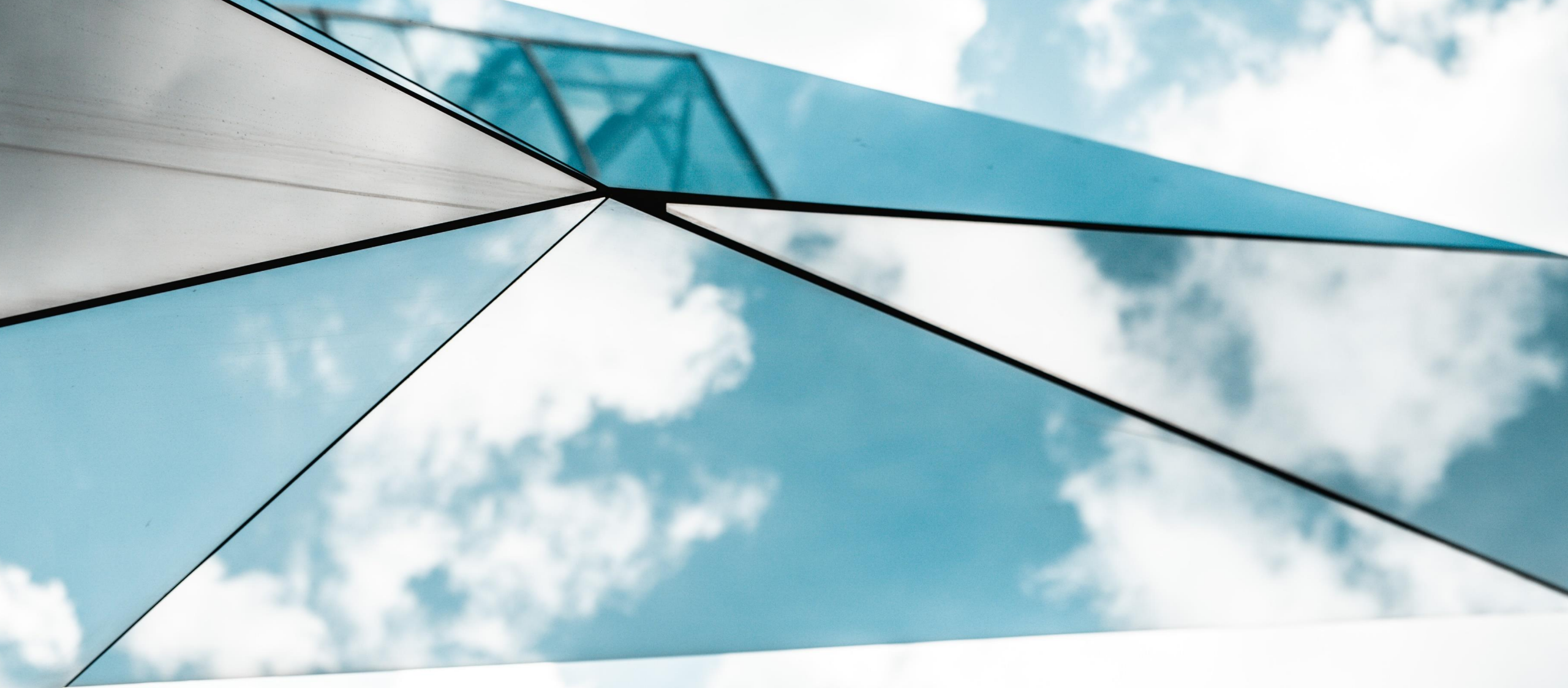


Hiding in plain sight: A QuantCrit, Intersectional Analysis of Dual Enrollment



Jake D. Winfield
Dissertation Defense | April 18, 2023
Temple University | CEHD
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Positionality

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A close-up photograph of several dark, textured wooden planks or beams, likely made of charred wood, arranged in a diagonal pattern. The lighting is dramatic, highlighting the grain and texture of the wood. A solid red rectangular box is overlaid on the right side of the image, containing the text 'Theoretical framework' in white, bold, sans-serif font.

Theoretical framework

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Critical race theory is a framework that “challenges the ways race and racism impact educational structures, practices, and discourses...[it] refutes dominant ideology and White privilege”

(Yosso, 2005, p. 74)



“The intersectional experience is greater than the sum of racism and sexism”

(Crenshaw, 1989, p. 140)

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- How do demographics of areas of the United States with limited access to widely accessible colleges and universities vary from those with greater access?

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- How did access to DE vary across the United States in the 2017-18 school year and how does this vary for Black females and males?
- Is participation in DE associated with increased probabilities of attending postsecondary education and does this association vary for Black people based on their gender?

Dual enrollment allows “superior students to take courses in nearby colleges and universities while they are completing their high school programs”

(Radcliffe & Hatch, 1961, p. 6)

The problem of the twentieth century is the problem of the color-line.

(Du Bois, 1903/2003, p.8)

College Access Deserts

Klasik et al. (2018)



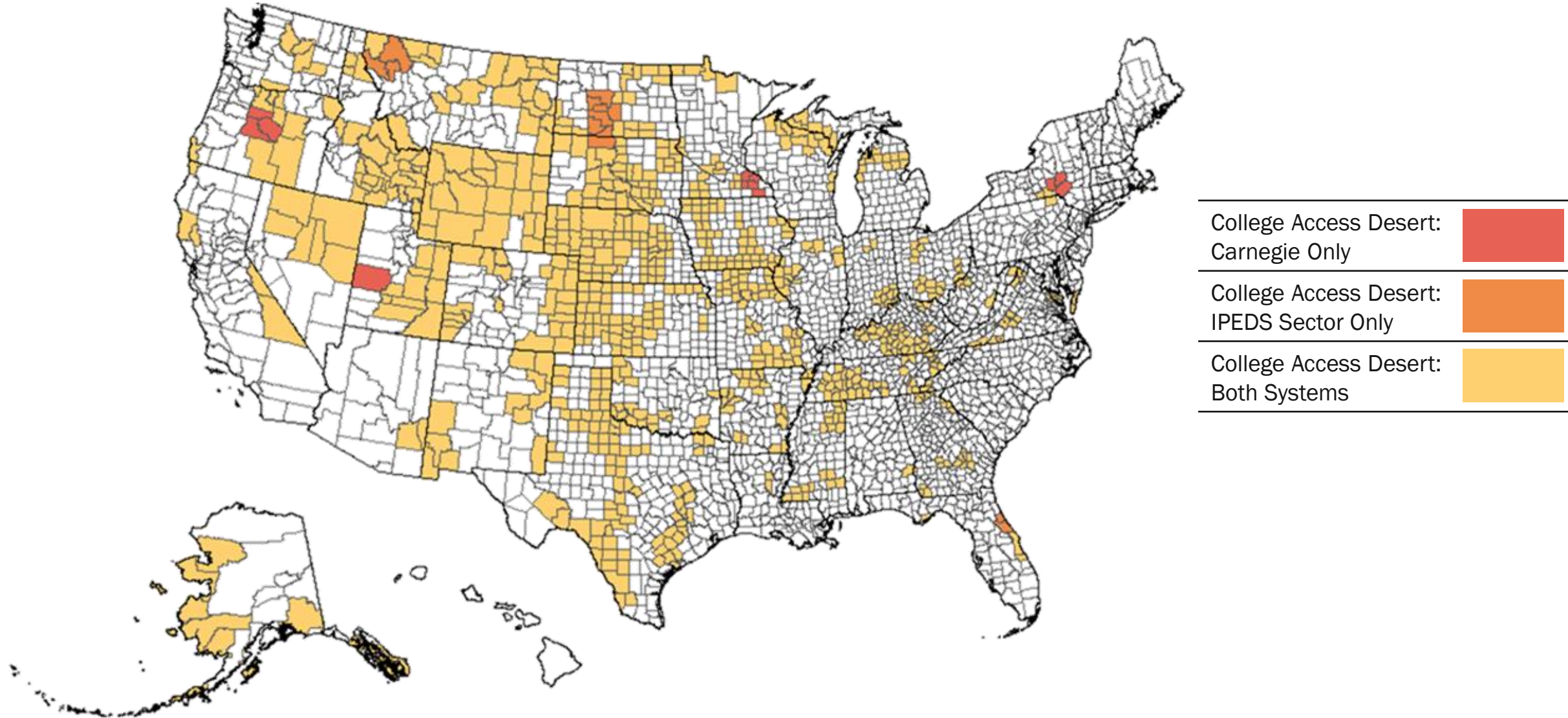
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College access deserts are commuting zones that:

- do not have one public four-year undergraduate degree-granting institution that accepts at least 75% of applicants
- do not have two public two-year undergraduate degree-granting colleges

Based on Hillman & Weichman, 2016 and Klasik et al., 2018

College Access Deserts: 2010 to 2019



Data & Methods:

Demographics of College Access Deserts

- Data: American Community Survey Five-Year Estimates: 2015-2019

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- Logistic regression

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Demographics of College Access Deserts

- Data: American Community Survey Five-Year Estimates: 2015-2019
- Logistic regression
- Variables:
 - Percentages: Race/ethnicity, gender, children in poverty, individuals with BA or higher, residents with broadband, unemployed residents in the labor force
 - Population Density: People per square mile

Findings:

Characteristics of College Access Deserts 2010 to 2019

IPEDS Sectors

Commuting zones with higher:

- Percentage of American Indian/Alaskan Native residents

Commuting zones with lower:

- Population density
- Percentage of Black residents
- Percentages of children in poverty
- Percentage of residents with a BA or higher
- Percentage of unemployed residents

Carnegie Classifications

Commuting zones with higher:

Commuting zones with lower:

- Population density
- Percentage of Black residents
- Percentage of residents with a BA or higher
- Percentage of unemployed residents

were more likely to be college access deserts from 2010 to 2019



Access to Dual Enrollment: Civil Rights Data Collection: 2017-18

Photo by [moren hsu](#) on [Unsplash](#)

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 - 21,370 public high schools

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- Interaction term: proportion of female students and Black students

Access to Dual Enrollment

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- Schools with greater racial or ethnic diversity were less likely to offer DE
- Interaction term was not statistically significant and not preferred

A photograph showing a person's legs from the knees down, wearing brown pants and blue Converse sneakers with white laces and white soles. The person is standing on a brick ledge. Yellow vertical handrails are visible on either side of the person. The background is a brick wall.

Participation in Dual Enrollment: High School Longitudinal Study of 2009

Photo by [Redd Fon](#) [Unsplash](#)

Benefits to Dual Enrollment Participation



- High School Longitudinal Study of 2009
 - Approximately 21,000 students
 - 8,310 students met inclusion criteria

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- Variables: Participation in DE, prior achievement, educational expectations, SES, Gender, Race, Years in a college access desert, the importance of academics among friends
- Interaction terms: Gender, Race, DE participation
- Utilize effect coding for categorical variables, including race/ethnicity

Dual Enrollment and College Attendance

- Student's SES, ninth-grade grades, and educational expectations were statistically significant predictors

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Dual Enrollment and College Attendance



- Student's SES, ninth-grade grades, and educational expectations were statistically significant predictors
- DE participation associated with increased probability of enrolling in college
- Gender, race/ethnicity, and interactions were not statistically significant predictors

Dual Enrollment and College Level

- SES, ninth-grade grades, and educational expectations at the extremes were statistically significant predictors

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- DE participation associated with increased probability of enrolling in four-college

Dual Enrollment and College Level



- SES, ninth-grade grades, and educational expectations at the extremes were statistically significant predictors
- Black students were statistically significantly more likely to enroll in a four-year college
- DE participation associated with increased probability of enrolling in four-college
- Model with interaction between gender and DE participation was preferred, but not statistically significant



Conclusions & Implications

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- Researcher decisions can lead to different policy recommendations

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Conclusions

- Researcher decisions can lead to different policy recommendations
- Persistent College Access Deserts have lower percentages of Black people
- Dual enrollment is more common in College Access Deserts
- Schools with higher proportions of males and Black students are less likely to offer dual enrollment
- Dual enrollment participation is associated with an increased probability of enrolling in college
- Of college attendees, dual enrollment participants were more likely to enroll in four-year colleges, but this varies by gender

Questions?

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Findings:

College Access Deserts



- IPEDS Sector classifications identified more college access deserts in 14 of 19 years
- Greatest number of counties identified as college access deserts in 2009
 - 1,456 via IPEDS and 1,426 via Carnegie Classifications
- Fewer counties are identified as college access deserts
 - 2001: 1,343 via IPEDS and 1,415 via Carnegie Classifications
 - 2019: 1,336 via IPEDS and 1,219 via Carnegie Classifications

Findings:

Characteristics of College Access Deserts in 2019

IPEDS Sectors

Commuting zones with higher:

- Percentage of Male residents

Commuting zones with lower:

- Percentage of residents with a BA or higher

Carnegie Classifications

Commuting zones with higher:

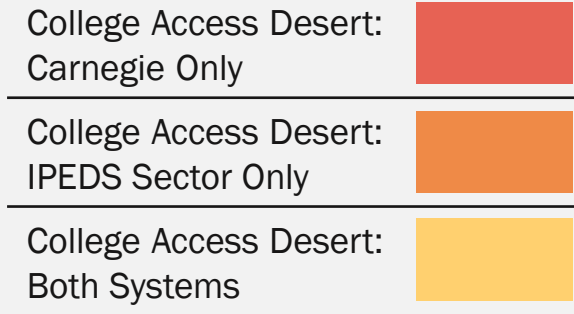
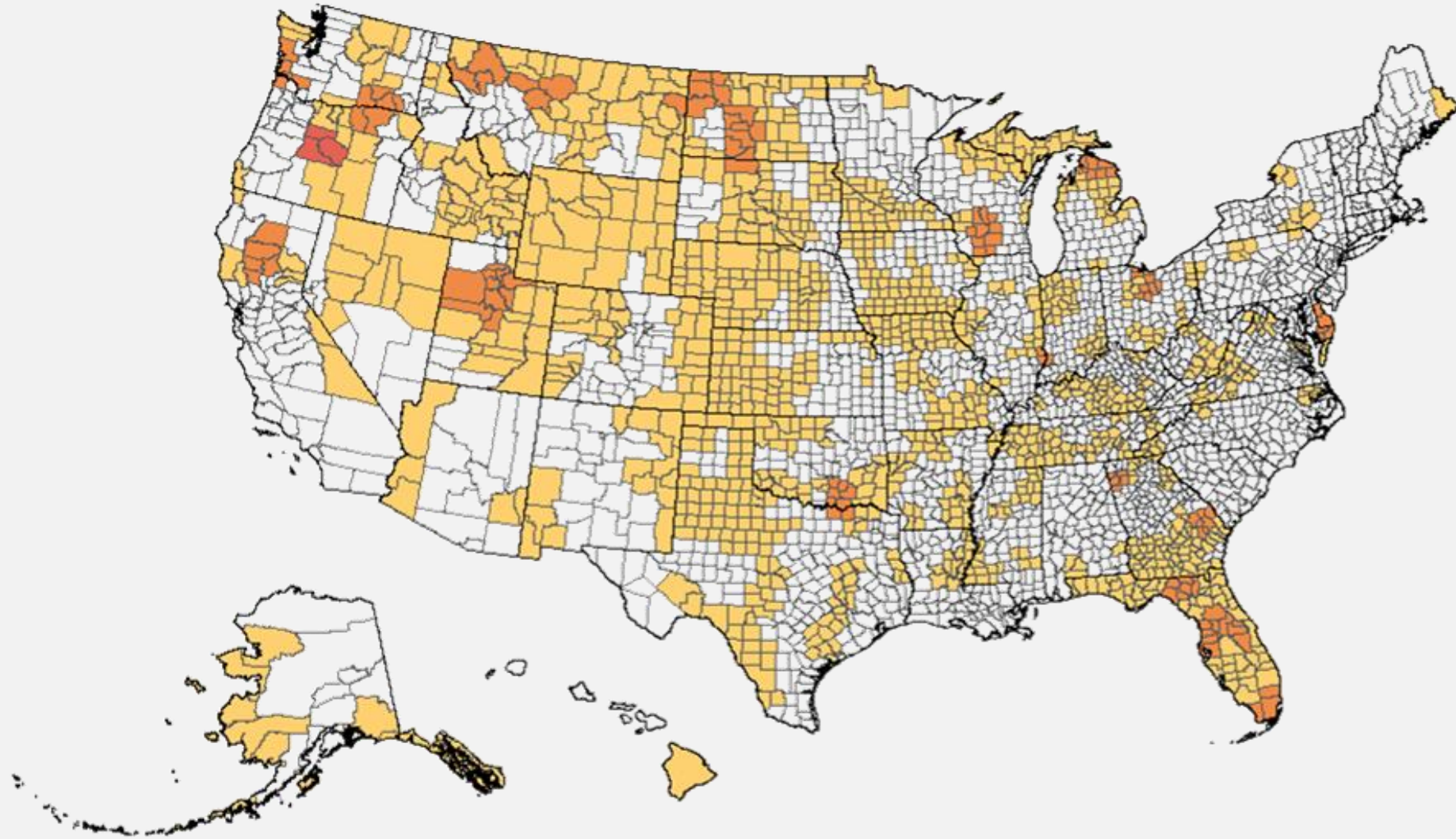
- Percentage of Male residents

Commuting zones with lower:

- Percentage of residents with a BA or higher
- Population density
- Percentage of unemployed residents

were more likely to be college access deserts in 2019

College Access Deserts: 2019



College Access Deserts: 2019

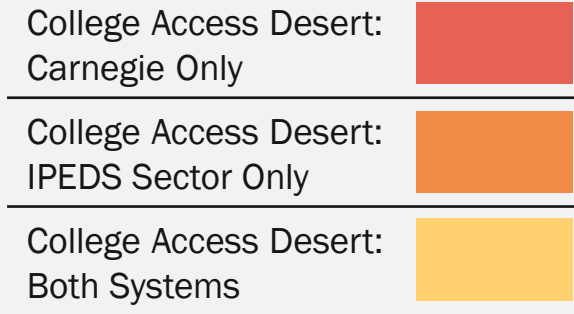
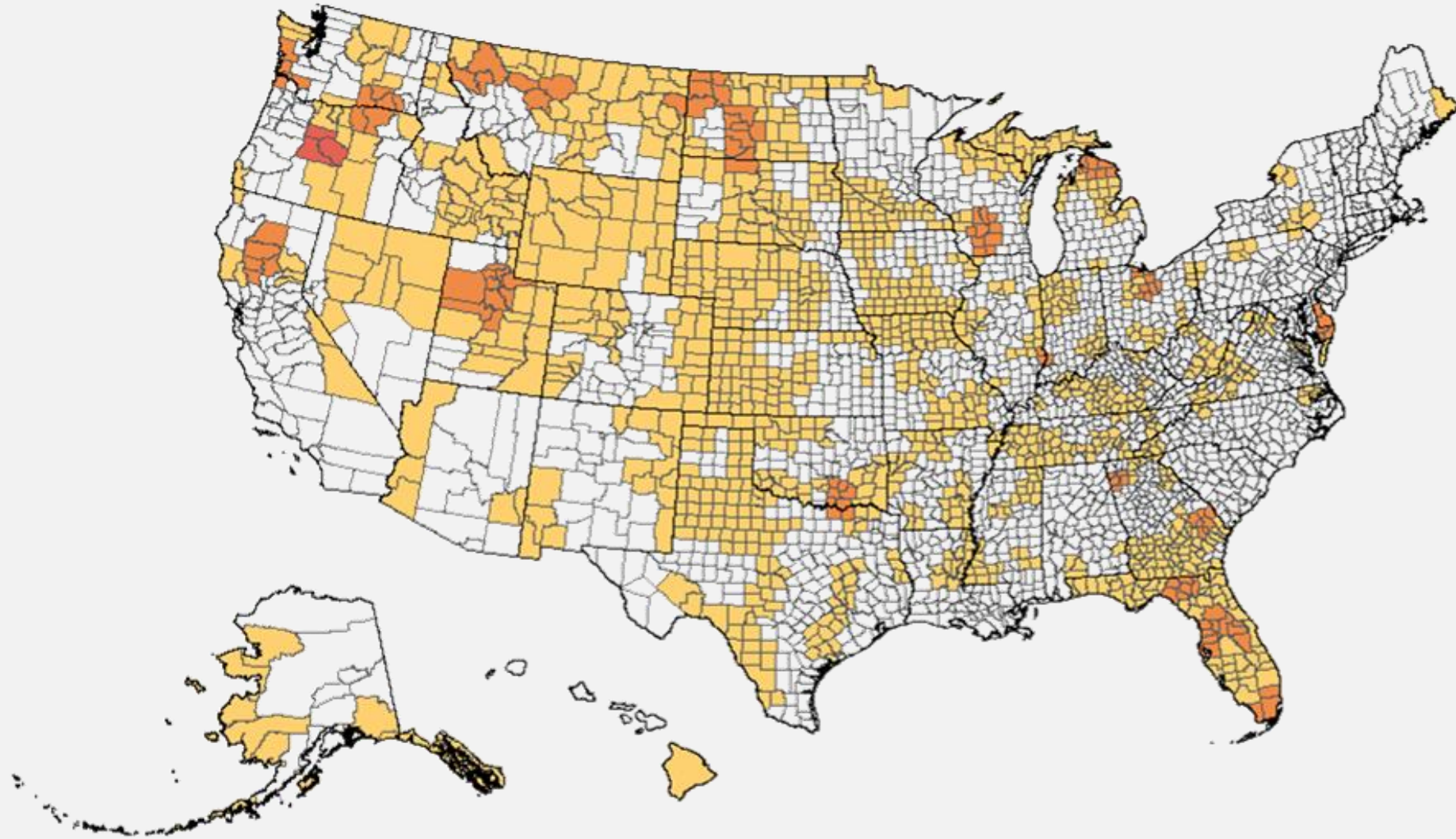


Table 4.5. College Access Desert Classifications: 2010-19, Regressed On Commuting Zone Characteristics

	College Classification: IPEDS Sector	College Classification: Carnegie Classification
Population density	-1.08* (0.55)	-3.35*** (0.81)
Percentage of Male residents	0.26 (0.13)	0.13 (0.13)
Percentage of Black residents	-0.29* (0.14)	-0.33* (0.14)
Percentage of American Indian & Alaskan Native residents	0.33* (0.13)	0.21 (0.13)
Percentage of Asian Residents	-0.04 (0.21)	0.10 (0.23)
Percentage of Native Hawaiian/Pacific Islander Residents	-0.32 (0.31)	-0.40 (0.32)
Percentage of Multiracial residents	-0.08 (0.14)	-0.06 (0.14)
Percentage of Hispanic residents	0.08 (0.13)	0.00 (0.13)
Percentage of children with a ratio of income to poverty below 1	-0.44* (0.20)	-0.34 (0.20)
Percentage of residents with a Bachelor's degree or higher	-0.98*** (0.18)	-0.92*** (0.18)
Percentage of residents with broadband	-0.30 (0.18)	-0.23 (0.18)
Percentage of unemployed residents	-0.48** (0.15)	-0.38* (0.15)
Intercept	-0.38** (0.13)	-0.83*** (0.18)
Tjur's R-squared	0.305	0.336

Note: R-squared values calculated with the R package performance (Lüdtke et al., 2021). All variables are z-standardized for each logistic regression. Standard errors are provided in parenthesis after the estimate. N = 622 commuting zones.

*p < 0.05, **p < 0.01, ***p < 0.001

Table 5.7 *Results Of Comparisons Of Dual Enrollment Participation Rates*

	College Access Deserts		College Access Oases		Degrees of Freedom	<i>p</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Overall Participation Rate	13.11	13.28	12.67	16.69	3902	0.1905	-0.029
Female Student Inequality Index	1.90	3.09	1.30	2.63	2929.9	<0.001	-0.212
Male Student Inequality Index	-1.82	2.91	-1.24	2.52	2958.6	<0.001	0.213
Black Student Inequality Index	-4.33	11.2	-2.54	8.85	2819.7	<0.001	0.177
Black Female Student Inequality Index	-2.67	16.74	-1.25	12.82	2778.3	<0.001	0.095
Black Male Inequality Index	-5.94	13.96	-3.74	11.74	2909.7	<0.001	0.170

Note. Mean values for each variable are shown for college access deserts (n = 2,170) and oases (n = 9,490), as well as the results of *t* tests comparing the averages between the two locations. Positive values on the inequality index indicate that a subgroup is over-enrolled compared to the school's overall DE participation rate, while negative index values.

Table 5.6 *Offering Dual Enrollment, Regressed On School Characteristics*

	Model 5.6.a Coefficient (SE)	Model 5.6.b Coefficient (SE)	Model 5.6.c Coefficient (SE)
Charter School	-0.1838***(0.0108)	-0.1400***(0.0107)	-0.1401***(0.0107)
Magnet School	-0.0191(0.0128)	0.0211(0.0128)	0.0213(0.0128)
AP Courses Available	0.2247***(0.0067)	0.0990***(0.0078)	0.0990***(0.0078)
IB Courses Available	0.0128(0.0127)	-0.0267*(0.0126)	-0.0266*(0.0126)
College Access Desert	0.0504***(0.0071)	0.0331***(0.0069)	0.0331***(0.0069)
Total Enrollment (logged)		0.0854***(0.0036)	0.0854***(0.0036)
Female (decile)		0.0283***(0.0037)	0.0297***(0.0046)
Black Students (decile)		-0.0344***(0.0017)	-0.0318***(0.0063)
American Indian/Alaskan Native (decile)		-0.0227***(0.0035)	-0.0227***(0.0035)
Asian (decile)		-0.0365***(0.0052)	-0.0365***(0.0052)
Native Hawaiian/Pacific Islander (decile)		-0.0370*(0.0145)	-0.0370*(0.0145)
Multiracial (decile)		-0.0447***(0.0101)	-0.0446***(0.0101)
Hispanic (decile)		-0.0279***(0.0018)	-0.0279***(0.0018)
Model estimates of poverty in schools		0.0459***(0.0054)	0.0460***(0.0054)
Salary of Total Personnel (logged)		0.0129***(0.0017)	0.0129***(0.0017)
Math Proficiency (decile)		0.0048*(0.0021)	0.0048*(0.0021)
Female (decile) X Black (decile)			-0.0006(0.0013)
Adjusted R-squared	0.184	0.254	0.254
Adjusted within R-squared	0.086	0.165	0.165
AIC	22,396	20,482	20,484
BIC	22,842	21,016	21,026

Note: There are 21,370 schools nested in 50 states and Washington D.C. R-squared values calculated with the performance package (Lüdtke et al., 2021). The linear probability models include state fixed effects and were calculated with the R package fixest (Bergé, 2018). Heteroskedastic standard errors are in parenthesis. The reference category for charter schools, magnet schools, AP, IB, and college access desert is “No”. Percents are measured in deciles.

*p <0.05, **p <0.01, ***p<0.001