

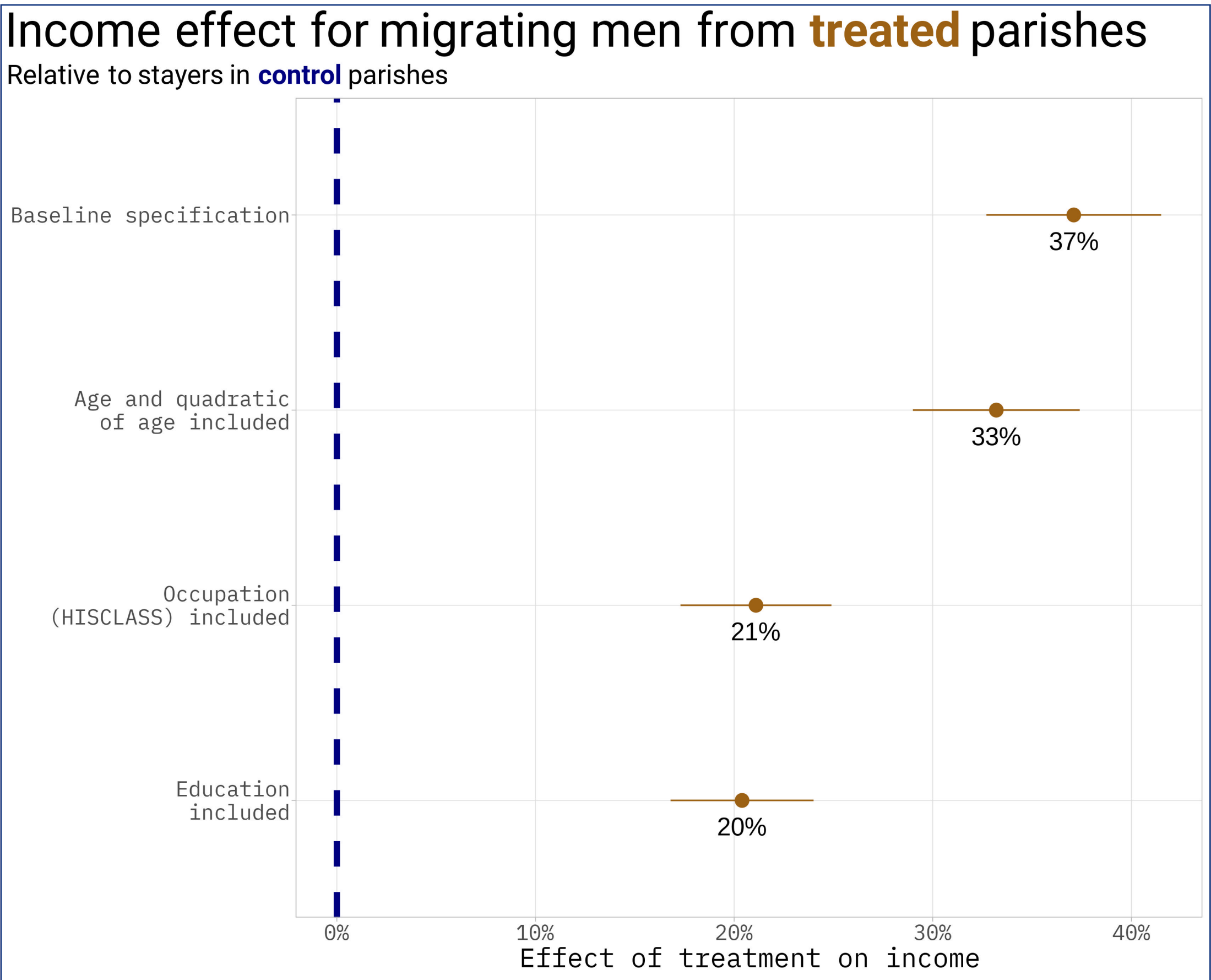
Shocking Technology:

Impacts of new technology on individuals' income, location and occupation

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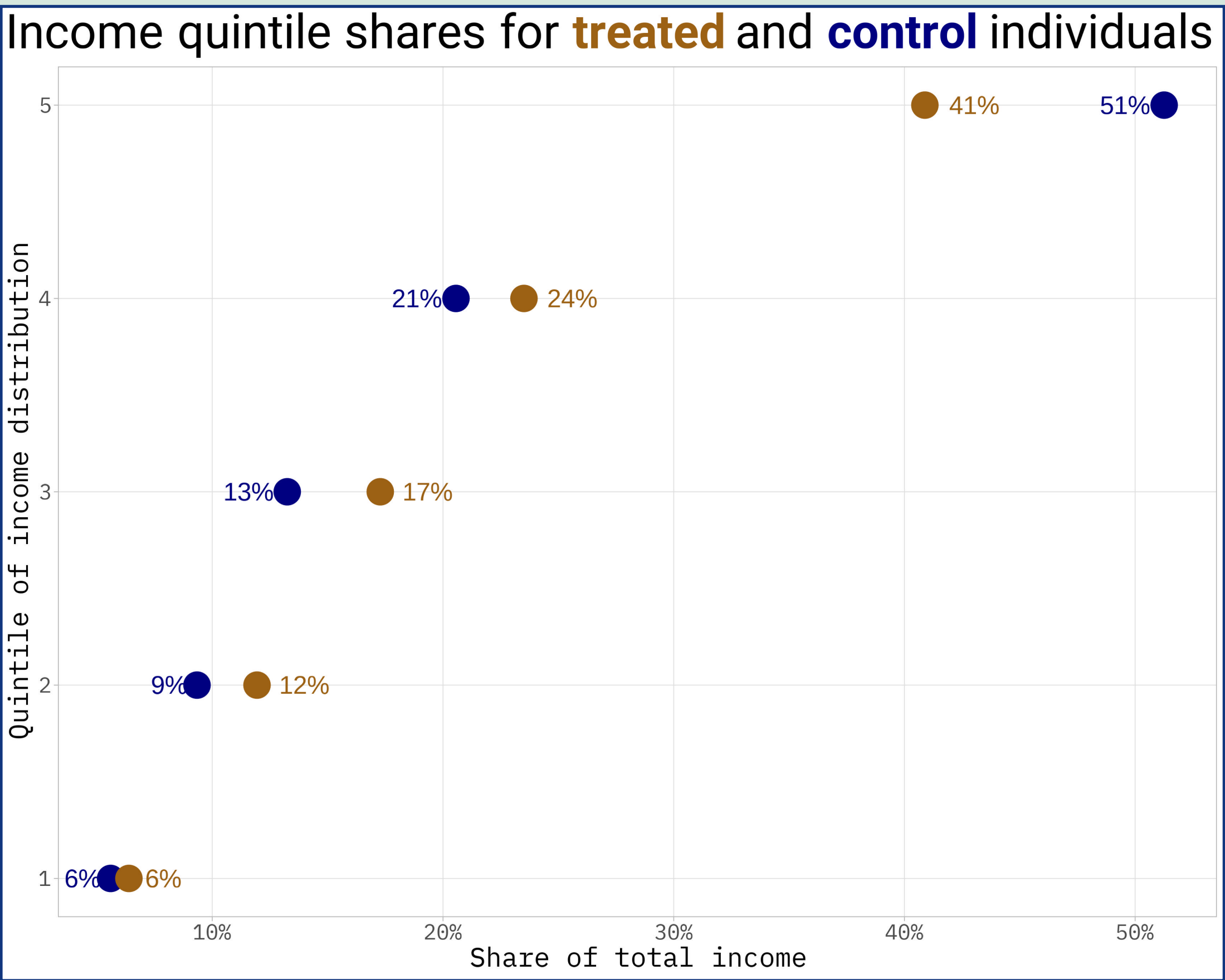
Highlights

- Rapid technological change raises both fears and hopes for the future. A quasi-random rapid rollout of electricity across Sweden allows us to show that in regions which received electricity first:
- New technology made individuals richer
 - * 12% average increase in income, as high as 20%
 - New technology resulted in lower inequality
 - * Individual income Gini coefficient of 0.32 for treated vs 0.42 for control
 - Two mechanisms drive these results: occupational upgrading and internal migration

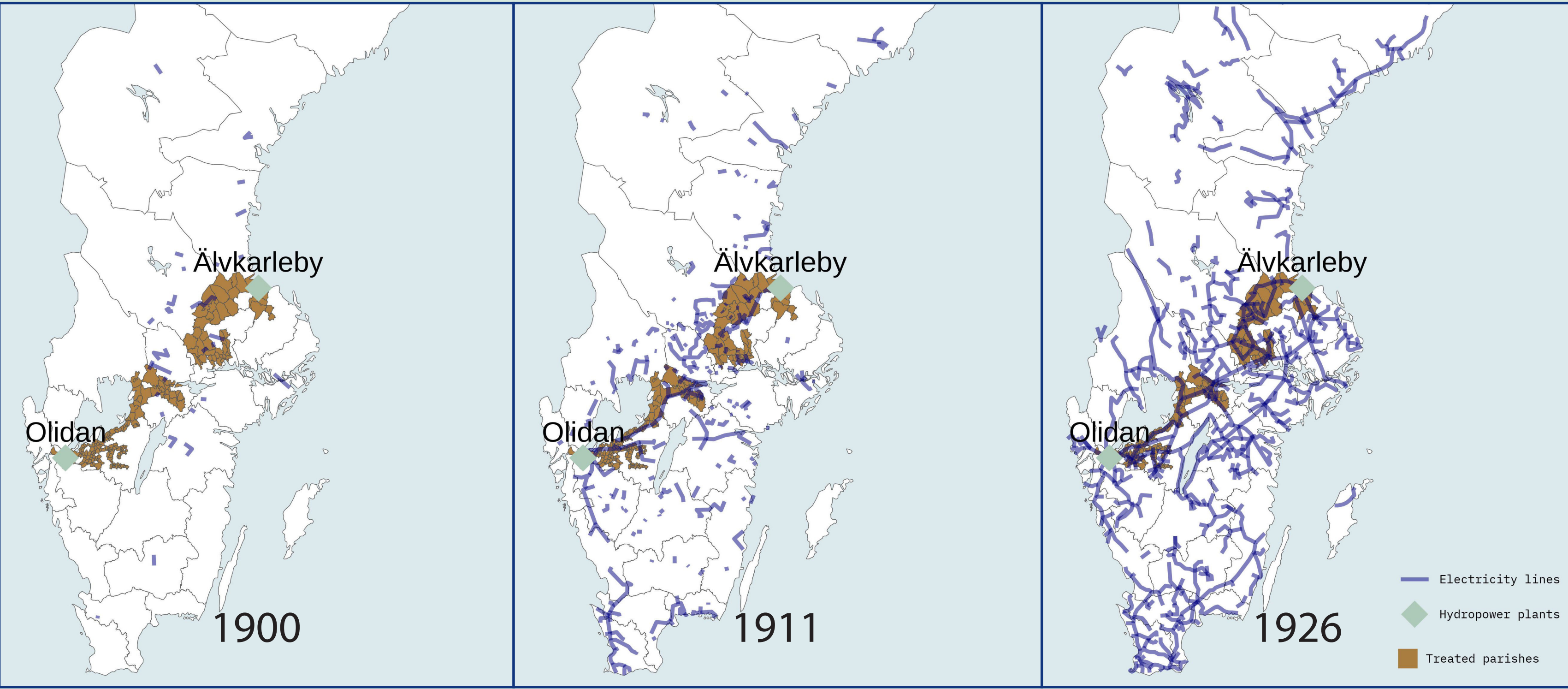


Why do we care about technological change?

- Does AI or machine learning threaten to steal our jobs? Technological change is a double-edged sword that augments and automates aspects of human work.
- Before the connection of the grid in 1922, we show that treated and control parishes had comparable occupational compositions in 1900
 - By 1926, we show that parishes along the central line (treated) had access to more generation capacity (F-stat ≈ 10) than control parishes and that the mechanism was through hydro power
 - We measure individual incomes with census micro data in 1930
- QUASI-RANDOM EXPERIMENT**
- We study technological change through the rollout of electricity along a line between two large hydropower stations in Sweden
 - This provided a treated group access to reliable and affordable electricity prior to their neighbours



This dot plot shows that up to the 80th percentile of the income distribution, the treated have a higher share of total income than the control group.



This map shows the rollout of the electrical grid between Älvkarleby and Olidan, and highlights parishes receiving treatment.

How does technological change impact income and inequality in this case?

INCOME EFFECT

- New technology raised incomes in treated parishes by 12% on average
- Men saw up to 20% higher incomes
- 1/2 the effect is due to occupation

INEQUALITY EFFECT

- Lower inequality among treated
- Gini coefficient of 0.32 vs 0.42

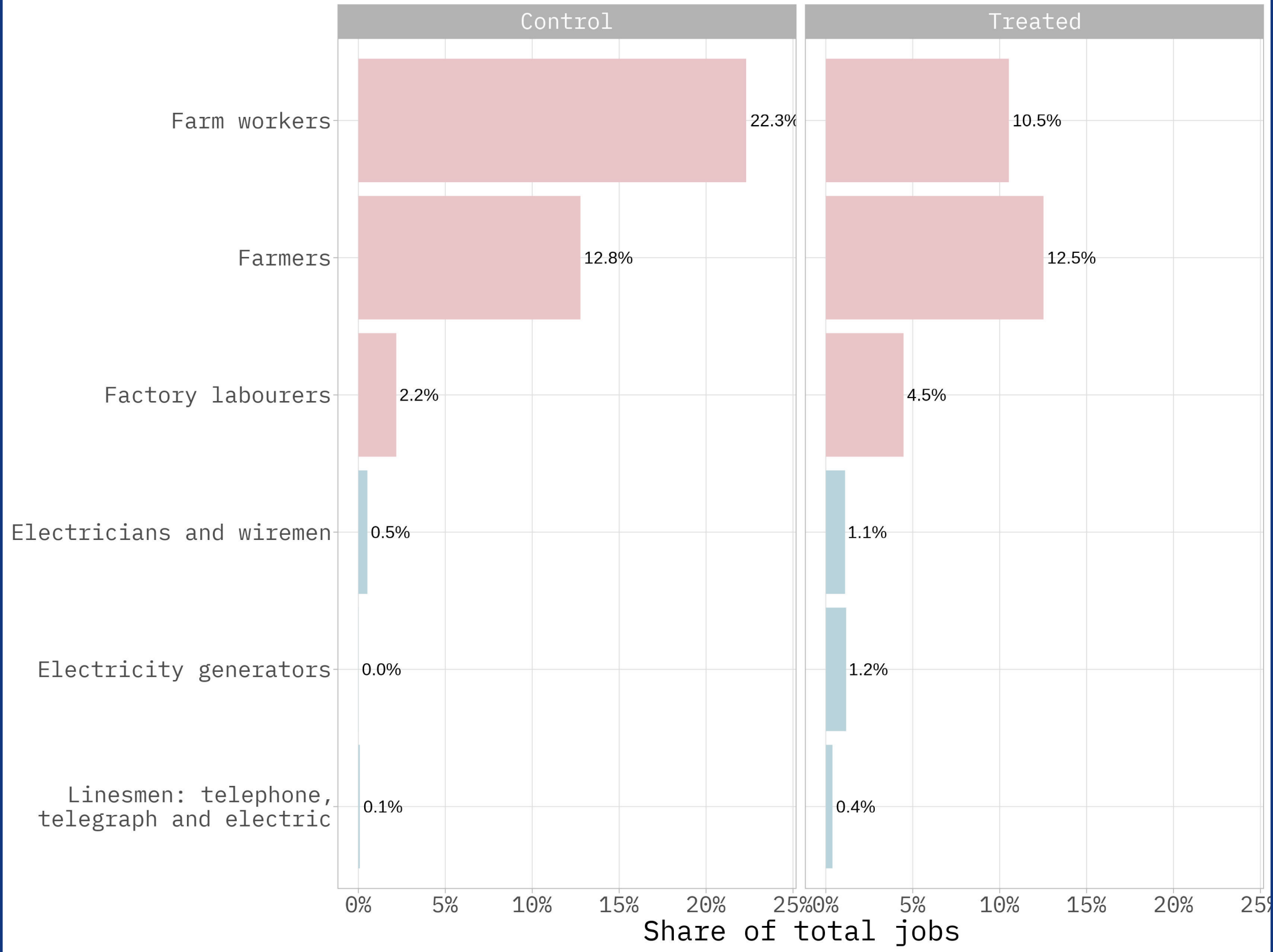
INTERNAL MIGRATION EFFECT

- Fewer treated individuals move from their parish of birth than controls (25% vs 55%)

OCCUPATIONAL UPGRADING

- Treated individuals sort into electricity related jobs. Spillovers allow higher incomes in other jobs

Share of employment in electricity related and other jobs



This bar graph shows that treated individuals opted into electricity related work in 1930 at higher rates than control parishes, though the total share of these jobs is still small in 1930.

Sources

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- Sweden's official statistics. The population and its changes. The census on 31 December 1930 by the Central Statistics Office. III. Population by occupation, income and wealth: volume 1.
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