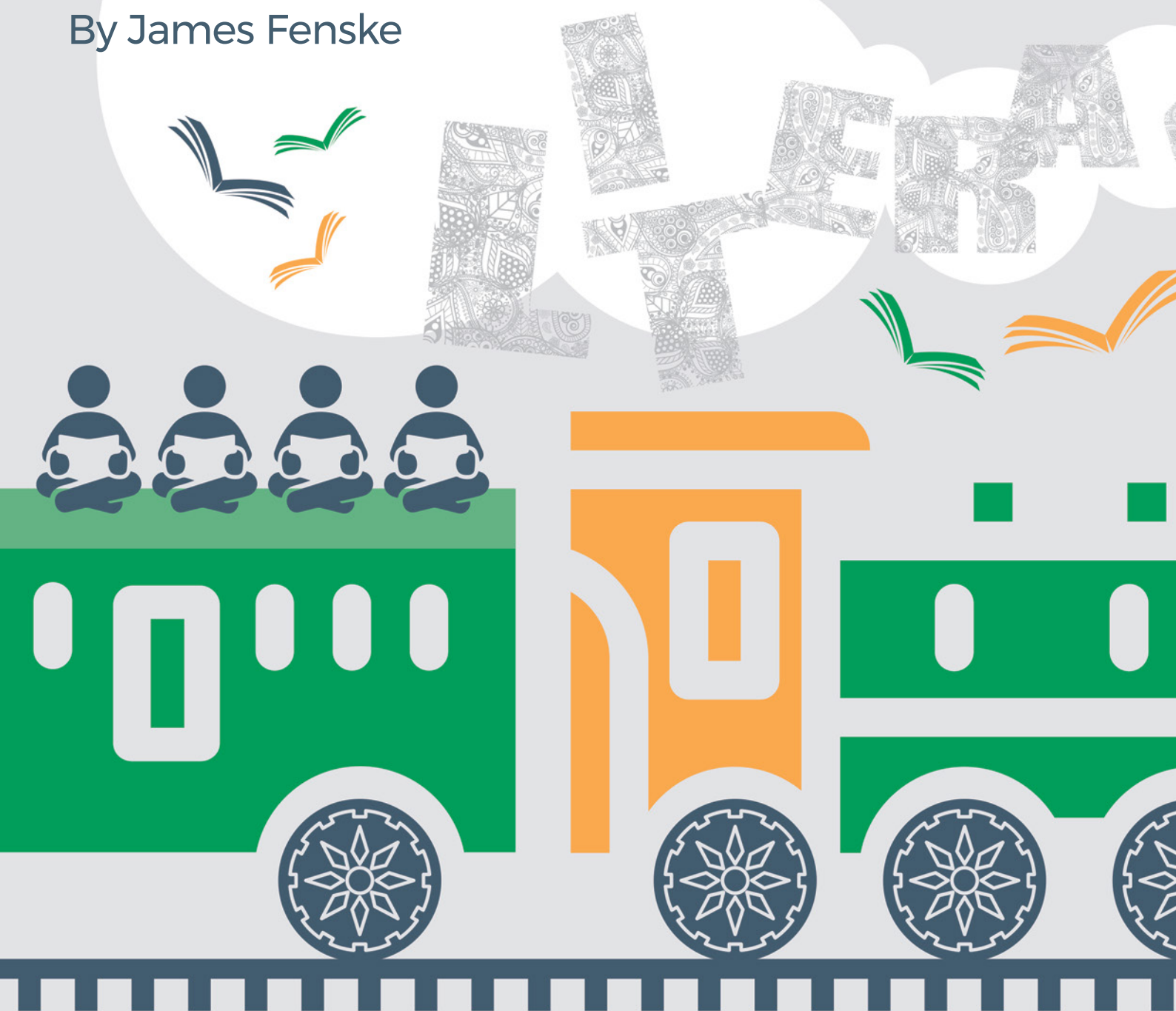


Did railways affect literacy? Evidence from India

By James Fenske





10%

PERCENTAGE OF
SCHOOL-AGED CHILDREN
ATTENDING SCHOOL IN
LATE 19TH CENTURY INDIA

By 1900, colonial India had one of the largest railway systems in the world. In stark contrast, education in India was underfunded under British rule, with less than 10% of school-aged children in school as late as 1891.

Despite the lack of government investment to increase schooling, it is possible that railways contributed to more children going to school by increasing demand for education. Possible drivers for such a demand-driven increase include greater trade, rising incomes, and expanded labour market opportunities.

Latika Chaudhary and I set out to test whether there is any evidence for a demand-driven increase in schooling in response to the railway network in India (Chaudhary and Fenske, 2021).

We begin with data from the colonial censuses. These sources allow us to build a district-level panel on literacy rates by sex and age

cohort for the years 1911 to 1921, and a district-level panel by sex that goes back to 1881.

But shifting definitions of literacy in the colonial censuses make it difficult to compare these rates from 1881 to 1921. So, using comparable rates from 1911 and 1921, we compare age cohorts in the same district and in the same census year who were differentially exposed to railways prior to the typical age for the beginning of primary schooling.

With this methodology, we side-step concerns of cross-district comparisons where railways may have arrived earlier in some districts due to favourable geography, trade, or other reasons that may also lead to higher literacy. ►

Using this cohort-comparison approach, we find that a cohort for whom the railway had been present for an additional 17 years prior to the start of schooling – a one standard deviation increase in exposure – has literacy rates that are 0.29 standard deviations higher than the comparison cohorts in the same district and census year.

These results are driven by literacy of men and boys and are also present for literacy in English. We find no evidence, using this approach, that women and girls exposed to the railway for longer are more literate.

We complement these within-district, within-census comparisons of cohorts with an alternative approach that compares literacy rates across districts in any given census year. Here, we examine variation in railway exposure that can be explained by whether a district lies near either of two paths.

The first is a plan proposed in the early 1850s by the military engineer Major J.P. Kennedy. This plan favoured low-cost routes over flat terrain. The second is a minimal set of straight railway lines connecting the military cantonments that existed in the mid-19th century.

Therefore, rather than simply comparing districts based on how long they had had a railway, we are able to compare them based on the differences in railway exposure that can be attributed to construction costs and military concerns – factors that should not otherwise predict the spread of literacy.

Using this approach, we find results that largely confirm our cohort comparisons, as well as evidence of a possible positive impact on female literacy.

But why did this happen? A first step to understanding the link between railways and literacy is to study whether more children went to school. Generating new panel data on school enrolment from the District Gazetteers, we show that railways increased secondary school enrolment.

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This may be because railways affected how long students remained in school. It may also be explained by a particularity of the colonial Indian context: secondary schools were often institutions that also included elite primary schools that were not separately enumerated.

School enrolment is only the proximate link from railways to literacy. What are the deeper economic incentives that connect the two? Turning to several other variables, we show that the answer is not rising agricultural incomes. While railways raised agricultural incomes (Donaldson, 2018), the link between agricultural incomes and schooling is weak.

Rather, we find evidence that measures of the growth of the non-agricultural sector can help explain our results. Income taxes, urbanisation, and service sector employment all responded positively to railways, and in all cases they also predict literacy and school enrolment. As a result, they can all explain a large share of the link between railways and literacy.

While we do find a positive link from railways to literacy, it is not one that is quantitatively large.

Comparing our work to a study by Atack et al. (2012), the expansion of the railway explains a much smaller

share of the growth in education in our context than the expansion of the railway in the United States over the 19th century.

Similarly, our results suggest that an additional rupee invested by the government in education would have had 200 times the impact on literacy as an additional rupee spent on railways. ◀

About the author

James Fenske is Professor of Economics at the University of Warwick and a CAGE Deputy Theme Leader.

Publication details

Chaudhary, L. and Fenske, J. (2021). [Did railways affect literacy? Evidence from India](#) CAGE working paper (no. 529).

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