Neighborhood Disadvantage and High School Dropout

MACS30200 Lerong Wang

Research Question

- **To what extent do neighborhood disadvantages affect high school dropout rates**
- Use NYC data
- Neighborhood disadvantage: poverty rate, unemployment rate, crime rate...
- Control individual characteristics such as race and gender

Motivation

Neighborhood Effect: The neighborhood effect is an economic and social science concept that posits that neighborhoods have either a direct or indirect effect on individual behaviors.

Why studying high school dropout is important?

- Dropping out from high school is associated with negative employment and life outcomes
- Dropout status has also been linked with poor health, including poor mental health
- Possible policy implications for reducing dropout rates

Previous Work

- Donnelly, Louis. Neighborhood disadvantage and school dropout. Retrieved from https://doi.org/doi:10.7282/T37S7QRD
- Vartanian, Thomas P., and Philip M. Gleason. “Do Neighborhood Conditions Affect High School Dropout and College Graduation Rates?” *The Journal of Socio-Economics*, vol. 28, no. 1, 1999, pp. 21–41., doi:10.1016/s1053-5357(99)00011-6.
- “Poverty and High School Dropouts.” *American Psychological Association*, American Psychological Association, www.apa.org/pi/ses/resources/indicator/2013/05/poverty-dropouts.aspx.

My Contributions

- Prior research emphasizes on poverty and socio-economic status
- I will take more environmental determinants into account
- Model comparison

Data

- High School Dropout Rate: NYC Department of Education Graduation Outcomes
- Neighborhood Disadvantage: American Community Survey
- Neighborhood Disadvantage: www.nyc.gov

New York City Department of Education

Graduation Rate Report

District Graduation Rate

All Students

				Cohort	Total Grads		Total Regents			Advanced Regents			Regents without Advanced			Local			Still Enrolled		Dropout		SACC (IEP Diploma)	
District	Category	Cohort Year	Cohort	#	#	% of cohort	#	% of cohort	% of grads	#	% of cohort	% of grads	#	% of cohort	% of grads	#	% of cohort	% of grads	#	% of cohort	#	% of cohort	#	% of cohort
1	All Students	2013	4 year August	1043	639	61.3	608	58.3	95.1	215	20.6	33.6	393	37.7	61.5	31	3.0	4.9	258	24.7	121	11.6	7	0.7
1	All Students	2012	4 year August	1069	652	61.0	641	60.0	98.3	229	21.4	35.1	412	38.5	63.2	11	1.0	1.7	258	24.1	148	13.8	7	0.7
1	All Students	2011	4 year August	1128	665	59.0	635	56.3	95.5	166	14.7	25.0	469	41.6	70.5	30	2.7	4.5	303	26.9	143	12.7	10	0.9
1	All Students	2010	4 year August	1104	590	53.4	564	51.1	95.6	127	11.5	21.5	437	39.6	74.1	26	2.4	4.4	308	27.9	197	17.8	2	0.2
1	All Students	2009	4 year August	1080	597	55.3	569	52.7	95.3	154	14.3	25.8	415	38.4	69.5	28	2.6	4.7	283	26.2	189	17.5	2	0.2
1	All Students	2008	4 year August	1128	685	60.7	661	58.6	96.5	187	16.6	27.3	474	42.0	69.2	24	2.1	3.5	246	21.8	172	15.2	12	1.1
1	All Students	2007	4 year August	1069	646	60.4	559	52.3	86.5	155	14.5	24.0	404	37.8	62.5	87	8.1	13.5	244	22.8	147	13.8	15	1.4
1	All Students	2006	4 year August	905	563	62.2	498	55.0	88.5	126	13.9	22.4	372	41.1	66.1	65	7.2	11.5	211	23.3	102	11.3	15	1.7
1	All Students	2005	4 year August	886	560	63.2	430	48.5	76.8	115	13.0	20.5	315	35.6	56.3	130	14.7	23.2	217	24.5	86	9.7	7	0.8
1	All Students	2013	4 year June	1043	613	58.8	588	56.4	95.9	211	20.2	34.4	377	36.1	61.5	25	2.4	4.1	284	27.2	121	11.6	7	0.7
1	All Students	2012	4 year June	1069	629	58.8	617	57.7	98.1	228	21.3	36.2	389	36.4	61.8	12	1.1	1.9	281	26.3	148	13.8	7	0.7
1	All Students	2011	4 year June	1128	649	57.5	622	55.1	95.8	166	14.7	25.6	456	40.4	70.3	27	2.4	4.2	319	28.3	143	12.7	10	0.9
1	All Students	2010	4 year June	1104	564	51.1	543	49.2	96.3	127	11.5	22.5	416	37.7	73.8	21	1.9	3.7	334	30.3	197	17.8	2	0.2
1	All Students	2009	4 year June	1080	569	52.7	544	50.4	95.6	153	14.2	26.9	391	36.2	68.7	25	2.3	4.4	311	28.8	189	17.5	2	0.2
1	All Students	2008	4 year June	1128	639	56.6	620	55.0	97.0	184	16.3	28.8	436	38.7	68.2	19	1.7	3.0	290	25.7	173	15.3	13	1.2
1	All Students	2007	4 year June	1069	608	56.9	535	50.0	88.0	153	14.3	25.2	382	35.7	62.8	73	6.8	12.0	280	26.2	148	13.8	16	1.5
1	All Students	2006	4 year June	905	549	60.7	493	54.5	89.8	125	13.8	22.8	368	40.7	67.0	56	6.2	10.2	225	24.9	102	11.3	15	1.7
1	All Students	2005	4 year June	886	522	58.9	419	47.3	80.3	113	12.8	21.6	306	34.5	58.6	103	11.6	19.7	255	28.8	86	9.7	7	0.8
1	All Students	2004	4 year June	756	470	62.2	347	45.9	73.8	111	14.7	23.6	236	31.2	50.2	123	16.3	26.2	213	28.2	68	9.0	3	0.4
1	All Students	2003	4 year June	603	328	54.4	285	47.3	86.9	60	10.0	18.3	225	37.3	68.6	43	7.1	13.1	209	34.7	60	10.0	5	0.8
1	All Students	2002	4 year June	381	212	55.6	185	48.6	87.3	18	4.7	8.5	167	43.8	78.8	27	7.1	12.7	130	34.1	28	7.3	5	1.3
1	All Students	2001	4 year June	376	252	67.0	205	54.5	81.3	19	5.1	7.5	186	49.5	73.8	47	12.5	18.7	58	15.4	54	14.4	11	2.9
1	All Students	2012	5 year August	1082	753	69.6	727	67.2	96.5	231	21.3	30.7	496	45.8	65.9	26	2.4	3.5	128	11.8	187	17.3	9	0.8

NOTES | All | ELL | SWD | Ethnicity | Gender | Ever_ELL | +

Methods

- Spatial analysis to analyze the pattern of high school dropout rates in NYC: Local spatial autocorrelation using Geoda
- Linear Regression
- Random Forest/Tree-based Method in Python

Thank you!

- Questions?