

Women's Safety-Constrained Education and Labor Decisions

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Common Perceptions

There is limited evidence about the economic costs of daily harassment (Aguilar et al. 2021). One revealed-preference experiment estimated women's willingness to pay to avoid harassment using crowdsourced data from 22,000 rides on the public train system in Rio de Janeiro, Brazil (Kondylis et al. 2020). Participants were offered a series of paid opportunities to ride either a carriage reserved for women or a mixed carriage, with a pay differential between the women's and mixed carriages that varies from ride to ride. A fifth of riders were willing to forgo 20 percent of the fare to ride in the "safe space." This foregone payment equals \$1.17–2.25 per incident avoided, or approximately 0.4 percent of the minimum wage annually. Such a wage penalty would cause a 0.48–0.60 percent reduction in female labor supply (Vick 2017).

Questions We Should Be Asking

However, despite these early findings on the economic costs of fear of harassment and violence, there is no quantitative estimate of the economic costs of harassment in terms of women's longer-term educational attainment and earnings. One potential cost of an environment where street harassment is prevalent is that women may avoid opportunities that would otherwise be available.

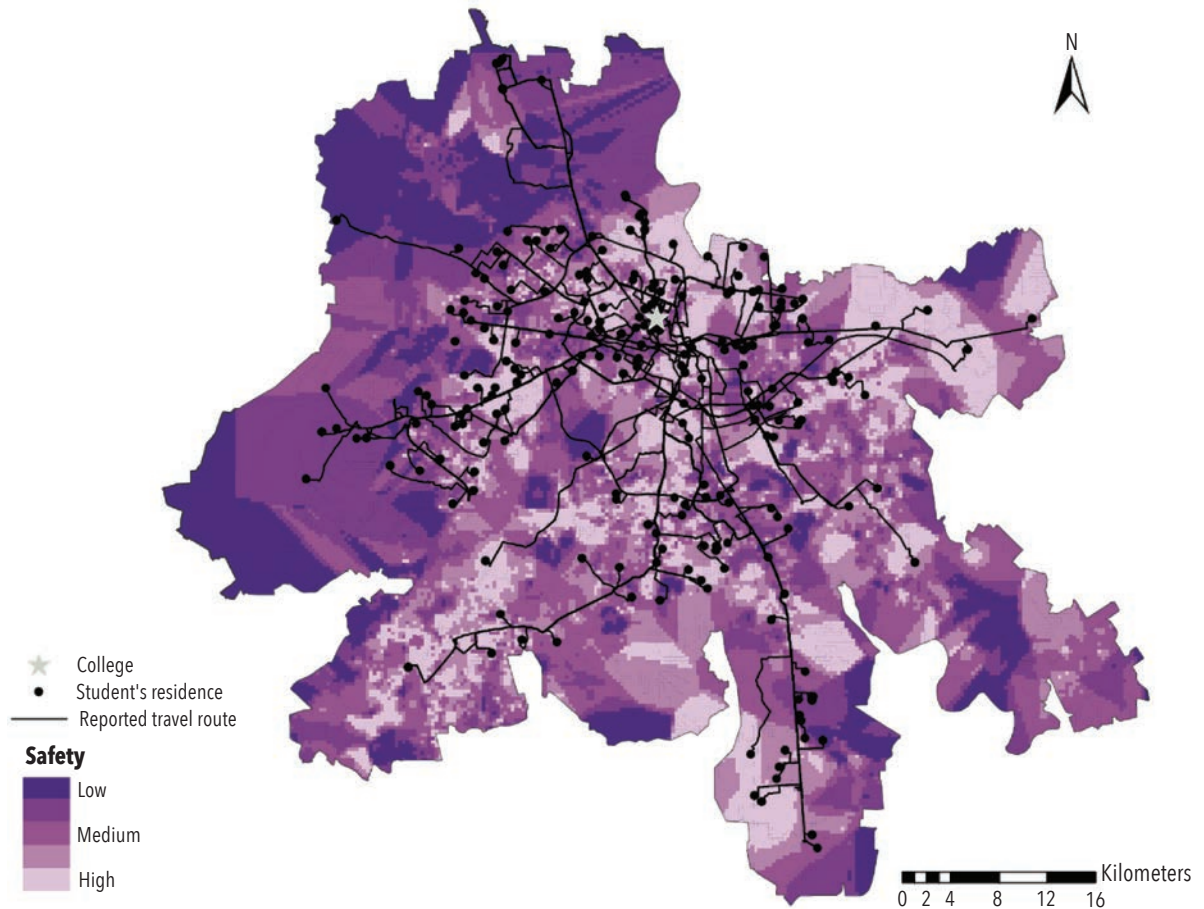
At Delhi University (DU) in India, women tend to attend lower-quality colleges than men, even

though, on average, they outperform men on the qualifying national high school exams. In Delhi, a staggering 95 percent of women aged 16–49 report feeling unsafe in public spaces (UN Women and ICRW 2013). The question is: do women choose to attend lower-quality colleges to avoid sexual harassment when traveling to and from college? This question is addressed in a context where 72 percent of enrolled students live at home with their families and travel to college every day, mostly by public transport, and where over 89 percent of female students have faced some form of harassment while traveling in the city.

To assess if women choose a low-quality college because it is located on a "safe" route, I evaluate the difference in female and male students' willingness to pay for travel safety in terms of college quality, travel costs, and travel time in a model of college choice. The difference captures the cost of street harassment for women, since men in Delhi do not face such harassment but are expected to have similar concerns about other forms of safety.

To do so, I assembled a unique dataset (see map 3.1). DU is composed of 77 colleges spread across Delhi. The colleges vary in quality, with each college having its own campus, classes, staff, and placements. Admission to DU is strictly based on students' high school exam scores. I infer students' comprehensive choice set of colleges using detailed information about 3,800 students from a survey conducted at the university. Using Google Maps and an algorithm developed for the project, I mapped students'

■ ■ -Map 3.1 Perceived Safety and Students' Reported Travel Routes to a College at Delhi University



Note: Crowdsourced safety data from two mobile phone applications show students' travel routes to university as well as the associated perceived levels of safety across New Delhi.

travel routes by travel mode, including both the reported travel route and the potential routes available to students for every college in their choice set.

Finally, I combine the information on travel routes with crowdsourced safety data from two mobile phone applications ("apps"). The first app, *SafetiPin*, provides perceived spatial safety data through safety audits conducted at various locations across Delhi. The second app, *Safecity*, provides analytical data on harassment rates by travel mode. Together, the route and safety data facilitated the assignment of

a safety score to each travel route. Map 3.1 shows the safety data and the reported travel routes for students of one college in the sample.

Findings

College Quality

Women were willing to choose a college in the bottom half of the quality distribution over a college in the top 20 percent for a route perceived to be one standard deviation (SD) safer. Conversely, men were only willing to go from

a top 20 percent college to a top 30 percent college for an additional one SD of perceived travel safety.

To put these findings into perspective, I used district-level data on rape from the National Crime Record Bureau. This data revealed that one SD of perceived safety while walking is equivalent to a 3.1 percent decrease in reported annual rapes.

Money

Women were willing to spend an additional INR 17,400 (\$290) per year on travel costs for a route perceived to be one SD safer (see figure 3.1). Men are willing to spend an additional INR 9,840. The difference of over INR 7,500 is a significant sum of money—75 percent of the average annual tuition at DU, and five times the monthly travel costs of a student at DU.

Post-College Salaries

Using data on placement offers at the time of graduation, women’s willingness to pay for safety amounts to an estimated decline of INR 82,000, or 27 percent, in terms of the average graduating salary at DU. Furthermore, using estimates from Sekhri (2019), women’s willingness to pay for safety translates to an estimated 17 percent decline in the present discounted value of their post-college salaries. The findings speak to the long-term consequences of everyday harassment: perpetuating gender inequality in both education and lifetime earnings.

Beyond Education

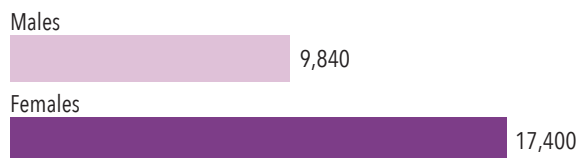
While this paper focuses on the effects of street harassment on women’s choice of college, these findings are also relevant for other economic decisions made by women. For instance, the propensity to avoid street harassment could impact

■ ■ **Figure 3.1** Women’s and Men’s Willingness to Pay for Travel Safety

Ranks per SD of safety



Rupees per SD of safety



Note: To gain an additional standard deviation of safety (equivalent to a 3.1 percent decrease in annually reported rapes), men were willing to attend a college that was 1.4 ranks lower in quality, while women were willing to attend a college that was 5.4 ranks lower. In terms of travel costs, men were willing to spend an additional 9,840 INR (125 USD) per year to travel on a road that is one standard deviation safer, while women were willing to spend 17,400 INR (223 USD) per year (78 percent more than men).

women’s employment decisions including where to work, how much to work, or even whether to work at all. This can potentially explain India’s low levels of female labor force participation.

Policy Implications

These results highlight the significant economic costs associated with unsafe travel and reinforce the need for policies to address violence against women in public spaces. Many governments recognize the safety constraints women face while traveling and have launched initiatives to tackle these issues. These include policies like the installation of CCTV cameras or panic alarms, street patrols targeting harassment, placement of marshals on public transport who can respond to women’s safety concerns, and the organization of information campaigns encouraging

women to speak-up or bystanders to intervene to promote women's safety in public spaces.

Other initiatives, like the creation of women-reserved spaces, are effective in the short-term but have been found to lead to unintended perverse consequences like stigmatizing the use of unreserved spaces. Little is known about the effectiveness of these measures in terms of their direct effects on women's physical mobility and even less is known about their impact on women's economic mobility. To fill these knowledge gaps, DIME is pushing past the frontier to measure women's safety concerns in rapidly urbanizing cities like Dar es Salaam. DIME will also evaluate the effects of policies being implemented to promote women's safety, for example a police street patrolling program on violence against women and their perceptions of safety.



For the full results of this case study, see: Borker, Girija. * 2021. "Safety First: Perceived Risk of Street Harassment and Educational Choices of Women." Policy Research Working Paper 9731, World Bank, Washington, DC.

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