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Moving Opportunity Closer: Public Transit, Firm Composition and Female Employment in India

Transit stations increase firm entry, shift local firm composition toward larger consumer-facing businesses, and raise female employment

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Transit stations shift local firm composition toward larger consumer-facing firms, raising local female employment!

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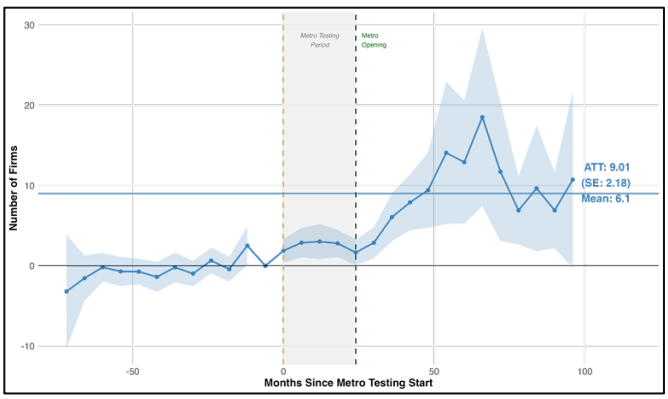
Topic at a Glance

We tend to think of transit as moving people to jobs. But what if it also moved jobs to people?

India has among the lowest female labour force participation rates in the world, around 10% in Delhi in the early 2000s and 20% nationally. This research asks whether the Delhi Metro raised female employment mainly by reducing commute costs, or also through the types of firms drawn to locate near stations.

Using administrative data on nearly one million firms matched to the phased Metro rollout, we find that new stations triggered immediate waves of firm entry in surrounding neighbourhoods. The arriving firms were larger and consumer-facing, and already employed more women before the metro arrived. Counterfactual decompositions show that these firm composition shifts, not reduced commute costs, account for the majority of the differential rise in female employment near stations.

The implication is direct: mobility improvements alone will not close gender gaps in employment if the supply of suitable local jobs does not change alongside them.



Caption: New firm entry per neighbourhood spikes immediately after metro station opening and remains elevated. Flat pre-trends confirm the causal effect of transit access on local firm entry.

New Insights

The standard view of transit treats it as a commuting technology: it lowers travel costs and extends workers' reach. What this research reveals is that transit also reshapes the local economy on the demand side, changing where firms choose to locate and which types enter. In Delhi, these firm-side responses turn out to be the primary channel through which transit raised female employment.

New stations triggered immediate, large, and persistent increases in firm entry in surrounding neighbourhoods. Roughly 9 additional firms registered per neighbourhood in each six-month period after a station opened: a 150% increase over the pre-treatment baseline. New entrants were also19% larger on average and substantially more likely to be professionally managed. The effect concentrated sharply within 1 kilometre of stations and decayed with distance.

The types of firms that responded reveal the mechanism. Of the new entrants, the overwhelming majority were consumer-facing:

retail stores, diagnostic centres, personal services. Business-to-business firms, call centres, and female-intensive manufacturing showed no response. Mobile phone data confirm foot traffic surged around new stations. Transit attracted firms dependent on passing customers, not firms seeking female labour.

Female employment among residents near new stations rose 7.5 percentage points. In newly registered establishments, female employment increased by 98% compared to 45% for men. Women gained in male-managed firms (93% increase), large establishments with 10 or more workers (115% increase), and specialised firms (82% increase). Gains were broad-based, not confined to traditionally female sectors.

Counterfactual decompositions confirm that most of the differential female employment effect is explained by changes in firm size and industry composition, not by reduced commuting costs. The key fact is visible in the Figure above: industries locating closest to metro stations already had higher female workforce shares before the metro arrived. Transit attracted consumer-facing firms, and those firms happen to employ more women.

Transit moves jobs as well as workers, and the identity of those jobs determines who benefits. This is the first empirical evidence that firm composition is a primary channel of transit-induced female employment growth in a low-income country setting.

Policy Recommendations

Text Commuting interventions may be insufficient on their own. When Indian states provided women with free bus travel, female employment barely moved — consistent with the finding that reduced travel costs alone do not raise employment if local job composition does not change alongside them. Policies that lower commuting barriers, such as fare subsidies or women-only carriages, are likely to be more effective when paired with complementary measures that shape what kinds of firms locate near stations.

Last-mile connectivity deserves attention alongside trunk infrastructure investment. Employment benefits appear to concentrate near stations, and pilot data suggest that around half of female metro users walk to their station, making first-mile distance a binding constraint on who benefits. Lighting, footpath quality, and informal transit links may meaningfully extend the reach of the employment gains documented here.

Land use policy around station areas could amplify these effects. The consumer market access mechanism documented here suggests that permitting retail and service commercial uses near stations encourages the kind of firm entry most associated with female employment gains. Mixed-use zoning around transit corridors, and attention to what commercial activity is permitted near stations, may therefore be a useful complement to infrastructure investment itself. Peripheral neighbourhoods appear to benefit most, suggesting that station siting decisions also carry distributional implications worth considering.

Standard infrastructure appraisal may understate the welfare gains from transit. The firm composition, consumer mobility, and safety effects documented here are typically omitted from cost-benefit analyses, which tend to capture commuting cost savings alone. Incorporating these channels — and disaggregating benefits by gender — could provide a more complete picture of who gains from transit investment and by how much.

Together, these findings suggest that the distributional returns to transit infrastructure depend in part on the firm composition it attracts: something that land use, zoning, and appraisal frameworks may be well placed to influence.

Limitations

Transit infrastructure affects the whole city, not just areas near stations. This research accounts for city-wide connectivity changes using established methods, but a complete assessment of how benefits and costs are distributed across all workers and households in Delhi remains ongoing. One finding that will be important to that fuller picture is that female consumers travelling near stations appear to reshape employer demand for female labour; not just female workers commuting in. Tracing these city-wide effects in their entirety requires a structural model that is currently being developed.

The administrative data used here cover nearly one million firms and span several decades, which is what makes the causal analysis possible. A complementary set of original surveys — currently underway at firms, households, and commuting sites across Delhi — is designed to get at questions the administrative data cannot answer: how sensitive women and men are to travel time and safety when deciding whether to work, how employers respond to the gender composition of their customers, and what wages and

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working conditions look like in the new firms that locate near stations. These surveys are smaller in scale by design and are not based on a randomised experiment, so their role is to shed light on the mechanisms and magnitudes behind the patterns documented here rather than to replicate them independently.

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