Influencing High School Graduation Rates

Presented by: Helen Levy-Myers, Athena's Workshop

GASP! Government Advances in Statistical Programming

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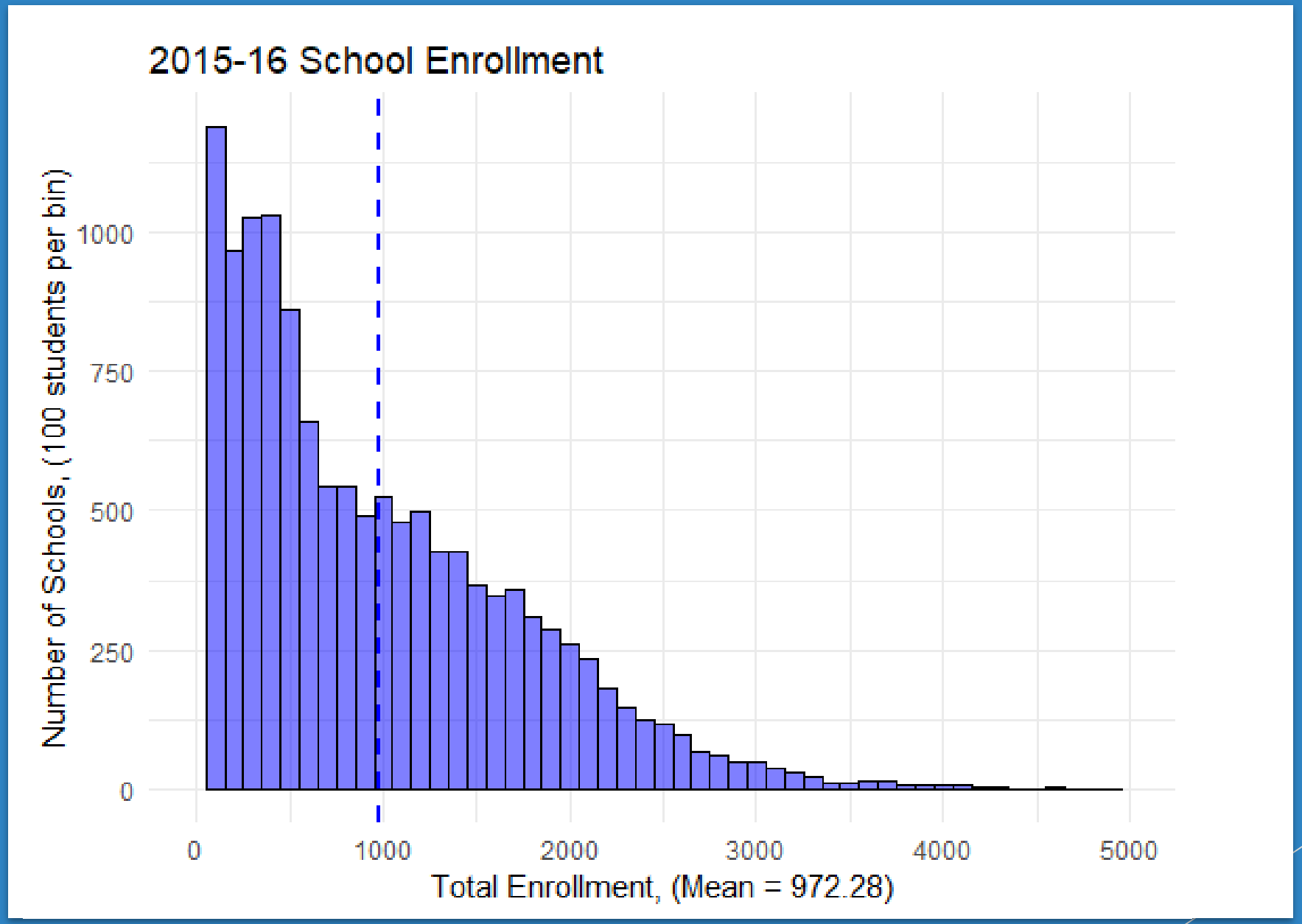
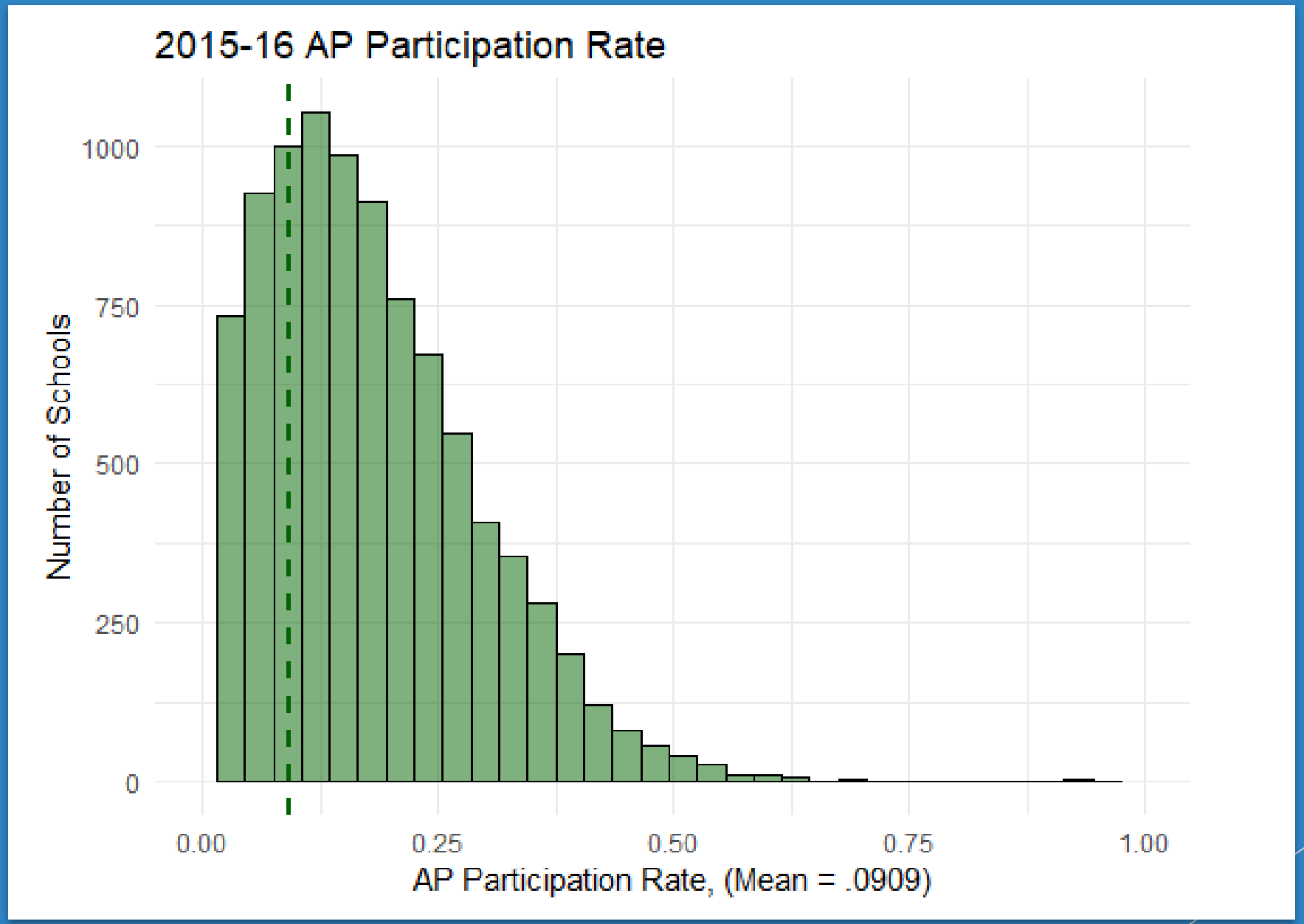
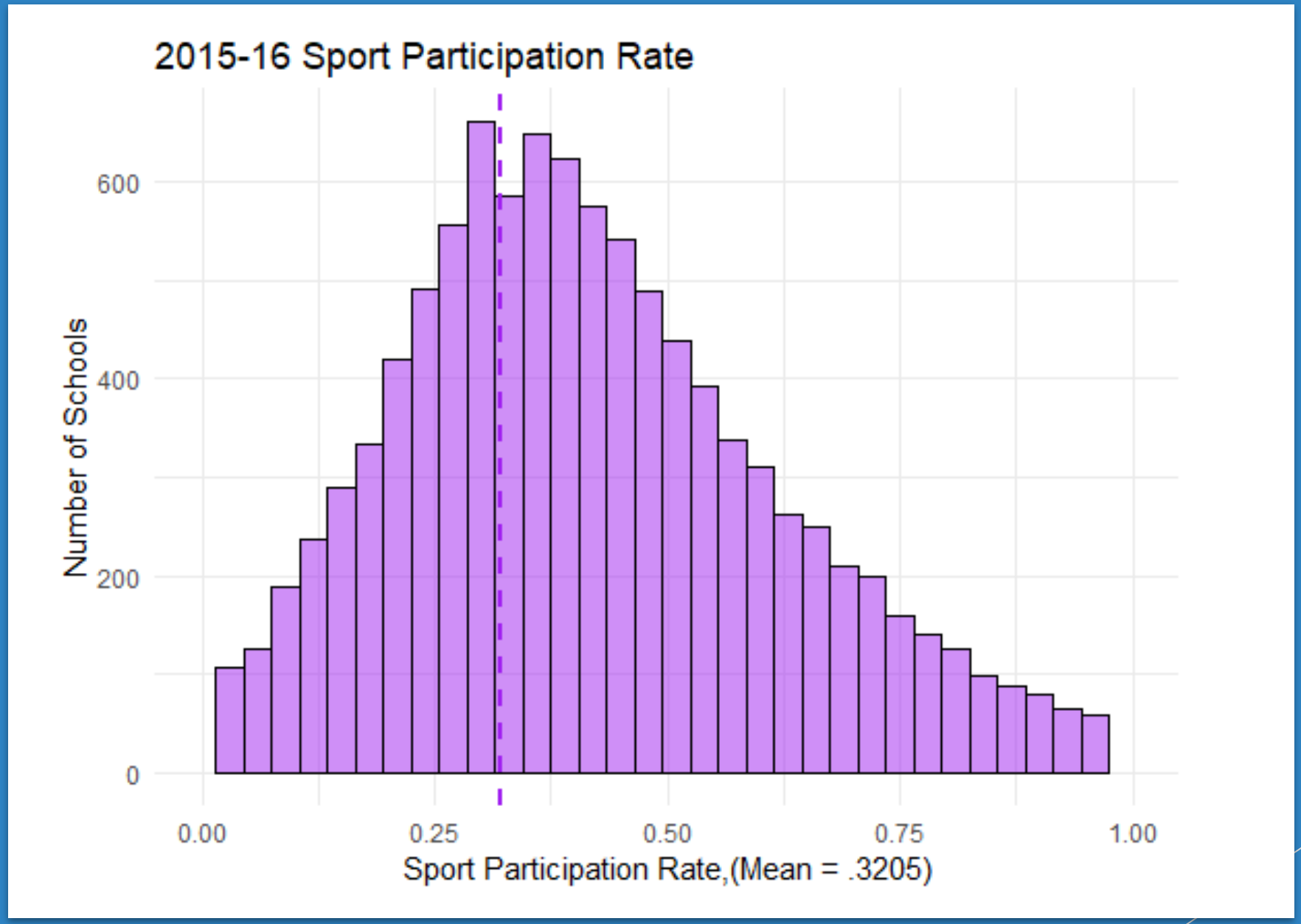
Data

- 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, juvénile justice, alternative, charters, etc.)
  - 1,836 variables, bullying, teacher certification, absenteeism, sports participation, AP class, suspensions, explusions, gender, ethnicity, disablity, LEP, etc. subsets.
- Data examined totals for each variable.

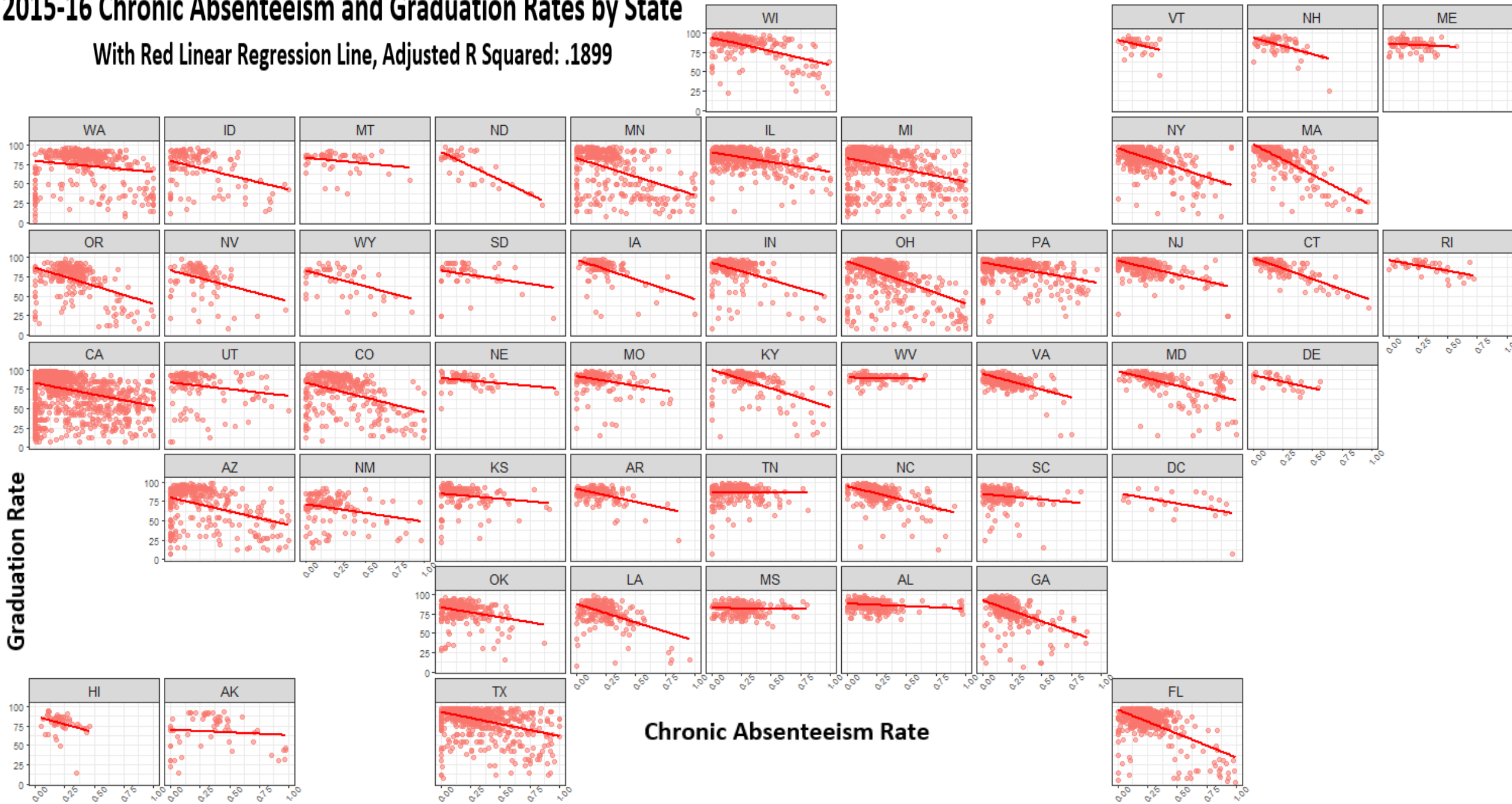

2015-16 School Enrollment
Number of Schools, (100 students per bin)
1000
750
500
250
0
0
1000
2000
3000
4000
5000
Total Enrollment, (Mean = 972.28)


2015-16 AP Participation Rate
Number of Schools
1000
750
500
250
0
0.00
0.25
0.50
0.75
1.00
AP Participation Rate, (Mean = .0909)


2015-16 Sport Participation Rate
Number of Schools
600
400
200
0
0.00
0.25
0.50
0.75
1.00
Sport Participation Rate,(Mean = .3205)

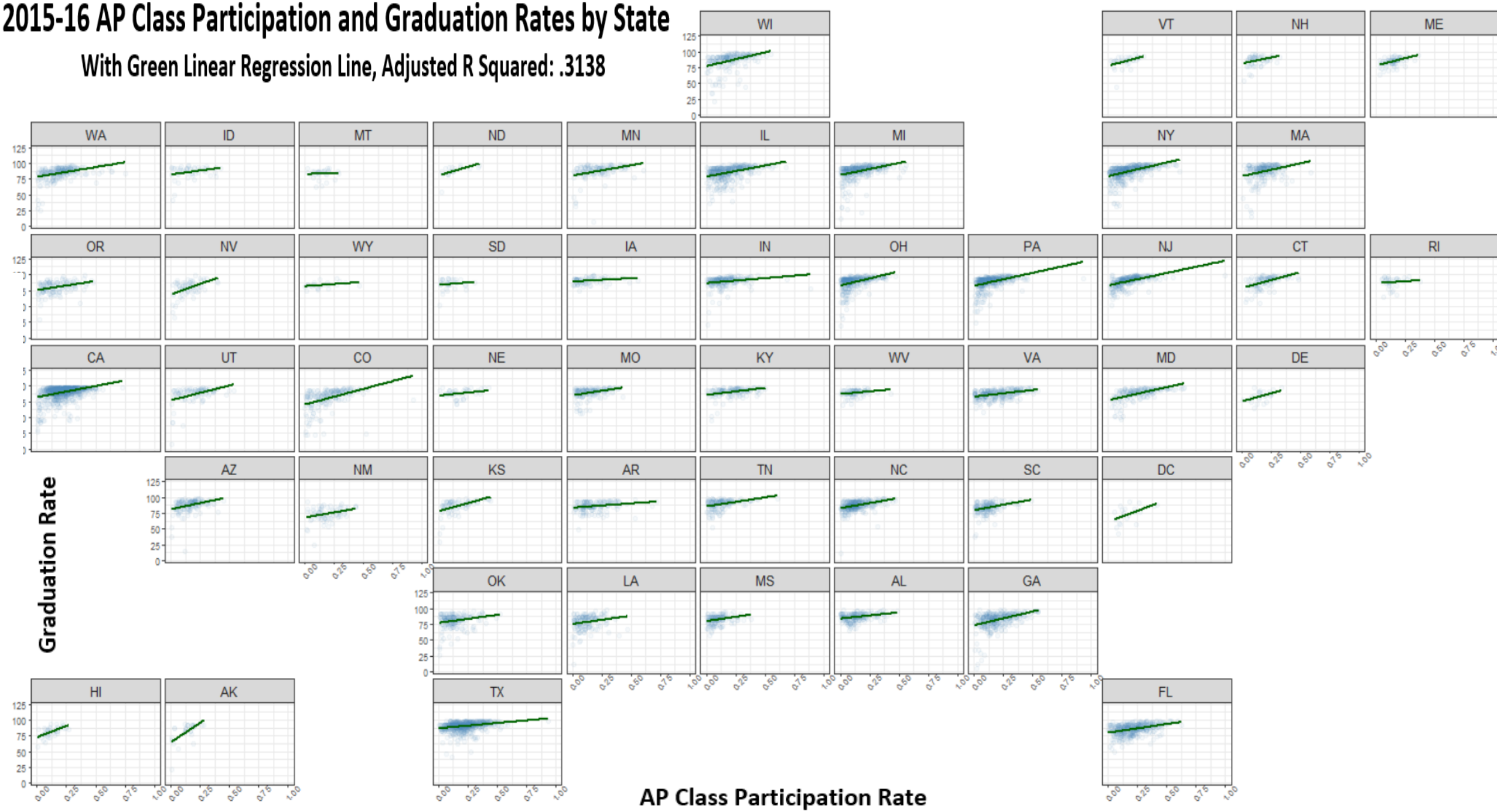
2015-16 Chronic Absenteeism and Graduation Rates by State

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



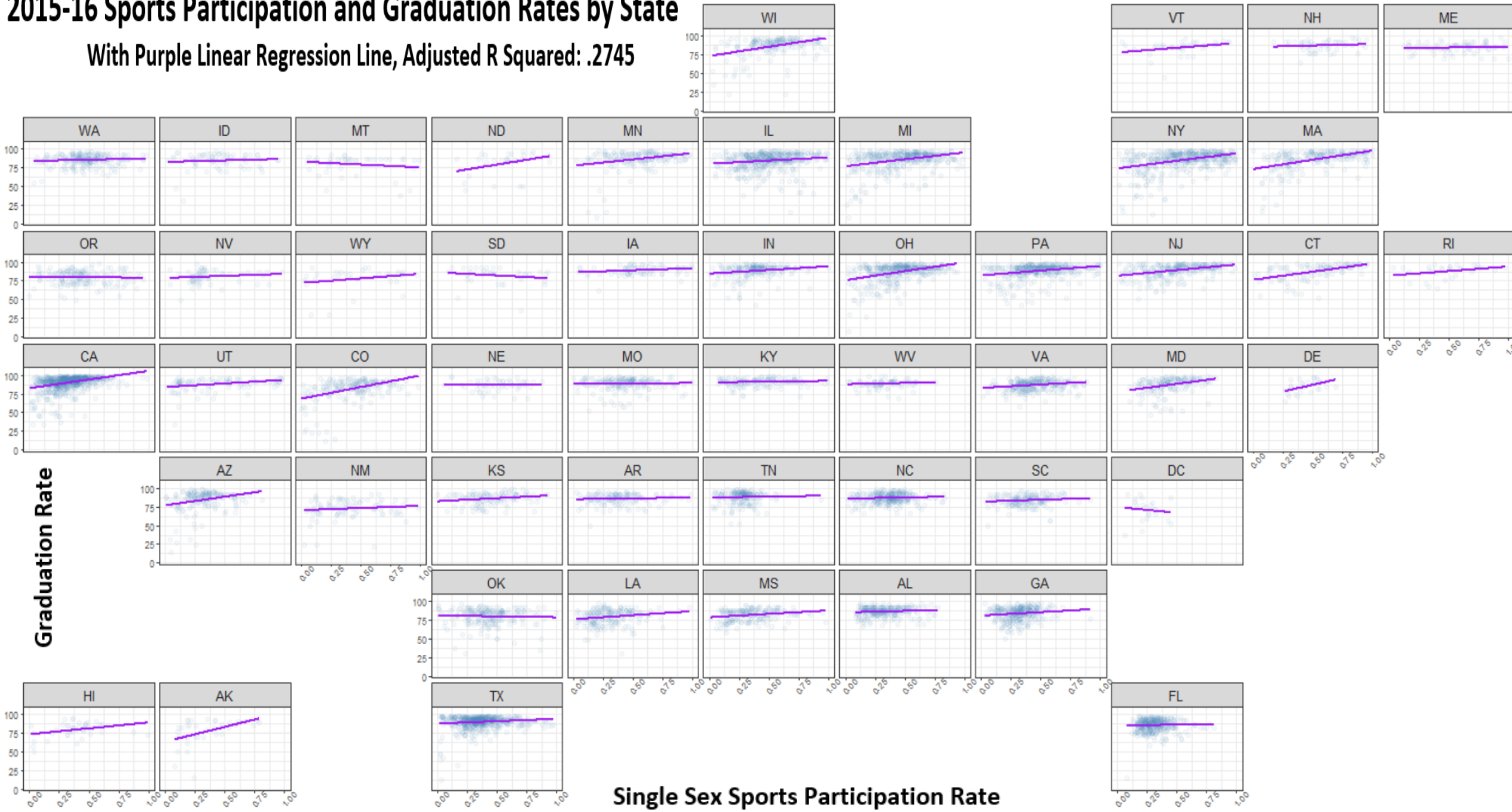
2015-16 AP Class Participation and Graduation Rates by State

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

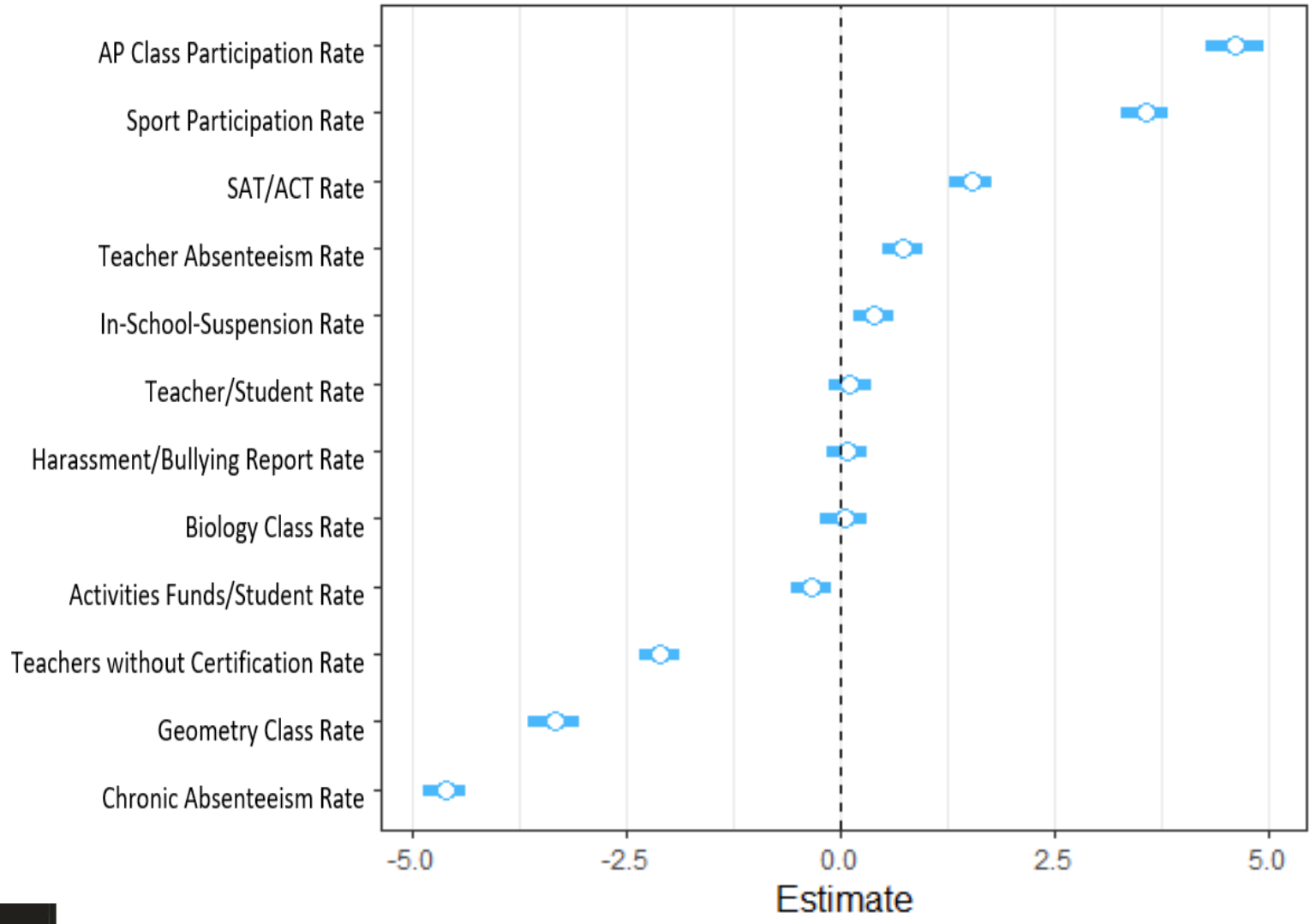


2015-16 Sports Participation and Graduation Rates by State

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



95% Confidence Intervals



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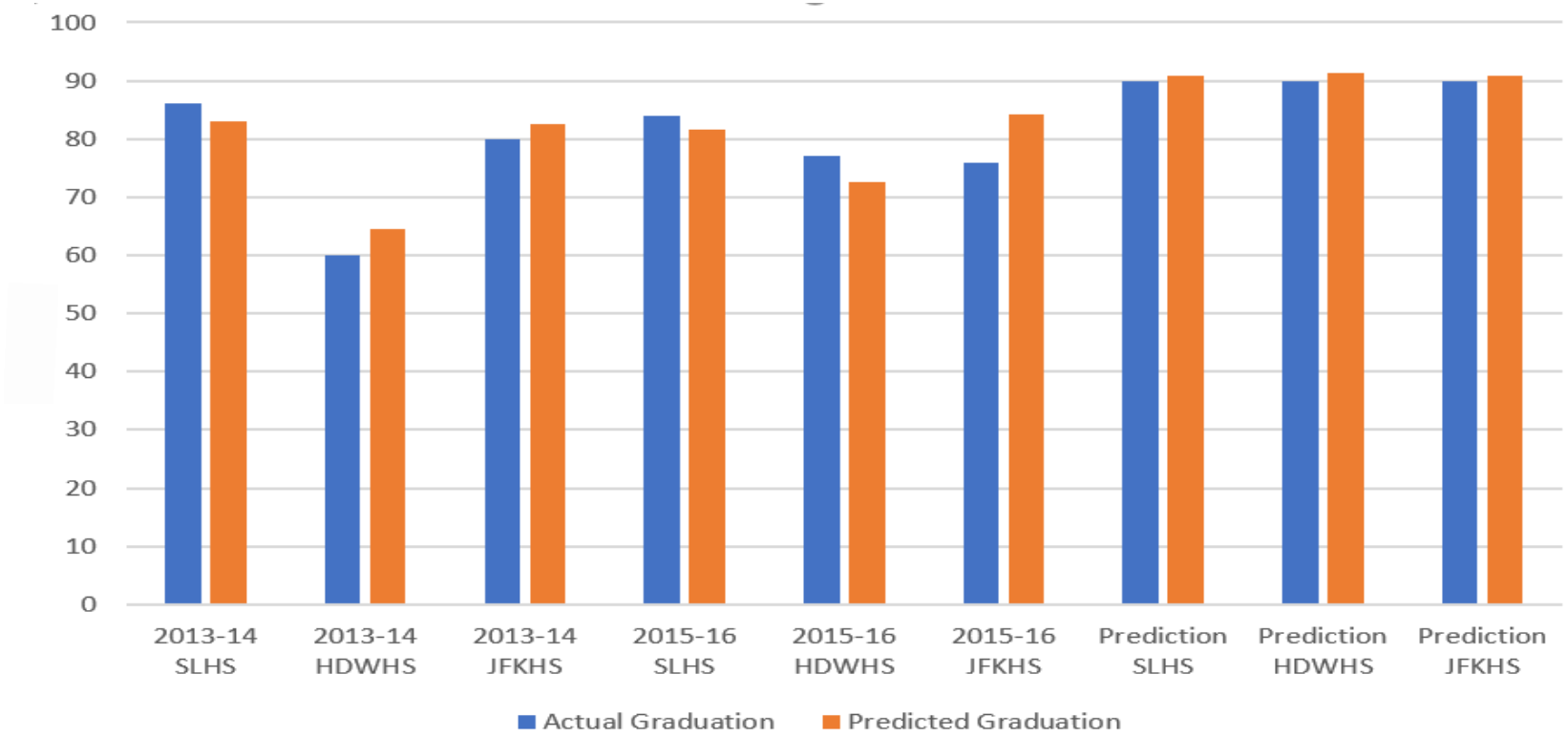
Graduation Rates
Actual vs. Model Prediction

```
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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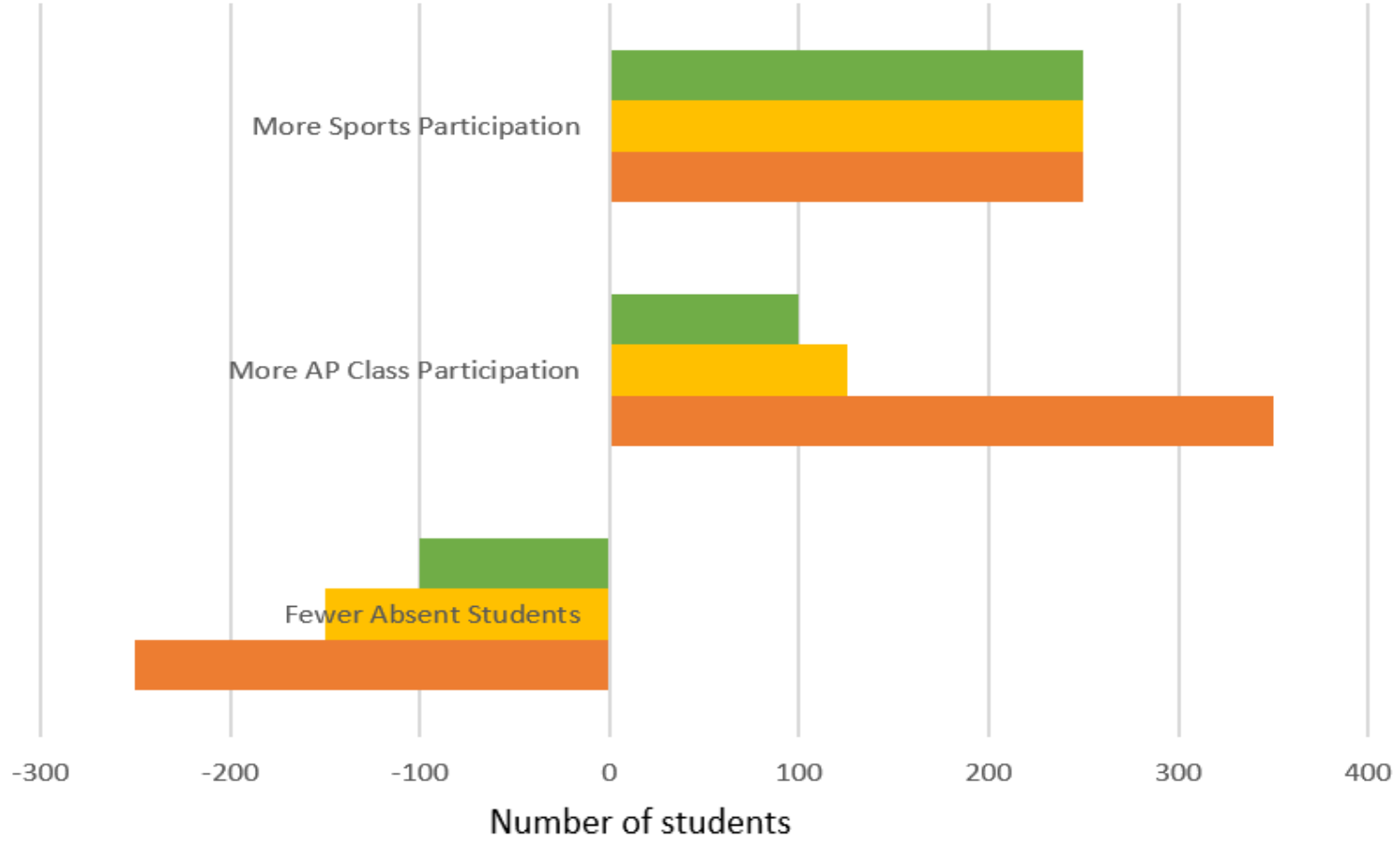
Changes to Achieve 90% Graduation



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)

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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

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Let’s Keep In Touch

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