

Does Gender of Administrators have an Effect on Education?

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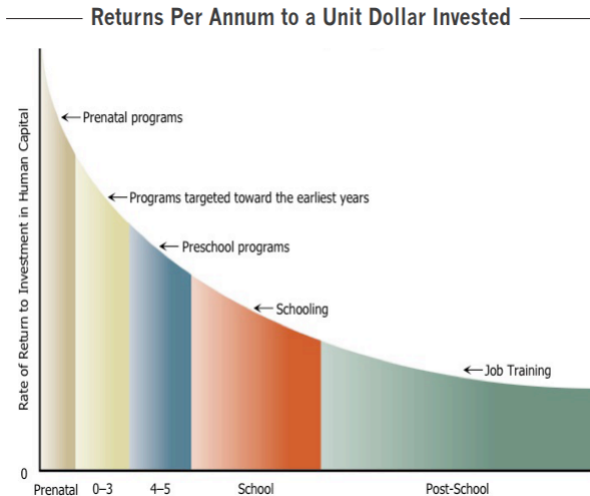
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Outline

- ▶ Association between Education and Quality of Life.
- ▶ Educational attainment indicators.
- ▶ Background of Study on Administrators.
- ▶ Results from the Study.

Returns to Education



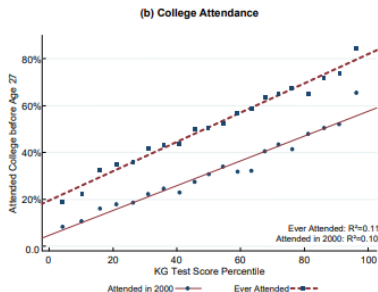
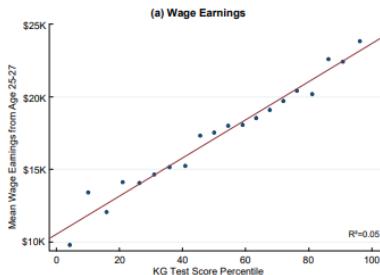
Source: Heckman et al. ABCEDARIAN Project.

Education and Quality of Life

- ▶ Early education is associated with *Wage Earnings*
- ▶ Early education is associated with *College Education*
- ▶ College Education is associated with Inter-generational Mobility
- ▶ Education is associated with Lower Mortality, and Better Health.

Education and Wages, College Attendance

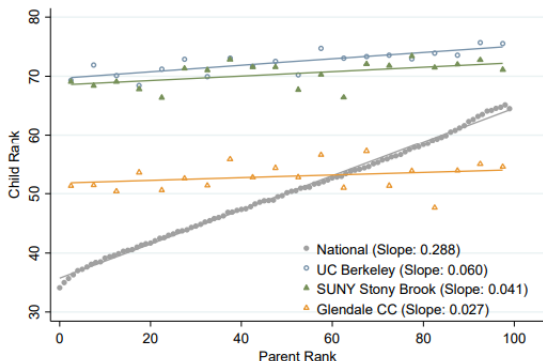
- ▶ Project STAR (Student/Teacher Achievement Ratio), 11,571 students from Kindergarten to Grade 3 in Tennessee, USA, 1985-1989.
- ▶ Long-term effect at age 27.
- ▶ Early education is associated with Wage Earnings
- ▶ Early education is associated with College Education



Source: Chetty, Raj, et al. 2011. How Does Your Kindergarten Classroom Affect Your Earnings? Evidence from Project Star. Quarterly Journal of Economics 126(4): 1593-1660.

College Education and Inter-generational Mobility

- ▶ The relationship between children's earnings and parents' incomes is much flatter within colleges than in the nation as a whole.
- ▶ Children from low-income and high-income families who attend the same college have very similar earnings outcomes.



Source: Chetty, Raj, et al. 2017. Mobility Report Cards: The Role of Colleges in Intergenerational Mobility.

Education and Health

- ▶ RCT of 120 families. Structured pre-school (0-5); Cost USD19,000/child
- ▶ 4 times likely to graduate from college.
- ▶ 42% more likely to be employed (75% in Treatment, 53% in Control)
- ▶ 1.8 years older when first child was born (21.8 years vs 20 years)
- ▶ 81% less likely to receive welfare between ages of 22.5 and 30

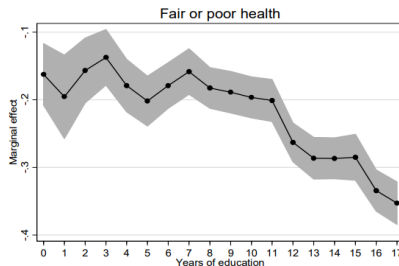
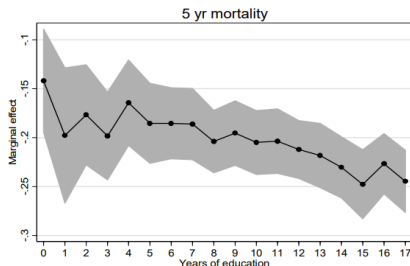
Abecedarian Project, Health Effects at Age 35 (Males)

	Treatment Mean	Control Mean	Treatment p-value
Systolic Blood Pressure	125.79	143.33	0.018
Diastolic Blood Pressure	78.53	92.00	0.024
Pre-Hypertension	0.68	0.78	0.235
Hypertension	0.10	0.44	0.011
HDL Cholesterol	53.21	42.00	0.067
Cholesterol/HDL-C	3.89	4.69	0.057
Abdominal Obesity	0.65	0.87	0.136
Metabolic Syndrome	0.00	0.25	0.009

Source: Campbell, Conti, Heckman, Moon, Pinto, Pungello and Pan (2014).

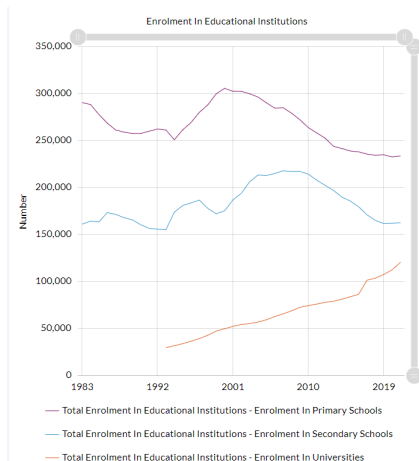
Education and Mortality

- ▶ Education is associated with decrease in mortality.
- ▶ Education is associated with decrease in poor health.



Source: Cutler and Lleras-Muney. 2006, Education and Health: Evaluating Theories and Evidence.

Educational Attainment - Enrollment - Singapore

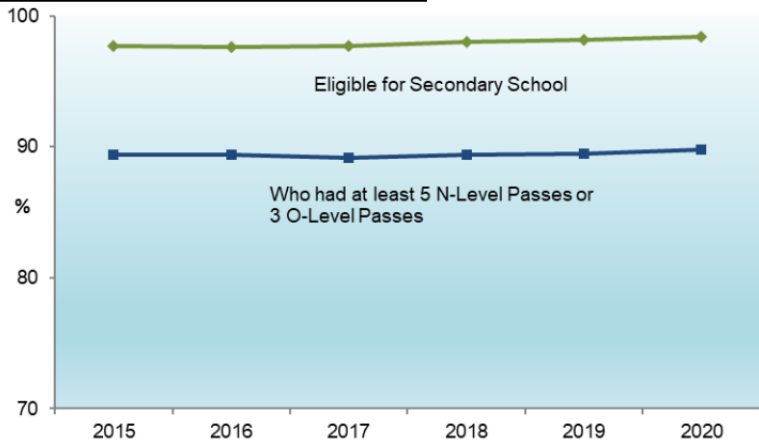


Source: SingStat singstat.gov.sg.

Educational Attainment - Completion Rate - Singapore

- ▶ Primary school completion rate: $> 97\%$

i) Percentage of Primary 1 (P1) cohort:

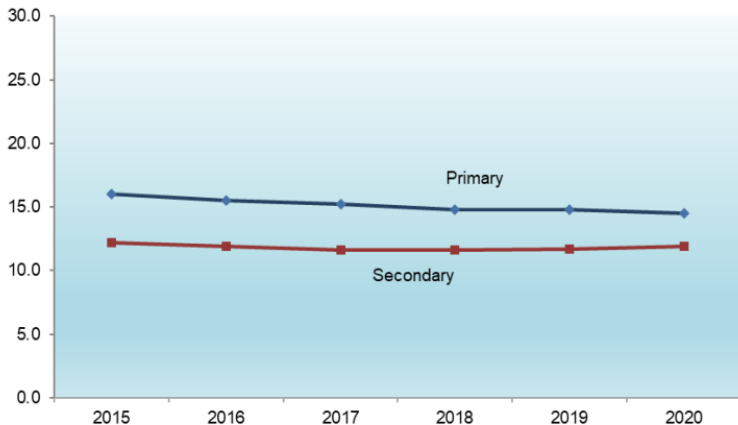


Source: Ministry of Education, Singapore, Education Statistics Digest 2021

Education - Student Teacher Ratio - Singapore

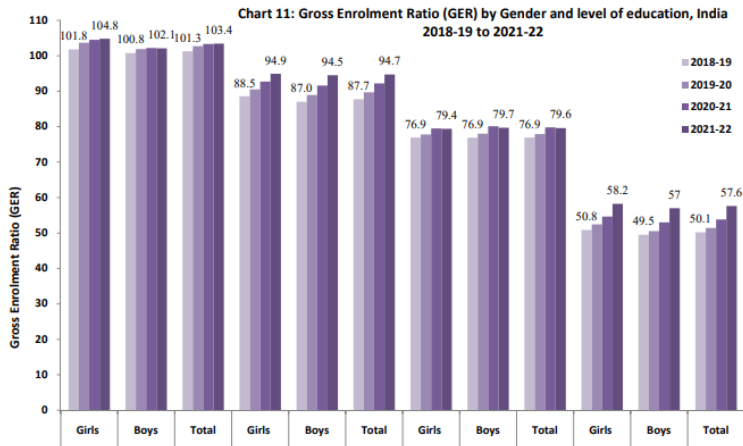
- ▶ Primary schools: 14 Students to Teacher
- ▶ Secondary schools: 12 Students to Teacher

Ratio of Students to Teaching Staff



Source: Ministry of Education, Singapore, Education Statistics Digest 2021

Educational Attainment - Enrollment - India



Source: Ministry of Education and Literacy 2021-2022. Flash Statistics
https://www.education.gov.in/sites/upload_files/mhrd/files/statistics-new/udise_21_22.pdf.

Educational Attainment - Completion Rate - India

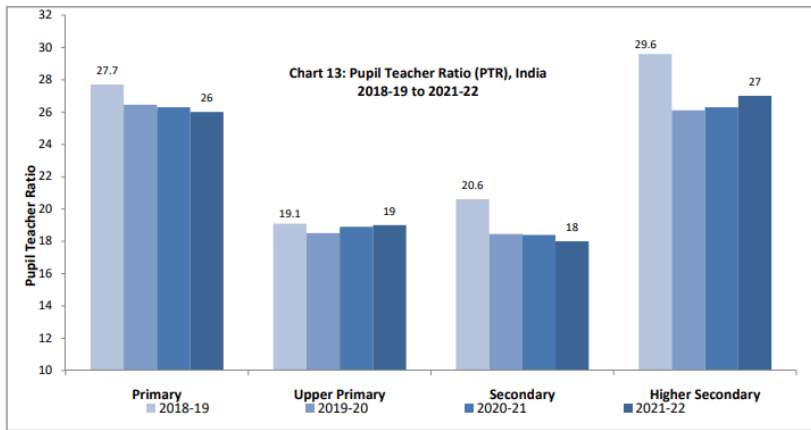
- ▶ Singapore: 97% (No transition: 6,979 out of 232,650)
- ▶ India: 93% (No transition: 8 million out of 121.8 million)

Dropout Rates – All Categories		
Dropout Rates - Primary	0.8	1.45
Dropout Rates – Upper Primary	1.9	3.02
Dropout Rates - Secondary	14.6	12.61
Transition Rates – All Categories		
Transition Rates Primary to Upper Primary	92.1	93.18
Transition Rates Upper Primary to Secondary	91.3	88.81
Transition Rates Secondary to Higher Secondary	73.3	78.41

Source: Ministry of Education and Literacy 2021-2022.Flash Statistics
https://www.education.gov.in/sites/upload_files/mhrd/files/statistics-new/udise_21_22.pdf.

Education - Student Teacher Ratio - India

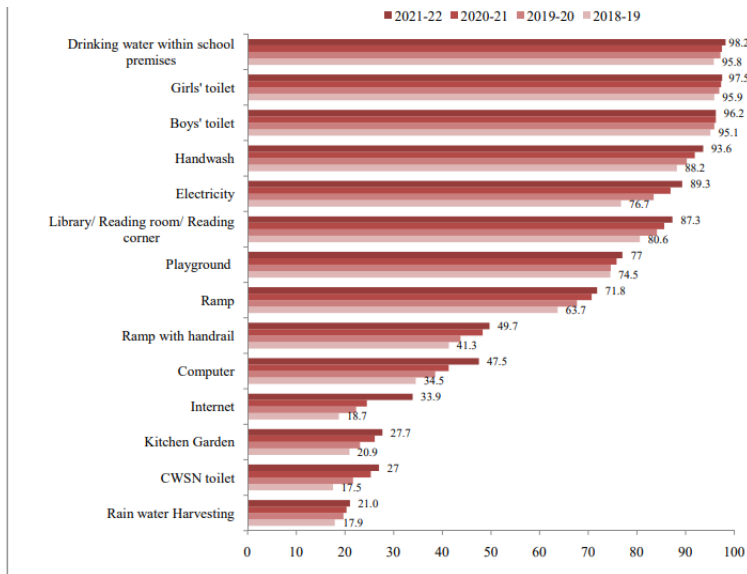
- ▶ Singapore: 14:1 (Primary) and 12:1 (Secondary)
- ▶ India: 26:1 (Primary) and 19:1 (Secondary)



Source: Ministry of Education and Literacy 2021-2022.Flash Statistics

https://www.education.gov.in/sites/upload_files/mhrd/files/statistics-new/udise_21_22.pdf.

Education - Infrastructure - India



Administrators and Education

Do female administrators improve educational attainment?

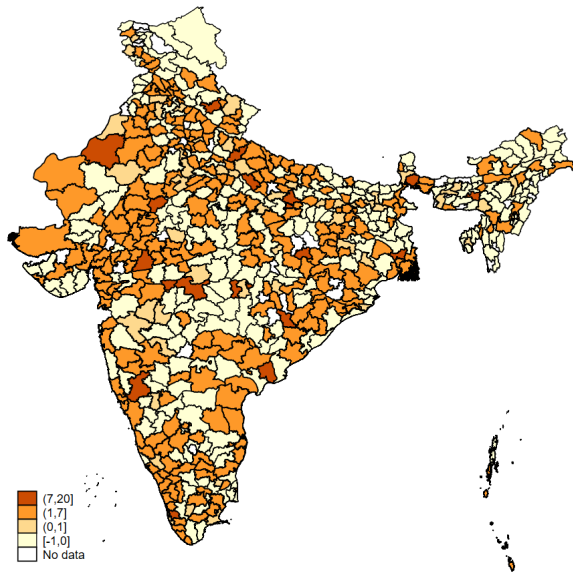
Literature

- ▶ Women politicians spend more on public goods (Andersen et al. 2008).
- ▶ Women politicians spend on goods related to social welfare such as **health and education** (Chattopadhyay and Duflo 2004, Haider, and Pande 2005)
- ▶ Women politicians have a “**role-model**” effect (Beaman et al. 2012).

Effects:

- ▶ Improve **education** (Beaman et al. 2012; Clots-Figueras 2012)
- ▶ Promote **good health** and well-being (Bhalotra and Clots-Figueras 2014; Chattopadhyay and Duflo 2004; Besnier 2023)
- ▶ **Gender equality** through reduction in crime (Iyer et al. 2012)
- ▶ Overall economic development (Duflo 2012).

Changes in District Administrators



School Data

- ▶ Primary school data from Ministry of Education in India.
- ▶ It includes student data on enrollment, failure, grades by gender.
- ▶ It includes school and teacher data on infrastructure, gender, and educational attainment of teachers.
- ▶ 236,748 primary schools from 2005 to 2017.

Source: Author's calculations. Please do not cite without permission.

Questions

- ① **Does enrollment change** due to female administrators?
 - ① Does enrollment increase in primary school?
 - ② Which grades does enrollment increase?
 - ③ How long does the effect last?

- ② **Why does enrollment change** due to female administrators?
 - ① Changes in infrastructure?
 - ② Changes in security?
 - ③ Changes in perception about women?

Does enrollment increase in primary school?

	ln(Enrollment)			
	(1)	(2)	(3)	(4)
Female-Head (Yes = 1)	0.0095** [0.0043]	0.0094** [0.0043]	0.0097** [0.0041]	0.0097** [0.0041]
School Covariates	No	Yes	Yes	Yes
Location Covariates	No	Yes	Yes	Yes
Infrastructure Covariates	No	No	Yes	Yes
Inspections	No	No	No	Yes
School Fixed Effects	Yes	Yes	Yes	Yes
State by Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	2,916,717	2,915,544	1,337,605	1,337,605
Adjusted R2	0.825	0.826	0.889	0.889

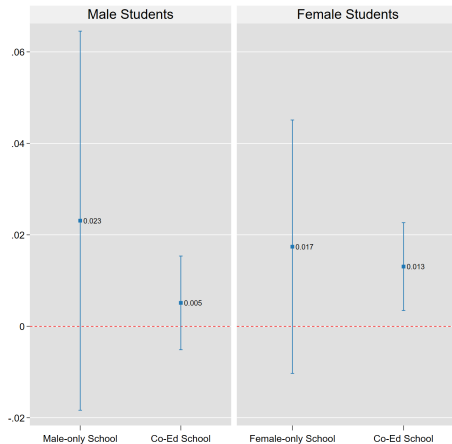
Standard error in brackets. Standard errors in brackets are clustered by district.

Stars signify significance level * 0.1 ** 0.05 *** 0.01

- ▶ Female administrators are associated **0.97% increase in enrollment** in schools in their districts.
- ▶ Back of the envelope calculations: $0.97\% \times 236,748 \text{ schools} \times 162 \text{ students / school} = \mathbf{372,000 \text{ new students per year}}$

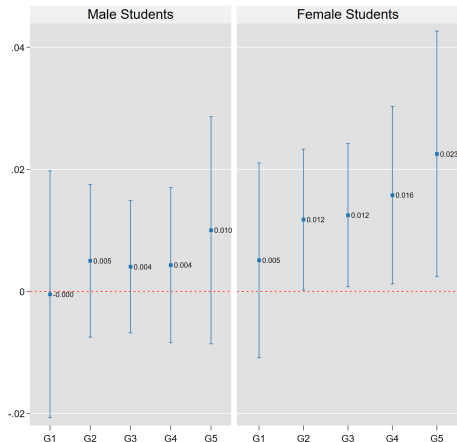
Source: **Author's calculations. Please do not cite without permission.**

In which schools does enrollment increase?



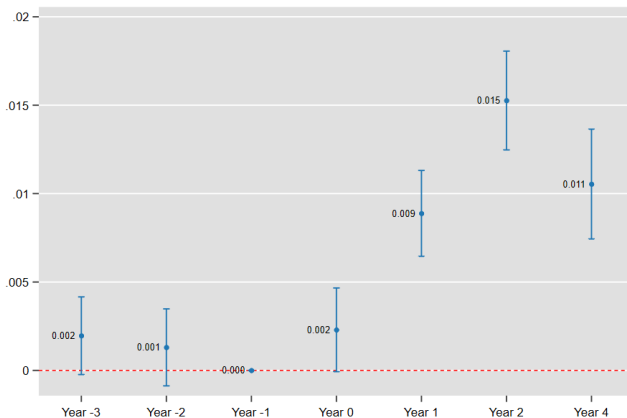
Source: **Author's calculations. Please do not cite without permission.**

Which grades does enrollment increase?



Source: **Author's calculations. Please do not cite without permission.**

How long does the effect last?



Source: **Author's calculations. Please do not cite without permission.**

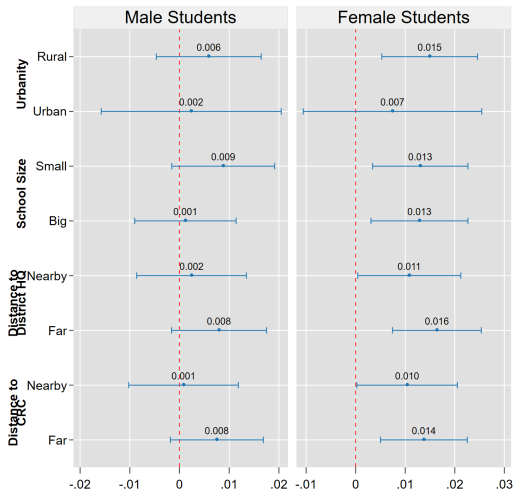
Questions

- ❶ **Does enrollment change** due to female administrators?
 - ❶ Does enrollment increase in primary school - Yes by 0.9%
 - ❷ In which schools does enrollment increase - In co-education schools for girls.
 - ❸ In which grades does enrollment increase - In grades 3- 5 for girls.
 - ❹ How long does the effect last - 2-3 years.

- ❷ **Why does enrollment change** due to female administrators?
 - ❶ Location and perceptions of security?
 - ❷ Attitudes towards women?
 - ❸ Changes in infrastructure?

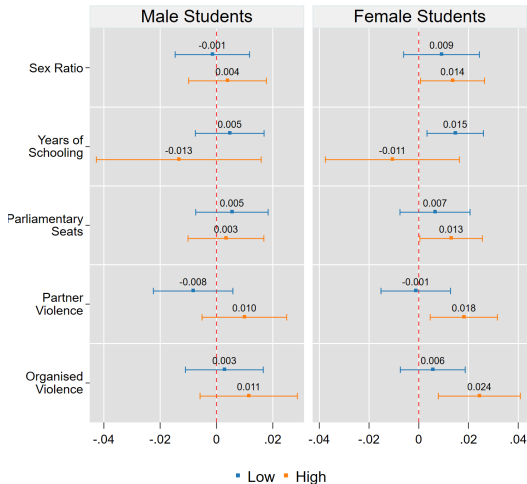
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Location Characteristics



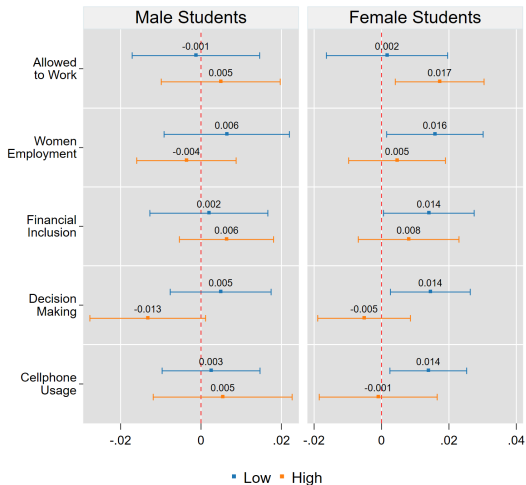
Source: Author's calculations. **Please do not cite without permission.**

Attitudes towards women 1



Source: **Author's calculations. Please do not cite without permission.**

Attitudes towards women 2



Source: Author's calculations. Please do not cite without permission.

Changes in School Infrastructure

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
	(1)	(2)	(3)	(4)	(5)
Number of Toilets per Female Student	0.000631*	0.000353*	0.000255*	0.000367**	-0.00008
	[1.69]	[1.69]	[1.75]	[2.44]	[-0.59]
Medical Check-up (Yes=1)	0.00985**	0.00811	0.00615	0.0100	0.0133
	[2.13]	[1.34]	[0.77]	[1.17]	[1.54]
Mid-day Meal (Yes=1)	0.0153**	0.0175*	0.0204**	0.0191**	0.0132*
	[2.40]	[1.87]	[2.15]	[2.56]	[1.80]
Graduate Teacher Ratio	0.00778*	0.00611*	0.00483	0.00205	0.00200
	[1.84]	[1.82]	[1.57]	[0.75]	[0.56]
Percentage of Teaching and Learning Material Grant Used	0.00414	0.00580*	0.00709**	0.00602**	0.00324
	[1.14]	[1.84]	[2.29]	[2.08]	[1.22]

Source: **Author's calculations. Please do not cite without permission.**

Conclusion

- ① Education is important for short-term and long-term individual and societal outcomes.
- ② Educational attainment can be altered due to administrators.
- ③ Female administrators were associated with enrollment increase of 0.97% in primary schools.
 - ① In co-education schools for girls.
 - ② In grades 3- 5 for girls.
- ④ Effect due to:
 - ① Location and perceptions of security.
 - ② Attitudes towards women.
 - ③ Changes in infrastructure.