# GEOG701 Literature Review

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## Contents

## On 'Neighborhood'

### Galster's neighborhoods

'Neighborhoods' are a critical concept in urban social science, underlying investigations of how spatial contexts affect behavior and outcomes as well as how space changes over time. Yet, a concrete quantification of what constitutes a neighborhood is not universally agreed upon. G. Galster (2001) attempts to define 'neighborhood' in a way that lends itself to quantification: "Neighbourhood is the bundle of spatially based attributes associated with clusters of residences, sometimes in conjunction with other land uses." These attributes (or dimensions) include characteristics of the natural and human-constructed environment, but also demographics, socio-interactive characteristics, and sentimental value. Galster's goal in this articulation is enabling researchers to test hypothesis and construct predictive models of neighborhood change.

### Neigborhoods are dynamic

Galster's work helps us to deliniate neighborhoods as they stem from perceptions of their residents or governments, but they do not explicitly understand temporal dynamics of neighborhoods. In other words, it begins to address the number of issues arising from taking administrative boundaries such as census tracts as *a priori* neighborhoods, but does not appreciate that the spatial structure of neighborhoods - in addition to its phsyical and demographic characteristics - are dynamic and can change over space and time. Rey et al. (2011) argue that both of these dimensions are critical for understanding neighborhood change, are are likely to differ depending on the topic of neighborhood effects being investigated. As well, they demonstrate that the study of spatial boundaries are underappreciated in the scope of the larger literature.

### Externality spaces

Resident perceptions are a key factor in neighborhood quantification. G. C. Galster (1986) describes 'externality spaces,' which are the *quantified* individual perceptions of the previously described neighborhood dimensions. Specifically, a person's externality space is the "area over which changes in one or more [dimensions] initated by others are percieved as altering the well-being [or use-value]" of the person. G. Galster (2001) Quantification of neighborhood spaces by individual perspectives means that two people living next-door to each other could have differing views about where their neighborhood begins and ends. As well, we might consider administrative bundaries drawn by government agencies, such as census tracts or school districts, as additional perspectives - the difference being that administrative boundaries are often tied directly to public policies, making them useful for policy analysis.

Galster also articulates three features of externality spaces against which differing quantifications can be measured: *congruence*, or the degree to which an externality space corresponds to a predetermined geographical boundary; *generality*, or the degree to which different neighborhood dimensions correspond; and *accordance*, or the degree to which externality spaces for different individuals corresponds.

### Towards a dissertation

Quantifying dynamic neighborhood dimensions through various externality spaces approaches meaningful delineations of 'neighborhood.' The application of Galster's formulations to public policy analyses yield methodologies to granularly measure policy impacts across time and space. Therefore, this paper will explore intersections in the neighborhood literature with public policy analysis in an attempt to find gaps and articulate a research agenda.

First, we investigate applications to school systems. The neighborhood effects on educational outcomes and vice versa – the school-neighborhood nexus – is the subject of an extensive body of literature, yet the spatial structure of the school-neighborhood nexus and its potential to inform policy remains under-investigated.

Next, we explore applications of Galster's formulation of 'neighborhood' to homelessness. Because Galster relies heavily on quantification via market valuation of residences, quantifying the 'homeless dimension' raises a number of complications.

Finally, we attempt to draw together a number of policy issues through the theoretical lens of 'computationalism,' or the belief that computer processes *can and must* underwrite social organization and resource allocation. To the computationalist, the inexorable advancement of technology has imbued the computer (or more specifically, the algorithm) with almost supernatural properties and the capacity to solve all of the world's problems. Here, we explore implications on social relations and civic structures by the increasingly algorithmic logic that drives public policy.

## School-Neighborhood Nexus

In this section, we explore findings in the neighborhood effects literature as it relates to school systems and discuss their implications on public policy. Unlike vaguely defined neighborhoods, education systems have discrete boundaries from which specific policies are applied. The variation in policies, school characteristics, and student outcomes between (and within) school districts position school systems in a way that greatly benefits from granular spatial and temporal policy analysis.

### School Catchments

Individual schools have boundaries that determine which students will attend that school, called school attendance boundaries or school catchment zones. These boundries nest within the geography of larger school districts, which themselves fall

within the boundaries of individual cities and counties. These nesting, discrete boundaries each have their own governing bodies which each apply their own regulations and policies on top of existing state and federal policies, all of which, in part, determine how we concieve of different spaces. The higher resolution (smaller) geographies have stronger impact on how we concieve of individual neighborhoods, and crucially, they lend themselves well to measurements and hypothesis testing of policy impacts via spatial statistical methods.

Despite their importance and relevance to the study of spatial contexts and their effects, school catchments are very difficult to study in the U.S due to a lack of institutional support for catchment data - the latest nationally representative data year is the 2015-2016 school year, and even this is not without issues. Beyond the relatively 'normal' issues that occur with spatial data such as opaque and obscure coding logics, the School Attendance Boundary Survey (SABS) data are effectively an amalgamation of data from disparate educational agencies which may have different ways of gathering and encoding this data, resulting in spatial-specific data issues such as non-planar enforcement. These issues mean that the data require additional processing before any spatial methodologies (such as regionalization) can be applied. One major avenue of work that would elevate the school-neighborhood nexus literature at large is institutional support for consistent and consecutive SABS data-years (akin to the Census' American Community Survey).

**School Catchments and Segregation**

Monarrez and Chien (2021) wrote an extensive report for the Urban Institute that explicitly analyzed school catchments as a mechanism for segregation, and highlighted cases in the U.S. where intense pockets of segregation persist, even though the general levels of school segregation have decreased in recent decades. While this report performs a very interesting analysis linking pairs of highly segregated schools to the inequalities created by the New Deal's Home Owners' Loan Corporation redlining policies using historical maps, it unfortunately utilizes a privately sourced dataset, rendering the findings impervious to reproduction and validation.

In a similar vein,Saporito and Van Riper (2016) investigates whether or not the 'regularity' of catchment zones across the US has any implication for reducing or exasperating segregation, similarly to how congressional districts are drawn to capture a particular voting population, a practice known as gerrymandering. The authors find that on average, irregularly drawn catchments tend to have lower levels of segregation than regular (compact) catchments.

While this might be a consequence of different urban contexts - catchments in urban cores tend to be smaller with more heterogenous populations, whereas catchments in rural areas necessarily need to be larger and have a more homogenous population - it also suggests that school administrators could be 'gerrymandering for good'. Indeed, advocacy for the use of boundary drawing as a tool for policy makers to reduce segregation and increase diversity in schools is common across this literature.

Two well-published scholars in this subfield are Ann Owens at the University of Southern California, who studies trends in income and racial segregation in U.S. schools and Sean F. Reardon, who heads the Educational Opportunity Project at Stanford University, which is interested in quantification of opportunity in different educational regional contexts, primarily through variation in academic performance. Together, **?** investigate schools in the U.S. through these demensions and conclude that income segregation has increased in U.S. schools, measured as both *within and between* districts.

### Finnish Context

Kauppinen, van Ham, and Bernelius (2022) and Bernelius and Vilkama (2019) study school catchment zones as causal factors in intra-regional mobility and neighborhood segregation in the context of Helsinki, Finland. They are presented here to contrast an American-centric persepctive by differring significantly in political, economic, and cultural contexts. Notably, the neighborhood contexts are different in that schools do not have anywhere near the variation in quality that exists in the U.S.. Though the Nordic countries are famed for their egalitarian civic structures, they have their share of xenophobia regarding non-western immigrants. Despite high quality schools uniformly across the region, Bernelius and Vilkama (2019) is able to model urban mobility patterns and segregation and finds school catchment zones (via parent's perception of school quality) to be a causal factor. Finish parents seek out higher quality schools (determined by the number of native Finns, non-immigrants), up until they have school-aged children, presumably prioritizing stability for the student over their desires to find 'suitable' neighborhood contexts. Similarly, Kauppinen et al. (2022) finds that catchment boundaries are a causal factor in intra-urban residential mobility using regression discontinuity techniques. These findings are made possible in part by the Finns maintaining datasets that are much higher quality than exists in the U.S. and contain data about the entire population as opposed to a sampling.

### Spatial Congruence of the School-Neighborhood Nexus

Forthcoming work by Rey and Knaap et al. (including the present author) direclty investigates the spatial structure of the school-neighborhood nexus through Galster's *congruence*. Instead of taking census tracts as *a priori* neighborhoods, The authors regionalize census tracts using the *max-p regions* algorithm to create neighborhoods that represent geodemographic clustering in the 110 largest Core-Based-Statistical Areas in the U.S.. They calcuate congruence between these neighborhoods and school catchment boundaries, and find correlates between congruence and spatial and demographic characteristics of the spaces. These metrics are constructed from both focal points: schools-to-neighborhoods and neighborhoods-to-schools.

The results indicate that full congruence (parity between neighborhoods and

schools) is the exception, not the rule; congruence correlates positively with size and circularity (regularity), and negatively with density, though these relationships are by no means linear. Another important finding is that as the proportion of the Black population in a catchment grows, it tends to pull from *more* neighborhoods, while an increase in the White population tends to pull from *fewer* neighborhoods. As well, catchments that pull from multiple neighborhods tend to have higher levels of diversity and are less regularly shaped, lending evidence to support the claims of 'good gerrymandering' suggested above.

## Homelessness Dimension

Galster's emphasis on residence valuation as a focal points for neighborhood quantification is complicated by the continued proliferation of homelessness.

The persistence of homelessness presents a particular quandry for neighborhood quantification and effects modeling. Thus far in our review, neighborhood quantification has

### A typology of homelessness camps

Herring (2014) posits a 4-pronged typology of homelessness camps on the west coast of the U.S. that could begin to fill this gap. Herring divides camps along dimensions of legality, with the illegal side consisting of contested camps (such as protest-guided tent cities), tolerated camps (those that are not legally sanctioned but tolerated by authorities for pragmatic reasons); while legal camps can be either accomodated (legally sanctioned camps that attempt to provide a link between the unhoused and the potential of getting off the streets) or co-opted (camps that have been effectively taken over by the municipality, usually mirroring the conditionality of service associated with homeless shelters and all the problems therein). This typology contains a great deal of variety even between different camps that fall within the same categorization, and may constitute a continuum in itself - contested camps could cause enough pressure that municipalities relent and accomoadate the campers with assistance in establishing a permament site, as such was the case with Portland's Dignity Village. The variation in camps speaks to the individual spatial contexts of the camps having effects on behaviors and social outcomes - concurrent with Galster's conception. But this typology is concerned with only the visibly unhoused in concentrations passed the threshold required for collaboration amongst the campers. A homelessness dimension comporting with Galster's definition needs to consider the visible but isolated homeless, as well as the far more numerous 'invisible homeless' - those who are managing well enough to couch surf or live in vehicles.

Speer (2016) Articulates a 'right to the city,' using a 'rights' framework similar to right to food, effectively arguing for a more dignified life decoupled from capitalist commodification of housing and ammenities. They highlight sanitation infrastructure and conditioins of the unhoused in Fresno using interviews and visits to encampments

to illustrate the dehumanization of the unhoused by municipal policy makers. Much of this article discusses heartbreaking accounts of destruction of makeshift homes and other attempts by the unhoused to find some comfort and bodily autonomy. The unhoused are forced to perform bodily functions in public, including urination, defication, eating, bathing, love-making, in ways that are inherently dehumanizing. Nobody likes to witness these things, nobody likes that these people do them or are forced to do them, but conditions are such that nobody wants to provide (pay for) a solution to preventing it, so instead it is mobilized to advance arguments and policies that force the unhoused out of public sight.

Both Herring and Speer reference the use of force by municiaplities (police) to remove the unhoused from public spaces, whether an established encampment or an individual using the restroom in a public business.

### Housing market econometrics in municpal homelessness policy

DeWitt (2022) demonstrates that the California Environmental Quality act (CEQA), which requires the production of enviornmental impact reports for new construction projects in the state

## 'Big Data'

"computationalism, when harnessed to the authority of the state, reifies a faith in instrumental rationality in which reason is the ultimate arbiter of both truth and power."

### Ubiquity

Big Data is a catch-all phrase that has colloquially come to mean the use of massive datasets to guide our decisions and policies. I am interested in aspects of Big Data's impact on a variety of topics, some of which are more theoretical and less quantifiable than the subfields listed earlier. Crampton (2015) defines Big Data as "a matter of technologic practices, epistimologies, and ontologies. This definition captures the essence of Big Data as a practice rather than simply concrete pieces of data. An implication of Big Data that interestes me is that it centers the uninhibited, wanton harvesting of data - pieces of information about humans, essentializing and generalizing them. This serves a variety of purposes, some of which could potentially be beneficial, some of which are immediately nefarious, but all of which represent a major breach of private life that merits investigation.

Batty (1997)

### Marxist perspectives

Burell and Fourcade (2021) consider the topic from an explicitly marxist perspective. They propose an extension of the class divide: The coding elite (which

is a good name) as the upper class oppressing and extracting the wealth from the cybertariat (which is a bad name), who comprises a whole swath of digital laborers. Something that is unexplored (or unstated) about this formulation is the processes through which these classes are produced. The authors begin with the notion of almighty code - if you can touch, edit, or read the codes that drive Big Data innovations, you inherently have more potential than those who cannot. This is mostly correct, but increasingly, the cybertariat class can and does touch code, and yet are relegated to cybertarian jobs. I would argue that computer science know-how does not necessairly elevate a person on their own merits. Inter and intra-industry social capital still plays an outsized role in determining if someone will advance in class status. This is a potential avenue for further research. Burell and Fourcade's article is central to me on the subject due to its thorough review of literature. They briefly describe the development of Sillicon Valley and then investigate several issues brought about by the proliferation of Big Data. For my purposes, I try to organize these into 1) Use of algorithms in civic strucures and 2) use of algorithms in human relations.

## Intersection with urban systems

### Public policy digital government.

1. Police

   Policing is a sort of venn diagram between several of my study areas. I'm interested in the role of police from both a public policy perspective and a human geography perspective. The police represent a massive expendature by local municipalities, in stark contrast to other services. Police are rightfully criticized for corruption, excessive force, cruelty, racist practices, and the rest. And yet, veneration of police and police culture is not uncommon.

   Broadly, I want to include police abuses as a part of my research. A clear intersection exists with enforcement of municipal policies against the unhoused. There is a basic economic/public policy argument for diverting funds away from police departments and towards place-specific/regional specific policies to combat homelessness would yield better results than the proliferation of police militarization and continued instances of violence, corruption, and abuses that it entails.

   Local police and sherriff are only one factor in the perpetuation of police violence; underappreciated are the roles of the courts, the public officials that represent police interests in local politics, as well as local, state, and federal legislation and executive policies that all determine the logics of these sytems.

   (a) Local

   Laniyonu (2018) performs an example of these mechanisms through the framework of post-industrial policing, operationalizing gentrification in

New York City. I include this paper for the purposes of highlighting its methodology. They use Spatial Durbin modeling to show that gentrification can be predicted at a tract level by an increase in policing in surrounding tracts, but a decrease within the tract itself. As well, it should be considered part of the literature on use of force by police; although the macro resolution of policing abstracts the individual actions occuring to push the poor out of gentrifying spaces, it should not be forgotten that these are often violent encounters resulting in bodily harm, trama, or death.

Richardson (2019) is another important paper because it's a potential avenue between two of my areas: policing and Big Data. Richardson expands upon the term 'dirty data' to reflect the nature of data production in policing - derrived from corrupt and unlawful practices. Richardson analyzes a number of police jurisdictions that develop predictive policing systems (such as LAPD's Compstat) WHILE they are under a consent decree or under investigation by federal authorities for civil rights violations. The paper details three such cases, wherein the policing systems developed, whose ostentiable purpose is to abate bias in the police department, are on their face corrupt or biased, while also being ineffective at it's goal (usually a tool for cops to replace the percieved mechanism of corruption/abuse).

(b) National

NSA (Snowden)

Crampton (2015) writes about complications related to Big Data using the United States intelligence community (IC) as a case study.

1. Not police

(a) Local

(some) Municipalities recognize that Big Data has immense potential to improve the quality and timelieness of services, and attempt to adopt technological solutions/improvements to previously analog processes.

Certoma (2020) elaborates a research agenda for digital social innovations (DSI), which refer to initiatives that leverage digital technologies to co-create solutions for a wide range of social needs. They cite a few examples from the European context: The reusing of abandoned buildings, and the organization of new commons. Of particular interest to my research is the use of DSI in creating local sharing economies in neighborhoods. In theory, this constitutes a major element of a digital neighborhood dimension.

(b) National

While I can assume that the federal government pursues Big Data solutions for much the same reasons that municipalities do, I have not yet read enough to provide any specific examples.

**Private enterprise**

**Advertising.** Williams (1961)

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