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Improving Learning: Developing Measures of Accountability and Evaluating their Association with Students' Gains in Achievement in Nepal

Uttam Sharma

Dirgha Ghimire, Brian Rowan, & Paul Schulz

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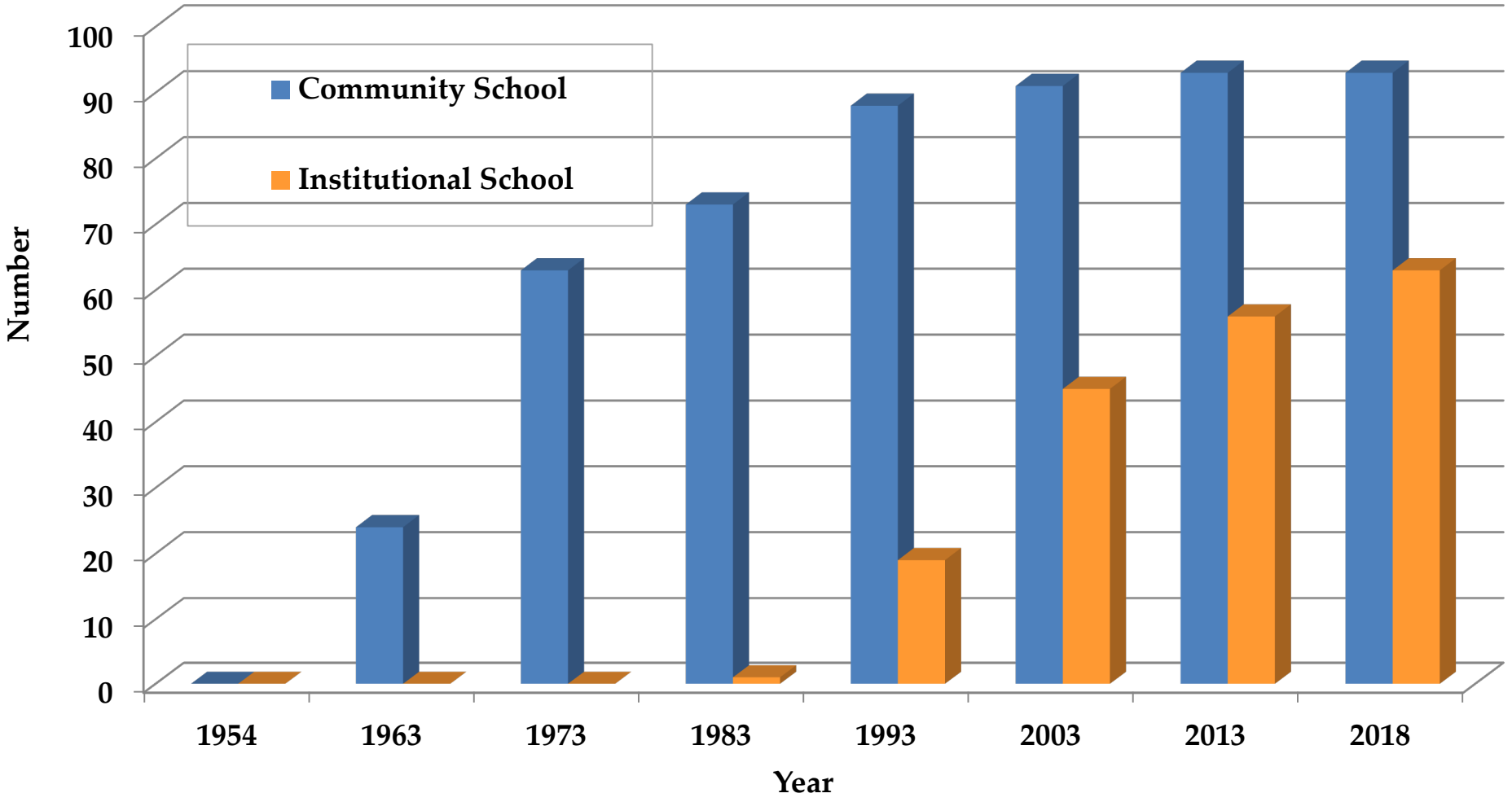
Outline of Presentation

- Brief history of school education in Nepal and Western Chitwan
- Completed DFID-ESRC study
  - Study rationale: understanding the role of local accountability
  - Study design
  - Findings
- Ongoing Wave 2 study
- Access to data

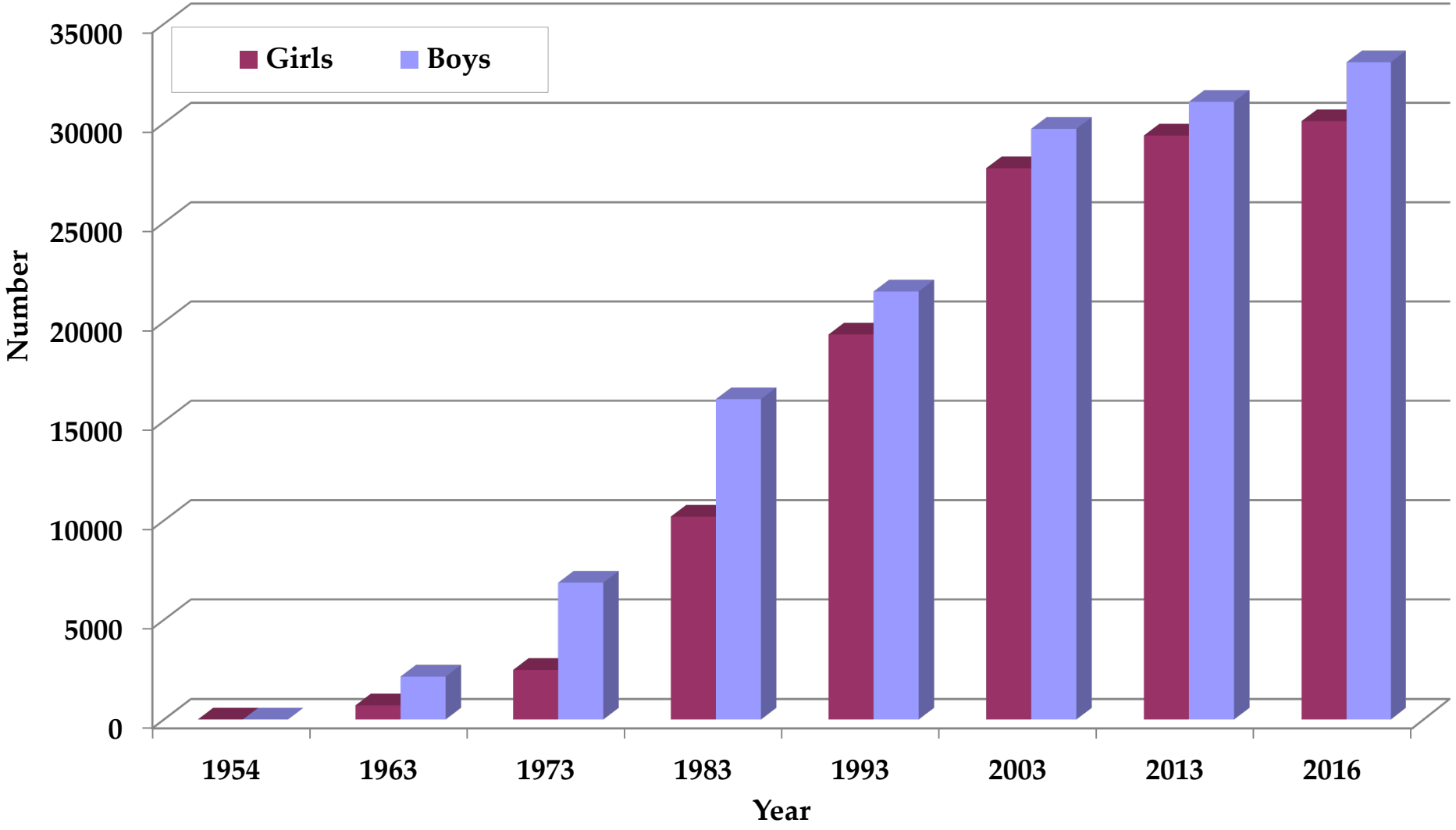
Overview of School Education in Nepal

- Historically, Gurukul, Monasteries and Madrasa and other forms of teaching
- 1853 - First western model school opened
- 1954 - First National Education Plan
- 1961 - Adopted a free and compulsory primary education policy
- 1971 - Introduced New Education Plan (NEP)
- 1986 - Introduced privatization in National Educational Policy

Number of schools over time in Western Chitwan by school type (Grade 1-12)



Number of students by gender in schools of Western Chitwan (Grade 1-12)



School Education in Nepal

- Similar to most other developing nations, Nepal fell behind in student achievement.

- Education in Nepal continues to be marked by pervasive inequalities of gender, ethnicity, urban/rural residence, and public/private schools.

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Improving Learning: Developing Measures of Accountability and Evaluating their Association with Students' Gains in Achievement in Nepal

- **Funded by DFID-ESRC**
- **Study goal:** Investigate how school-level accountability processes, instructional service delivery in schools, and student learning are related

Study Sample

- We focused on schools offering 8th grade education in 2018/2019, which included:
    - 114 Schools (57 Community/public and 57 Institutional/private Schools)
    - 114 School Management Committees
    - 114 Parent Teacher Associations
    - 114 Head Teachers/Principals
    - 8th grade teachers
    - Parents
    - Students

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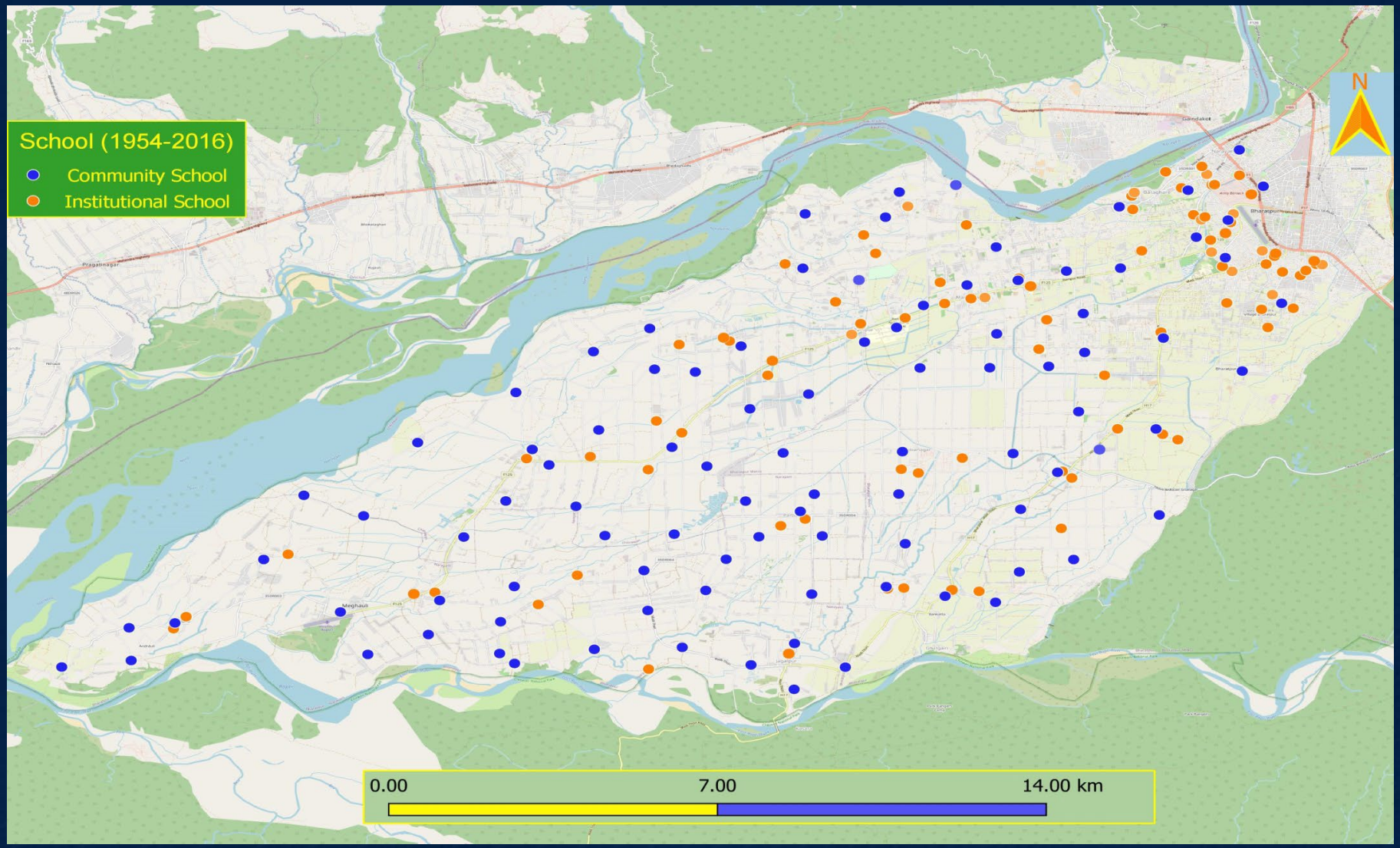
Distribution of schools offering Grade 8 in Western Chitwan

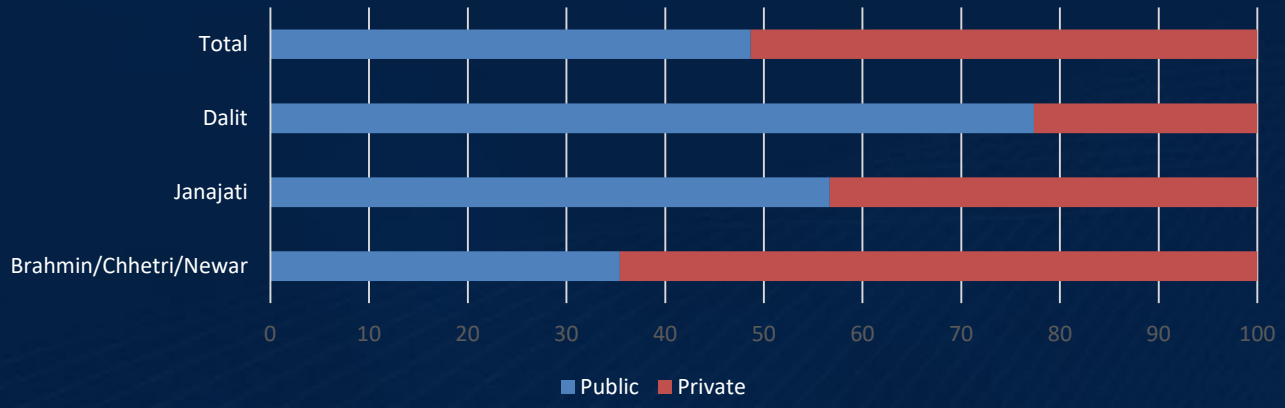


Socioeconomic disparities and achievement

Basic descriptive statistics of grade 8 students in Western Chitwan

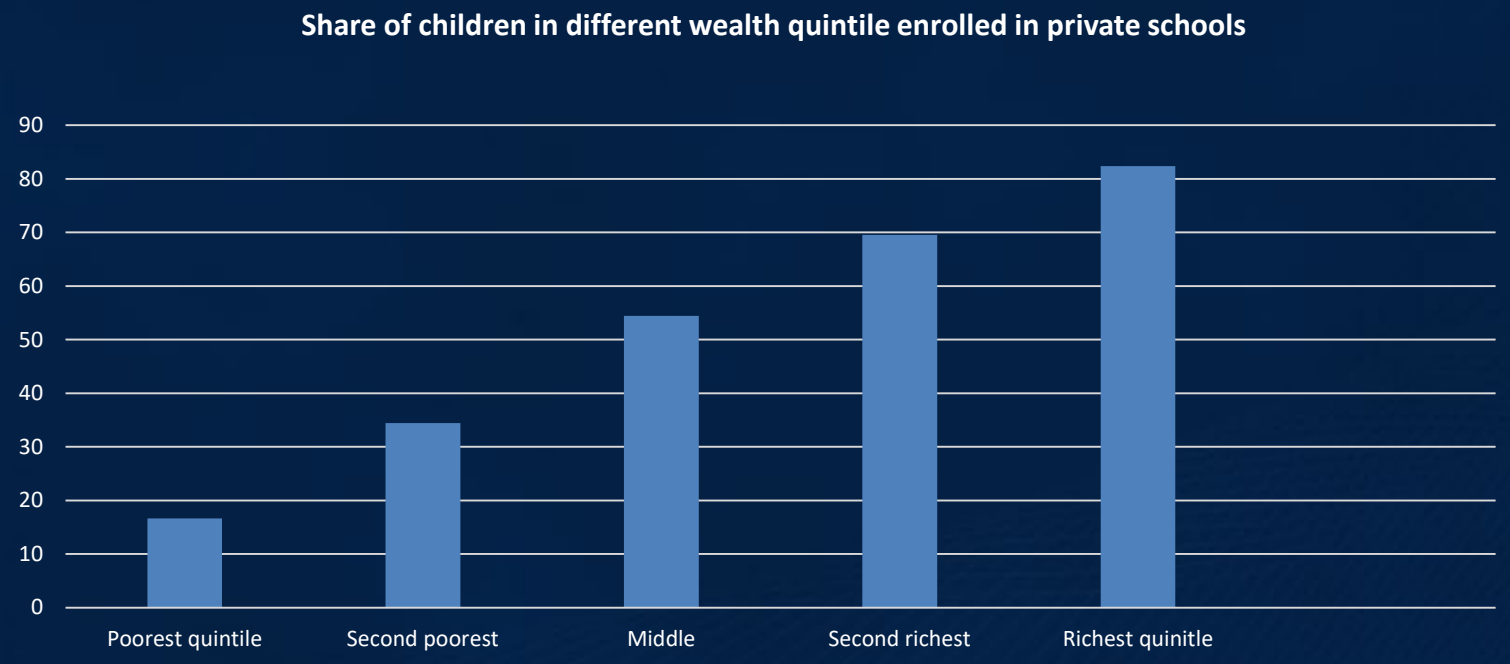
- School type (114 schools: 57 public; 57 private schools)
  - Public school: 2,327 students (48.49%)
  - Private school: 2,376 students (51.51%)

- Sample by Caste and school type



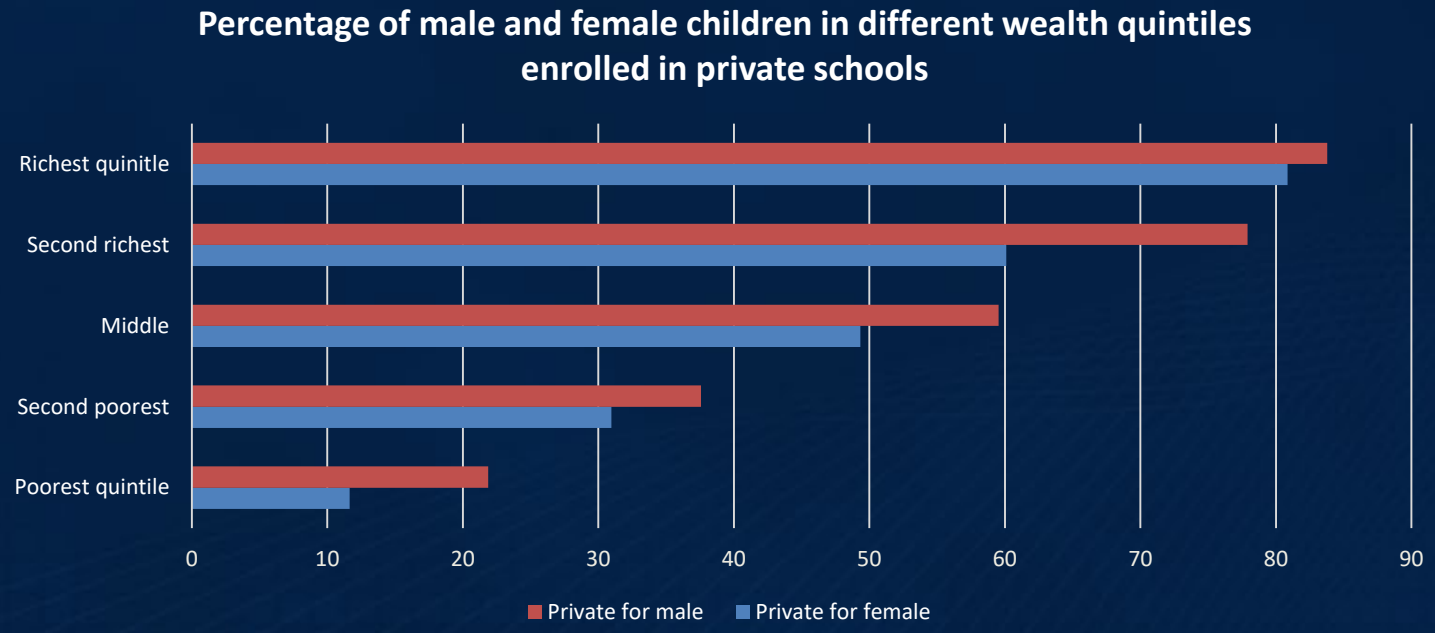
Students in public and private schools wealth quintile

- As household wealth increases, the probability of a child being enrolled in private school increases



Share of male and female children enrolled in private schools by wealth quintile

- Male child is more likely than female child to be enrolled in private school regardless of wealth quintile; disparity less for the richest quintile.



Low-stakes Assessments

- Male students, on average, have done better than female students in Math and Science, but not in Nepali (this requires a nuanced interpretation).

Average scores (% correct) in Math, Science and Nepali assessments by gender				
Variable	Male	Female	Difference (Male -Female)	Statistical significance
Math baseline	33.01	29.05	3.96	***
Math endline	45.56	40.07	5.50	***
Science baseline	30.78	28.52	2.26	***
Science endline	40.00	37.41	2.59	***
Nepali baseline	37.97	41.67	-3.70	***
Nepali endline	37.54	42.57	-5.03	***
Observations	2230	2147		

Disparities in (unadjusted) assessment scores (% correct) by ethnicity/caste

Average of total percentage scores in Math, Science and Nepali assessments by Caste			
Variable	Brahmin/Chhetri/Newar	Janajati	Dalit
Math baseline	36.34	26.37	22.87
Math endline	49.51	37.36	31.51
Science baseline	33.59	25.84	24.26
Science endline	43.47	34.05	32.36
Nepali baseline	43.86	35.38	35.86
Nepali endline	43.18	36.31	37.68
Observations	2201	1,559	563

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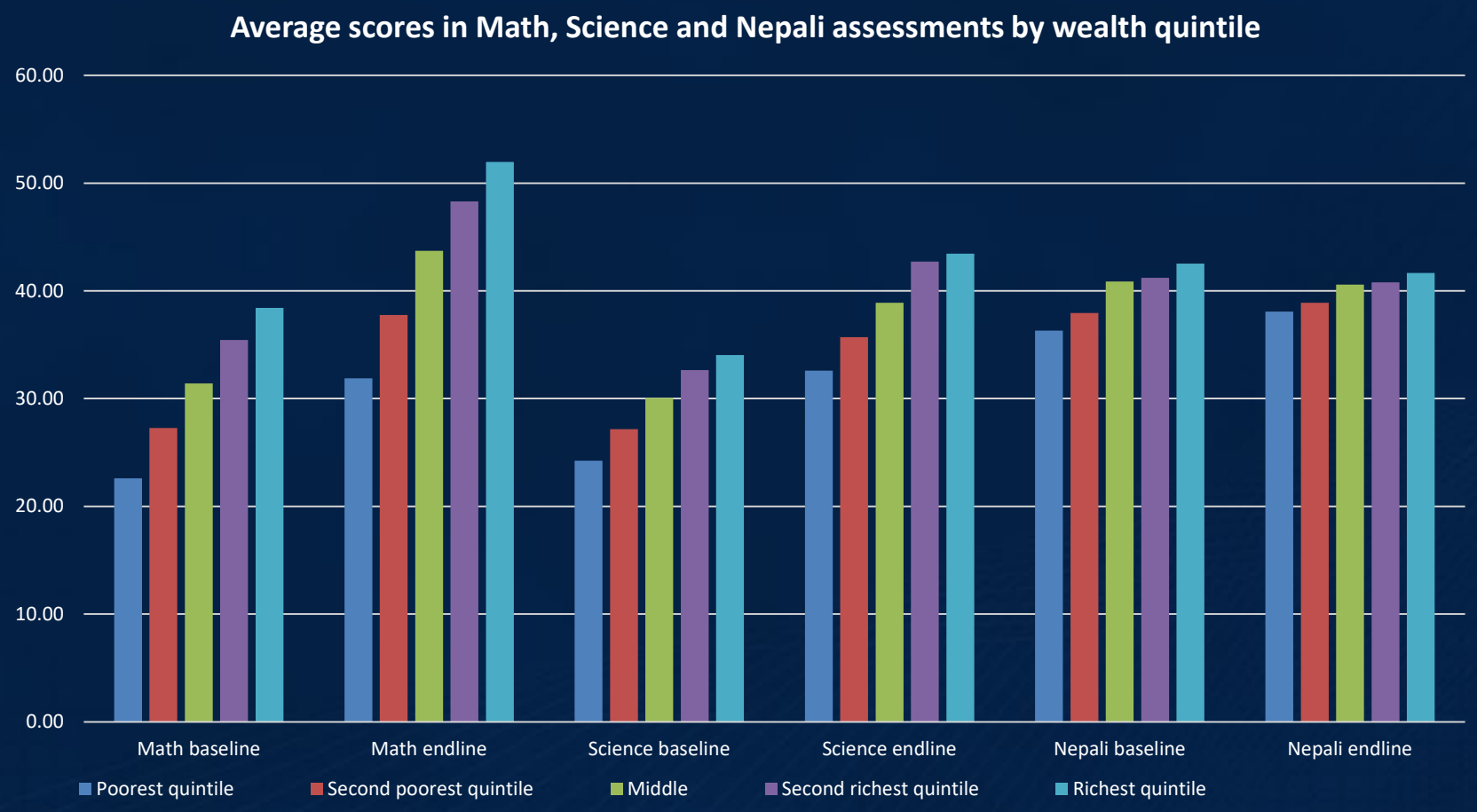
Average percent of total scores in Math, Science and Nepali assessments by wealth quintile



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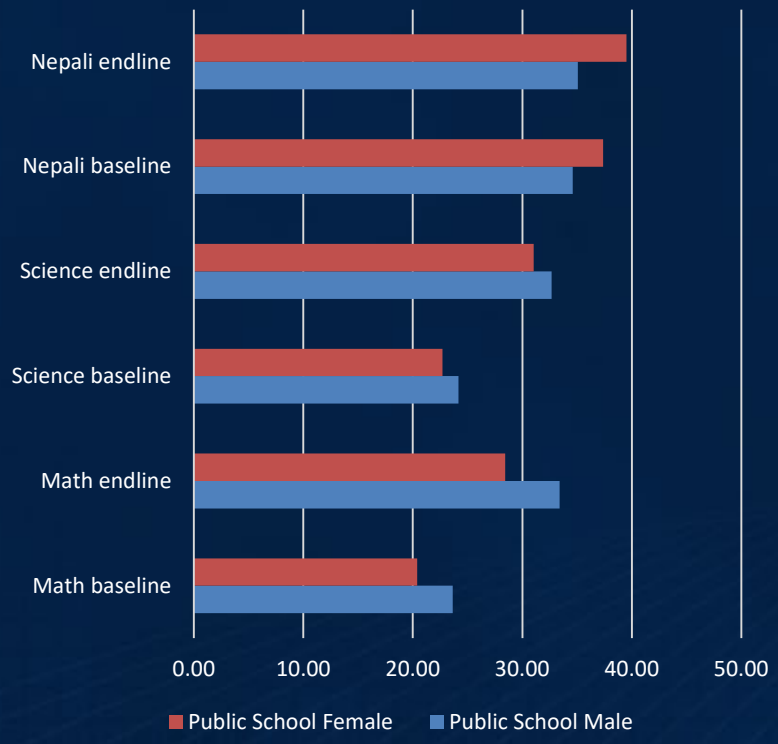
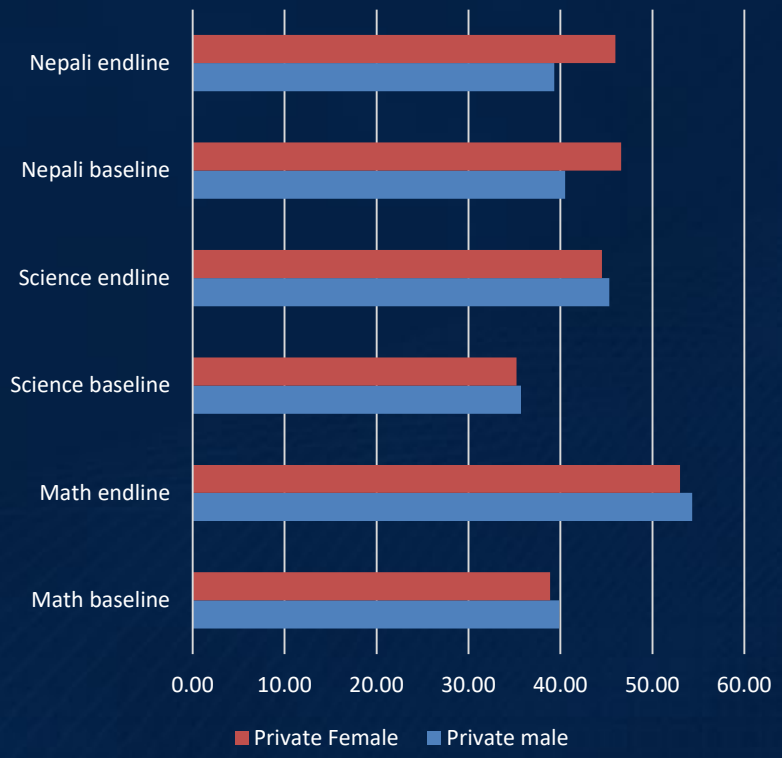
Assessment scores (% correct) by gender for children in the same type of school

Assessment scores by gender in public school



Assessment score by gender in private schools



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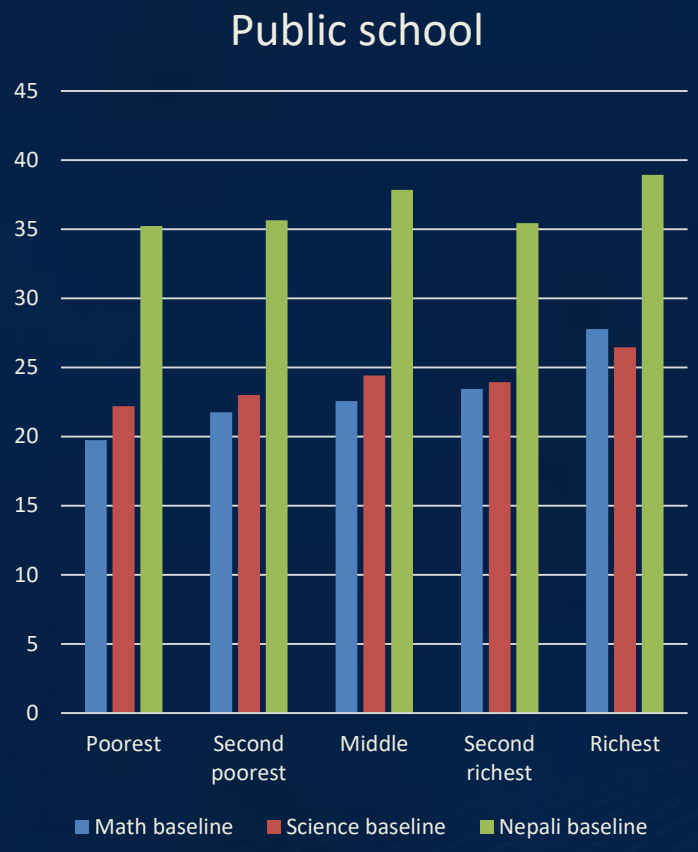
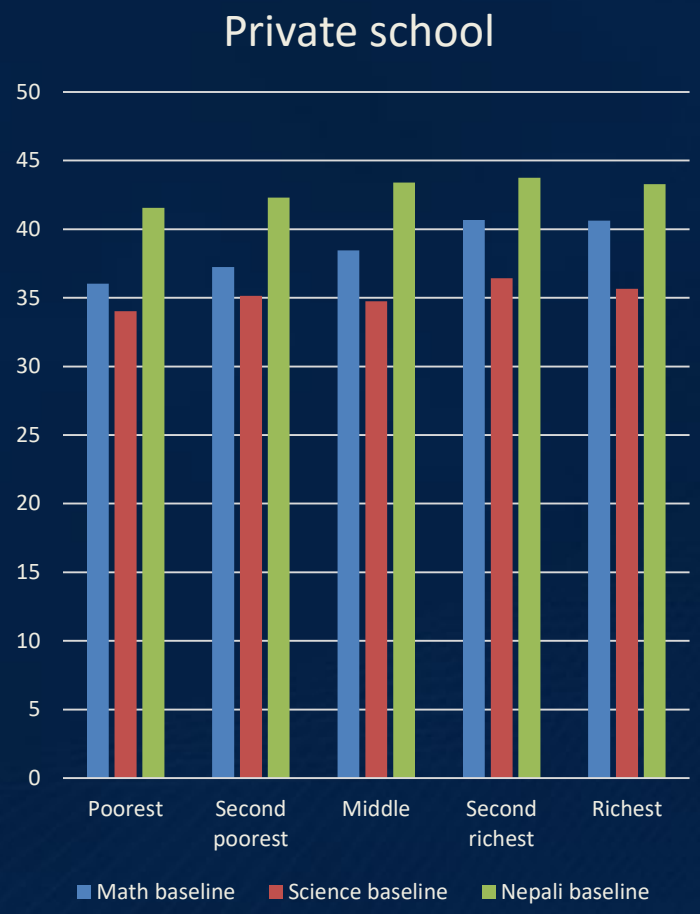
Percent of total assessment scores by wealth quintile for children in the same type of school





Further analysis

- Decades of research (from the United States and from many other countries) shows that these differences in student learning exist at the point of entry into schools and that entry differences continue to exist as students progress through school.

- For this reason, the focus in much academic research has turned from looking at student test scores at a single point in time to looking at ***growth in learning*** (i.e., changes in test scores over time). That is because the only way to make up for differences in learning at entry into schooling is to affect growth in learning in subsequent years.

"Basic" Statistical Model

- We use both "audit" tests developed by Nepal's Education Ministry (Education Review Office) and "high stakes" accountability tests as dependent variables
  - "Audit" test: similar to National Assessment of Student Achievement (NASA) conducted by ERO
  - Basic Education Examination (BEE), taken after grade 8 by the Municipalities (local governments)
  - Tests for Math, Science and Nepali

"Basic" Statistical Model, cont.

- We estimated the private school effect on student achievement using a multi-level (i.e., mixed) statistical model

$$Y(\textit{Student's endline Scale score Achievement}) = \alpha + \beta_1(\textit{centered baseline scale score for an individual student}) + \beta_2(\textit{centered baseline scale score at School level}) + \beta_3(\textit{Student in Propensity Stratum 1}) + \beta_4(\textit{Student in Propensity Stratum 2}) + \beta_5(\textit{Student in Propensity Stratum 3}) + \beta_6(\textit{Student in Propensity Stratum 4}) + \beta_7(\textit{Student's Propensity Score}) + \beta_8(\textit{Student Over-Age for } 8^{th}\textit{ Grade}) + \beta_9(\textit{Student Repeating } 8^{th}\textit{ grade}) + \beta_{10}(\textit{Student Receiving Tutoring}) + \beta_{11}(\textit{Private School}) + eij + Uj.$$

Independent Variables : The Propensity Score

- From interviews with each student's family, we gathered data on:
  - **Student's sex**
  - **Student's ethnicity**
  - **Parents' education level**
  - **Parents' educational aspirations for student**
  - **Household income and wealth**
- In the analyses, these student characteristics were combined into a single score predicting the probability of a student's enrollment into a private school.
- This "propensity score" allowed us to control for student background as we estimated the statistical relationships of school-level variables to student gains in academic achievement.

Additional Independent Variables: School Characteristics

- We measured four types of school characteristics:
  - **Institutional status (public or private)**
  - **External actors' engagement (Diversified governance)**
  - **External monitoring (government supervision)**
  - **Instructional quality**
- We then examined the effects of school governance/monitoring and instructional quality variables on students' gains in academic achievement and checked to see if the inclusion of these variables in the regression analyses "explained away" the positive effects of private schools on student achievement.

Distributions of the governance and instructional quality measures across public and private schools

	Mean (Private)	95% CI	Mean (Public)	95% CI	d
Diversified Governance	-0.49	(-0.65, -0.34)	0.42	(0.26, 0.58)	-0.91
Government supervision/inspection	-0.41	(-0.51, -0.31)	0.34	(0.13, 0.56)	-0.75
Instructional quality (student ratings)	0.41	(0.18, 0.64)	-0.41	(-0.67, -0.15)	0.82
Teacher absences	-0.21	(-0.45, 0.02)	0.21	(-0.07, 0.50)	-0.43

Regression estimates for Effects of School Governance and Instructional Quality on Student Achievement

	NASA			BEE			
	Math	Science	Nepali	Math	Science	Nepali	
Explanatory factor							
School type (Private=1)	8.172**	-2.439	-2.387	17.64***	22.08***	4.058**	
	(3.403)	(3.272)	(2.299)	(2.908)	(3.237)	(1.716)	
	0.016	0.456	0.299	0.000	0.000	0.018	
External actors' engagement	-1.715	-3.457**	-0.302	2.139*	0.492	1.265	
	(1.450)	(1.672)	(1.258)	(1.253)	(1.666)	(0.962)	
	0.237	0.039	0.81	0.088	0.768	0.189	
External monitoring	0.948	0.798	1.462	-1.045	-0.523	-0.472	
	(1.348)	(1.534)	(1.154)	(1.165)	(1.574)	(0.890)	
	0.482	0.603	0.205	0.369	0.74	0.596	
Instructional quality	1.986**	4.148***	0.847	1.804**	2.270**	1.130*	
	(0.994)	(1.142)	(0.903)	(0.833)	(1.127)	(0.653)	
	0.046	0.000	0.348	0.03	0.044	0.084	

Discussion of Findings

- Our regression analyses showed statistically significant and substantively large private school effects on student achievement when "high stakes" BEE test scores were the dependent variables

- But, private school effects were statistically significant in only one of the regression analyses where NASA scale scores were the dependent variable, and that effect was substantively small
  - The finding that private schools do not have much of an effect on achievement is contrary to the widespread view (in Nepal) that private schools are "better" at producing high achievement than public schools.

- If we assume that the positive effects of private schools on student achievement are real, we can now ask why these positive effects are so much larger for the BEE tests than the NASA tests.
  - One answer might be that the BEE tests serve as the market signal of school quality in Nepal, in which case, these exams (in theory) are also the ones that public and private school administrators attend to as they compete for students in Nepal

Discussion: Next Steps for Policy, Practice, and Research

- Policy: Discussion could shift from concerns with forms of control over schools (public vs. private) to improve *the quality of classroom instruction in schools*.

- Practice: The education practice community can play a role in developing instructional improvement programs for broad dissemination.

- Research: Find good ways to measure the quality of classroom instruction in schools

Other working papers using these datasets

- Patel, Anoushka, William G. Axinn, and Dirgha J. Ghimire. “The Role of Restroom Quality in Academic Success.”

- Sharma, Uttam, Dirgha J. Ghimire. “How Does Father’s Migration Status Influence School Choice and Achievement of Their Children?”

Ongoing follow-up (Wave 2) study

- Data collection work ongoing (Oct 2023-January 2024)
  - Reasons behind those who dropped-out in various grades
  - Aspirations of youth: work and education
  - Whether they want to go abroad for work or study
  - Migration history of parents
  - COVID-level disruptions
  - Use of tobacco, alcohol, and other substance use
  - Use of social media
  - GPA in SEE (grade 10) and SLC (grade 12)
- Both youths and one of their parents to be asked a subset of similar questions

Ongoing Wave 2 study, cont.

- Limited high quality student learning data available in many panel surveys from developing countries
- Following up with more than 50% (more than 2300) of the students who were in grade 8th in 2019
- Exploratory in nature: Focused on developing a broad understanding of diverse topics rather than delving into in-depth analysis of limited topics

Access and Use of Data

Access

- UK Data Service: https://reshare.ukdataservice.ac.uk/855391/
- Inter-university Consortium for Political and Social Research (ICPSR): data has been deposited and the restricted data is expected to be available late 2024.

Data also potentially useful for those using CVFS data

- School level characteristics
- Proxies for school quality

Thank you!