Discussion of "Advanced Cognitive Skill Deserts in the U.S.: Their Likely Causes and Implications"

Erik Hurst March 2021

Paper

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 Paper documents many interesting facts about spatial variation in skill deserts and how this spatial variation differs across age groups.

What am I going to Do?

- Discuss the relationship between advanced cognitive skills and educational attainment.
 - o Is the spatial variation in test scores (advanced cognitive skills) picking up more than the spatial variation in educational attainment?
- Discuss how spatial variation in skill deserts is related to spatial variation in other demographics (particularly race).
 - How much of the spatial variation in advanced cognitive skills remain once controlling for race?

Skill Desserts: Program for International Assessment of Adult Competencies (PIAAC)

Figure 3: Percentage of Adults Whose Numeracy Skills Are at Least Somewhat Advanced (top 3 levels)



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Skill Desserts: Share Bachelor's Degree or More (Census/ACS Data)

Percentage of Population Aged 25 Years and Over With a Bachelor's Degree or Higher: 2015–2019



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Initial Thoughts: Part 1

- Strong spatial correlation between advanced cognitive skills in paper (test scores) and share of population with bachelor's degree or more.
- Good news: Potentially can use bachelor share (or other measures of educational attainment) as a proxy for advanced cognitive skills.
- **Concern**: Education is not a perfect measure of skills (nor are test scores for that matter).
- Question: Are measures of test scores predictive of skill deserts above and beyond education?

Exploit Some NLSY Data

- Based on some data I am using for two projects:
 - o "*Skill Acquisition and the Speed of Adjustment to Structural Change*" (with Mark Aguiar and Adrian Auclert)
 - o "*Task Based Discrimination*" (with Yona Rubinstein and Kazuatsu Shimizu)
- Pool together data from the NLSY 1979 and 1997 cohorts.
- Use AFQT scores as measure of "advanced cognitive scores". Transform into "z-score" units. Measured when individuals are in their mid-teens.
- Use panel dimension to measure individuals highest level of education.

How Do AFQT Scores Vary Across Regions

Region (Relative to Northeast)	(1)	(2)
South	-0.36	-0.36
	(0.02)	(0.02)
Midwest	-0.01	-0.01
	(0.02)	(0.02)
West	-0.10	-0.10
	(0.03)	(0.03)
Urban Control	No	Yes
Education Controls	No	No
Race Controls	No	No

Even in NLSY data, South region has large advanced cognitive skill deficit.
AFQT scores about one-third standard deviation lower relative to other regions.

Do Education Differences Explain Regional Variation in AFQT?

Region (Relative to Northeast)	(1)	(2)	(3)
South	-0.36 (0.02)	-0.36 (0.02)	-0.25 (0.02)
Midwest	-0.01 (0.02)	-0.01 (0.02)	0.02 (0.02)
West	-0.10 (0.03)	-0.10 (0.03)	-0.02 (0.02)
Urban Control	No	Yes	Yes
Education Controls	No	No	Yes
Race Controls	No	No	No

 Education differences explain about one-third of advanced cognitive skill gaps between South and other regions.

Are There Racial Differences in Pre-Labor Market Skills?

	1979 Cohort	1997 Cohort
Black-White Gap in AFQT Scores	-1.00	-0.62
(in z-score units)	(0.06)	(0.05)
Age/Educ. Controls	Yes	Yes
Employed Sample	Yes	Yes

 Black men have, on average, much lower AFQT scores (about one standard deviation lower in 1979). The gap has narrowed somewhat recently.

Does Race Explain Regional Variation in AFQT?

Region (Relative to Northeast)	(1)	(2)	(3)	(4)
South	-0.36 (0.02)	-0.36 (0.02)	-0.25 (0.02)	-0.12 (0.02)
Midwest	-0.01 (0.02)	-0.01 (0.02)	0.02 (0.02)	-0.02 (0.02)
West	-0.10 (0.03)	-0.10 (0.03)	-0.02 (0.02)	-0.03 (0.02)
Urban Control	No	Yes	Yes	Yes
Education Controls	No	No	Yes	Yes
Race Controls	No	No	No	Yes

 Race explains much of the cross-region variation in advanced cognitive skill (even conditional on education).

Initial Thoughts: Part 2

- How much of the regional variation in advanced cognitive skill measures can be explained by demographics (such as race)?
- In the NLSY, race explains much of the regional variation in AFQT scores.
- Broader question are there biases in the mapping of test scores to measure of advanced cognitive skills that differ systematically by race?
- How does that affect the interpretation of what we are measuring?

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- Broader question are there biases in the mapping of test scores to measure of advanced cognitive skills that differ systematically by race?
- How does that affect the interpretation of what we are measuring?
- Summary: Paper is super interesting! Should be a launching of point for future research.