Andhra Pradesh Randomized Evaluation Study (AP RESt)

Teacher and Non-Teacher Inputs in Primary Education
Experimental Evidence from India

By

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Agenda

- Overview
- Experimental Design
- Results
- Next Steps and Future Studies

Background

GoI and GoAP have made significant progress on providing access
education, and so the next step is to increase quality

- -Less than 60% of children in classes 3-5 in AP can read even at the level of class 1 (ASER 2007)
- -About 58% of children aged 6-14 could not read at the 2nd Grade level, thou over 95 percent of them were enrolled in school (ASER 2008)

Large inefficiencies in service delivery of education

- -In India (and AP), 25% teachers are absent, less than half are teaching
- -Over 90% of non-capital spending goes to teacher salaries
- -The problem is not low 'level' of pay (higher paid teachers are more absent!)
- -There is *no connection between pay and performance*

Following discussions of the findings from the teacher absence stu
with government officials

- -Project between GoAP and the Azim Premji Foundation (APF) to design, implement, and evaluate the effectiveness of alternative policies to improve education quality in AP
- -5-year MoU signed between GoAP and APF

Project Timeline

Jan – Dec 04 (discussions with the Government of Andhra Prades proposal refinement, expert feedback, funding, partner selection)

Dec 04 – March 05 (Pre-testing and calibration, refining of processes – process pilot in 40 schools in one district - Chittoor)

June 05 – May 08 (Main Study across 5 districts representing all regions of AP proportional to population)

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June 08 – May 10 (Sustainability of impact of initial programs if they are withdrawn, and if they are continued)

June 08 – onwards (Tracking of longer term outcomes from initial study, pilots of additional interventions and implementation of other research projects)

AP RESt Programs Studied To Date

- In the first phase of AP RESt, four major programs were launched and evaluated

- 2 input-based policies
  - -Provision of an extra Vidya Volunteer (contract teachers) to schools
  - -Provision of a cash block grant to schools

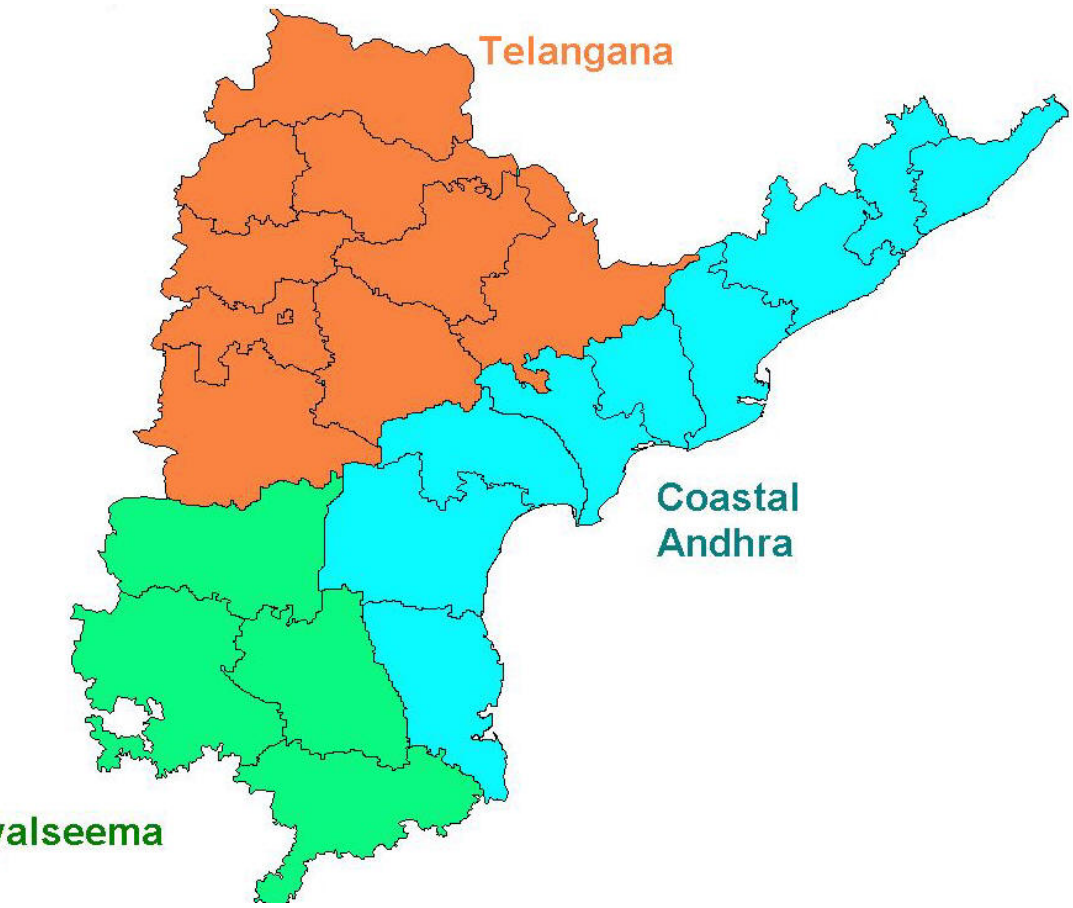
- 2 incentive-based policies
  - -Provision of group-based performance bonuses to teachers
  - -Provision of individual-based performance bonuses to teachers

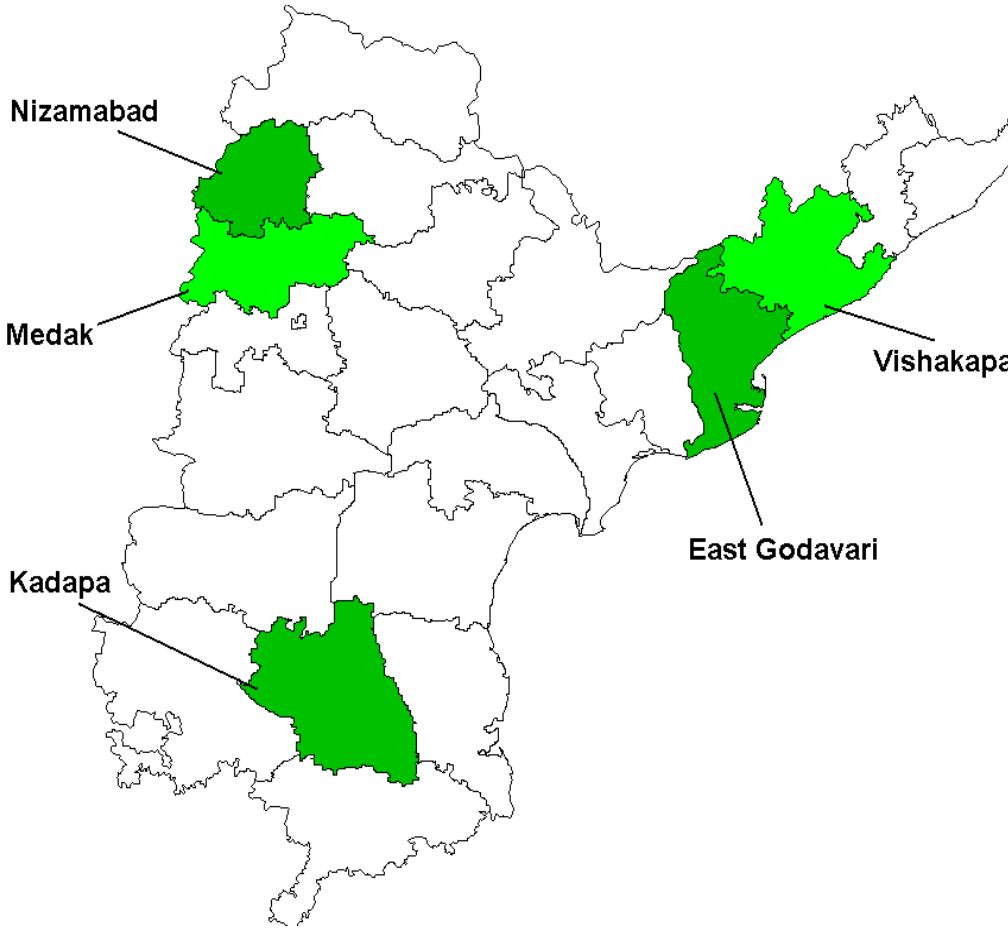
- Why were these particular programs chosen for evaluation?
  - -The input-based policies are both already being done by the government, but we have a very limited knowledge of their effectiveness
    - Proponents as well as opponents of para-teachers/school grants
    - But very limited data-based understanding
  - -The performance-based pay interventions were motivated by focus group discussions with teachers following the absence work
    - Idea was to provide some objective basis of recognizing high-performing teachers to increase motivation of all teachers
    - Both group and individual-based programs were studied

Final Design Overview

		INCENTIVES (Conditional on Improvement in Student Learning)		
		NONE	GROUP MONETARY	INDIVIDUAL MONETARY
INPUTS (Unconditional)	NONE	CONTROL (100 Schools)	100 Schools	100 Schools
	EXTRA PARA TEACHER	100 Schools		
	EXTRA BLOCK GRANT	100 Schools		

District Sampling





ontext

Typical rural school is quite small

-80-100 students across grades 1-5
-Around 3 teachers/school
-One teacher for all subjects in a grade
-Multi-grade teaching common

All regular teachers are civil-service employees

-Salary determined by experience and rank
-Mean salary: Rs. 7,500/month (income/capita ~ Rs. 2,000/mont
-No performance-based component (promotions based on seniori

Teacher unions are strong and disciplinary action for non-performance is rare

-In previous work, it is found that only 1 head teacher in over 3,000 government schools across India had ever fired a teacher repeated absence (despite a teacher absence rate of 25%)

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Test Design

cientifically developed assessment papers based on mapping uestions to competencies and learning goals

-Papers designed by one of India's leading test design companies – "Education Initiatives" based in Ahmedabad

he test is designed to be able to distinguish between "no learning mechanical learning" and "conceptual learning" for each student

wo rounds of testing each year to cover broad range of content

-Lower endline covers the competencies of previous year's curriculum
-Higher endline covers competencies of the current year
-Each year's lower endline has overlap with previous year's higher endline
-Allows for scientific measurement and progress tracking of each child

Detailed diagnostic reports of performance of each child, class, and chool are provided to every school to help the teacher understand he strong and weak areas and to improve teaching practices

-Pass around samples of diagnostic feedback

Summary of Experimental Design

Study conducted across 500 primary schools in 5 districts of AP

Conduct independent testing in these 500 schools (June/July 05)

Provide diagnostic feedback on test performance to all schools an announce different programs in different schools (August 05)

- -100 schools **randomly assigned** to each of 4 treatments, 100 in control
- -Stratified random allocation (2 schools in each mandal to each “treatment”)

Carefully monitor various aspects of school-performance over the course of the year via unannounced monthly tracking surveys

- -Collect data from all stake holders (parents, children, teachers)
- ~50,000 children tracked over this period (including a household survey)

Conduct independent end of year tests to assess the impact of various interventions on learning outcomes (March/April 06)

Provide feedback reports and bonuses to schools in the next scho year and announce continuation of program

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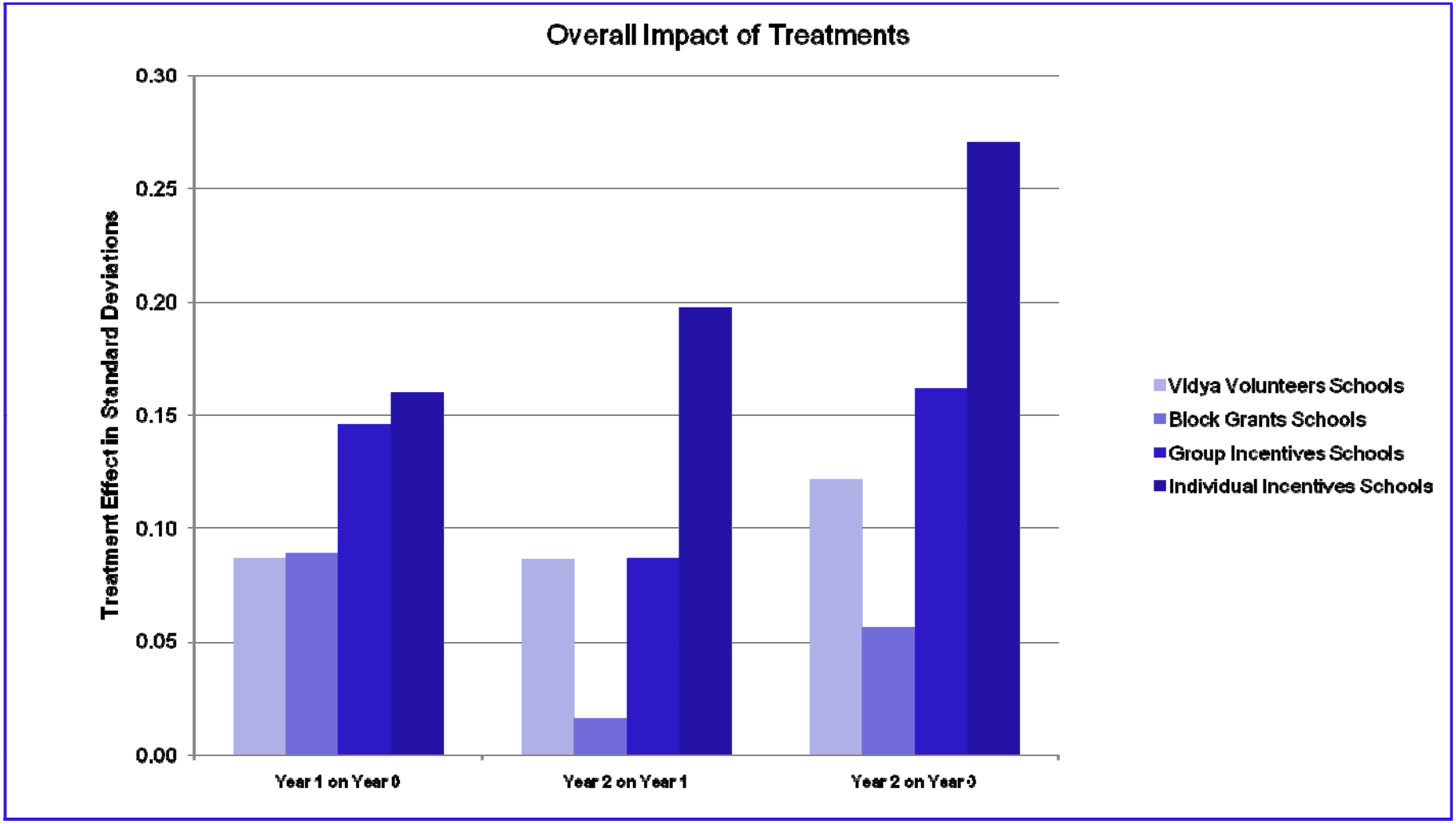
Main Questions on Performance Pay?

- Do teacher incentives improve test scores?
- What is the relative effectiveness of teacher-level versus school-level bonus programs?
- Who gains most from the program?
- What, if any, are the negative consequences?
- How does teacher behavior change?
- How will teachers respond to the idea?

Summary of Impact of Various Programs



program impacts are relative to the control group and expressed in terms of
andard deviations (SD) of the test score distribution
Using SD standardizes comparisons across difficulty levels of tests
A rough way to interpret the SD is that each 0.1 SD equals 4 percentile points, and so
treatment impact of 0.2 SD is saying that an average child who received the treatment
would have improved his/her rank by 8 places out of 100 (i.e. move from rank 50 to 42

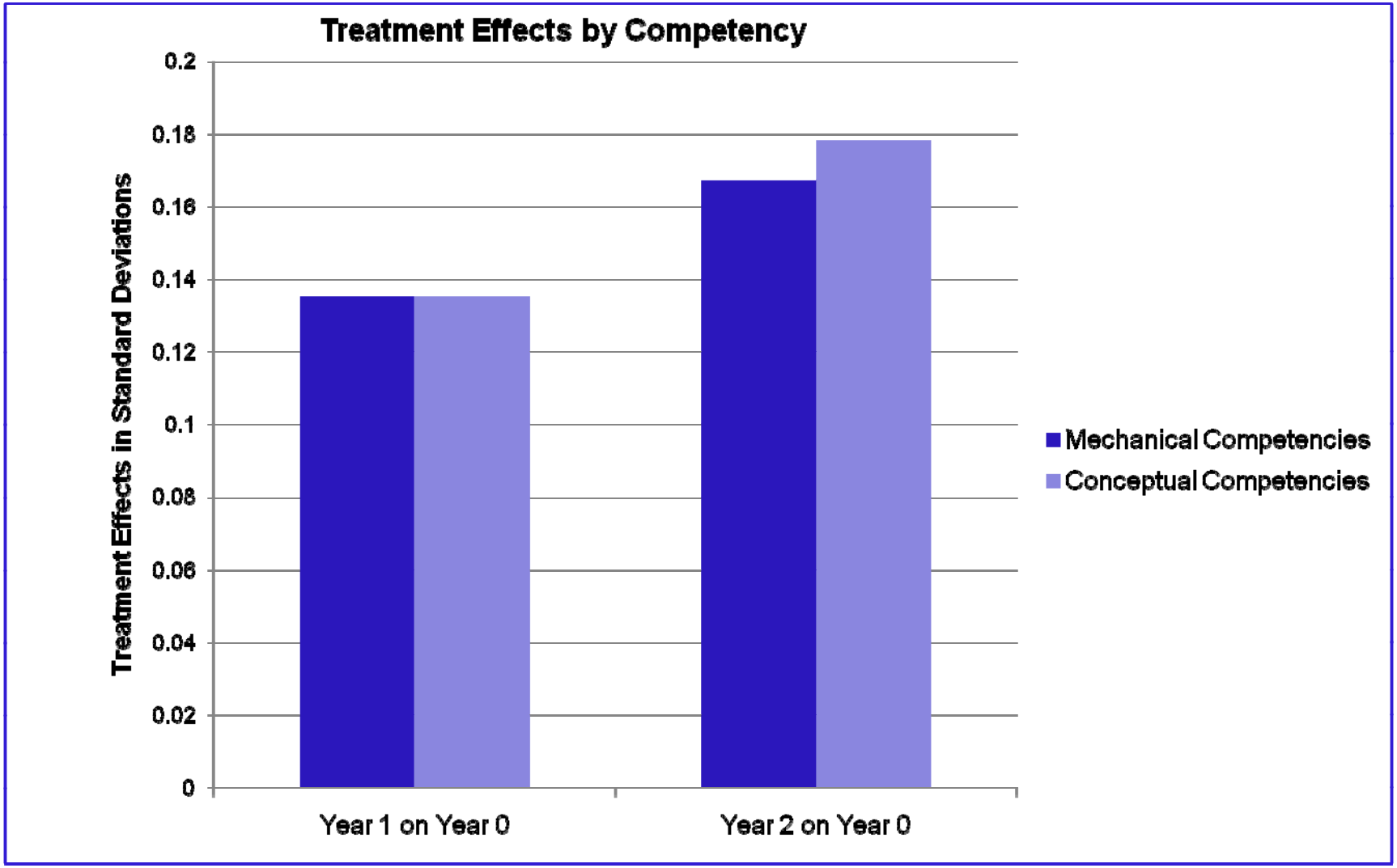
centives Improved Results Across the Board

The performance-pay program improved performance for
-All 5 grades
-All 5 districts
-All levels of question difficulty
-So no child in an incentive school was worse off compared to a c
in a control school

Similarly, improvements were seen for
-All levels of household affluence and literacy
-Children with high as well as low baseline scores
-All types of teachers
- Senior/junior, male/female, high/low qualifications/training

Some evidence that younger teachers responded better t
he program
-Could be because bonus percentage is larger for teachers with
lower base salary
-Could also be that younger teacher respond better to all progran

centive schools show gains in both echanical and Conceptual Components



Teachers Liked the Program

Teachers interviewed in August each year (before they know outcomes)

75% of teachers say the program increased their motivation
- 25% say their motivation was unchanged

85% of teachers had a favorable opinion about the idea of bonus payments on the basis of improvement in student performance

68% thought that the government should try and scale up this program in all schools

75% were willing to accept a performance-pay system even under neutrality of the total wage bill

Teachers who show greater support for performance-pay (ex ante) are also likely to have performed better (ex post)
- Implications for sorting into teaching profession

Questions about Contract Teachers (VV's)

- How does contract teacher effort differ from that of regular teachers and how does the presence of a contract teacher affect regular teacher behavior?
- Do contract teachers improve learning outcomes?
- Who benefits the most from an additional contract teacher in a school?
- These questions are being answered in the first large-scale randomized experiment to study the impact of contract teachers in a representative set of government schools (in an "as is" setting)

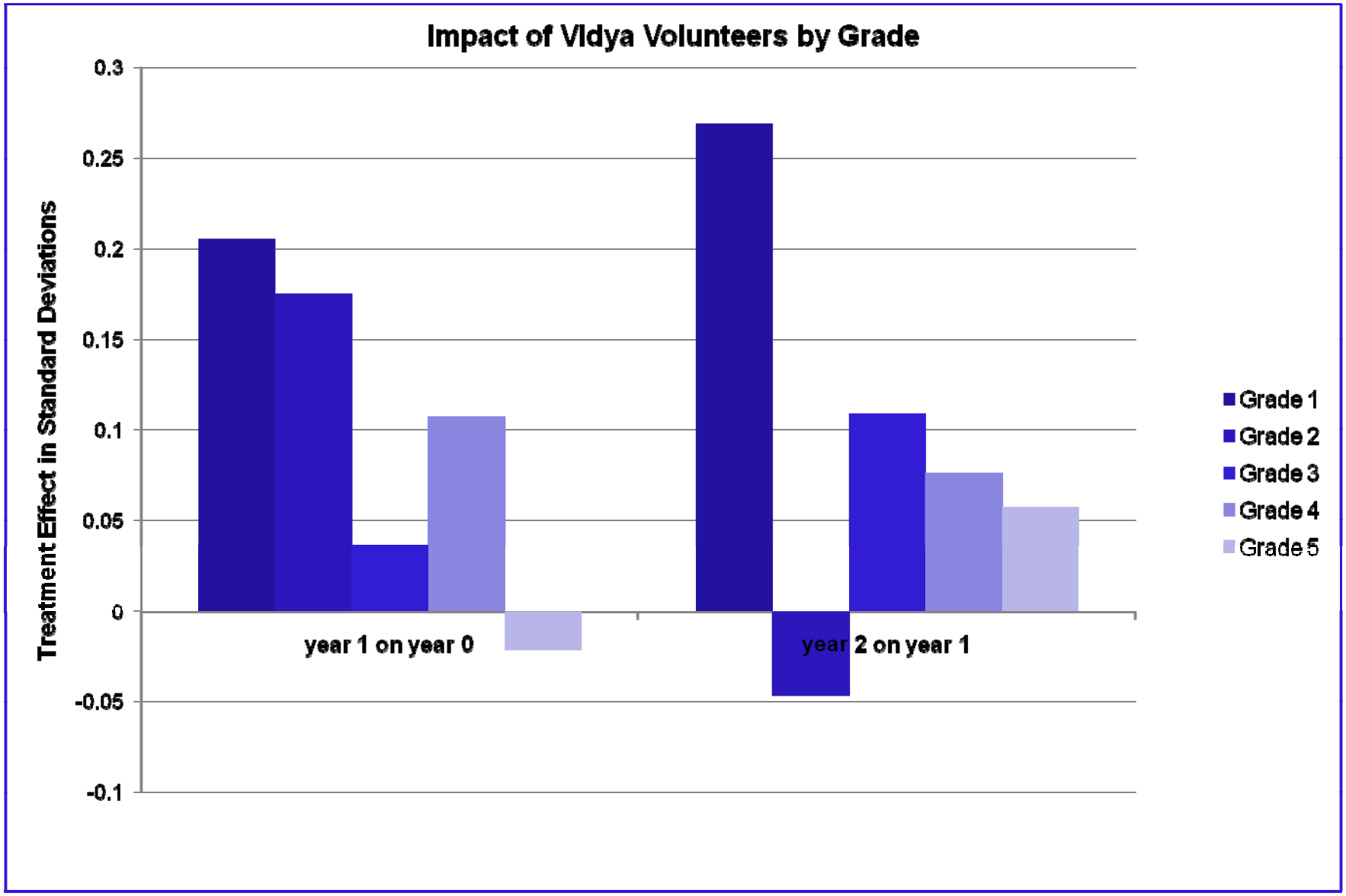
Teacher Effort by Contract Type

	Teacher Absence				
	Contract Teachers (%)	Regular Teachers (%)	Difference (%)	Difference with School Fixed Effects	Difference with mandal fixed effects
Year 1	15.2%	24.1%	-8.9%	-10.6%	-9.8%
Year 2	16.7%	29.4%	-12.6%	-17.0%	-13.4%
Combined	16.0%	26.8%	-10.8%	-13.6%	-11.8%

	Teacher Activity				
	Contract Teachers (%)	Regular Teachers (%)	Difference (%)	Difference with School Fixed Effects	Difference with mandal fixed effects
Year 1	49.4%	45.2%	4.2%	7.3%	6.3%**
Year 2	43.8%	35.4%	8.4%	9.8%	9.0%
Combined	45.9%	39.0%	6.9%**	8.4%	7.8%

All coefficients were significant at the 1 % level except where noted

mpact of Extra Contract Teacher by Grade



Summary of Impact and Cost Effectiveness

Year 1

	Vidya Volunteer	Block Grant	Group Incentive	Individual Incentive
Total Cost	1020000	1016000	601600	1038800
Gain in Standard Deviations	0.09	0.09	0.15	0.16
Cost per Gain of 0.1 Standard Deviations (Rupees/School)	11333	11289	4121	6493

Year 2

	Vidya Volunteer	Block Grant	Group Incentive	Individual Incentive
Total Cost	1500000	916879	589226	860361
Gain in Standard Deviations	0.09	0.02	0.09	0.2
Cost per Gain of 0.1 Standard Deviations (Rupees/School)	16667	45844	6547	4302

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Additional Questions on Inputs/Incentives

Will these gains in performance be sustainable once the programs are discontinued?

Will the gains continue or diminish if the programs are continued?

How much can student achievement be improved by the provision of a composite intervention that combines all four of the treatments studied to date?

Design for years 4 and 5 will address these questions

TH PAY COMMISSION

FORM

Commission makes it appear as if it ates external and independent of such performance. It is said in .2.2:

RIS recommended by this mission envisages a (reward) for r performance that would be d by… an external independent y.

ver, in Para 2.5.25 – it says:

endent evaluation of deliverables, e quality and stakeholder action with performance by nal agencies should be dered… Employee input should e included as a necessary part of valuation process.

ington. It is symptomatic of the nuclear initiative of

Grading classrooms

Linking teachers' pay to their performance is a step in the right direction

GOVERNMENT schools in India are plagued with many and diverse problems. Almost as many and varied are the projects that have been launched and proposals that have been floated to solve those problems. Few of those succeed. Why, then, would the Pune Municipal Corporation's newly announced plan to link teachers' pay to their performance, as judged by parents' councils, be any different? Well, for one thing, many previous schemes have floundered precisely because teachers were uncooperative or intransigent in the face of reforms, even those meant to make their work easier. Operation Blackboard, an ambitious scheme to provide teaching aids to thousands of primary schools did not perform as well as expected precisely because it did not take into account their unwillingness to adapt their methods to those aids. Ideas ranging from providing additional teaching help to cameras to record teacher attendance have stumbled at the same hurdle, which might not be a problem in this case.

The committees in each school will have parents as well as representatives from NGOs that specialise in the education sector. It is important that these committees be insulated as far as possible from political manipulation, and be focused exclusively on performance. Experience with such local control of school performance elsewhere in the world varies widely with those factors, and it is to be hoped that the Pune Municipal Corporation resists the temptation to gain political influence through manipulating the composition of these committees. Their purpose must be merely to serve as an instrument in bringing teachers' incentives more closely in line with desired results, not in providing another avenue for politicking.

If teachers' incentives are correctly altered, there is considerable room for hope that this scheme will be successful, and perhaps can be utilised elsewhere. An ambitious experiment conducted in Andhra Pradesh over 500 government schools demonstrated fairly conclusively that merit-based bonuses significantly improve educational outcomes and reduce dropout rates. Strangely, the same study demonstrated that a large improvement was noticed even in those schools where teachers were monitored regularly, without being paid bonuses. Either way, this is an idea with considerably more promise than its predecessors.

Garden of earthly delights