

The Effects of Providing Incentives on Multiple Levels of Response and Data Quality

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All results have been approved by the Disclosure Review Board, Approval #CBDRB-FY19-315

National Teacher and Principal Survey (NTPS)

- National cross sectional survey of public and private schools
- Sponsor: National Center for Education Statistics (NCES)
- Multi-level survey
 - School and principal questionnaires (school level)
 - Teacher listing form - TLF (school level)
 - Teacher questionnaires (teacher level)
- Data collection period goes from August through June
- Survey cycle is every two or three years
- A School Coordinator is established at each school as the main point of contact for all survey materials
 - Typically this is someone in the front office or the Principal

Teacher Incentives Experiment

- Motivation: Increase overall teachers response rates
- Challenges:
 - The teacher response rate is a two-stage response rate
 - Teachers are sampled in waves
- Plan: Incentivize on multiple levels
 - Teacher
 - School Coordinator
 - Targeted contingency incentives

Experimental Design

- Phase 1 – Teacher sample waves 1-12
 - Two treatment groups:
 - Teacher Incentive (\$5 for priority and non-priority)
 - No Teacher Incentive
- Phase 2 – Teacher Sample waves 13-21
 - Four treatment groups:
 - Teacher Incentive and School Coordinator Incentive (\$5 for non-priority, \$10 for priority)
 - Teacher Incentive and no School Coordinator Incentive
 - School Coordinator Incentive and no Teacher Incentive
 - No Teacher Incentive and no School Coordinator Incentive

Phase 1 Results



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Response Rates – Phase 1

- Overall, the teacher incentive significantly increased the final response rate for the public school teacher questionnaire*
- The teacher incentive significantly increased response in all but two domains:
 - Charter
 - Enrollment: less than 100

Public School Domain	Final Response Rate	
	Incentive	No-Incentive
All	88.6%	84.6%
Charter	84.2%	82.8%
Non-Charter	89.2%	84.8%
Primary (school level)	86.8%	83.6%
Middle (school level)	90.7%	86.0%
High (school level)	90.6%	87.0%
Combined (school level)	88.6%	83.9%
City	83.6%	78.3%
Suburban	88.4%	84.0%
Town	92.7%	89.0%
Rural	93.8%	90.7%
Enrollment: less than 100	88.1%	88.5%
Enrollment: 100-199	94.1%	88.0%
Enrollment: 200-499	90.5%	87.8%
Enrollment: 500-749	88.6%	83.9%
Enrollment: 750-999	88.1%	83.2%
Enrollment: 1000 or more	85.6%	80.9%
Free/Reduced Price Lunch: 0-34%	89.6%	84.7%
Free/Reduced Price Lunch: 35-49%	90.2%	85.8%
Free/Reduced Price Lunch: 50-74%	89.1%	86.8%
Free/Reduced Price Lunch: 75% or more	84.9%	79.9%
Free/Reduced Price Lunch: DNP	90.2%	85.0%
Non-Priority	90.9%	87.6%
Priority	77.3%	71.2%

*All results are significant at 90% confidence level



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R-Indicator Calculations

- Full Sample R-Indicators

$$R(\hat{\rho}) = 1 - 2 \left(\sqrt{\frac{1}{N-1} \sum_{i=1}^N \frac{s_i}{\pi_i} (\hat{\rho}_i - \hat{\rho})^2} \right)$$

- Evaluate representativeness of respondent population as compared to the sample population, given a set of balancing variables

- Unconditional Partial R-Indicators

- Variable-Level

$$R_u(\text{var}, \hat{\rho}) = \sum_{k=1}^K \frac{N_k}{N} (\hat{\rho}_{x,k} - \hat{\rho}_x)^2$$

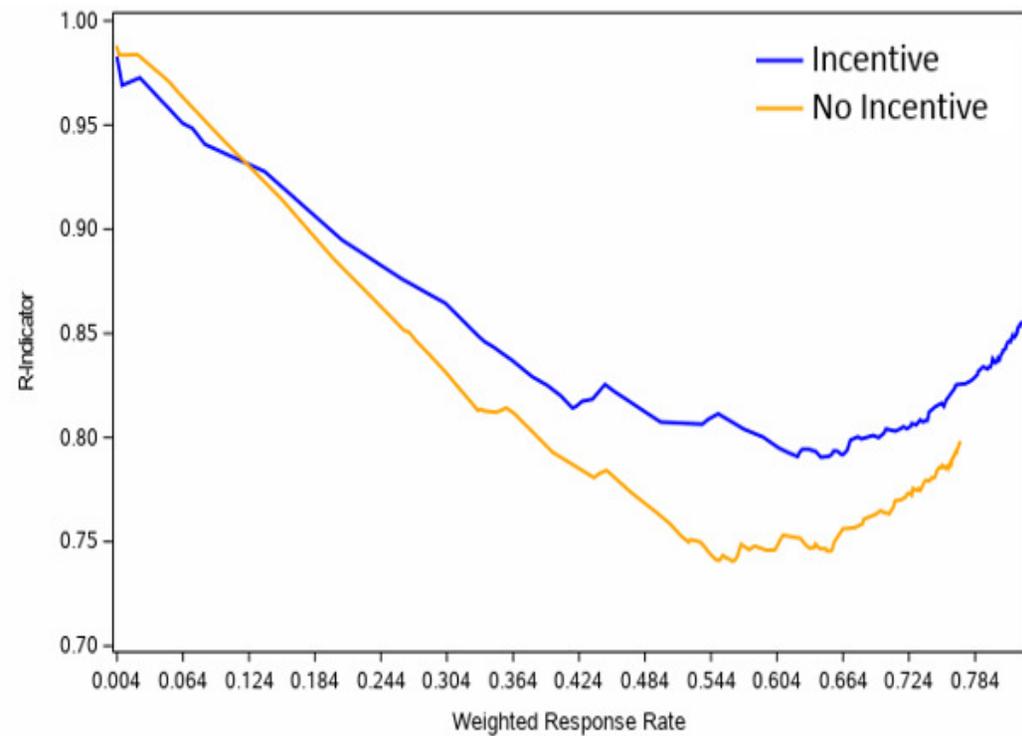
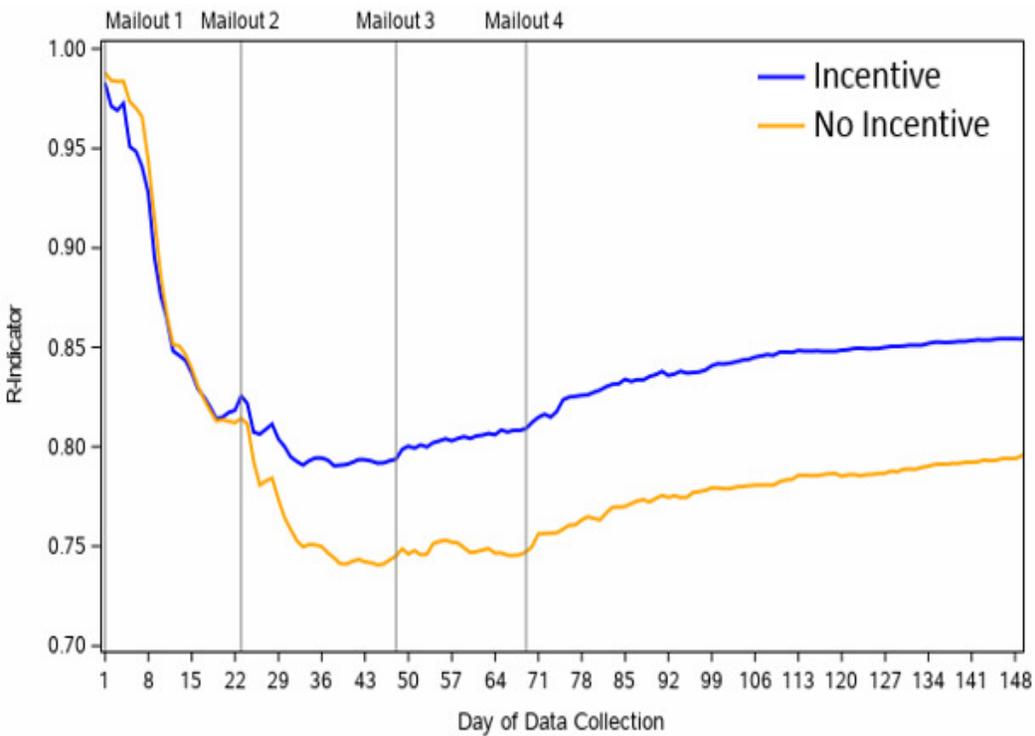
- Evaluate which variables are driving the variation in response propensities

- Category-Level

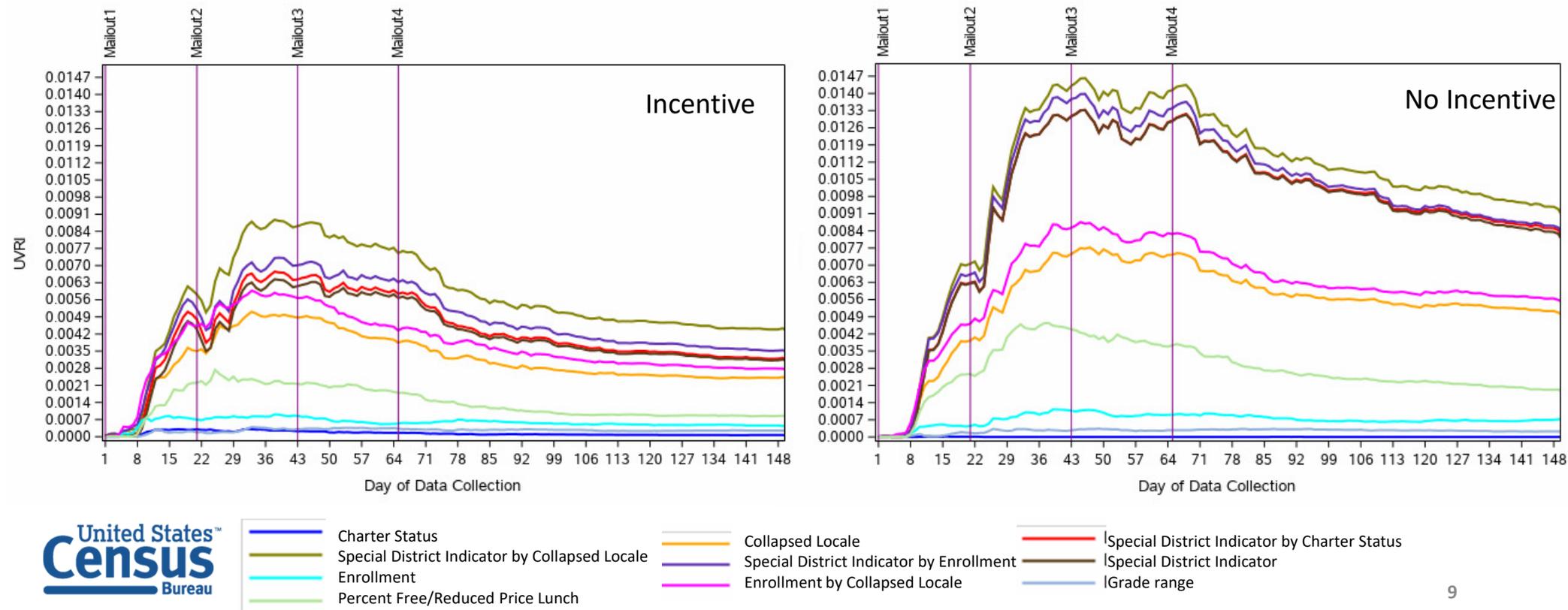
$$R_u(\text{var}, k, \rho) = \sqrt{\frac{N_k}{N}} (\bar{\rho}_{x,k} - \bar{\rho}_x)$$

- Evaluate which subgroups of a variable or a cross of variables are over- or under-represented

Full Sample R-indicator – Phase 1



Phase 1: Variable-level Partial R-indicators by Day of Data Collection



Days to Complete – Phase 1

Treatment Group	Average Days to Complete
Incentive	33.71 days
No incentive	38.55 days
Difference	4.84 days*

*Statistically significant using both the Mood's Median test and Cook's D test

- 21 days between the first and second mail-outs
- 22 days between the second and third mail-outs
- Given the timing for delivery of the mail-out label files, 4-5 days could save the survey significant mail-out costs and lower respondent burden

Phase 2 Results



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Response Rates – Phase 2

Public School Domain	Teacher and SC	Teacher Only	SC Only	None
All	77.4%	76.7%	73.0%	73.7%
Charter	71.0%	69.1%	66.9%	69.2%
Non-Charter	78.5%	78.0%	74.1%	74.4%
Primary	75.9%	76.0%	70.5%	72.2%
Middle (school level)	82.9%	76.8%	76.8%	77.5%
High (school level)	77.2%	77.3%	70.2%	72.3%
Combined (school level)	77.2%	77.1%	75.2%	74.7%
City	73.4%	71.5%	65.6%	69.3%
Suburban	74.7%	76.5%	72.6%	71.8%
Town	86.1%	82.9%	79.2%	81.7%
Rural	83.6%	81.8%	83.3%	80.2%
Enrollment: less than 100	76.1%	70.1%	83.5%	78.3%
Enrollment: 100-199	87.2%	78.6%	83.7%	76.5%
Enrollment: 200-499	79.6%	77.0%	75.0%	76.7%
Enrollment: 500-749	77.4%	77.3%	73.8%	73.8%
Enrollment: 750-999	74.6%	75.7%	73.1%	72.7%
Enrollment: 1000 or more	75.4%	76.8%	68.8%	71.0%
Free/Reduced Price Lunch: 0-34%	78.1%	79.0%	75.8%	76.1%
Free/Reduced Price Lunch: 35-49%	78.9%	77.6%	74.2%	74.6%
Free/Reduced Price Lunch: 50-74%	79.4%	80.1%	72.1%	76.2%
Free/Reduced Price Lunch: 75% or more	74.1%	71.3%	70.1%	67.4%
Free/Reduced Price Lunch: DNP	68.3%	58.8%	64.4%	71.9%
Non-Priority	79.2%	78.4%	74.9%	76.0%
Priority	61.3%	62.0%	55.7%	53.9%



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Response Rates – Phase 2

When comparing the two groups that received the teacher incentive, this table shows that:

1. Overall, the addition of the School Coordinator incentive (to the teacher incentive) did not significantly increase the overall response rate*
2. The addition of the School Coordinator incentive (to the teacher incentive) significantly increased the response rate within only 6 of the 21 tested domains
 - Significant difference ranges from 2.6% to 9.5%

*All results are significant at 90% confidence level



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Public School Domain	Teacher and SC	Teacher Only
All	77.4%	76.7%
Charter	71.0%	69.1%
Non-Charter	78.5%	78.0%
Primary	75.9%	76.0%
Middle (school level)	82.9%	76.8%
High (school level)	77.2%	77.3%
Combined (school level)	77.2%	77.1%
City	73.4%	71.5%
Suburban	74.7%	76.5%
Town	86.1%	82.9%
Rural	83.6%	81.8%
Enrollment: less than 100	76.1%	70.1%
Enrollment: 100-199	87.2%	78.6%
Enrollment: 200-499	79.6%	77.0%
Enrollment: 500-749	77.4%	77.3%
Enrollment: 750-999	74.6%	75.7%
Enrollment: 1000 or more	75.4%	76.8%
Free/Reduced Price Lunch: 0-34%	78.1%	79.0%
Free/Reduced Price Lunch: 35-49%	78.9%	77.6%
Free/Reduced Price Lunch: 50-74%	79.4%	80.1%
Free/Reduced Price Lunch: 75% or more	74.1%	71.3%
Free/Reduced Price Lunch: DNP	68.3%	58.8%
Non-Priority	79.2%	78.4%
Priority	61.3%	62.0%

Response Rates – Phase 2

When comparing the group that received the teacher incentive with the two groups that did not receive the teacher incentive, the table shows:

- Overall, the two groups that did not receive a teacher incentive had significantly lower response rates than the group that did receive the teacher incentive*
- This finding is also apparent within roughly half of the tested domains (11 of 21 domains)
 - Significant differences range from 3.2% to 13.4%

*All results are significant at 90% confidence level



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Public School Domain	Teacher Only	SC Only	Teacher Only	None
All	76.7%	73.0%	76.7%	73.7%
Charter	69.1%	66.9%	69.1%	69.2%
Non-Charter	78.0%	74.1%	78.0%	74.4%
Primary	76.0%	70.5%	76.0%	72.2%
Middle (school level)	76.8%	76.8%	76.8%	77.5%
High (school level)	77.3%	70.2%	77.3%	72.3%
Combined (school level)	77.1%	75.2%	77.1%	74.7%
City	71.5%	65.6%	71.5%	69.3%
Suburban	76.5%	72.6%	76.5%	71.8%
Town	82.9%	79.2%	82.9%	81.7%
Rural	81.8%	83.3%	81.8%	80.2%
Enrollment: less than 100	70.1%	83.5%	70.1%	78.3%
Enrollment: 100-199	78.6%	83.7%	78.6%	76.5%
Enrollment: 200-499	77.0%	75.0%	77.0%	76.7%
Enrollment: 500-749	77.3%	73.8%	77.3%	73.8%
Enrollment: 750-999	75.7%	73.1%	75.7%	72.7%
Enrollment: 1000 or more	76.8%	68.8%	76.8%	71.0%
Free/Reduced Price Lunch: 0-34%	79.0%	75.8%	79.0%	76.1%
Free/Reduced Price Lunch: 35-49%	77.6%	74.2%	77.6%	74.6%
Free/Reduced Price Lunch: 50-74%	80.1%	72.1%	80.1%	76.2%
Free/Reduced Price Lunch: 75% or more	71.3%	70.1%	71.3%	67.4%
Free/Reduced Price Lunch: DNP	58.8%	64.4%	58.8%	71.9%
Non-Priority	78.4%	74.9%	78.4%	76.0%
Priority	62.0%	55.7%	62.0%	53.9%

Response Rates – Phase 2

When comparing the two groups that did not receive the teacher incentive, this table shows that:

1. Overall, the School Coordinator incentive alone did not significantly increase the final response rate when compared to the group that received no incentives*
2. In two of the 21 tested domains, the group that received no incentives had significantly higher response rates than the group that did receive the School Coordinator incentive alone.

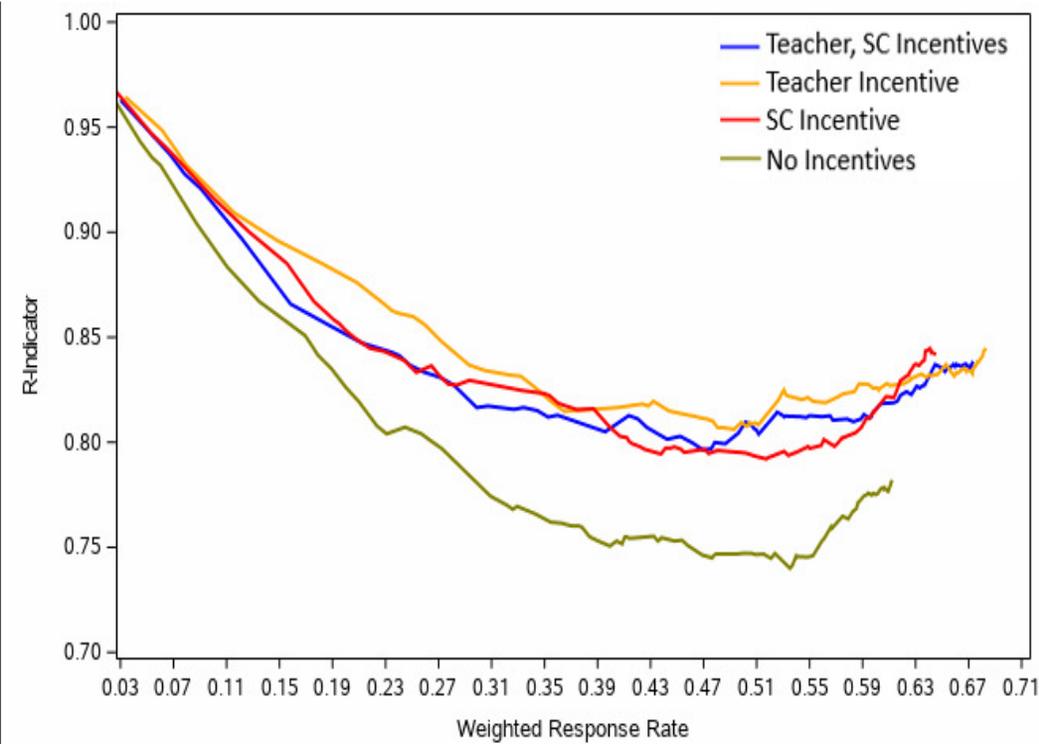
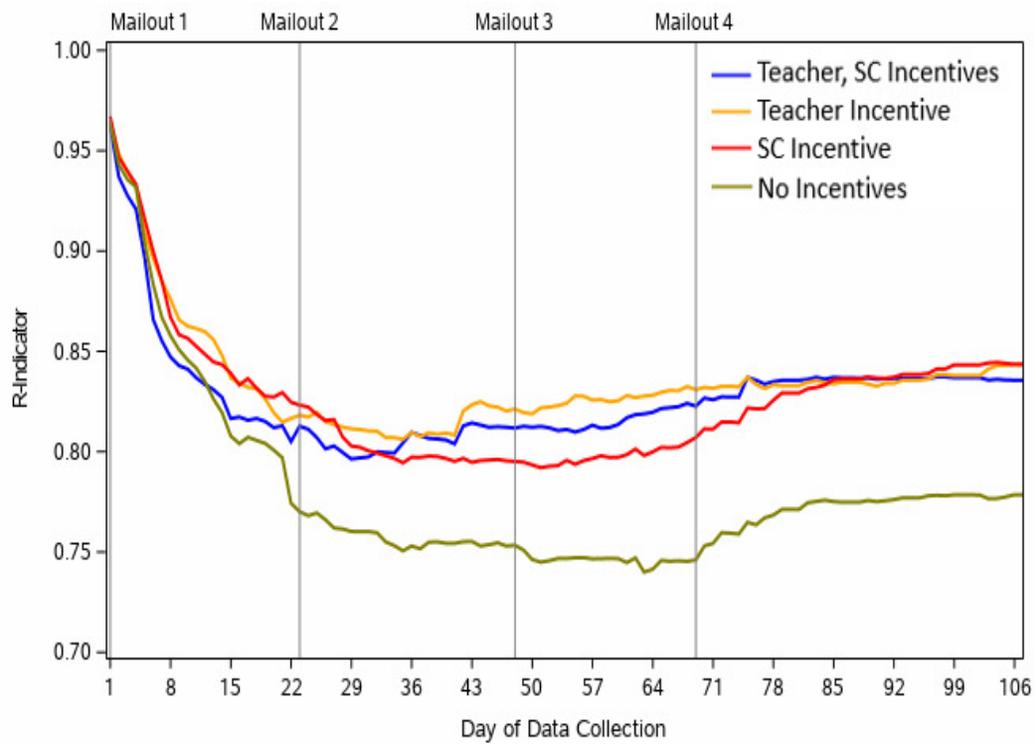
Public School Domain	SC Only	None
All	73.0%	73.7%
Charter	66.9%	69.2%
Non-Charter	74.1%	74.4%
Primary	70.5%	72.2%
Middle (school level)	76.8%	77.5%
High (school level)	70.2%	72.3%
Combined (school level)	75.2%	74.7%
City	65.6%	69.3%
Suburban	72.6%	71.8%
Town	79.2%	81.7%
Rural	83.3%	80.2%
Enrollment: less than 100	83.5%	78.3%
Enrollment: 100-199	83.7%	76.5%
Enrollment: 200-499	75.0%	76.7%
Enrollment: 500-749	73.8%	73.8%
Enrollment: 750-999	73.1%	72.7%
Enrollment: 1000 or more	68.8%	71.0%
Free/Reduced Price Lunch: 0-34%	75.8%	76.1%
Free/Reduced Price Lunch: 35-49%	74.2%	74.6%
Free/Reduced Price Lunch: 50-74%	72.1%	76.2%
Free/Reduced Price Lunch: 75% or more	70.1%	67.4%
Free/Reduced Price Lunch: DNP	64.4%	71.9%
Non-Priority	74.9%	76.0%
Priority	55.7%	53.9%

*All results are significant at 90% confidence level

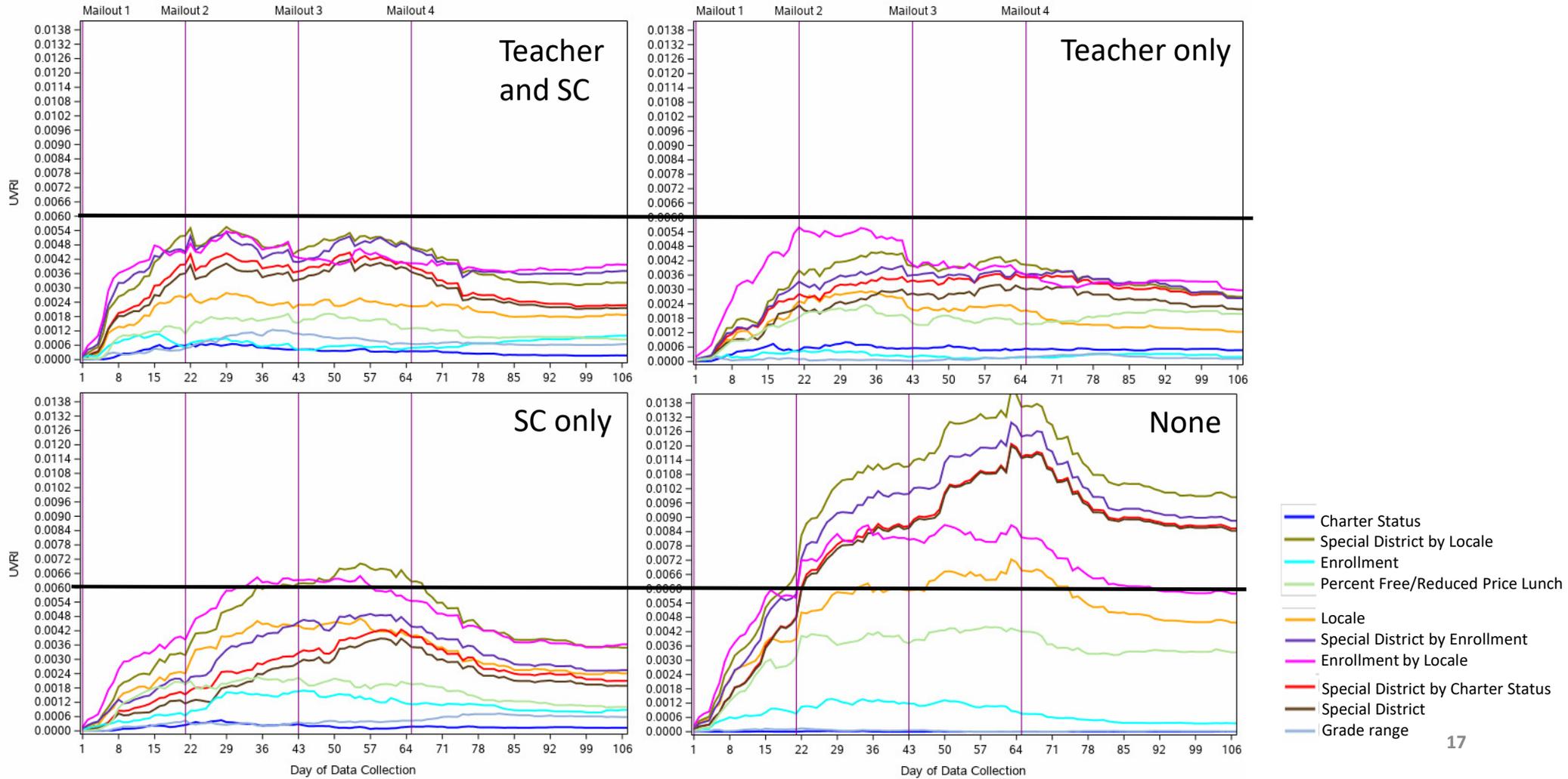


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Full Sample R-indicator – Phase 2



Phase 2 - Variable-level Partial R-indicators by Day of Data Collection



Summary Conclusions

- Phase 1
 - The teacher incentive led to a significant increase in the overall response rate for public school teachers, as well as significant response rate increases within a majority of the specific teacher domains
 - The teacher incentive contributed to a more representative respondent population
 - The teacher incentive significantly decreased the average number of days to completing a case
- Phase 2
 - The additive effect of the School Coordinator incentive with the teacher incentive is negligible
 - There was also no significant effect of sending the School Coordinator incentive alone when compared to sending no incentives at all
 - The balance of the respondent population was consistent between the three treatment groups receiving any combination of incentives, where all three groups were more representative than the group that received no incentives

Thank you!

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