Street Safety: Fuel to Girls' Secondary Schooling in India*

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Abstract

Do police patrolling to combat violence against women (VAW) in streets improves secondary schooling completion among girls? This paper leverages exogenous introduction of police units, specifically targeted at women's safety on the streets of Telangana state in India, to answer this question. Using triple difference-in-differences (DDD) method on repeated cross-sections of National Family Household Surveys in 2015-16 and 2019-21, the paper finds that patrolling of streets by special police units against street harassment increased grade 12 completion at school for girls by 37.34 percent. This finding remains robust to intra-household substitution between schooling and work responsibilities for girls. Factors such as distance to school, schooling costs, hygiene facilities at school and availability of female teachers, do not appear to undermine this finding. Also, the econometric specification in the paper ensures that estimated impact of street safety on girls' secondary schooling is unaffected by potential changes in road and electricity infrastructure. Moreover, this estimate is free from incentives of girls to complete schooling up to grade 12 to benefit from potential improvement in job opportunities for females. Instead, the paper suggests increased sense of street safety as a potential mechanism driving the positive impact on girls' secondary schooling completion. Finally, the paper also argues that its findings should remain valid even when considering potential confounding influences from CCTV cameras on the streets and the availability of location-sharing and emergency apps on girls' mobile phones.

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JEL codes: H41, I21, I28, J16, O15

"But Dear Sultana, how unfair is it to shut in harmless women and let loose the men"

- Excerpt from Begum Rokeya Sultana's Dream
in The Indian Ladies Magazine, Madras, 1905

1 Introduction

Harassment against women and girls in public spaces is a significant global issue that takes even starker form in societies with regressive gender norms (Wasti et al., 2000). In Arab societies, particularly in Egypt, young girls encounter daily harassment while going to and from school, using public transportation, or spending time with friends (McClinton et al., 2015). In a 2016 online survey in Nepal, 98% of female participants reported harassment, with 71% experiencing it while using public transportation.[1] Nearly 80% of Indian females experience public harassment in urban areas.[2] According to a recent study, endorsed by Government of India, 96 percent of adolescent girls interact with some form of public space at least once a week, primarily through attending school (Save the Children., 2018).[3] As per same survey, over a third of teenage girls confessed to face distressing situations in public areas, such as unwelcome comments, harassment by men, stalking, and uncomfortable stares. These unsettling experiences make it more likely for girls to consider discontinuing their schooling. About 20 percent of parents appeared to prefer early marriage for their daughters to avoid potential dangers during their travel to school, work, or any public location. Moreover, only about a third of both teenage girls and their parents reported to believe in local police to respond effectively against reported cases on female street harassment. These experiences are further supported in qualitative studies of Luciana et al (2020), Talboys et al (2017) and Hardt et al (2022).

Davidson et al. 2016, refer to the Stop Street Harassment organization's definition of street harassment, which includes unwanted behaviors like whistling, leering, making sexist, persistently pursuing someone's personal information after they've declined, using sexual language, following, indecent exposure, public masturbation, groping,

[1] IWalkFreely – A Nepali girl's dream. Click here

[2] female harassment in indian cities: Action Aid Survey, 2016. Click here.

[3] This report covers 3128 adolescent girls (1821 in urban and 1307 in rural areas), their families and schools in Delhi, Assam, West Bengal, Madhya Pradesh, Maharashtra and Telangana. The survey followed stratified sampling procedure based on parameters of child sex ratio, crimes registered against females and child marriage at district level.

sexual assault, and rape (p. 553). These harassing behaviors can be scary and invasive for teenagers (Goldstein et al., 2007) . Sexual harassment can harm students' health and their perception of school, resulting in lower academic performance and a tendency to disengage from their studies (Lipson, 2001; Strauss, 2012). The psychological impact of sexual harassment can include feelings of sadness, low self-worth, and helplessness (Davidson et al., 2016). Sexual harassment alters their lives, taking away their happiness, enjoyment, and peace of mind, which in turn affects how adolescents perceive their social and educational surroundings. A world bank report estimates a loss of $15 trillion to $30 trillion in lifetime productivity and earnings due to failing to provide 12 years of education to girls in countries like India (Wodon et al., 2018).

Financial constraints, lack of information on returns to education for women, early marriage and adolescent pregnancy, regressive cultural norms, school-related gender-based violence are some of the prominent determinants of under-schooling among girls (Maertens, 2013; Singh & Mukherjee, 2018; Psaki et al., 2022; Kumar et al., 2023). However, limited research exists on the role of safety in public spaces as a determinant of schooling among adolescent girls (Nanda et al., 2022; Psaki et al., 2022). Existing evidence suggests proximity to home takes precedence over quality in revealing college choices among girls (Borker, 2021). Moreover, providing bicycles for transportation improved girls' enrollment in secondary school by creating a safer commute to and from school in Bihar, India (Muralidharan & Prakash, 2017). Similarly, deploying civilian guards along school routes led to decreased crime in school neighborhoods and reduced student absenteeism in Chicago, USA (McMillen et al., 2019). This paper provides evidence on catalyzing effect of public safety measures for females on the completion of schooling till grade 12 among girls. Also, the extant literature on Indian context is limited by its focus on drop out of girls from school either till elementary level (up to grade 8) or lower secondary level (grade 10) (Nanda et al., 2022). This paper extends it to higher secondary schooling level, i.e. grade 12.

To achieve it, this paper exploits the introduction of special police units in the state of Telangana in India which are dedicated to combat street based violence against women and girls (VAW). This paper compares girls' schooling completion rates to boys' in Telangana and its neighboring states before and after the introduction of dedicated police units for female safety in public spaces. The inclusion of neighboring

states is crucial as they lacked similar specialized police units like Telangana. Applying a triple difference-in-differences approach to data from National Family Health Surveys (round 4 in 2015-16 and round 5 in 2019-21), this paper finds a rise of at least 13.48 percentage points in the rate of completing grade 12 schooling among girls, due to the introduction of special police units on the streets. This increase in schooling completion for girls remains unaffected by factors like the opportunity cost of schooling, such as work at home or outside the home. Additionally, supply-side factors like school fees and proximity to school do not interfere with the observed gains in girls' schooling completion. Furthermore, the presence of female-specific hygiene facilities and female teachers at school does not influence the gains in girls' schooling completion during the study period.

This paper focuses solely on urban areas of Telangana and neighboring states. This decision is driven by two reasons. First, the potential hotspots of street based VAW, as identified by police, are more commonly located in urban regions. These hotspots are educational institutions (schools, colleges, and coaching centers), parks, markets, malls, railway stations, hospitals, workplaces, and residential areas (female hostels). Furthermore Sharma (2022), presents evidence of widespread sexual violence against women in urban public spaces in India. Second, urban areas generally have a greater strength of police personnel per capita, compared to rural areas.[4,5] Therefore, the findings of this paper are at best generalizable for urban settings.

The research design in this paper encounters two potential threats. First, during the same period as the introduction of special police units, Telangana expanded its CCTV coverage of streets, which might deter street harassers in a similar manner to the special police units. Second, the use of mobile apps focused on female street safety increased during the study period. The paper discusses how these threats impact the identification strategy and argues why the findings in paper should still hold.

The remainder of the paper proceeds as follows. Section 2 provides background and conceptual framework. Section 3 discusses about data and empirical framework. Empirical results are presented in Section 4 . Section 5 discusses the results. Finally,

[4] *Urban-rural divide in per capita police presence, TISS Mumbai (click here)*

[5] The empirical results confirm that there was no change in girls' completion of schooling till grade 12 in rural areas of Telangana following the introduction of police intervention. The results are not part of this draft for paucity of space. They are available upon request.

section 6 concludes.

2 Background and Conceptual Framework

2.1 Background

The state of Telangana and its neighboring states in India provide an appropriate research context for us to measure the impact of street safety on girls schooling completion till grade 12. The government of Telangana established a special police unit known as the 'SHE Teams' on October 24, 2014, in the state capital of Hyderabad. The SHE teams are dedicated to combat violence against women and girls (VAW) on streets. It was subsequently expanded to all districts within the state by April 1^{st}, 2015.[6]

Each SHE team consists of one inspector of police, one sub-inspector, and four police constables, supervised by a Deputy Superintendent of Police. SHE teams are responsible for combating VAW in public spaces by targeting perpetrators. These teams, in official uniform and plainclothes, scan potential hotspots of violence against women and children, especially eve-teasing, stalking, and harassment in public places.[7] In addition to the direct role of SHE teams on streets, victims of harassment and related offenses are encouraged to report such incidents through an array of easily accessible platforms (like QR Codes, Whatsapp Complaint Number and Email ID).[8] Data indicates a steady increase in the number of petty cases and First Information Reports (FIRs) filed by SHE teams in Telangana. Specifically, the number of FIRs registered by these teams increased from 340 in 2016 to 626 in 2017 and 771 in 2018. By June

[6] *SHE Teams – Telangana Police Women Safety Wing (click here)*

[7] The legal response to stalking varies based on the severity and frequency of the offense. Perpetrators committing the offense for the first time may be charged with minor offenses under Section 290 of the Indian Penal Code or Section 70© of the Hyderabad City Police Act, particularly if the victim does not wish to file a formal complaint. However, in cases involving repeat offenders or specific complaints from women, more serious charges may be filed under cognizable sections of the Indian Penal Code, including the Criminal Amendment Act 2013 (Nirbhaya Act). In addition to these legal measures, counseling and parental intervention may be utilized to discourage future offenses among minor perpetrators.

[8] FIR/petty cases can be registered through SHE Teams in the concerned police station. Victims of sexual violence in public can contact the SHE teams through publicly available WhatsApp number and email id. In addition to these measures, QR Code mechanism has been implemented in Telugu/English/Urdu languages and barcodes have been placed in every public place in the State. The victim can scan the barcode to lodge a complaint with the district SHE Team from any location.

of 2019, a total of 338 FIRs had already been filed within the state.[9] In addition to filing FIRs, SHE teams also engage in other regular forms of action (like counsellling of perpetrators in front of parents) to combat sexual harassment against females.[10]

Direct measure of harassment data for children under 18 is only available for 2014 and 2015, without gender differentiation.[11,12] Therefore this paper looks at three forms of crime against children that might correlate with harassment offenses against girls below the age of 18 years. Total crime against children, Kidnapping and abduction of children, and Protection of children from sexual offenses are those three forms of crimes against children in Telangana, tracked in this paper for descriptive purpose. Additionally, it's important to consider that cases in the "Kidnapping and abduction of children" and "Protection of children from sexual offenses" categories may also have data quality issues. There have been instances where parents of children involved filed false cases, as indicated by rulings from High Courts and the Supreme Court.[13,14] These data quality issues also coerce the use of introduction of SHE teams in Telangana as a proxy for change in street harassment cases to study the impact on secondary schooling completion among girls.

Telangana was carved out of Andhra Pradesh on June 2^{nd} 2014 as a separate state. I will use the history of Telangana and Andhra Pradesh to argue that the introduction of SHE police units was an exogenous intervention for girls in Telangana. Figures 1 to 3 demonstrate that crime rates against children were at similar levels in districts of Telangana and Andhra Pradesh before the establishment of Telangana as an official state. However, the Telangana government opted to introduce SHE police units within four months of its creation, while Andhra Pradesh did not choose to implement a similar intervention. Before SHE teams were introduced, the number of child-related cases registered in Telangana was similar to that in Andhra Pradesh

[9] *5 years of SHE Teams: A look at Telangana's pioneering women's safety initiative (click here)*

[10] *SHE Teams nab 125 including school teacher for harassing women (click here)*

[11] *District-wise Crimes committed against Children 2015, National Crime Records Bureau (NCRB), Government of India. Click here.*

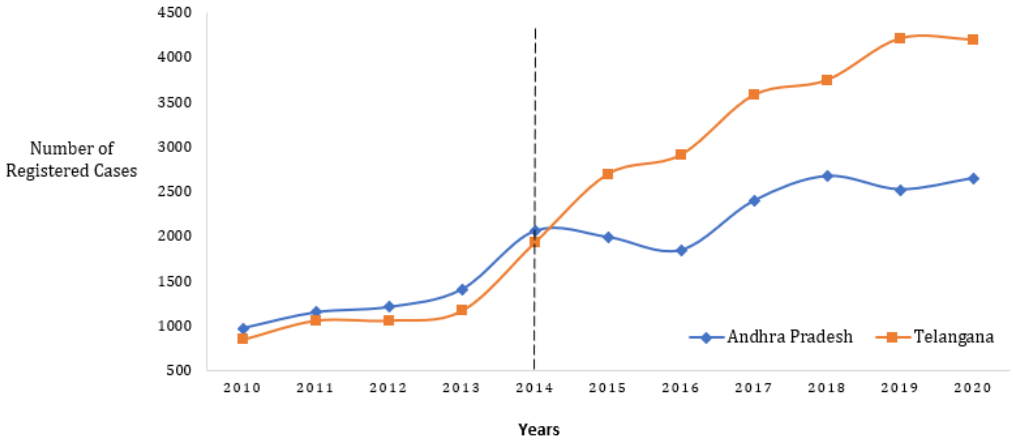
[12] *District-wise Crimes committed against Children 2015, National Crime Records Bureau, Government of India. Click here.*

[13] Does India have a problem with false rape claims? Click here.

[14] False allegations in child molestation case can be lethal, even if acquitted later: Kerala HC. Click here.

between 2010 and 2014 (Figure 1).[15] After the introduction of SHE teams in 2015, there was a divergence in registration of child-related crimes between Telangana and Andhra Pradesh. However, it's important to note that overall child-related crime cases also include crimes not committed on the streets.

Figure 1. Total crimes against children before and after SHE intervention

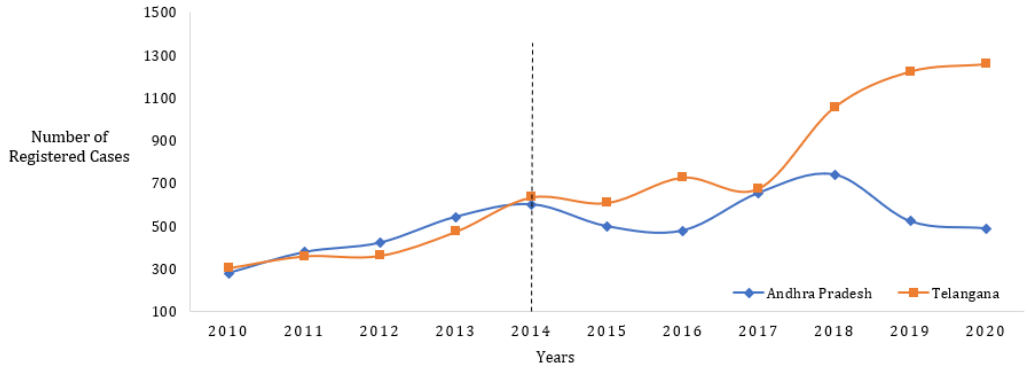


Source: Self illustrated using data from National Crime Records Bureau

To get a clearer picture, I also looked at cases reported under kidnapping and abduction (likely to occur on streets) as shown in Figure 2. These numbers followed a similar pattern to the overall crime statistics against children in Figure 1.

[15]Telangana has no crime data prior to the 2014 in publicly available records. To generate crime statistics for Telangana from 2010 to 2014, the districts of Andhra Pradesh were divided based on their future allocation to Telangana and Andhra Pradesh. Child related cases are classified for children below 18 years of age.

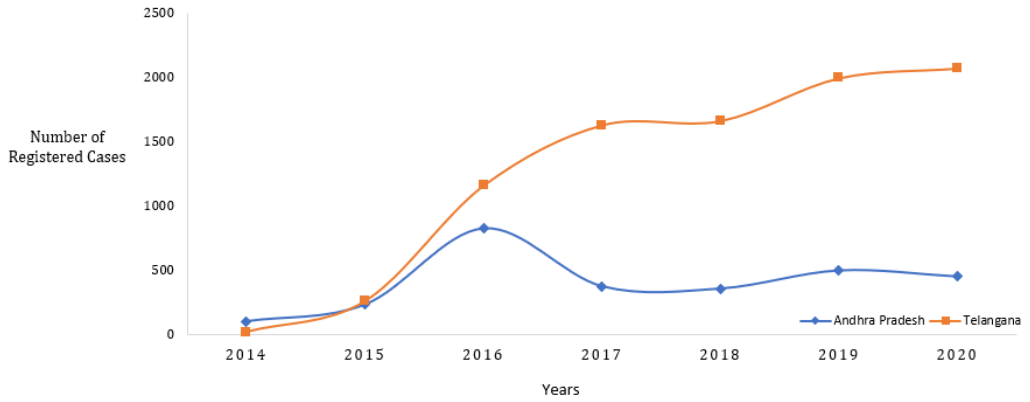
Figure 2. Kidnapping and Abduction of Children before and after SHE intervention



Source: Self illustrated using data from National Crime Records Bureau

Furthermore, cases registered under the Protection of Children from Sexual Offences (POCSO) Act of 2012 were also notably higher in number in comparison to Telangana, as depicted in Figure 3.[16]

Figure 3. Protection of Children from Sexual Offences before and after SHE intervention



Source: Self illustrated using data from National Crime Records Bureau

The paper argues that the rise in number of registered cases within Telangana compared to Andhra Pradesh as shown in figures 1, 2 and 3 after introduction of SHE

[16] *Since POCSO act was introduced in June 2012, I can't have registered cases under POCSO before 2014. Click here.*

teams should be seen as improvement in ability to spot, detect and register incidences of crime related to street harassment (at least partially). This higher reporting of crime cases to be seen as improved ability to report cases aligns with the findings of Iyer et al (2012).

2.1.1 Anecdotal Evidence on Street Harassment of School-going Girls in India

As mentioned earlier, official crime statistics repository, i.e., NCRB (National Crime Records Bureau), lacks a direct measure of street harassment against school-going girls in India. Therefore, I am presenting a few anecdotes from different states of India, including Telangana, to emphasize the prevalence of this public safety issue. The cases mentioned here include incidents where men and boys have ogled at girls with lecherous stares, made lewd comments, physically abused the girls on their way to school, and even led to death in certain cases.

A news report from Rajasthan on March 20, 2016 mentions:

"Unlike other days, Preeti, the girl had to go to school alone. She took the bus as usual. As soon as she got off the bus, this man came too close to her. When she rebuffed him, he slashed her"[17]

A news report from Haryana on August 11, 2016 mentions:

"The men follow us and pass lewd comments. They also do sexual gestures and when we try to protest, the men start abusing. Tired, we went to the police station, and informed local authorities too. Police have filed a case and have promised action. But we are scared, a student said."[18]

A news report from Telangana on August 25, 2023 mentions:

[17] When going to school is a test of courage. *Cick here*
[18] Girls harassed en route to school. *Click here*

"Apart from this, an incident occurred in the Chinna Kodur area where a group of girls, who cycled to school daily, were being harassed by two boys on a motorcycle without a number plate. Inspired by the awareness program organized by the She Teams at their ZP high school, these students bravely reported the harassment to the authorities. Prompt action was taken, leading to the arrest of the culprits. Additionally, the SHE Teams intervened in cases where boys had engaged in misconduct on the roads and streets, counseling them and issuing warnings."[19]

A news report from Uttar Pradesh on August 25, 2023 mentions:

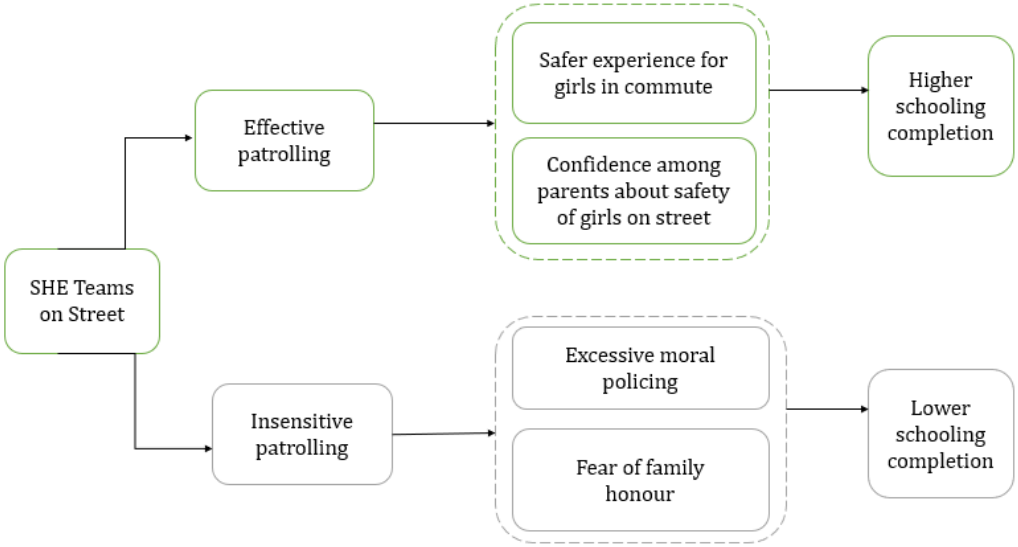
"Two persons were arrested and a minor was detained after a 16-year-old girl on her way home from school on a bicycle fell on the road allegedly after being harassed by them and got run over by a motorcyclist"[20]

2.2 Conceptual Framework

This paper theorizes the impact of SHE teams on schooling completion till grade 12 in two stages. Initially, SHE teams can apprehend wrongdoers, preventing them from committing future crimes. Public awareness about the presence of SHE teams patrolling streets can also deter potential perpetrators of street harassment incidents. In the second phase, managing victims of street harassment with empathy and understanding by SHE teams, can instill confidence among girls and their parents about female safety in public spaces. This increased confidence about safer public spaces may result in fewer girls dropping out of school and greater completion of schooling till grade 12. However, it's important to acknowledge that if SHE teams handle street harassment cases insensitively or ineffectively, thus inviting unwanted gaze in community towards the victim or her family, it could discourage girls from attending school. Therefore, empirical investigation about realized (actual) effect of SHE teams on secondary schooling completion for girls becomes an imperative exercise.

[19] SHE Teams crack down on harassers. *Click here*
[20] School girl run over by bike, three held for harassment. *Click here*

Figure 4. Conceptual Framework: How SHE Teams can Encourage Girls for More Schooling?



Source: Self illustrated

3 Data and Empirical framework

3.1 Data

The two rounds of National Family Health Survey in 2019-21 (NFHS-5) and in 2015-16 (NFHS-4) will be used to estimate effect of SHE teams on schooling completion. It will be also used to carry out a battery of robustness tests and causal mechanism test. NFHS surveys provide nationally representative sample in India. In the NFHS-5 round, it included 707 districts from 28 states and eight union territories, while the NFHS-4 round covered 29 states and six union territories. Respondents are selected under this survey based on a stratified two-stage sampling approach involving states and urban/rural regions.[21]

This paper compares the completion rate of schooling among girls before finishing grade 12 between Telangana and its neighboring states. Its neighboring states—Andhra Pradesh, Karnataka, and Chhattisgarh—are considered the comparison group be-

[21] National Family Health Survey. Click here.

cause police teams modeled on, SHE structure was lacking there until 2020.[22,23]. Karnataka and Chhattisgarh, along with being adjacent to Telangana, also announced intentions to establish SHE-style police teams. However, the author couldn't locate any public document confirming the official implementation of these teams in Karnataka and Chhattisgarh.[24] These three states are well-suited for comparison with Telangana due to their shared political aims of enhancing public safety for females, alongside their geographical proximity on Telangana's borders.

It is also important to mention about why NFHS dataset and not NSS Education rounds or Young Lives Survey is used as the primary data source for schooling completion outcome. While the NSS (national sample survey) 75^{th} round on Education in 2017-18 includes data about education completed up to class 12, the NSS 71^{st} round on Education in 2014 does not have the same information available. Therefore, this dataset is not suitable to estimate the impact of SHE police intervention on completing schooling till grade 12 between 2015 and 2019. The latest round of Young Lives Survey took place post lockdown and COVID-19 in the states of Telangana and Andhra Pradesh, which makes it unsuitable to measure the impact of SHE teams on schooling completion decision. This is so since decision to remain in school before and during COVID-19 is not likely to follow the same process. The economic repercussions of the lockdown likely led to diminished earning potential for impoverished households, potentially raising the opportunity cost of sending children to school, particularly girls (Alvi & Gupta, 2020).

NFHS rounds 4 and 5 do not face the above two problems. NFHS-5 covered Telangana state before January 1^{st} , 2020. The paper also restricts observations from neighboring states before April 1^{st} , 2020 to protect the analysis from potential omitted variable bias arising out of COVID-19 and lockdown measures.

[22]SHE-style police teams were introduced in a few towns across three districts of Andhra Pradesh—Chittoor, East Godavari, and Krishna—prior to 2020. Consequently, these districts are not part of the comparison group in this study. While a news article (third link provided below this footnote) suggests that Andhra Pradesh intends to implement similar teams in all districts, the author couldn't locate any publicly accessible information confirming this beyond the three districts.

[23]SHE team scripts a success story in Rajamahendravaram. Source: *The Hindu*

[24]SHE-the-force-behind-womens-safety. *Click here*

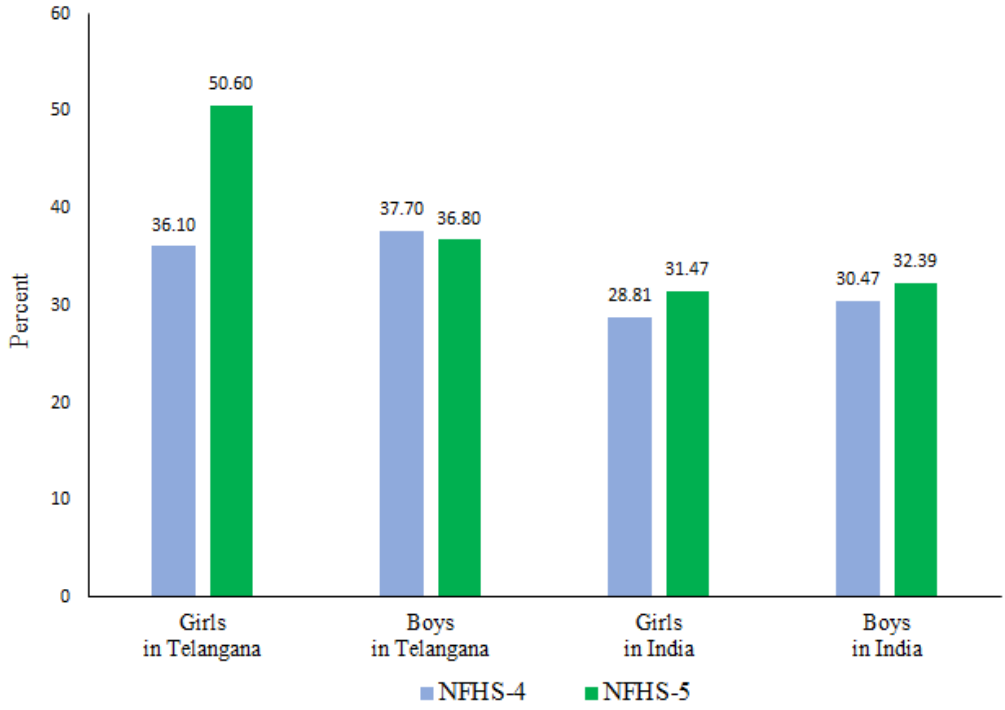
3.1.1 Age-appropriate grade 12 schooling completion rate among school going children in Telangana and India (before and after SHE intervention)

The paper focuses only for the children who have ever been to school in any grade between 6 to 12. Within that sample, the paper tracks age appropriate grade 12 schooling completion for children in the age cohort of 18 to 21 years in the rounds of NFHS-4 and 5. This is because those in the age group of 18 to 21 in NFHS-5 (a period after the SHE intervention, i.e., the time period of 2019-21) would have belonged to the age cohort of 15 to 18 in the year of 2015-16. According to age-appropriate schooling standards, children aged 15 to 18 should have been enrolled in grades 9 to 12 at school. Therefore, those in grades 9 to 12 during NFHS-4 (time period of 2015-16) would have been exposed to SHE Teams before completing schooling till grade 12. This group of children and their grade 12 completion should have captured the effect of SHE teams.[25] By similar logic, children in the age cohort of 18 to 21 in NFHS-4 (i.e., before the SHE intervention in 2015-16) would have completed their grade 12 schooling in the absence of SHE teams on streets. Therefore, comparing grade 12 completion rate for age cohorts of 18 to 21 in NFHS-5 and 4 enables in estimation of the effect of SHE teams.

Based on calculations from NFHS surveys, 50.60 percent of girls aged 18-21 in NFHS-5 in Telangana, who ever attended secondary school, managed to complete schooling till grade 12 (Figure 5). This is an improvement of approximately 14.50 percentage points when compared to the statistics from NFHS-4 (Figure 5). Notably, this improvement is particularly more pronounced for girls, as boys actually register a decline of 0.90 percentage points between NFHS 4 and 5 (Figure 5). In the national context, the completion rate of schooling till grade 12, for school-going girls aged 18 to 21 in NFHS-5, stood at only 31.47 percent (Figure 5). This is just a slight rise of nearly 2.66 percentage points from NFHS-4 (Figure 5). For boys, this figure stood at 1.92 percentage points (Figure 5).

[25] *NFHS follows the nomenclature of International Standard Classification of Education, ISCED 2011 to classify schooling attainment into primary (class 1 to 5), secondary (class 6 to 12) and higher (an undergraduate or higher degree). Click here.*

Figure 5. Percent of School going Children in the Age Cohort of 18 to 21 who Completed Schooling till Grade 12 before and after SHE intervention



Source: Self illustrated using data from NFHS 4 and 5

Evidently, girls in Telangana have surpassed the national average in terms of completing schooling till grade 12 between the period of NFHS-4 (2015-16) and NFHS-5 (2019-21). This paper is an attempt to link some of this gain for girls in Telangana to the introduction of SHE police teams on the streets.

3.1.2 Descriptive Statistics and Composition bias in NFHS sample before and after SHE intervention

I also compare descriptive statistics for factors that can influence the completion of schooling till grade 12 for Telangana and its neighboring states between NFHS rounds 4 and 5.

< INSERT TABLE 1 here >

However, this paper restricts the observations in NFHS-5 before April 1^{st} of 2020 to alleviate the problem of omitted variable bias in empirical specification, the NFHS-5

observations can be systematically different from the observations in NFHS-4. So it is important to examine composition bias across two rounds of the dataset over different factors that can influence the outcomes, both before and after the SHE intervention (Paglin & Rufolo, 1990). Therefore the differences in socioeconomic and demographic factors between the Telangana and comparison (neighboring) states are presented for NFHS 4^{th} and 5^{th} rounds (Table 2). These factors could influence the choice for girls to discontinue schooling before completing class 12. While significant differences exist between the two groups over the two rounds (4^{th} and 5^{th}) of NFHS survey in terms of some of the included covariates, these differences become weaker over time (Table 2, coefficients of "(diff_2 - diff_1)"). This is another reason to employ difference-in-differences technique in the paper. The related details are provided in the Identification strategy section. The indicators that remain significantly different between two groups over time as well, become weaker when compared for females with respect to males in the age cohort of 18-21 (Table 2, coefficients of "(diff_2 - diff_1) $\times$ female").

This is favorable for our main analysis as the principal research inquiry of this paper pertains to evaluating the influence of SHE police teams on school going girls in that age cohort.

< INSERT TABLE 2 here >

3.1.3 Identification strategy

The paper defines girls in the age cohort of 18 to 21, who ever attended secondary schooling, as the treated group. Similarly, the boys in same age cohort, who ever attended secondary schooling, form the comparison group. The benefit of having these boys as the comparison group is that boys will be exposed to all non-gendered determinants of schooling like girls (Muralidharan & Prakash, 2017; Jayachandran & Lleras-Muney, 2009).

It is also important to note a caution about having this comparison group. The introduction of SHE Teams and increased street patrolling can influence boys' school attendance also, in two ways. First, some boys and their parents may feel safer on the streets, leading to improved school completion rates for these boys. Second, boys who previously engaged in street harassment may be deterred by the presence of SHE Teams, choosing to attend school instead of hanging out in public spaces during

school hours. This paper suggests that even if contamination from the SHE treatment affects the assigned control group, the proposed empirical methodology will ensure that this comparison group will not reverse the overall effect but rather lead to an underestimated effect size of SHE teams. In this way the direction of effect of SHE teams will remain preserved in the proposed empirical analysis.

To estimate the impact of SHE police intervention on child's decision to complete schooling till grade 12, the preferred difference-in-difference-in-differences (DDD) specification is

$$y_{ihdt} = \beta_0 + \beta_1 Girl_{ihd} \times Post_t \times Telangana + \sum_2^4 \beta_i(3 \text{ double interaction terms}) + \sum_5^7 \beta_i(3 \text{ linear terms}) + \theta X_{ihdt} + Z_d + \epsilon_{ihdt} \quad —(1)$$

where, y_{ihdt} is a dummy variable that takes value 1 if child i, in the age cohort of 18 to 21 years, from household h in district d at time t, has completed schooling till grade 12. $Girl_{ihd}$ takes value 1 if the child is a girl else zero for a boy. $Post_t$ dummy takes value 1 for t belonging to 2019-21 (i.e., for observations from NFHS-5) and zero if t belongs to 2015-16 (i.e., for observations from NFHS-4). *Telangana* dummy takes value 1 for all children belonging to the state of Telangana and zero for its neighboring states. Andhra Pradesh, Karnataka, and Chhattisgarh are considered as the neighboring state here since they touch the boundary of Telangana. X captures the effect of socioeconomic and demographic control variables at child and household level. It include age, caste, religion, wealth index, environmental conditions, and housing characteristics, and current marital status.[26] Z_d represents fixed effects at districts level.
β_1 is the parameter of interest in equation (1). It measures the impact of SHE police intervention on completion of schooling till grade 12 for girls relative to boys in Telangana compared to the neighboring states. The idiosyncratic errors, ϵ_{ihdt} are clustered at household level. Results remain qualitatively similar when clustering is shifted to town level.

Equation (1)'s empirical approach may encounter issues due to varying district-specific trends in both road and electricity infrastructure over time. For instance, if one district experiences greater road development compared to another, girls in that district will naturally find it less expensive to attend school. This reduced cost isn't limited to just a shorter travel time and lower commuting expenses. It may also translate to increased sense of safety for the girls and their parents because they would now spend less time on road. So road expansion that would have coincided with SHE introduction across districts might have

[26]The wealth index reported in NFHS is constructed using a method developed by Filmer and Pritchett (2001).

shared the same channel (street safety) and direction of influence on schooling completion choices among girls. The positive role of better access to roads on schooling attainment for girls at secondary level is also confirmed in Shimamura et al., 2022. On the contrary, greater road construction can also result in higher school drop out to participate in labor market (Aggarwal, 2018). Access to sustained electricity supply can itself positively influence schooling completion decision for girls through. Girls may choose to dedicate time at night to their homework after finishing their household chores for entire day (Daka & Ballet, 2011). Therefore improved access to electricity can enable girls to keep up with higher levels of schooling without contemplating about question on trade-off between school and work. From the supply side perspective, better road and electricity infrastructure can lead to more private schools being available (Pal, 2010). This, in turn, can simplify and reduce the cost of schooling for girls.

The interaction term $Z_d \times Post_t$ is added later in equation (1) to take care of potential changes at district level in infrastructure such as roads, electricity, and other relevant policy level interventions that might simultaneously affect the decision to complete grade 12 schooling for girls. The empirical results show that inclusion of $Z_d \times Post_t$ only strengthen the magnitude of coefficient of proxy for SHE intervention, i.e., DDD interaction term, without compromising the significance.

The paper does report the result for comparing completion rate of schooling till grade 12 for girls versus boys within Telangana, using difference-in-differences (DiD) technique (Table A3 in appendix). This test also passes the placebo test related to parallel trend assumption. However, DiD set up is not the preferred specification for a particular reason. We can't be sure if the SHE police intervention in Telangana was a random shock to its potential exposed subjects. But I will argue here that presence of SHE teams in Telangana and absence of such police units in Andhra Pradesh present a case of exogenous variation in intervention implementation.
Prior to the formation of the state of Telangana in 2014, as illustrated in Figures 1 and 2, districts in Telangana exhibited trends and rates of crime against children, that were similar to current districts in Andhra Pradesh. So the introduction of SHE police units in Telangana and choice of not having similar street safety focused police units, provides exogenous variation in the street safety intervention. This will help in teasing out the casual estimate of impact of street safety oriented police units on girls' grade 12 completion rate. The other reason is purely statistical, based on increasing the sample size to improve statistical power of results. Therefore triple difference-in-differences (DDD) is preferred over DiD.

This paper recommends using a two-period triple difference-in-difference treatment design instead of a staggered treatment design to evaluate the impact of SHE teams on girls' secondary schooling. Since all Telangana districts received SHE intervention within six months, a staggered difference-in-difference approach is unnecessary. It's reasonable to assume that by the first year of SHE intervention (2016-17), confidence in street safety should have improved similarly across all districts. District fixed effects should account for any differences in street safety confidence unrelated to SHE team patrolling. Additionally, since the paper assesses the SHE intervention's impact four years after its introduction, it's plausible that it influenced school completion in a similar way across all districts after four years of introduction, assuming other factors remained constant. Therefore, the paper uses a standard two-period treatment framework.

4 Main Results: Grade 12 completion rate difference between Telangana and Neighboring States

The findings of econometric model (equation 1) are presented in Table 3. There is rise of 13.48 percentage points in rate of completing age-appropriate schooling till grade 12 among girls of Telangana due to introduction of SHE police intervention (Table 3), column 1).[27] This translates to effect size of 37.34 percent from SHE intervention as rise in grade 12 completion for girls in Telangana, compared to the baseline. This procedure of generating effect size for triple difference-in-differences setup is followed in (Muralidharan & Prakash, 2017).[28] The impact estimates increase in magnitude and remain significant when district level time variation is considered in other factors such as electricity and roads availability using "district FE $\times$ Post" dummies (Table 3, column 2). Column 3 in Table 3 confirms that the estimated effect remains similar even in the presence of potential imbalance in covariates between observations from Telangana and neighboring states over time. Results of Table 3 remain qualitatively similar when standard errors are clustered at town level instead of household (Table A2 in appendix).

[27] Results in Table 3 are analyzed again without including Andhra Pradesh in the set of comparison states with respect to Telangana, and the results are given in Table A4 in appendix. The results remain qualitatively similar to Table 3. This helps me to confirm whether my results in Table 3 remain safe, if police patrolling activities similar to, SHE teams were to be present in all Andhra Pradesh districts. This concern is valid because I mention in section 3.1.2 that some towns in three Andhra Pradesh districts have SHE-style police units. Although, I haven't found any public documents indicating SHE units in Andhra Pradesh districts other than Krishna, East Godavari and Chittoor. If all Andhra Pradesh districts have SHE-style police units, I can't use Andhra Pradesh as a comparison state because it won't be untreated.

[28] 37.34 is ratio of estimated coefficient of Girl $\times$ Post $\times$ Telangana, i.e., 0.1348 (Table 3, column 1) to the baseline grade 12 completion of girls in Telangana, i.e., 0.361, and finally multiplied by 100. These figures are reported in Table 3.

< INSERT TABLE 3 here >

To argue for the parallel trend assumption in the outcome variable, a placebo test is conducted using data from two rounds of the India Human Development Survey (2004-05 and 2011-12). These two rounds took place prior to the introduction of SHE police intervention. The paper uses IHDS instead of NFHS for the placebo test because NFHS round 3 (2005-06) lacks district identification, making it impossible to distinguish Telangana from undivided Andhra Pradesh during that period. To run the placebo test, the outcome variable in equation (1) remains same but the $Post_t$ dummy takes value 1 for t in 2011-12 and zero for t in 2004-05. The result of placebo test to support parallel assumption trend is reported in Table 4.[29]

< INSERT TABLE 4 here >

4.1 Robustness Tests to Check Validity of DDD Interaction Term as Proxy for Introduction of SHE Teams on Streets

4.1.1 Grade 12 completion rate difference between Telangana and Neighboring *Districts*

Given the covariate imbalances between Telangana and neighboring states (Table 2), the paper also compares the outcome between Telangana and its neighboring districts touching the boundary of state. This is done to generate a more similar comparison group (Khurana & Mahajan, 2021; Suryanarayana et al., 2023). The estimated impact comes to be a rise of 19.33 percentage points in the rate of completing age-appropriate schooling till grade 12 amongst girls in urban Telangana relative to the comparison group (Table 5, column 1). This result remains qualitatively similar even after accounting for over-time variation in each district with respect to roads and electricity availability (Table 5, column 2).

< INSERT TABLE 5 here >

4.1.2 Older Cohort Test

Equation (1) assumes that the only variable that changed differently for girls in urban Telangana relative to the comparison group between NFHS-4 and NFHS-5 was street safety, specifically due to the introduction of SHE teams. All other factors that could impact the

[29]For the placebo test, I re-evaluate equation (1) using IHDS round 1 (2004-05) and IHDS round 2 (2011-12). As both these periods precede the introduction of, SHE police intervention, if the coefficient of the DDD interaction term is insignificant, it suggests that the grade 12 completion rate remained similar between treated and comparison group before the introduction of SHE police units.

decision to complete schooling up to grade 12 were expected to change similarly for girls in Urban Telangana and the comparison group between NFHS-4 and NFHS-5. Therefore, the two groups, whose decision to complete schooling till grade 12 is not going to be affected by SHE teams, should show similar level of grade 12 completion at school.

To show the same, the paper re-runs regression equation (1) for individuals aged 25 to 30 years and doesn't find any association between DDD interaction term (the proxy for SHE teams) and their grade 12 schooling completion rate (Table 6). This is anticipated since males and females in the 25 to 30 age cohort during NFHS-5 would have been 21 to 26 years old during NFHS-4, a time before the introduction of SHE teams. By age-appropriate standard, people in the age group of 21 to 26 years in NFHS-4 should have already completed schooling till grade 12.

< INSERT TABLE 6 here >

An analysis of the findings presented in following sections 4.1.3 to 4.1.5 suggests that the observed improvement in girls' grade 12 completion depicted in Table 1 cannot be attributed to a decline in the dropout rate stemming from commonly cited factors within the Indian context, with the exception of safety concerns. In India children can drop out of school due to list of reasons including, "work responsibilities (paid or unpaid)", "taking care of younger siblings at home", "school too far away", "transport not available", "cost of schooling is too much", "no proper WASH facilities at school for girls", "no female teacher", "marriage", or host of base reasons, viz., "not interested in studies", "repeated failures" and "did not get admission". I also argue that some of these factors indirectly capture supply side changes in access to secondary schooling and how they don't confound the results in Table 1.

4.1.3 Tradeoff between Schooling and Work for Girls (before and after SHE intervention)

School going children face tradeoff of time allocation between work and schooling attainment (Rosenzweig & Evenson, 1977; Basu, 1999; Ravallion & Wodon, 2000; Bhalotra & Heady, 2003; Morrow et al., 2017). In India, a 2018 report from the National Commission for Protection of Child Rights reveals that 39.4 percent of girls aged 15-18 years leave school and college. Among these dropouts, 64.8 percent are not doing so to work, but rather because they are compelled to take on household tasks or are involved in begging (Scroll, 2018).

I find that rate of school drop out for adolescent girls due to work responsibilities did not change after the introduction of SHE teams (Table 7). It signifies that girls in Telangana faced no changes in the need to work and sacrifice schooling relative to the comparison

group after the introduction of SHE teams.

To achieve results of Table 7, I re-run equation (1) with a new outcome variable. The outcome variable takes value 1 if the reasons to drop out of school include "required for household work", "required for work on farm / family business", "required for outside work for payment in cash or kind" and "required for care of siblings". The outcome variable takes zero if the reasons to drop out of school include "not interested in studies", "repeated failures" and "did not get admission". The justification behind taking last three reasons as comparison case is that those are unlikely to be affected by street safety measures. Also it can be argued that rate of drop out due to those last three reasons should actually go down over time because of continued push to schooling by state and central governments. So the insignificant result in Table 7, should convince us that potential changes in work responsibilities for girls didn't affect their grade 12 completion status.

< INSERT TABLE 7 here >

4.1.4 School Accessibility and Facilities within School as the reasons to Drop-out (before and after SHE intervention)

The catalyzing role of distance from school and cost paid for schooling on dropout among children is well documented (Brock & Cammish, 1997; Sabates et al., 2010; Mughal et al., 2019). In addition, presence of female teachers makes significant difference in retention of girls in school (Solotaroff, 2007). Recent research reveals a critical role of gendered WASH facilities at school in encouraging greater schooling attainment among girls (Phillips-Howard et al., 2016; Belay et al., 2020). Typically girls may miss up to one-fifth of school days in a month due to absence of quality sanitation facilities. Eventually 23 percent of those girls tend to drop out of school upon reaching puberty (DASRA, 2015).

The rate of dropout from school due to issues related to school accessibility and facilities at school didn't change for girls in Telangana relative to the comparison group, after SHE intervention (Table 8). To achieve this result (Table 8), the outcome variable in equation (1) is replaced with dummy taking value 1 if the reasons to drop out of school include "school too far away", "transport not available", "costs too much", "no proper school facilities for girls" and "no female teacher". Together these reasons capture supply side effect of changes in access to schooling tot he child. The dummy takes value zero if the reasons to drop out of school include "not interested in studies", "repeated failures" and "did not get admission".

< INSERT TABLE 8 here >

The absence of association in Table 9 between the DDD interaction term and dropout rate related to school accessibility and girl-centric facilities within schools further supports the suitability of using the DDD interaction term as a proxy for the SHE intervention. This result means that adolescent girls in Telangana faced no differential changes in supply side factors in terms of school accessibility and facilities within school relative to the comparison group, after SHE intervention.

4.1.5 Dropout from School due to Marriage before and after SHE intervention

Early marriage can have detrimental impact on completion of secondary schooling, particularly for girls (Sekine & Hodgkin, 2017; Wodon et al., 2015). I show in this section is that proxy for SHE intervention (i.e., DDD interaction term in equation 1) is unrelated to the rate of drop-out from school due to marriage. To achieve it, I replace the outcome variable in equation (1) with dummy that takes value 1 if the child drops out of secondary schooling due to marriage. This dummy takes value zero if the reasons to drop out of school include "not interested in studies", "repeated failures" and "did not get admission". The DDD proxy for SHE teams introduction is unrelated to dropout rate from secondary school, caused by marriage of the child (Table 9). The rate of dropout from school due to marriage of girls in Telangana did not change relative to the comparison group, due to SHE teams.

< INSERT TABLE 9 here >

The absence of association between proxy for SHE intervention and drop-out from school due to marriage gives two indications. First, the gains in grade 12 completion for girls, as estimated in Table 3, is free from marital choices made by/ for the girl. Second, SHE intervention did not have any impact on age of marriage for children below age of 18 years. This is important point to consider. SHE intervention can improve sense of safety about outside mobility of girls close to the age of 18. That can encourage parents to delay the marriage to let the girl child complete her schooling till grade 12.

4.2 Mechanisms

Improved street safety can motivate girls to pursue higher education through two channels as suggested in conceptual framework section (Figure 4). Firstly, it can boost girls' confidence in their safety when traveling to school (Fiala et al., 2022; Timperio et al., 2006). Secondly, it can make females feel safer in public spaces during their commutes to work, signaling to girls still in secondary school, that better job prospects are available due to increased street safety. This could encourage higher levels of schooling among girls, in order to participate

more in the job market. Here I provide evidence in support of the first channel and negate the second channel.

4.2.1 Dropped out of school due to feeling unsafe in commuting to school before and after SHE intervention

For testing the first channel, I replace the outcome variable in equation (1) with dummy that takes value 1 if the girl child drops out of school due to safety concern in commuting to school.[30] This dummy takes value zero if the reasons to drop out of school include "not interested in studies", "repeated failures" and "did not get admission". I find a decline of at least 33.90 percentage points in girls dropping out of school due to feeling unsafe in commuting to school in Telangana compared to neighboring states (Table 10, column 1). This indicates that girls and their families do perceive improvement in safety on the streets post SHE police intervention.

< INSERT TABLE 10 here >

4.2.2 Link between better job opportunities due to improved street patrolling and motivation for girls to complete grade 12 in school to access better job prospects

The appeal to schooling completion goes up with rise in opportunities to participate in labor markets (Adukia et al., 2020; Alam & Mamun, 2016). In this section, it is shown that adolescent girls in school faced similar likelihood of getting employed across Telangana and neighboring states. This would support the argument that a rise in grade 12 completion for school going girls in Telangana was direct consequence of better street safety and not favorable anticipation of employment opportunities in future. The employment status of individual from 2016 to 2019 are tracked using household panel data extracted from the Centre for Monitoring the Indian Economy's (CMIE) Consumer Pyramids database. This database is instrumental in ruling out the rise in completion rate of schooling till grade 12 and incentives of girls to attain higher schooling, to benefit from potential improvement in job opportunities for females.[31] To negate the indirect impact of SHE teams on grade 12 completion through potentially favorable changes in female labor market, I replace the

[30] In NFHS survey, only girls are asked if they dropped schooling because of safety concerns in commuting to school.

[31] This database tracks approximately 160,000 households in three separate rounds annually. Each year is divided into four-month periods known as survey "waves," with each household participating once in each wave. While the survey primarily focuses on households, it also gathers individual-level data. This information covers demographics, education levels, employment status, specific occupation details, and income. Click here.

outcome in equation (1) by a dummy variable that equals 1 if the person is employed during the survey and 0 if the person is unemployed but actively seeking a job at the time of the survey. The standard errors are clustered at the level of town here. It is done to account for heterogeneity of street safety and demand for labor in each town.

The DDD interaction term is unrelated to a person's employment status (Table 11). It holds true for age cohorts of 18 to 30, 18 to 40 and 18 to 50 years. It implies that the likelihood of being employed for females in Telangana was no different than the comparison group due to SHE teams (column 1 to 6, Table 11).

< INSERT TABLE 11 here >

5 Discussion

The paper shows rise of 13.48 percentage points in grade 12 schooling completion rate among girls in urban Telangana relative to the comparison group. The paper also provide evidence that rate of drop-out from school for girls in urban Telangana relative to the comparison group didn't change after the introduction of SHE teams for the factors including need to work, distance to schooling, early marriage, fees of schooling, lack of hygiene facilities at school, and absence of adequate number of female teachers at school. Moreover, the paper also shows that there is a significant decline in number of girls who chose to drop-out of school because of safety concerns about commute between home and school. Additionally, the adolescent school-going girls in Telangana did not observe better chances of females in Telangana being employed compared to the neighboring states. When considering all these findings together, it suggests that the introduction of SHE teams should have had a positive effect on the safety of girls on the streets. As a result, it likely led to an increase in the completion of grade 12 schooling among girls in urban Telangana.

However, it is also important to look at the potential sources that can threaten the identification strategy in the paper. The first one could be network of surveillance of streets using CCTV cameras. With CCTV surveillance on the streets, potential female harassers are more likely to be aware of the increased risk of being caught by police. Consequently, instances of street harassment may go systemically down with street CCTV surveillance in place. The capital of Telangana state, i.e., Hyderabad made it to the world's top 20 most surveilled cities in the year 2020.[32] Interestingly, Hyderabad already accounted for 30 percent of urban population in Telangana in 2017.[33] So it is possible to check sensi-

[32] Time of India, 2020. Click here.
[33] Deccan Chronicle, 2017. Click here.

tivity of results in Table 3 to the presence of CCTV cameras on streets by excluding the observations belonging to Hyderabad. Table 12 does the same and reports the impact of SHE teams for Telangana except Hyderabad corresponding to equation 1. Table 12, column 1 shows that grade 12 completion for girls in Urban Telangana (excluding Hyderabad) increased by 18.09 percentage points post the introduction of SHE teams relative to the comparison group. Comparing Table 12 to Table 3, it is inferred that excluding a population in Hyderabad, which is extensively monitored by CCTV, actually strengthens the estimated impact of SHE teams on grade 12 completion, and this effect remains statistically significant. Another point challenging the effectiveness of CCTV cameras as a deterrent to street harassment is that, according to a 2023 RTI (right to information) response from the Telangana police, 40 percent of the cameras in Hyderabad were non-operational.[34]

< INSERT TABLE 12 here >

Second source of threat to identification in this paper comes from rise in presence of emergency apps in mobiles related to location sharing. Mobile devices now offer the option of location sharing by user to the emergency contact numbers. More importantly, now mobiles also provide the option of safety apps for women when they are outside homes.[35] These features of location sharing and emergency contacts can theoretically improve the sense of safety among females on streets. However, schools in India have long forbidden its students from carrying mobile phones to school, much before 2015-16.[36,37] Therefore, school-going girls in Telangana won't have option of carrying mobile phones to schools to fight against street violence.

Finally, CCTV cameras and emergency apps in mobile are also limited in their ability to raise confidence about safety in public spaces. This is so since these two modes are useful only after the incidence of violence against females and girls. In this context, SHE teams offer an additional layer of protection against violence against women (VAW) on the streets before any actual incident occurs. Women and girls can seek immediate assistance by calling out or approaching SHE personnel on streets.

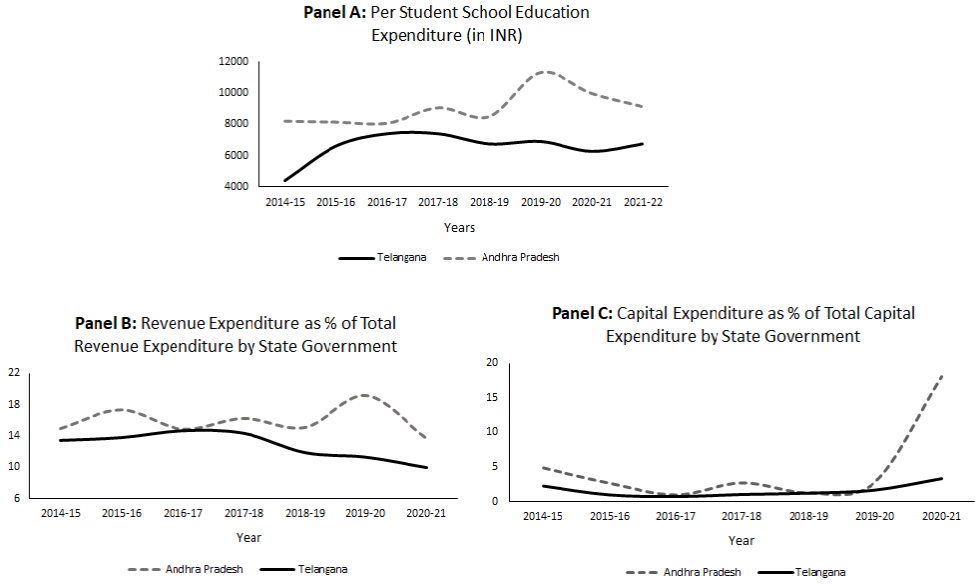
This paper also addresses the concern that school education-oriented policies implemented concurrently with SHE teams in Telangana may undermine the main finding in Table 1. I use three proxies for schooling investment by state governments in Telangana and Andhra

[34] Times of India, 2023. Click here.
[35] A Handy Guide to Decide How Safe That Safety App Will Really Keep You. Click here.
[36] Circular by Central Board of Secondary Education, 2009. Click here.
[37] Telangana government bans the use of mobile phones in all educational institutions, January 2015. Click here.

Pradesh, viz., per student schooling expenditure, revenue and capital expenditures as a percentage of total expenditure on school education to negate those concerns at broader scale. As shown in Panel A of Figure 2, Andhra Pradesh consistently spent more on schooling education per student than Telangana during the period 2014-15 to 2021-22. Similarly, Panels B and C of Figure 6 show that Andhra Pradesh spent more on the provision and maintenance of schooling infrastructure, salaries and pension to school-related staff, scholarships, cash transfers, and research grants than Telangana during the period 2014-15 to 2021-22. It is important to note that not all of this schooling investment by state governments is geared towards girls' schooling promotion. Therefore, the finding in Table 1 that girls' schooling completion of grade 12 in Telangana improved despite its lower investment in schooling than Andhra Pradesh provides strong evidence for the positive and significant effect of SHE teams in improving grade 12 completion among girls, even if the actual effect size is not as large as estimated in this paper. The potential impact of schooling schemes sponsored by central government should get eliminated in our DDD equation (1). The underlying idea behind this assumption is girls in Telangana and its neighboring states should be exposed to similar trend of funding from central government over time, if its not same in magnitude. I do recognize that this should be taken with caution and ideally checked empirically. At the moment, I don't have information on district wise actual allocation of funds under central government's schooling schemes.[38]

[38]State-wise data on actual allocation of those funds won't provide meaningful variation, as there will be just 6 data points between NFHS-4 and NFHS-5 for state-level funding of centrally sponsored schemes.

Figure 6. Proxies for Schooling Investment by States during 2014 to 2021



Source: Self illustrated using data from UDISE (Unified District Information System for Education database in India) and states' budget documents

6 Conclusion

Completing secondary schooling till grade 12 offers numerous benefits for girls, including improved livelihood skills, delayed marriage, and increased influence within the household (Wodon et al., 2018). However, unsafe public spaces can prove to be a strong hindrance in completing secondary schooling. This is especially relevant in countries like India where cultural norms limit female mobility and access to education. Interventions like SHE police, aimed at making streets safer, can remove barriers to female education. This study confirms this insight. The SHE intervention's effect size of 37.38 percent is comparable to the effect sizes achieved by similar interventions in girls' schooling conducted elsewhere in India (32 percent effect size in Muralidharan & Prakash, 2017). There could be two ways to make sense of bigger effect size in this paper compared to Muralidharan & Prakash, 2017. First, this paper only considers the girls in urban regions whereas Muralidharan & Prakash, 2017takes most of its sample from rural regions. It is reasonable to assume that girls in urban regions face lower restrictions on mobility compared to those in rural regions. Therefore, an intervention like SHE teams that makes commuting in public spaces safer in urban regions, should encourage a huge chunk of girls to take benefit of this intervention. Second, girls don't have to pay any transaction cost in getting benefits from SHE police teams on streets, whereas Muralidharan & Prakash, 2017considers the case of girls who would only get bicycles if they provide evidence of school enrolment.

This paper provides causal evidence for improvement in secondary schooling completion of girls following the implementation of women-centric police deterrence measures against VAW (violence against women and girls), in the state of Telangana in India. By employing a triple difference-in-differences (DDD) approach, the paper finds a significant rise in the rate of girls finishing schooling up to grade 12, due to street patrolling by special police units. The finding remains strong even when considering potential factors like changes in schooling facilities, school distance, competing opportunities outside school, and the burden on girls to balance work and education.

The paper's findings have critical implications for policy making at the intersection of gender, education, and crime. The study argues that public safety measures can complement existing channels to improve completion of secondary schooling for girls till grade 12, leading to potential gains in female participation in skilled employment. This underscores the importance of gender targeted public safety measures as a tool for women's empowerment and economic development.

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Tables

Table 1: Descriptive Statistics
(For urban regions of Telangana and Neighboring States)

	Telangana		Neighboring States	
	NFHS-4 (2015-16)	NFHS-5 (2019-21)	NFHS-4 (2015-16)	NFHS-5 (2019-21)
Fraction of girls aged between 18 to 21 years and ever been to school in any grade between 6 to 12 at school, who completed schooling till grade 12	0.361	0.506	0.368	0.395
Number of girls aged between 18 to 21 years and ever been to school in any grade between 6 to 12 who completed schooling till grade 12	266	448	1646	1318
Fraction of boys aged between 18 to 21 years and ever been to school in any grade between 6 to 12 who completed schooling till grade 12	0.377	0.368	0.336	0.373
Number of boys aged between 18 to 21 years and ever been to school in any grade between 6 to 12 who completed schooling till grade 12	196	445	1728	1419
Fraction of female headed households	0.136	0.226	0.181	0.224
Fraction of households from scheduled caste or scheduled tribe	0.195	0.268	0.285	0.327
Fraction of households from other backward caste	0.589	0.617	0.562	0.554
Fraction of households with access to piped drinking water	0.537	0.477	0.453	0.425
Fraction of households from hindu religion	0.625	0.643	0.772	0.779
Fraction of households from muslim religion	0.351	0.312	0.199	0.190
Fraction of households in poorest/ poorer category	0.049	0.085	0.123	0.160
Fraction of households in middle category	0.186	0.228	0.234	0.231
Fraction of girls aged between 18 to 21 years who are currently married	0.365	0.344	0.402	0.319
Fraction of boys aged between 18 to 21 years who are currently married	0.0204	0.0382	0.0532	0.031

Note: This table provide information for only those households with at least one child between the age group of 18 to 21 years. Poorest/ Poorer/ Middle category are taken from levels of wealth index of each household provided in NFHS data.

Table 2: Composition bias between Telangana and Neighboring States over NFHS-4 and 5 Rounds

		fraction of females between 18 to 21 years	fraction of HHs below median of wealth index	fraction of HHs headed by female	fraction of HHs from Hindu religion	fraction of HHs from Muslim religion	fraction of HHs from Scheduled caste-tribe	fraction of HHs from Other Backward Classes	fraction of ever married people	Household size
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
NFHS-4 (2015-16)	Telangana - border states (diff_1)	0.0359	-0.106***	-0.0307**	-0.0906***	0.1002***	-0.0883***	0.0656***	-0.019	-0.436***
		(0.0183)	(0.0169)	(0.0137)	(0.0155)	(0.0148)	(0.0159)	(0.0182)	(0.0143)	(0.0914)
	Observations	6,046	6,046	6,046	6,046	6,046	6,046	6,046	6,046	6,046
NFHS-5 (2019-21)	Telangana - border states (diff_2)	0.0712	-0.0912***	-0.0066	-0.0762***	0.0614***	-0.0363***	0.0736***	0.0152	-0.447***
		(0.0143)	(0.0133)	(0.0117)	(0.0122)	(0.0116)	(0.0129)	(0.0142)	(0.0102)	(0.0649)
	Observations	5,900	5,900	5,900	5,900	5,900	5,900	5,900	5,900	5,900
	diff_2 - diff_1	-0.0288	0.0155	0.0241	0.0144	-0.0388**	0.052***	0.008	0.0342*	-0.0109
		(0.0232)	(0.0215)	(0.0182)	(0.0198)	(0.0188)	(0.0205)	(0.0231)	(0.01747)	(0.110)
	Observations	11,946	11,946	11,946	11,946	11,946	11,946	11,946	11,946	11,946
diff_2 - diff_1× female						-0.0429	-0.0698		0.0285	
						(0.0261)	(0.0412)		(0.0327)	
	Observations					11,946	11,946		11,946	

Note: $^{***}p < 0.01$, $^{**}p < 0.05$, $*p < 0.1$. . HHs refers to households. In columns 1 to 9, only those households are included where children of age 18 to 21 years are present. This is done as the main analysis is about secondary schooling completion of children in the age cohort of 18 to 21 years.

Table 3: Impact of SHE on Girls' Schooling Completion till Grade 12
(Telangana versus Neighbor States)

Dependent variable: if the child completed age-appropriate schooling till grade 12			
	(1)	(2)	(3)
Girl × Post × Telangana	0.1348**	0.1431**	0.1465**
	(0.06)	(0.06)	(0.0605)
Observations	7,244	7,244	7,244
R^2	0.1221	0.1322	0.1368
Covariates	Yes	Yes	Yes
district FE	Yes	Yes	Yes
district FE × Post	No	Yes	Yes
Covariates × Post	No	No	Yes
cluster level	Household	Household	Household
Proportion of girls in Telangana in the age group of 18 to 21 who completed schooling till grade 12 before SHE police intervention: **0.361**			
Standard deviation of dependent variable for girls in Telangana in the age group of 18 to 21 in 2015-16 (before SHE police intervention): **0.48116**			

Note: ***p <0.01, **p <0.05, *p <0.1. Clustered standard errors are in parenthesis. The covariates include age, caste, religion, wealth index quintiles based on ownership of specific assets (e.g., radio and television), environmental conditions, and housing characteristics (e. g., materials used for housing construction and sanitation facilities), and current marital status. FE refers to fixed effects.

Table 4: Placebo test in support of Parallel Trend assumption of main result in Table 3

Dependent variable: if the child completed age-appropriate schooling till grade 12?			
	(1)	(2)	(3)
Girl × Post × Telangana	0.0957	0.0603	0.0773
	(0.1429)	(0.1489)	(0.1496)
Observations	1,746	1,746	1,746
R^2	0.1646	0.1933	0.2024
Covariates	Yes	Yes	Yes
district FE	Yes	Yes	Yes
district FE × Post	No	Yes	Yes
covariates × Post	No	No	Yes
cluster level	Household	Household	Household

Note: ***p <0.01, **p <0.05, *p <0.1. Clustered standard errors are in parenthesis. The covariates include age, caste, religion, wealth index quintiles based on ownership of specific assets (e.g., radio and television), environmental conditions, and housing characteristics (e. g., materials used for housing construction and sanitation facilities), and current marital status. FE refers to fixed effects.

Table 5: Impact of SHE on Girls' Schooling Completion till Grade 12
(Telangana versus Neighbor **Districts**)

Dependent variable: if the child completed age-appropriate schooling till grade 12			
	(1)	(2)	(3)
Girl × Post × Telangana	0.1933**	0.2082**	0.2244**
	(0.0863)	(0.0868)	(0.0878)
Observations	2,100	2,100	2,100
R^2	0.1381	0.1462	0.1522
Covariates	Yes	Yes	Yes
district FE	Yes	Yes	Yes
district FE × Post	No	Yes	Yes
Covariates × Post	No	No	Yes
cluster level	Household	Household	Household
Proportion of girls in Telangana in the age group of 18 to 21 who completed schooling till grade 12 before SHE police intervention: **0.361**			
Standard deviation of dependent variable for girls in Telangana in the age group of 18 to 21 in 2015-16 (before SHE police intervention): **0.48116**			

Note: ***p <0.01, **p <0.05, *p <0.1. Clustered standard errors are in parenthesis. The neighboring districts are Kurnool, Prakasam, Guntur, West Godavari, Anantapur (from Andhra Pradesh), Bijapur, Sukma (from Chhattisgarh), Bellary, Koppal and Raichur (from Karnataka). The list of covariates is same as in Table 3.

Table 6: Impact of SHE on Girls' Schooling Completion
till Grade 12 for age cohort of 25 to 30
(Older cohort test)

Dependent variable: if the individual completed age-appropriate schooling till grade 12			
	(1)	(2)	(3)
Girl × Post × Telangana	- 0.0305	- 0.029	- 0.0238
	(0.0417)	(0.0418)	(0.042)
Observations	10,177	10,177	10,177
R^2	0.0775	0.0874	0.0914
Covariates	Yes	Yes	Yes
district FE	Yes	Yes	Yes
district FE × Post	No	Yes	Yes
covariates × Post	No	No	Yes
cluster level	Household	Household	Household

Note: ***p <0.01, **p <0.05, *p <0.1. Clustered standard errors are in parenthesis. The covariates include age, caste, religion, wealth index quintiles based on ownership of specific assets (e.g., radio and television), environmental conditions, and housing characteristics (e. g., materials used for housing construction and sanitation facilities), and current marital status. FE refers to fixed effects.

Table 7: Substitution between Schooling and Work
before and after SHE intervention

Dependent variable: if the child dropped out of schooling before passing grade 12 due to need to work			
	(1)	(2)	(3)
Girl × Post × Telangana	-0.1086	0.119	-0.0535
	(0.2192)	(0.2324)	(0.2587)
Observations	2,014	2,014	2,014
R^2	0.1325	0.166	0.179
Covariates	Yes	Yes	Yes
district FE	Yes	Yes	Yes
district FE × Post	No	Yes	Yes
covariates × Post	No	No	Yes
cluster level	Household	Household	Household

Note: ***p <0.01, **p <0.05, *p <0.1. Clustered standard errors are in parenthesis. The covariates include age, caste, religion, wealth index quintiles based on ownership of specific assets (e.g., radio and television), environmental conditions, and housing characteristics (e. g., materials used for housing construction and sanitation facilities), and current marital status. FE refers to fixed effects.

Table 8: Dropped out of school due to issues related to school accessibility and facilities at school before and after SHE intervention

Dependent variable: if the child dropped out of schooling before passing grade 12 due to issues related to school accessibility and facilities at School			
	(1)	(2)	(3)
Girl × Post × Telangana	-0.1391	-0.2081	-0.1962
	(0.2051)	(0.2209)	(0.2187)
Observations	1,454	1,454	1,454
R^2	0.1849	0.2381	0.2505
Covariates	Yes	Yes	Yes
district FE	Yes	Yes	Yes
district FE × Post	No	Yes	Yes
covariates × Post	No	No	Yes
cluster level	Household	Household	Household

Note: ***p <0.01, **p <0.05, *p <0.1. Clustered standard errors are in parenthesis. The covariates include age, caste, religion, wealth index quintiles based on ownership of specific assets (e.g., radio and television), environmental conditions, and housing characteristics (e. g., materials used for housing construction and sanitation facilities), and current marital status. FE refers to fixed effects.

Table 9: Dropped out of school due to marriage
before and after SHE intervention

Dependent variable: if the child dropped out of schooling before passing grade 12 due to marriage			
	(1)	(2)	(3)
Girl × Post × Telangana	-0.0314	0.0279	0.105
	(0.1437)	(0.1811)	(0.158)
Observations	1,625	1,625	1,625
R^2	0.779	0.788	0.794
Covariates	Yes	Yes	Yes
district FE	Yes	Yes	Yes
district FE × Post	No	Yes	Yes
covariates × Post	No	No	Yes
cluster level	Household	Household	Household

Note: ***p <0.01, **p <0.05, *p <0.1. Clustered standard errors are in parenthesis. The covariates include age, caste, religion, wealth index quintiles based on ownership of specific assets (e.g., radio and television), environmental conditions, and housing characteristics (e. g., materials used for housing construction and sanitation facilities), and current marital status. FE refers to fixed effects.

Table 10: Dropped out of school due to unsafe commute
before and after SHE intervention
(Mechanism 1)

Dependent variable: if the girl dropped out of schooling before passing grade 12 due to feeling unsafe in going to school			
	(1)	(2)	(3)
Post × Telangana	- 0.3393**	- 0.407***	- 0.467***
	(0.1327)	(0.1523)	(0.135)
Observations	1,112	1,112	1,112
R^2	0.294	0.331	0.348
Covariates	Yes	Yes	Yes
district FE	Yes	Yes	Yes
district FE × Post	No	Yes	Yes
covariates × Post	No	No	Yes
cluster level	Household	Household	Household

Note: ***p <0.01, **p <0.05, *p <0.1. Clustered standard errors are in parenthesis. The covariates include age, caste, religion, wealth index quintiles based on ownership of specific assets (e.g., radio and television), environmental conditions, and housing characteristics (e. g., materials used for housing construction and sanitation facilities), and current marital status. FE refers to fixed effects.

Table 11: Employment Status of Individuals between 2015-16 and 2019-21 before and after SHE intervention

Dependent variable: if the individual is employed at the time of survey?						
	(1)	(2)	(3)	(4)	(5)	(6)
	age 18 to 30 years		age 18 to 40 years		age 18 to 50 years	
Female × Post × Telangana	- 0.0103	- 0.0096	- 0.017	-0.0096	- 0.0559	- 0.0492
	(0.0379)	(0.0374)	(0.0486)	(0.0472)	(0.0521)	(0.0511)
Observations	51,978	51,978	105,895	105,895	175,369	175,369
R^2	0.28	0.288	0.268	0.277	0.253	0.262
Covariates	Yes	Yes	Yes	Yes	Yes	Yes
district FE	Yes	Yes	Yes	Yes	Yes	Yes
district FE × Post	No	Yes	No	Yes	No	Yes
cluster level	Town	Town	Town	Town	Town	Town

Note: ***p <0.01, **p <0.05, *p <0.1. Clustered standard errors are in parenthesis. The covariates include age, caste, religion, wealth index quintiles based on ownership of specific assets (e.g., radio and television), environmental conditions, and housing characteristics (e. g., materials used for housing construction and sanitation facilities), and current marital status. FE refers to fixed effects.

Table 12: Impact of SHE on Girls' Schooling Completion till Grade 12
(Telangana (**excluding Hyderabad**) versus Neighbor States)

Dependent variable: if the child completed age-appropriate schooling till grade 12			
	(1)	(2)	(3)
Girl × Post × Telangana	0.1809***	0.1919***	0.1972***
	(0.07)	(0.069)	(0.0702)
Observations	6,966	6,966	6,966
R^2	0.1245	0.1350	0.14
Covariates	Yes	Yes	Yes
district FE	Yes	Yes	Yes
district FE × Post	No	Yes	Yes
covariates × Post	No	No	Yes
cluster level	Household	Household	Household

Note: ***p <0.01, **p <0.05, *p <0.1. Clustered standard errors are in parenthesis. The covariates include age, caste, religion, wealth index quintiles based on ownership of specific assets (e.g., radio and television), environmental conditions, and housing characteristics (e. g., materials used for housing construction and sanitation facilities), and current marital status. FE refers to fixed effects.

Appendix

Table A1: Frequency table for reasons to not going to school before and after SHE intervention

	Telangana	Telangana	Neighboring States	Neighboring States
	2015-16	2019-20	2015-16	2019-20
Reasons for dropping out of school				
Issues related to school	42	276	285	1034
Marriage	35	729	196	1692
Need to work	40	665	338	2481
Not Safe to go to school	4	14	16	53
Others	62	706	798	2950

Note: This sample is about the children who have been to any grade between 6 to 12 in school and fall in the age cohort of 18 to 21 in the two rounds of NFHS survey. Issues related to school includes "school too far away", "transport not available", "costs too much", "no proper school facilities for girls" and "no female teacher". Required to work includes "required for household work", "required for work on farm / family business", "required for outside work for payment in cash or kind" and "required for care of siblings". Others include "not interested in studies", "repeated failures" and "did not get admission".

Table A2: Impact of SHE on Girls' Secondary Schooling
(Telangana versus Neighbor States)
with clustering at the level of town

Dependent variable: if the child completed age-appropriate schooling till grade 12?			
	(1)	(2)	(3)
Girl × Post × Telangana	0.1348**	0.1431**	0.1465**
	(0.0614)	(0.0615)	(0.0619)
Observations	7,244	7,244	7,244
R^2	0.1221	0.1322	0.1368
Covariates	Yes	Yes	Yes
district FE	Yes	Yes	Yes
district FE × Post	No	Yes	Yes
covariates × Post	No	No	Yes
cluster level	**town**	**town**	**town**

Note: ***p <0.01, **p <0.05, *p <0.1. Clustered standard errors are in parenthesis. The covariates include age, caste, religion, wealth index quintiles based on ownership of specific assets (e.g., radio and television), environmental conditions, and housing characteristics (e. g., materials used for housing construction and sanitation facilities), and current marital status. FE refers to fixed effects. This table is different from Table 3 only in level of clustering.

Table A3: Impact of SHE on Girls' Secondary Schooling
before and after SHE intervention
(**Within Telangana analysis**)

Dependent variable: if the child completed age-appropriate schooling till grade 12?			
	(1)	(2)	(3)
Girl × Post	0.1416**	0.1455**	0.1135*
	(0.0563)	(0.0564)	(0.0664)
Observations	1,355	1,355	1,355
R^2	0.1284	0.1352	0.1426
Covariates	Yes	Yes	Yes
district FE	Yes	Yes	Yes
district FE × Post	No	Yes	Yes
covariates × Post	No	No	Yes
cluster level	Household	Household	Household

Note: ***p <0.01, **p <0.05, *p <0.1. Clustered standard errors are in parenthesis. The covariates include age, caste, religion, wealth index quintiles based on ownership of specific assets (e.g., radio and television), environmental conditions, and housing characteristics (e. g., materials used for housing construction and sanitation facilities), and current marital status. FE refers to fixed effects.

Table A4: Impact of SHE Police Intervention on Girls' Secondary Schooling Completion till Grade 12 (**Telangana versus Neighbor States *excluding Andhra Pradesh***)

Dependent variable: if the child completed age-appropriate schooling till grade 12?			
	(1)	(2)	(3)
Girl × Post × Telangana	0.1246**	0.1328**	0.1339**
	(0.0606)	(0.0607)	(0.0612)
Observations	6,581	6,581	6,581
R^2	0.1231	0.1332	0.1381
Covariates	Yes	Yes	Yes
district FE	Yes	Yes	Yes
district FE × Post	No	Yes	Yes
covariates × Post	No	No	Yes
cluster level	Household	Household	Household

Note: ***p <0.01, **p <0.05, *p <0.1. Clustered standard errors are in parenthesis. The covariates include age, caste, religion, wealth index quintiles based on ownership of specific assets (e.g., radio and television), environmental conditions, and housing characteristics (e. g., materials used for housing construction and sanitation facilities), and current marital status. FE refers to fixed effects.