2013-14.csv>
- ▶ <https://www2.ed.gov/about/inits/ed/edfacts/data-files/acgr-sch-sy2015-16.csv>
- ▶ <https://www2.ed.gov/about/offices/list/ocr/docs/crdc-2013-14.html>
- ▶ <https://www2.ed.gov/about/offices/list/ocr/docs/crdc-2015-16.html>



Thank you

- ▶ Michael Jadoo for inviting me to present this information
- ▶ Reuben Levy-Myers for advice on the presentation
- ▶ Nathanael Aff for advice and help on modeling and data cleaning



Let's Keep In Touch

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