

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

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Paper

- There are "advanced cognitive skill" deserts within the United States.
- Differential investments in these skills during adolescences may be responsible for these deserts.

Paper

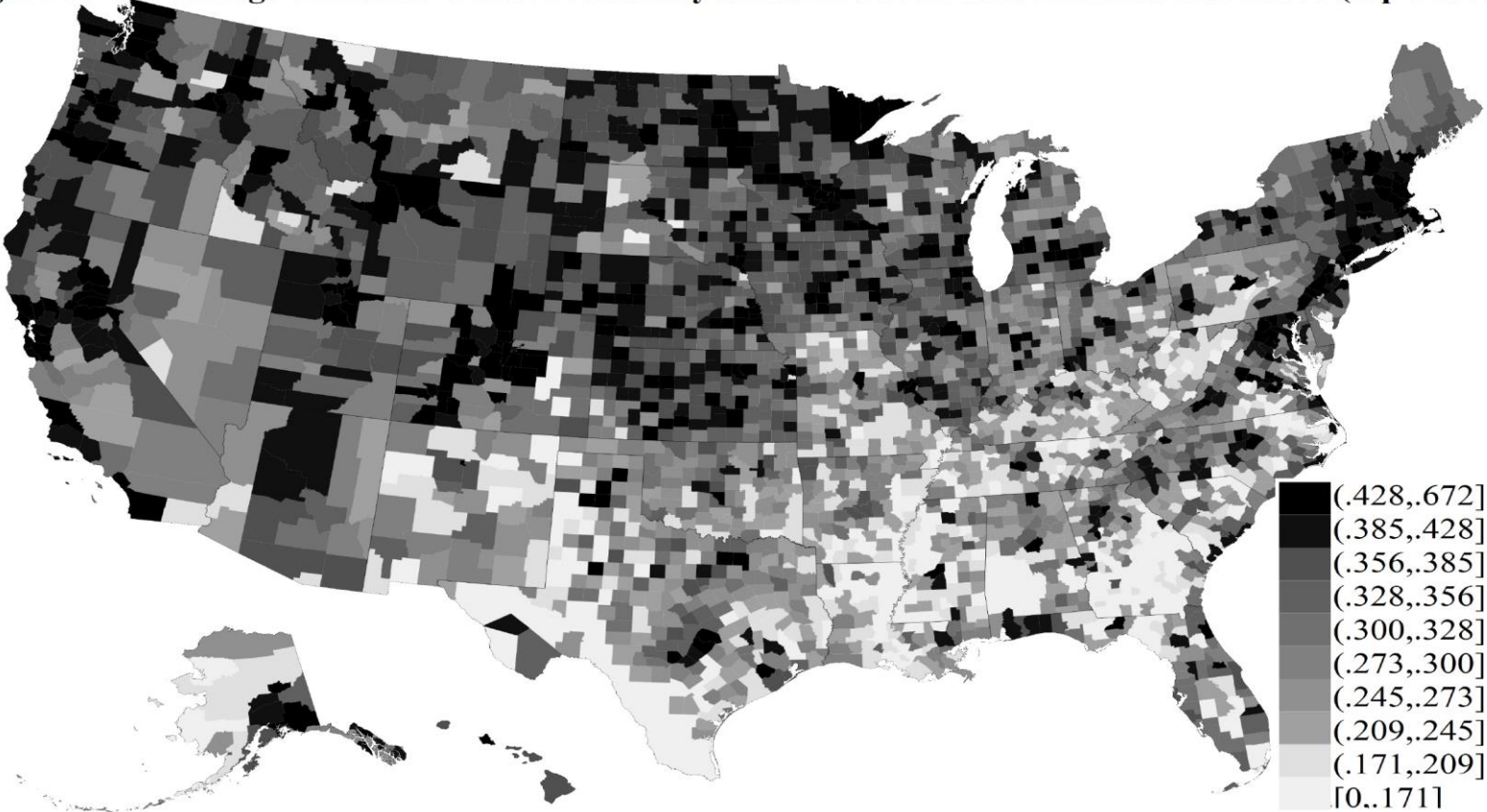
- There are "advanced cognitive skill" deserts within the United States.
- Differential investments in these skills during adolescences may be responsible for these deserts.
- Paper documents many interesting facts about spatial variation in skill deserts and how this spatial variation differs across age groups.

What am I going to Do?

- **Discuss the relationship between advanced cognitive skills and educational attainment.**
 - 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?

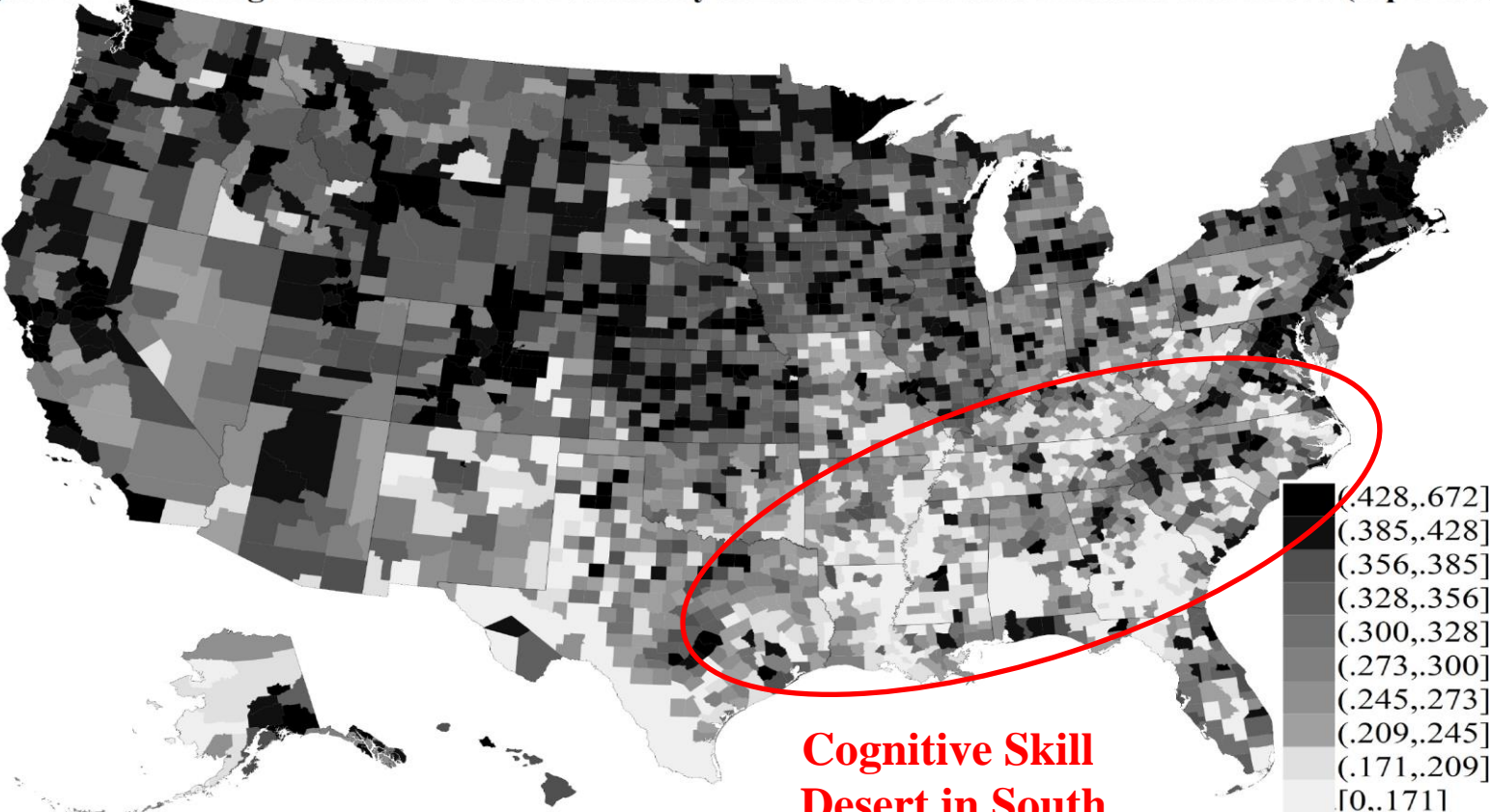
Skill Desserts: Program for International Assessment of Adult Competencies (PIAAC)

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



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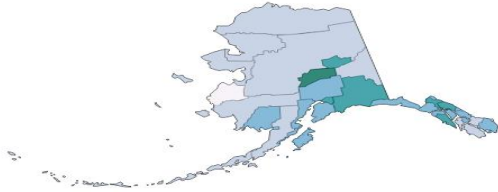
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**Cognitive Skill
Desert in South**

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



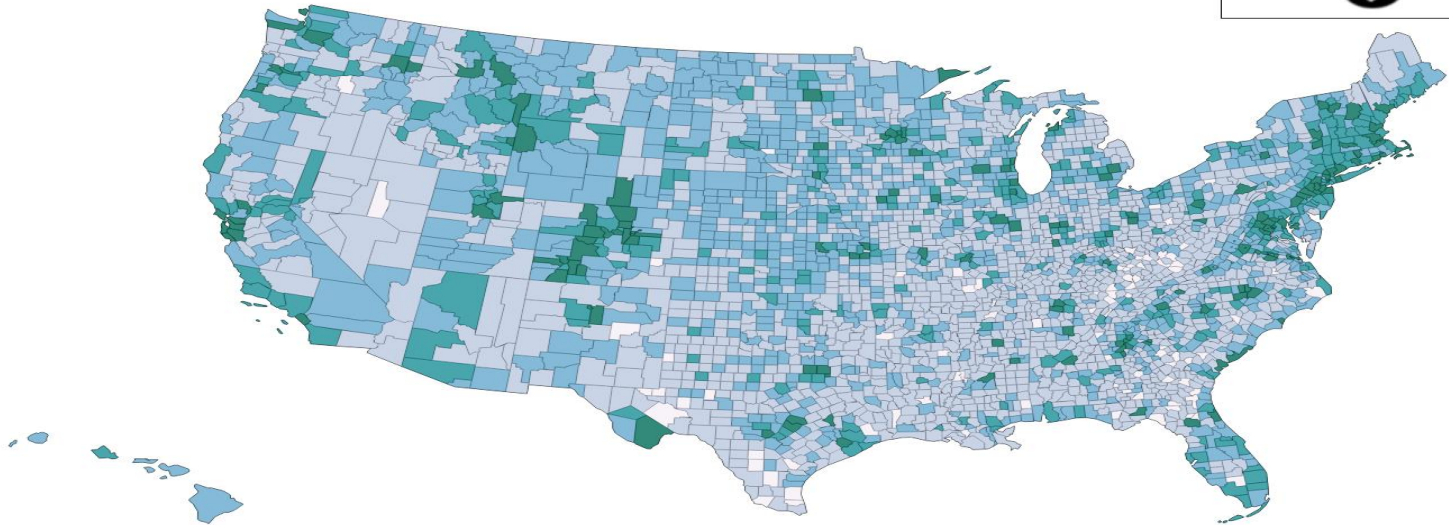
Bachelor's Degree or Higher (%)

- 40.0% or higher
- 30.0% or 39.9%
- 20.0% to 29.9%
- 10.0% to 19.9%
- 0.0% to 9.9%

Interested in a particular state?
Select a state and click the button.

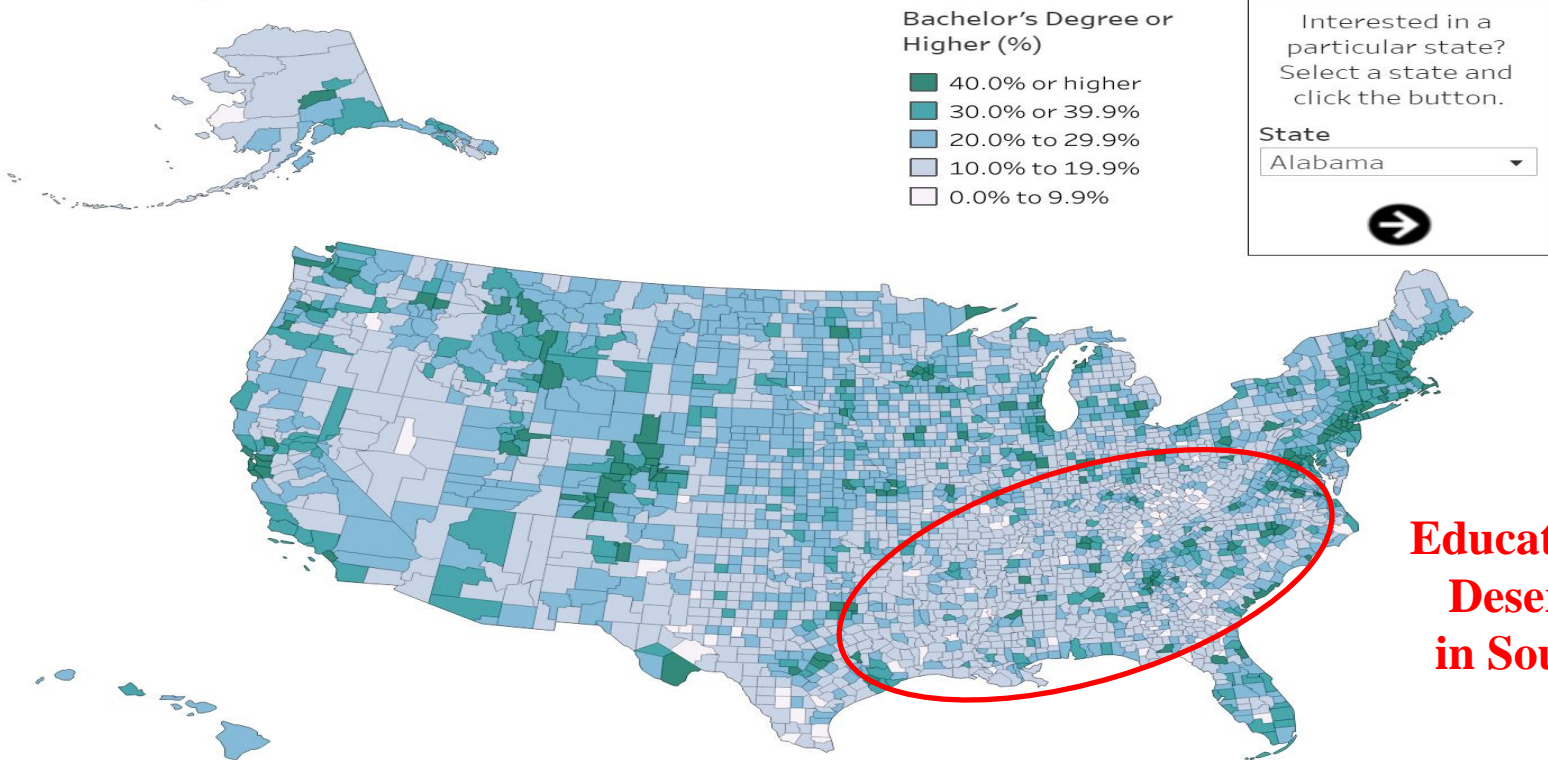
State

Alabama



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

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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:
 - "*Skill Acquisition and the Speed of Adjustment to Structural Change*" (with Mark Aguiar and Adrian Auclert)
 - "*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 (0.02)	-0.36 (0.02)
Midwest	-0.01 (0.02)	-0.01 (0.02)
West	-0.10 (0.03)	-0.10 (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?

	<i>1979 Cohort</i>	<i>1997 Cohort</i>
Black-White Gap in AFQT Scores (in z-score units)	-1.00 (0.06)	-0.62 (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.**