

Is Distance from Innovation a Barrier to the Adoption of Artificial Intelligence?

Abstract

We investigate whether online vacancies for jobs requiring Artificial Intelligence (AI) skills grow more slowly in U.S. locations farther from AI “innovation hotspots.” To do so, we create a dataset of AI publications (research papers and patents) and define hotspots based on locations’ cumulative number of AI publications by 2006. The source for job vacancies is online job advertisements scraped by Burning Glass Technologies from 2007–2019. With a hotspot defined as a commuting zone with at least 1000 AI publications, a 10% greater distance from a hotspot (about a standard deviation) reduces a commuting zone’s growth in AI jobs’ share of job advertisements by 3–5% of median growth. Distance from a hotspot plays no role if a commuting zone is itself a hotspot, but distance is a greater barrier the greater a hotspot’s share of publications that are patents rather than research papers. Analysis by occupation, industry and AI type suggests that the type of job posting for which distance is a barrier is jobs adapting AI for use in a new setting. We do not find convincing evidence for an effect of distance on the adoption of AI, perhaps because there is as yet little adoption.

This paper is joint work with James Bessen (Boston University) and Iain Cockburn (Boston University and NBER)

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