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# Using small data to interpret big data: 311 reports as individual contributions to informal social control in urban neighborhoods

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## ABSTRACT

Informal social control is considered a vital component of the well-being of urban communities. Though some argue that the actions that constitute this social process are often said to reflect territoriality, little else is known about how individuals contribute to it. The current study leverages a database of over 600,000 requests for government services received by the city of Boston, MA's 311 system as a way to answer such questions, focusing particularly on reports of issues in the public space arising from incivilities. In order to establish construct validity for the "big data" of the 311 system, they are combined with the "small data" of a survey of 311 users, permitting the simultaneous analysis of objective reporting behaviors with self-report attitudes. The analysis occurs in two parts. First, reporting of incivilities is distinguished behaviorally from reporting public issues arising from natural deterioration, and people are found to specialize in one or the other. Second, the survey is used to test whether the reports are a reflection of territoriality. Reports of incivilities were unique in their association with a desire to enforce local social norms. They were also associated with a second territorial motivation to benefit the community. Implications for future research are discussed.

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## 1. Introduction

Picture a street corner in a residential urban neighborhood where a group of teenagers has congregated. Imagine further that they are partaking in some undesirable activity, becoming a nuisance or even potential danger to themselves and others. This is possibly one of the most referenced vignettes in urban sociology and criminology, used to illustrate the importance of *informal social control*, and the ability of a neighborhood's residents to redirect and discourage problematic behavior within the community. Much work has examined how this capacity varies across neighborhoods and its correlation with key demographic and social characteristics (Sampson and Groves, 1989; Bursik and Grasmick, 1993; Silver and Miller, 2004). This has given us a good understanding of "if" a neighborhood expresses informal social control or not, but there has been very little quantitative work on "how" it actually occurs (cf. Drakulich, 2014). Who is taking such action? A shopkeeper? A nearby

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resident? A parent of one of the teens? Are a small subset of individuals largely responsible for social control, or is it evenly distributed across the community's members? Questions of this sort remain largely unanswered.

This area of inquiry has largely been limited by the methodological challenge it poses. Whether by observation, survey, or ethnography, it would be very difficult to systematically assess propensities to contribute to informal social control across the residents of a neighborhood, not to mention scale such a methodology to make comparisons across the many neighborhoods of a single city. Here I explore whether “big data,” in the form of the database generated by 311 systems, might offer a potential opportunity for this line of study. The 311 system is a recent innovation in urban policy, now implemented in over 300 municipalities, that offers one or more convenient channels by which constituents can request non-emergency city services, typically including a telephone hotline (i.e., 3-1-1) and web-based applications (e.g., smart phone applications). The requests received by 311 systems are diverse, including snow plowing, sidewalk repairs, pick-ups for oversized garbage items, and fixing streetlight outages. Many, like complaints of graffiti or illegal dumping, refer to instances of neglect or denigration of the public space, indicating that the report is seeking to rectify an incivility, and as such might be considered an act of informal social control.

The 311 system of a large city might receive hundreds or even thousands of requests per day, generating an extensive archive that can be analyzed across space and time. A particular advantage of the 311 database when compared to the 911 call record, which also documents reports of illicit or uncivil behavior, is that a user of the system can register, creating an account that archives and tracks all of his or her requests. For analytic purposes, this acts as a sub-database that offers a detailed description of that individual's patterns of requests—for example, how many requests were made, the types of issues, and their geographic distribution (O'Brien, 2015, 2016). In turn, the database as a whole might contain tens of thousands of registrants, providing a rich opportunity to compare such metrics across a wide sample of individuals. If indeed certain types of 311 reports can be treated as instances of informal social control, it would allow the comparison of propensities for such action both within and between the neighborhoods of a city.

As with most “big data,” the purported opportunity of 311 reports is accompanied by its own set of challenges. Apart from their size, most of these novel data resources are distinctive in that they were not intentionally collected for research purposes, but are the byproduct of some administrative operation. Consequently, they often provide a detailed view of some process that has previously been difficult to study directly. Examples include tracking the differentiation of violent offenses from other crimes over centuries of court cases (Klingenstein et al., 2014), mapping the density of taxi rides to identify opportunities for ride-sharing programs (Santi et al., 2014), and modeling the communication networks of whole countries from cell phone metadata (Eagle et al., 2010). The data's administrative origins cut both ways, however, because without an inherent research purpose, it is not immediately clear what they can measure or how such measurements would relate to existing theories and constructs (Boyd and Crawford, 2011; O'Brien et al., 2015). Taking the 311 example, reports that reference an incivility in the public space may appear to be an act of informal social control on the surface, but this cannot be confirmed by analyzing them in isolation.

This weakness does not disqualify the use of big data altogether, but it does call for a multi-method approach that marries the “big” data with the “small” data produced by traditional methodologies. Studies of this nature are relatively rare, but they have the potential to bridge the gap between administrative data and theory, imparting interpretive meaning to the former and providing a new resource for advancing the latter. The current study takes such an approach by merging the 311 database of Boston, MA, with surveys completed by its users, in order to establishing whether indeed reports of incivilities can provide insights on the enforcement of informal social control by urban residents. This might be described as an exercise in construct validity (c.f., Messick, 1995). Before this is possible it is necessary to determine what such an evaluation would entail. Informal social control is a neighborhood-level dynamic that emerges from the actions of residents, actions that themselves must be rooted in some particular set of motivations at the individual level. The goal here, then, would be to establish whether 311 reports of incivilities arise from a set of motivations that are believed to be associated with other contributions to informal social control, thereby justifying their use as a proxy for such tendencies.

As articulated in the following two sections, the current study works off the premise that the motivation to enforce social norms in a neighborhood arises from a broader human tendency for territoriality, that is, to claim ownership and responsibility for a space or object (Brown, 1987; Taylor, 1988; Perkins et al., 1993). The first section summarizes in greater detail current knowledge and existing methodologies for studying informal social control by residents. The second further defines territoriality and its theorized relationship with 311 reports. These then provide the rationale for the study design, hypotheses, and analyses that follow.

### 1.1. The study of informal social control

In their seminal efforts to explain why the neighborhoods of a city exhibit marked disparities in major outcomes, particularly violent crime and delinquency, the early Chicago School of urban sociology argued for the central role of informal social control, or the mechanisms by which local residents establish and enforce expectations for behavior in the community (Park, Burgess, and McKenzie 1968/1984, Shaw and McKay, 1942/1969). In the subsequent decades informal social control has become a major focus of neighborhood research, criminological and otherwise, further developing the concept and producing repeated evidence for its importance. Kasarda and Janowitz (1974) and later Bursik and Gasmick (1993) forwarded the systemic model of crime, arguing that social control emerges from the system of formal and informal social ties within the community. Sampson et al. (1997) took this a step further, proposing that social cohesion between neighbors combined with a

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