

# Women's Mobility and Labor Supply: Experimental Evidence from Pakistan

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# Motivation

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- ▶ Pattern has persisted despite substantial increases in women's education levels relative to men's education
- ▶ For Pakistani women aged  $\geq 25$ , only 24% are employed, rising to only 29% for those with university degrees (ILO, 2025)
- ▶ Increasing female labor force participation and employment has the potential to raise aggregate economic output as well as women's empowerment (Agte et al., 2024; Chiplunkar & Goldberg, 2024; Duflo, 2012)

# Paper Overview

- ▶ Launch low-tech, low-cost job matching platform
- ▶ Enroll broad sample of women in Lahore, Pakistan
- ▶ Offer multiple types of transport services for commuting
- ▶ Study effects on women's labor supply, proxied by job applications

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- ▶ Enroll broad sample of women in Lahore, Pakistan
- ▶ Offer multiple types of transport services for commuting
- ▶ Study effects on women's labor supply, proxied by job applications
- ▶ Show that transport offers raise application rates, particularly if the transport is reserved for women, which is as valuable as large price discounts

# Talk Outline

1. Economic Environment
2. Research Design
3. Results
4. Concluding Discussion

# Setting

- ▶ Lahore, Pakistan
- ▶ Roughly 10 million people
- ▶ In 2018, only 9.8% of women aged 18-60 worked & only 11.2% were labor force participants
- ▶ Matches low female LFP in many South Asian cities, despite rising female education (Heath & Jayachandran, 2018)



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- ▶ Door-to-door listing of  $\approx 150$ k HHs in randomly sampled areas
- ▶ Invited each adult to register with our job matching service
- ▶ Main focus: 2,653 women who registered and matched with at least one job advert during the experiment
  - ▶ Also study men later in paper

## Jobseeker Sample

- ▶ Successfully produced a sample with widely varied labor force attachment:
  - ▶ 48% neither employed nor searching (non-LFPs)
  - ▶ 9% employed but not searching
  - ▶ 32% searching but not employed
  - ▶ 11% of recruited women were employed and searching
  - ▶ 72% had ever worked before

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- ▶ Wide variation in education, age, marriage, number & age of kids
- ▶ Limited access to private transport or willingness to use public transport – report concerns about safety & propriety
- ▶ Relative to adult female population of Lahore, sample is:
  - ▶ Slightly younger, more educated, working & searching more
  - ▶ Relevant for policies targeted at adult women open to searching for jobs through a matching service with active recruitment

# Job Talash Platform

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- ▶ Matching:
  - ▶ Jobseekers register, we populate CV template with contact info, education & experience
  - ▶ Firms post job ads, based on door-to-door recruitment in random sample of commercial areas
  - ▶ Jobseeker notified about every job advert that matches their education, work experience & occupational preferences
  - ▶ If jobseekers want to apply, we send their CV to the firm

# Data

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  - ▶ Isolate labor supply decisions from demand-side decisions about how to select applicants based on gender, transport access, etc.

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- ▶ Main outcome: applications
  - ▶ Isolate labor supply decisions from demand-side decisions about how to select applicants based on gender, transport access, etc.
  - ▶ Labor supply decisions may reflect beliefs about demand-side decisions (other papers)

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- ▶ When jobseekers match to a job, they get a text message / phone call with
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- ▶ Transport / commuting service details
  - ▶ Van or motorized rickshaw
  - ▶ Takes them from home to work & back each workday
  - ▶ For the specific job in the advert, not for search or other jobs
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- ▶ Rare but familiar in this context: 7.8% of firms offer free or fee-based transport to at least some employees

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Base price is approximately break-even price for full transport

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	Transport type randomized at neighborhood level		
	None	Mixed-gender	Women-only
Discount randomized at job $\times$ jobseeker match level		20%	20%
	Not applicable	60%	60%
		80%	80%

Mixed-gender transport is reliable & avoids walking on streets

Women-only transport reduces safety & propriety concerns

Base price is approximately break-even price for full transport

Separate randomization of transport type at firm location level

# Estimation & Inference

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- ▶ Cluster standard errors by jobseeker & job locations (282 & 46 clusters)

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- ▶ Cluster standard errors by jobseeker & job locations (282 & 46 clusters)
- ▶ Estimate with and without 'flexible' controls for covariates

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# Effects of Transport Offers by Type

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Apply

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# matches	54237			
# jobseekers	2653			
Mean outcome   $T = 0$	0.0111			
Controls	No	Yes	No	Yes
p: equal treatment effects				

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## Effects of Transport Offers by Type

		Apply			
Offered any transport	0.0080** (0.0038)				
# matches		54237			
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## Effects of Transport Offers by Type

		Apply			
Offered any transport	0.0080** (0.0038)	0.0076** (0.0035)			
Offered women-only			0.0181** (0.0090)		
# matches			54237		
# jobseekers			2653		
Mean outcome   T = 0			0.0111		
Controls	No	Yes	No	Yes	
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	Apply			
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Offered women-only			0.0181** (0.0090)	
Offered mixed-gender			0.0048 (0.0048)	
# matches			54237	
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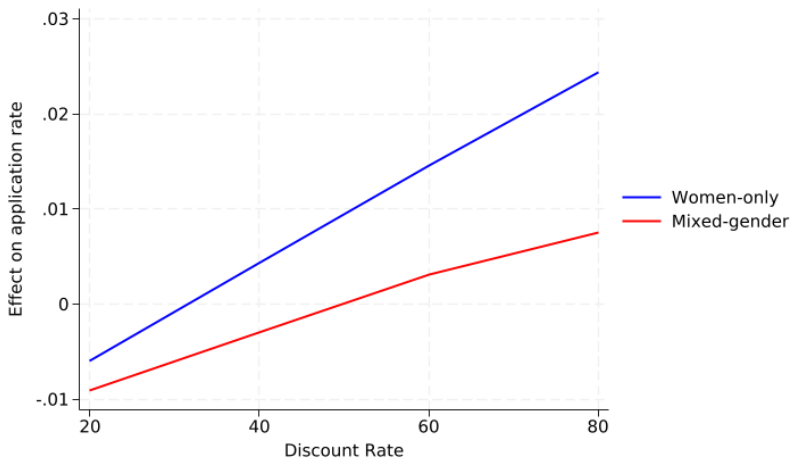
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# matches			54237	
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Mean outcome   T = 0			0.0111	
Controls	No	Yes	No	Yes
p: equal treatment effects			0.2403	

# Effects of Transport Offers by Type

	Apply			
Offered any transport	0.0080** (0.0038)	0.0076** (0.0035)		
Offered women-only			0.0181** (0.0090)	0.0163* (0.0097)
Offered mixed-gender			0.0048 (0.0048)	0.0048 (0.0044)
# matches			54237	
# jobseekers			2653	
Mean outcome   T = 0			0.0111	
Controls	No	Yes	No	Yes
p: equal treatment effects			0.2403	0.3208

# Application Sensitivity to Commuting Costs



# Pecuniary Value of Women-Only Transport

- ▶ Women value women-only transport more than mixed-gender transport, and cheaper transport more than expensive transport
  - ▶ How much do they value women-only transport relative to discounts?
  - ▶ Relevant for transport system considering subsidies versus reserved carriages (used in  $\geq 17$  countries on 5 continents)

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- ▶ Finding: application rates equalized with women-only transport or mixed-gender transport with 81pp larger discount rate
- ▶ Suggests high valuation of women-only transport relative to cheaper mixed-gender transport
- ▶ But standard error is huge: 110pp
- ▶ Different modeling approaches all produce big value, very big SE

## Other Results

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- ▶ Within-household between-person spillovers
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  - ▶ Don't affect main results
- ▶ Within-jobseeker spillovers between matches:
  - ▶ Negative but modest
  - ▶ Jobseeker-level treatment effects are still positive

# Talk Outline

1. Economic Environment
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## Recap Key Findings

- ▶ Have shown that transport offers raise application rates, particularly if the transport is reserved for women, which is as valuable as large price discounts

# What Have We Learned?

- ▶ Paper builds on extensive work showing
  - ▶ Women face risks of harassment and violence while traveling (Aguilar et al. 2019; Amaral et al., 2023; Chakraborty et al., 2018; Kondylis et al., 2025)
  - ▶ Harassment risks are associated with lower female employment (Chakraborty et al., 2018; Sharma, 2023; Siddique, 2022)
  - ▶ Women-only transport can lower harassment (Kondylis et al. 2025)
  - ▶ Expanding transport infrastructure can increase women's employment (Kwon, 2022; Martinez et al., 2020)
  - ▶ Facilitating women's access to mixed-gender public transport can increase employment & search for some subgroups (Abou Daher et al. 2025; Chen et al. 2024; Dasgupta & Datta 2024)



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- ▶ Paper provides the first experimental evidence on
  - ▶ Separate importance of pecuniary versus safety & propriety factors during commutes
  - ▶ Commuting constraints to women's *labor force participation*, by actively enrolling non-labor force participants

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  - ▶ Optimistic: changes in commuting can raise women's labor supply
  - ▶ Pessimistic: short-run costs > benefits, as price of commuting service is high relative to salaries: > half of salary for 40% of matches
  - ▶ Speculative: long-term benefits may rise if women-only commuting services crowd in labor supply directly or indirectly via norm changes, increase demand for commuting, lower marginal costs