

# Nothing Propinks Like Propinquity: Using Machine Learning to Estimate the Effects of Spatial Proximity in the Major League Baseball Draft

*Based on BFI Working Paper 2022-169, “[Nothing Propinks Like Propinquity: Using Machine Learning to Estimate the Effects of Spatial Proximity in the Major League Baseball Draft](#),” by Majid Ahmadi, University of Chicago; Nathan Durst, Chicago White Sox; Jeff Lachman, Chicago White Sox; John A. List, University of Chicago; Mason List, University of Chicago; Noah List, Harvard; and Atom T. Vayalinkal, University of Toronto*

*By examining Major League Baseball draft decisions, this work reveals propinquity at work in labor markets; specifically, a player is 7.1% more likely to be drafted by a particular team if he lives 1,000km closer to the scouting director, controlling for skill, and is 4.9% more likely to be drafted by a particular team if he lives 1,000km closer to the city where that team plays.*

Researchers for more than a century have theorized and studied the effects of propinquity in all manner of economic activity, from industry agglomeration (think of Detroit during its boom auto years or Silicon Valley and high-tech); to international trade (countries of a certain size/location tend to “gravitationally” attract each other); prices (firms’ pricing strategies are often based on location, not product differentiation), and even your own life (the simple insight that you are more likely to connect with people who work in offices or desks near yours, for example, or with those who share the same political views, holds large explanatory power for the development of friendship networks).

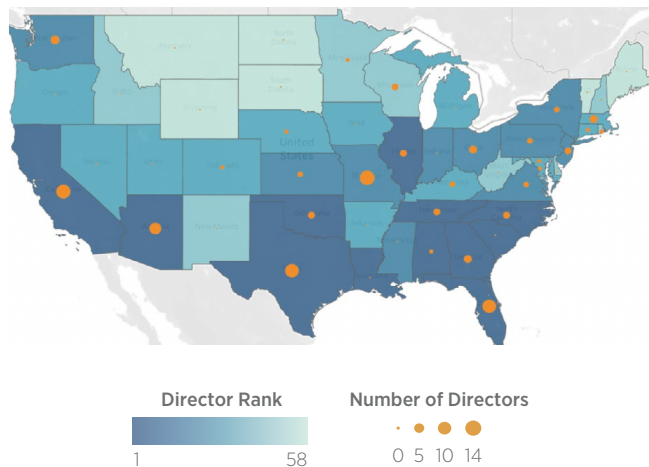
The list goes on, but a question remains. While research has revealed insights into the development of people-to-people networks, less is known about the allocation of people to organizations. Given that the efficient allocation of talent is of significant economic consequence, this gap in knowledge looms large. This work addresses that gap by asking whether propinquity is a factor within the matching of employee and employer in labor markets, and it does so by examining the Major League Baseball (MLB) Player Draft from 2000-2019. Specifically, the authors explore the draft picks across every MLB club of the nearly 30,000 players drafted (from a player pool of more than a million potential draftees).

This setting is ideal because MLB teams have increasingly employed data analytics when selecting players, which would seem to negate any propinquity bias among the clubs. In other words, in a labor market where players are highly scrutinized via objective data analysis, what difference could it possibly make whether a scout lived or worked near a certain player? Please see the full working paper for methodological details, but the authors’ extensive data allow them to explore whether players drafted in earlier rounds (who receive much more scrutiny) have less propinquity bias than those drafted in later rounds, where the scouting director has more latitude to drive the decision. The authors also examine the likely effects of changes in employment and residential location for scouting directors, and the impact of markets with two teams in one city, among other factors. They find the following:

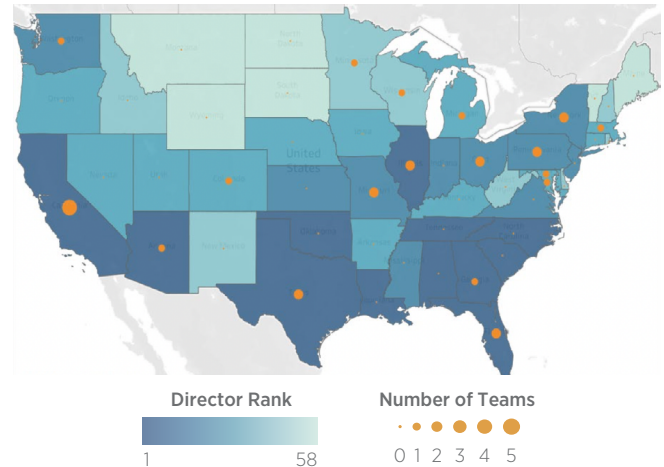
- Propinquity is alive and well. In the authors’ base model, a player is 7.1% more likely to be drafted by a particular team if he lives 1,000km closer to the scouting director, controlling for skill. Further, the player is 4.9% more likely to be drafted by a particular team if he lives 1,000km closer to the city where that team plays.
- MLB clubs pay a real cost in terms of inferior talent acquired due to propinquity bias. For example, such

**Figure 1 • Drafted Players Spatial Association**

**A) Directors**



**B) Teams**



Note: This figure is a visual representation of propinquity/proximity bias. It plots the distribution of talent and teams/directors, illustrating the ranking of states for the density of drafted players as well as the number of scouting directors and MLB teams in each state. The raw data reveal that the percent of players drafted from a state is correlated to the presence of MLB teams and scouting directors.

draft picks appear in 25 fewer games relative to teams that do not exhibit propinquity bias. Measured another way, players drafted by teams under the influence of propinquity bias are 38% less likely to ever play in an MLB game relative to players drafted without propinquity bias. In addition, in a counterfactual exercise, the authors find that scouting directors do not learn from this experience and take their propinquity biases to their new teams.

- In an especially novel insight, the authors find that those players who benefit from propinquity bias also receive financial benefits: conditional on their draft order, their initial contracts are superior to counterfactual draft picks by 12%-25%.
- Finally, the effect is most pronounced in later draft rounds (after round 15 of over 40), where the scouting

director has the greatest latitude. For instance, for rounds 16+, a player is 11.4% more likely to be drafted by a team if he lives 1,000km closer to the city where the team plays, and 11.8% more likely to be drafted by the team if he lives 1,000km closer to the scouting director, controlling for player quality.

**Bottom line:** Propinquity matters in person-to-organization networks. And, as the authors note, it may matter more than even the most optimistic propinquity theorists have suspected. This work examines propinquity's effects on the MLB draft and offers key insights with likely applications to other labor markets. However, that is a matter of future research, and the authors are hopeful that their methodology and results provide a useful roadmap to explore this question in other settings.

**READ THE WORKING PAPER**

NO. 2022-169 · DECEMBER 2022

**Nothing Propinks Like Propinquity:  
Using Machine Learning to Estimate  
the Effects of Spatial Proximity in  
the Major League Baseball Draft**

[bfi.uchicago.edu/working-paper/2022-169](https://bfi.uchicago.edu/working-paper/2022-169)

**ABOUT OUR SCHOLARS**

**Majid Ahmadi**

*Research Specialist, Kenneth C. Griffin  
Department of Economics*

[economics.uchicago.edu/directory/majid-ahmadi](https://economics.uchicago.edu/directory/majid-ahmadi)



**John A. List**

*Kenneth C. Griffin Distinguished Service  
Professor in Economics and the College*

[economics.uchicago.edu/directory/john-list](https://economics.uchicago.edu/directory/john-list)

**Mason List and Noah List**

*Research Assistants*

THE KENNETH C. GRIFFIN  
DEPARTMENT OF  
**ECONOMICS**  
THE UNIVERSITY OF CHICAGO