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Municipal Environments, Nonprofit Entrepreneurs, and the Development of Neighborhood Information Systems[1]

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Abstract: In recent years, organizations in dozens of municipalities around the United States have implemented neighborhood information systems. Neighborhood information systems are technology innovations that bring together and disseminate, via the Internet, regularly updated statistics on births, crime, educational performance, and other vital community conditions. Drawing upon research on organizational innovation, this article examines the environmental characteristics and entrepreneurial activities that have been associated with the formation and diffusion of the National Neighborhood Indicators Partnership (NNIP), an association of some of the strongest and most visible neighborhood information systems. A series of statistical analyses demonstrate that NNIP projects are especially likely to be present in large, densely populated cities with sizeable minority populations. Interviews with individuals who have been leaders in the NNIP illustrate that a combination of local entrepreneurship and the sponsorship of national organizations has provided the resources necessary for the

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creation and maintenance of specific neighborhood information systems. These findings highlight the conditions, obstacles, and resources that nonprofit organizations encounter and draw upon when seeking to adopt technology innovations.

I. THE EMERGENCE OF NEIGHBORHOOD INFORMATION SYSTEMS

Over the past several decades, organizations in dozens of municipalities around the United States have developed and implemented neighborhood information systems. Neighborhood information systems compile and disseminate, via the Internet, regularly updated statistics on births, crime, educational performance, and other vital community conditions.[2] The basic idea is that this statistical data, when combined with maps and other analytical tools, provide individuals and organizations with a means of monitoring trends and outcomes in geographic areas of interest.[3] Neighborhood information systems, in other words, are technology innovations that aim to enhance the participation of local stakeholders in the protection and revitalization of their communities.

The emergence of neighborhood information systems raises a variety of questions about the use of technology to foster awareness and involvement on the part of residents and community organizations. For example, how do neighborhood information systems make use of maps and statistics to influence local discourse and decision-making?[4] A particularly interesting organizational issue arises from the fact that neighborhood information systems were implemented years ago in some communities but have not yet been developed in many others. Are there certain types of municipal environments that tend to be associated with the emergence of neighborhood information systems? Who are the institutional actors, both nationally and locally, who typically provide the impetus for establishing neighborhood information systems?

With these questions in mind, this article addresses two aspects of the development of neighborhood information systems. First, the article focuses on the environmental characteristics that distinguish

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[2] Sarah Treuhaft, and others, "Bridging the Innovation Divide: An Agenda for Disseminating Technology Innovations within the Nonprofit Sector," (2007): 26, http://www.policylink.org/pdfs/Innovation_Divide.pdf. Information about neighborhood information systems can be found at http://www2.urban.org/nnip/about.html (accessed September 10, 2008).

[3] G. Thomas Kingsley, "Neighborhood Indicators: Taking Advantage of the New Potential," (1998): 5–11, http://www2.urban.org/nnip/pdf/kingsle1.pdf.

[4] Treuhaft, and others, "Bridging the Innovation Divide," (2007) 26–33 (see n. 2). Examples of neighborhood activities are provided at http://www2.urban.org/nnip/loc_activities.html (accessed October 28, 2008).

municipalities, where neighborhood information systems are currently in operation, from cities where such systems have not yet been implemented. For example, the Foundation for Community Empowerment has been conducting research and mobilizing community initiatives in Dallas for more than a decade.[5] In contrast, no analogous organization has, to this point, been established in Amarillo, a medium-sized city located in the sparsely populated panhandle of Texas. This article will employ statistical analysis to elaborate such differences for cities throughout the country in order to gauge the general importance of municipal characteristics including population size and density in the creation of neighborhood information systems.

Second, the article highlights the institutional actors—mainly nonprofit organizations such as universities—that are behind the establishment of neighborhood information systems. Why is it, for example, that Houston, a city that closely resembles Dallas on a number of demographic dimensions, does not yet have a neighborhood information system that is comparable to the Foundation for Community Empowerment? A partial answer to this question can be found in the beneficence of J. McDonald Williams, a Dallas businessman who personally started the Foundation for Community Empowerment with the aim of revitalizing impoverished neighborhoods in partnership with community residents.[6] The article will use information generated from interviews with individuals who have been leaders in the development and operation of neighborhood information systems, as well as existing documentary materials, to provide detailed accounts of the circumstances under which particular systems have come into being. By combining such qualitative evidence with broad statistical analysis, the article will offer insight into both the overall correlates of the presence of neighborhood information systems and the entrepreneurial activities that have led to the foundation of specific systems.

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[5] The Foundation for Community Empowerment describes itself and its work at http://www.fcedallas.org (accessed October 28, 2008).

[6] For more information about J. McDonald Williams and the creation of the Foundation for Community Empowerment, see http://www.fcedallas.org/Default.aspx?tabid=2054 (accessed October 28, 2008).

II. NEIGHBORHOOD INFORMATION SYSTEMS

The idea of using economic and social indicators to set priorities and evaluate public programs has been around for many decades.[7] It was not until the early 1990s, however, that municipalities began to develop full-fledged neighborhood information systems.[8] These developments were in part the result of advances in computing power and geographic information systems (GIS) software, which have made it increasingly easy for even non-specialists to produce professional-quality maps and community statistics.[9] In addition, municipal agencies have automated and made publicly available many of their records, greatly enhancing the ease with which interested parties inside and outside government can monitor trends and policy outcomes.

An important institutional development occurred in 1995, when representatives of nonprofit organizations from six cities joined with the Urban Institute, a research center located in Washington, D.C., to form the National Neighborhood Indicators Partnership (NNIP).[10] All of these organizations were operating successful neighborhood information systems and were interested in sharing their experiences and encouraging other municipalities to adopt systems of their own. To facilitate these ends, the Urban Institute agreed to perform a variety of functions, including producing guidebooks, holding conferences, and conducting studies of experiences common to numerous municipalities.

Over the years, the NNIP has expanded to such an extent that partners now exist in thirty municipalities.[11] Most of these neighborhood information systems are chiefly administered by nonprofit organizations, such as United Way affiliates and

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[7] Kingsley, "Neighborhood Indicators," 1 (see n. 3).

[8] Sungsoo Hwang, "Role of University in the Partnership for IT Innovations of Community Development: Utilizing Universities' Assets for 'Neighborhood Information System' Development," *Public Administration and Management* 11, no. 2 (2006): 78.

[9] Kingsley, "Neighborhood Indicators," 2–5 (see n. 3).

[10] G. Thomas Kingsley, and Kathryn L.S. Pettit, "Neighborhood Information Systems: We Need a Broader Effort to Build Local Capacity," (2004): 1, 4, http://www.urban.org/publications/900755.html.

[11] A list of National Neighborhood Indicators Partnership members is provided at http://www2.urban.org/nnip/loc_list.html (accessed October 28, 2008).

independent civic intermediaries.[12] For example, the Advanced Policy Institute at the University of California-Los Angeles maintains several neighborhood information systems. One of these platforms is Living Independently in Los Angeles, a "GIS-based, interactive information resource database for people with disabilities living in Los Angeles."[13]

Although local governments are important collaborators in NNIP projects, they are rarely the central decision-making organizations or users of these "virtual data warehouses."[14] In one partnership, for instance, Camden Churches Organized for People, an interdenominational group, joined with the Center for Social and Community Development at Rutgers University to explore the negative consequences of the city's large number of abandoned and vacant housing units.[15] This exploration revealed that crime rates were substantially higher in areas with elevated vacancy rates. Through the effective use of block-level maps, the groups were able to mobilize community residents, attract media attention, and ultimately secure state funding to help seal up and demolish hundreds of empty units.

Although there are neighborhood information systems in operation throughout the country, research suggests that the NNIP constitutes some of the "strongest"[16] and "most evident"[17] projects that have yet been developed. This strength and visibility derives in part from the multidimensional process through which NNIP partners are selected.[18] Partner institutions must not only operate sophisticated neighborhood information systems, they must also take steps to ensure that their systems are of practical use to community leaders and policymakers, especially those working in distressed

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[12] Kingsley and Pettit, "Neighborhood Information Systems," 1, 4 (see n. 10).

[13] This description and further information about the Advanced Policy Institute and Living Independently in Los Angeles can be found at http://www2.urban.org/nnip/desc_los.html (accessed October 28, 2008).

[14] Kingsley and Pettit, "Neighborhood Information Systems," 2 (see n. 10).

[15] This story and others are reported at http://www2.urban.org/nnip/pdf/dstory.pdf (accessed October 28, 2008).

[16] Treuhaft and others, "Bridging the Innovation Divide," 26 (see n. 2).

[17] Hwang, "Role of University," 79 (see n. 8).

[18] The National Neighborhood Indicators Partnership's selection criteria are listed at http://www2.urban.org/nnip/requirements_p.cfm (accessed October 28, 2008).

neighborhoods. In addition to these substantive restrictions, the NNIP selects only one partner per municipality and limits expansion to approximately four new partners per year.

In sum, neighborhood information systems are technology innovations that foster, through the "democratization of data," the improvement of economic and social conditions in needy communities.[19] Such revitalizations are driven not by governments acting in isolation, but by collaborations between public officials, nonprofit intermediaries, and individuals who live and work in affected neighborhoods. Institutionally, the NNIP brings together many of the most advanced neighborhood information systems in an ongoing forum for conducting research and disseminating information about programs and best practices. The centrality of the NNIP in the development and diffusion of neighborhood information systems raises a pair of important organizational considerations. What are the characteristics of the municipal environments where the NNIP has established projects? What were the internal conditions and external considerations that prompted specific neighborhood information systems to become partners of the NNIP?

III. THE ADOPTION AND DIFFUSION OF INNOVATIONS

Given that neighborhood information systems are relatively new developments in municipal governance, research on organizational innovation offers a set of theoretical guideposts for the article's empirical inquiry. For decades, the conventional approach to conceptualizing the adoption and diffusion of innovations emphasized three broad considerations.[20] First, an organization's propensity to innovate is a function of its objective conditions. As economic and social indicators deteriorate, the motivation to seek out innovative solutions becomes increasingly salient. Second, organizations often face obstacles to the adoption of innovations, such as opposition from constituencies favoring preservation of the status quo. Third, organizations vary in the extent to which they can draw upon resources for overcoming barriers to innovation. These resources can emanate from internal conditions, such as the presence of

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[19] David S. Sawicki, and William J. Craig, "The Democratization of Data: Bridging the Gap for Community Groups," *Journal of the American Planning Association* 62 (Autumn 1996): 512.

[20] Lawrence B. Mohr, "Determinants of Innovation in Organizations," *American Political Science Review* 63 (March 1969): 114.

entrepreneurs who develop and promote innovations.[21] In addition, external entities can be valuable repositories of information and expertise for organizations seeking to learn from the experiences of others.[22]

In the specific context of municipal governance, a series of factors have been identified as the most common and important correlates of innovation. Two objective conditions are associated with the adoption of virtually all types of innovations, from administrative reforms to technology advances to economic and social policies. These conditions are the size and wealth of the municipality.[23] Simply put, larger and wealthier cities are the main laboratories of innovation in municipal politics.

An assortment of obstacles can make it difficult for municipalities to adopt innovations. For example, cities with large proportions of minority residents were relatively slow in establishing a presence on the Internet, especially in building websites that foster citizen awareness and participation in public affairs.[24] In addition, poor economic conditions have served as barriers to the adoption of innovations in a variety of areas of municipal governance.[25]

What kinds of resources do municipalities have for overcoming obstacles to innovation? Research suggests that certain forms of governments are especially well-equipped to facilitate innovation in procedures and policies. In the 1990s, council-manager governments were more likely than mayor-council arrangements to adopt public management reforms such as public-private partnerships, the contracting out of service delivery, and training civil servants to view citizens as customers.[26] In some policy areas, municipalities that have

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[21] Michael Mintrom, "Policy Entrepreneurs and the Diffusion of Innovation," *American Journal of Political Science* 41 (July 1997): 738–41.

[22] Steven J. Balla, "Interstate Professional Associations and the Diffusion of Policy Innovations," *American Politics Research* 29 (May): 221–45.

[23] Examples of research demonstrating the centrality of size and wealth in municipal innovation include Ho (2002), Martin (2001), Musso, Weare, and Hale (2000), Torpe and Nielsen (2004), and Weare, Musso, and Hale (1999).

[24] A pair of empirical analyses—Ho (2002) and Musso, Weare, and Hale (2000)—have highlighted the connection between race and technological innovation.

[25] These areas include administrative reforms (Moon and DeLeon 2001, Smith and Taebel 1985) and technological advances (Haug and Jensen 2004; Weare, Musso, and Hale 1999).

[26] M. Jae Moon, and Peter DeLeon, "Municipal Reinvention: Managerial Values and Diffusion Among Municipalities," *Journal of Public Administration Research and Theory*

already adopted innovations provide nearby cities with successful examples to emulate. For example, fluoridation spread across the United States in a geographic pattern, beginning in Midwestern cities and quickly spreading to municipalities across the South and East.[27] In California, regional associations such as the East Bay Public Safety Corridor Partnership fostered the diffusion of handgun bans, trigger lock requirements, and other municipal gun control ordinances.[28]

To what extent is it reasonable to expect that similar conditions, obstacles, and resources affect the development of neighborhood information systems, particularly in the context of the NNIP? Given the overwhelming importance of size and wealth when it comes to municipal innovation, it is plausible to hypothesize that neighborhood information systems are predominantly located in cities that are especially large and affluent. However, there are strong rationales for expecting patterns specifically reflecting the goals and organizational attributes of neighborhood information systems. For example, characteristics such as large minority populations may not serve as obstacles to the adoption of neighborhood information systems, but as opportunities, as one of the central purposes of the NNIP is to build civic capacity inside disadvantaged communities. In addition, government type may not be central to the spread of neighborhood information systems, given that the lead decision makers are most often nonprofit organizations that act as intermediaries between public officials and local residents.

Finally, the NNIP was explicitly established to facilitate the sharing of information and experiences regarding neighborhood information systems.[29] As a result, the development of neighborhood information systems is likely conditioned by the learning and emulation that occurs between the NNIP, its local partners, and prospective municipalities.

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11 (July 2001): 343–44. Council-manager governments are headed by an elected council that appoints the city's administrator. In mayor-council governments, both the mayor and council members are elected.

[27] Robert L. Crain, "Fluoridation: The Diffusion of an Innovation Among Cities," *Social Forces* 44 (June 1996): 467–76.

[28] Marcia L. Godwin, and Jean Reith Schroedel, "Policy Diffusion and Strategies for Promoting Policy Change: Evidence from California Local Gun Control Ordinances," *Policy Studies Journal* 28 (4) (2000): 767–72.

[29] G. Thomas Kingsley, and Kathryn L.S. Pettit, "Neighborhood Information Systems: We Need a Broader Effort to Build Local Capacity," (2004): 1, http://www.urban.org/publications/900755.html (accessed October 28, 2008).

The article addresses these expectations from two distinct analytical perspectives. First, the article focuses on the environmental characteristics of the municipalities where neighborhood information systems exist, relative to cities where the NNIP has not yet established projects. Second, the article explores the national and municipal considerations that led to the formation of specific neighborhood information systems and the processes by which these systems became affiliated with the NNIP. In both respects, the central aim is to treat neighborhood information systems as innovations and investigate the conditions, obstacles, and resources that have affected the development and spread of the NNIP.

IV. NATIONAL NEIGHBORHOOD INDICATORS PARTNERSHIP MUNICIPALITIES

Founding partners of the NNIP are located in Atlanta, Boston, Cleveland, Denver, Oakland, and Providence.[30] In 1998, Washington, D.C. became the seventh city to have a member when the D.C. Agenda Project joined the NNIP.[31] Table 1 provides a list of municipalities where NNIP projects are currently in operation, as well as three demographic attributes of these cities.[32]

As the list demonstrates, neighborhood information systems have been established in diverse locations around the country, from New England to the West Coast, in the Midwest, and across the southern tier of states. In all, the NNIP has a presence in twenty-four states, including the District of Columbia. In addition to this geographic diversity, partner municipalities vary significantly in the size of their populations. The NNIP has projects in New York, Los Angeles, and Chicago, the three largest cities in the United States. At the other

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[30] The original partner in Atlanta, the Office of Data and Policy Analysis, has recently been replaced by the Atlanta Neighborhood Indicators Project (author interview with Michael Rich of the Atlanta neighborhood information system, June 27, 2008). It is not unusual for this type of institutional replacement to occur among National Neighborhood Indicators Partnership members. Other municipalities where such movement has taken place include Baltimore and Miami (author interviews with Matthew Kachura of the Baltimore and Lisa Pittman of the Miami neighborhood information systems, June 19, 2008 and June 23, 2008, respectively).

[31] Kingsley, "Neighborhood Indicators," 19 (see n. 3). The D.C. Agenda Project ceased its operations in 2004 and was replaced by NeighborhoodInfo D.C. This information can be found at http://www.neighborhoodinfodc.org/dcaredirect.html (accessed October 28, 2008).

[32] These attributes are the size of the population, the percent of residents who are white, and the number of residents per square mile.

extreme, seven municipalities, including founding partner Providence, have fewer than 200,000 residents. Camden, the smallest partner city, counted 79,904 residents in the 2000 Census.

Table 1: National Neighborhood Indicators Partnership Municipalities

City	*State*	*Population Size*	*Percent White*	*Population Density*
New York	New York	8,008,278	44.66	26,403.8
Los Angeles	California	3,694,820	46.93	7,876.4
Chicago	Illinois	2,896,016	41.97	12,752.2
Philadelphia	Pennsylvania	1,517,550	45.02	11,232.8
Dallas	Texas	1,188,580	50.83	3,470.3
Indianapolis	Indiana	781,870	69.09	2,162.8
Columbus	Ohio	711,470	67.93	3,383.1
Baltimore	Maryland	651,154	31.63	8,058.8
Memphis	Tennessee	650,100	34.41	2,327.6
Milwaukee	Wisconsin	596,974	49.98	6,212.0
Boston	Massachusetts	589,141	54.48	12,172.3
Washington	District of Columbia	572,059	30.78	9,316.9
Seattle	Washington	563,374	70.09	6,714.8
Denver	Colorado	554,636	65.30	3,615.6
Nashville	Tennessee	545,524	65.91	1,152.6
New Orleans	Louisiana	484,674	28.05	2,683.7
Cleveland	Ohio	478,403	41.49	6,165.0
Atlanta	Georgia	416,474	33.22	3,162.3
Sacramento	California	407,018	48.29	4,187.4
Oakland	California	399,484	31.29	7,120.9
Minneapolis	Minnesota	382,618	65.13	6,969.4
Miami	Florida	362,470	66.62	10,153.2
Louisville	Kentucky	256,231	62.94	4,126.1
Des Moines	Iowa	198,682	82.29	2,621.1
Grand Rapids	Michigan	197,800	67.30	4,435.0
Providence	Rhode Island	173,618	54.53	9,384.8
Chattanooga	Tennessee	155,554	59.71	1,150.5
New Haven	Connecticut	123,626	43.46	6,541.1
Hartford	Connecticut	121,578	27.72	7,027.6
Camden	New Jersey	79,904	16.84	9,080.0

Note: Population density is measured as the number of residents per square mile. The source of these data is the U.S. Census Bureau's *County and City Data Book: 2000*, which is available at http://www.census.gov/prod/www/abs/ccdb.html.

Camden is also distinctive in that it has the smallest proportion of white residents, 16.84 percent, of any municipality where there is a NNIP project. On one hand, about half of the partner cities do not have majority white populations. On the other hand, there are a number of municipalities where one-third or fewer residents are black, Asian, Hispanic, or other non-white races. The population of Des Moines, for example, is more than 80 percent white.

Des Moines and Providence offer an illustrative contrast when it comes to the density of their populations. Both municipalities have populations approaching 200,000 residents. Providence, however, has nearly four times as many residents per square mile as Des Moines. In general, NNIP projects have been established both in densely populated municipalities such as Boston and Philadelphia and in cities, such as Nashville and Chattanooga, where residents are spread out to a much greater extent.

The bottom line is that the adoption of neighborhood information systems has occurred in municipalities that vary along a number of dimensions. To this point, however, NNIP municipalities have not been juxtaposed with cities where there are no partner projects. Are there certain types of municipal environments in which NNIP projects are more likely to be established? Or, alternatively, are there few significant differences between partner cities and municipalities that have not yet joined the NNIP?

A. COMPARING MUNICIPAL ENVIRONMENTS

A crucial task in describing the characteristics of municipal environments with neighborhood information systems is to specify the set of cities against which NNIP cities are to be compared. The approach taken here is to focus on municipalities with a population of 75,000 or greater. [33] This threshold reflects the fact that no municipality with fewer than 75,000 residents has yet become a partner of the NNIP. Eliminating smaller cities reduces the magnitude of any population differences that might be observed between NNIP cities and the municipalities against which they are compared. In general, such circumscribed comparisons juxtapose partner cities against municipalities that, in light of the affirmative example of Camden, could plausibly have joined the NNIP.

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[33] According to the U.S. Census Bureau's *County and City Data Book: 2000*, which is available at http://www.census.gov/prod/www/abs/ccdb.html, there are 351 municipalities that met this criterion in 2000.

In Table 2, NNIP cities and non-partner municipalities are compared along a number of dimensions. These dimensions measure conditions, obstacles, and resources that are frequently salient in understanding the adoption and diffusion of municipal innovations. For each comparison, the mean value is provided for both sets of municipalities, along with the associated test of statistical significance.

Table 2: Comparisons of Partner and Non-Partner Municipalities

Municipal Attribute	*Mean Value for Partner Cities*	*Mean Value for Non-Partner Cities*	*T-Statistic*
Population Size	925,332.70	177,251.70	-8.13**
Population Density	6,722.00	3,978.85	-4.46**
Percent White	49.93	66.79	5.02**
Unemployment Rate	4.95	4.12	-2.01**

Note: The source of this information is the U.S. Census Bureau's *County and City Data Book: 2000,* which is available at http://www.census.gov/prod/www/abs/ccdb.html. All of the significance tests have 349 degrees of freedom. The null hypothesis is that there is no difference in the mean values for municipalities where there are no National Neighborhood Indicators Partnership projects and municipalities where such projects have been established. The significance tests are one tailed. ** = statistically significant at $p<.001$. * = statistically significant at $p<.05$.

NNIP cities have populations that are, on average, more than five times the size of non-partner municipalities.[34] This substantial difference is consistent with research on local politics, in that population size is one of the fundamental correlates of municipal innovation. Importantly, the difference between the two sets of municipalities is not simply a by-product of the inclusion of a number of relatively small cities that are extraordinarily unlikely to have developed neighborhood information systems. The difference holds,

[34] There is also a sizeable difference in the median populations of the two sets of municipalities. The median for National Neighborhood Indicators Partnership cities is 545,524, while the median for non-member cities is 116,715. This consistency across measures of central tendency indicates that the underlying difference is not substantially attributable to the statistical influence of especially large member cities such as New York. Author calculations from information contained in the U.S. Census Bureau's County and City Data Book: 2000.

when the comparison is restricted to municipalities with populations of 250,000 or greater.[35]

NNIP municipalities are not only larger than non-partner cities, but they are more densely populated as well. The average NNIP city contains 6,722.00 residents per square mile, which is nearly double the 3,978.85 residents per square mile who live in the average non-partner municipality.[36] Taken together, these first two comparisons illustrate that large urban centers have been the primary laboratories when it comes to the development of neighborhood information systems.

NNIP cities have minority populations that are substantially larger than municipalities that do not have partner projects. This difference, which holds across measures of central tendency, is contrary to the inverse relationship between minority populations and policy adoption and diffusion that is normally found in research on municipal innovation.[37] In the context of neighborhood information systems, however, the difference is entirely expected, given that a main premise of the NNIP is to build civic capacity inside disadvantaged communities.

Another indicator of the NNIP's focus on alleviating urban distress is the nature of the association between the unemployment rate and the presence of neighborhood information systems. NNIP cities have unemployment rates that average nearly a percentage point higher than non-partner municipalities.[38] This difference illustrates that economic disadvantages do not necessarily operate as barriers to the

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[35] The means are 1,161,257 and 519,308.4 for member and non-member cities, respectively. Author calculations from information contained in the U.S. Census Bureau's County and City Data Book: 2000, U.S. Census Bureau's County and City Data Book: 2000, http://www.census.gov/prod/www/abs/ccdb.html.

[36] There is a similar difference in the median population densities of the two sets of municipalities (6,376.55 for National Neighborhood Indicators Partnership cities and 3,105.60 for non-member cities). Author calculations from information contained in the U.S. Census Bureau's County and City Data Book: 2000. U.S. Census Bureau's County and City Data Book: 2000, http://www.census.gov/prod/www/abs/ccdb.html.

[37] Alfred Tat-Kei Ho, "Reinventing Local Governments and the E-Government Initiative," *Public Administration Review* 62 (July/August 2002): 439; Musso, Juliet, Christopher Weare, and Matt Hale, "Designing Web Technologies for Local Governance Reform: Good Management or Good Democracy?," *Political Communication* 17 (2000): 7–8. The median white population is 49.14 percent for National Neighborhood Indicators Partnership cities and 69.32 percent for non-member municipalities.

[38] Similarly, the median unemployment rate is 4.8 percent for National Neighborhood Indicators Partnership cities and 3.6 percent for non-member municipalities. See Table 2.

development of neighborhood information systems, but rather can serve as conditions that foster the establishment of NNIP projects.

Municipalities vary in the types of institutional arrangements that govern them. As Table 3 indicates, almost every city has either a council-manager government (223 municipalities) or mayor-council government (120 municipalities). NNIP cities are predominantly governed by mayor-council arrangements. In contrast, the most common form of government among non-partner cities is the council-manager arrangement.

Table 3: The Frequency of Municipal Government Forms

Government Form	*Overall Frequency*	*Frequency Among Partner Cities*	*Frequency Among Non-Partner Cities*
Council-Manager	223 (63.53%)	8 (27.67%)	215 (66.98%)
Mayor-Council	120 (34.19%)	21 (70.00%)	99 (30.84%)
Commission	7 (1.99%)	1 (3.33%)	6 (1.87%)
Representative Town Meeting	1 (.28%)	0 (.00%)	1 (.31%)
Total	*351*	*30*	*32*

Note: Information about government form was taken from International City Manager's Association (2000). The numbers in parentheses are column percentages. A Kruskal-Wallis test was conducted on the null hypothesis that there is no difference in the proportions of National Neighborhood Indicators Partnership partner and non-partner cities with council-manager governments. With a chi-squared statistic of 13.34 (one degree of freedom), this null hypothesis can be rejected at $p<.001$.

This pattern deviates from the conventional wisdom that managers, as professional chief administrators, emphasize technology innovations and other reforms to a greater extent than mayors, who, as elected officials, are generally more political in their orientations.[39] This deviation in all likelihood reflects the fact that large urban centers are for the most part governed by mayor-council

[39] Research conducted by Svara highlights differences in leadership background and orientation across forms of municipal government. See Svara, James, "The Shifting Boundary between Elected Officials and City Managers in Large Council-Manager Cities," *Public Administration Review* 59 (1999): 44–53; Svara, James, *Official Leadership in the City: Patterns of Conflict and Cooperation* (New York: Oxford University Press, 1990).

arrangements. For example, 18 of the 25 most populated municipalities have mayor-council governments. Mayor-council arrangements, in other words, happen to be in operation in the types of municipalities where neighborhood information systems are, for independent reasons, especially likely to be established.[40]

In sum, neighborhood information systems have spread to municipalities located throughout the country. There are, however, certain types of cities where NNIP projects are especially likely to be in operation. The profile of the typical partner municipality is a large, densely populated city with a sizeable minority population.

Many municipalities fitting this profile, however, do not operate neighborhood information systems that are partners of the NNIP. For example, NNIP projects have been established in only half of the ten most populated municipalities. In addition, neighborhood information systems are present in only 12 of the 50 cities with the largest percentages of minority residents. What distinguishes demographically similar municipalities from one another when it comes to the development of neighborhood information systems? As a way of addressing this question, the analysis turns to an in-depth examination of the individuals and organizations that have spearheaded the formation and maintenance of specific NNIP projects.

B. THE ACTIVITIES OF NONPROFIT ENTREPRENEURS

As organizational innovations, neighborhood information systems emanate from the activities of policy entrepreneurs. Policy entrepreneurs are "advocates for proposals or for the prominence of an idea."[41] In the context of neighborhood information systems, the

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[40] This interpretation is more intuitively plausible than the alternative explanation that mayor-council governments themselves provide institutionally favorable environments for the adoption of neighborhood information systems. In interviews with individuals associated with 16 National Neighborhood Indicators Partnership projects, not once was a mayor mentioned as being central to the creation and maintenance of the municipality's neighborhood information system (author interviews with neighborhood information systems, June–July 2008). Interviews were conducted with Michael Rich (Atlanta), Matthew Kachura (Baltimore), Charlotte Kahn (Boston), Derek Ziegler (Camden), Garth Taylor (Chicago), Claudia Coulton (Cleveland), Jung Kim (Columbus), Tim Bray (Dallas), Matt Barry (Denver), Neal Richman (Los Angeles), Lisa Pittman (Miami), Will Craig (Minneapolis-St. Paul), Denice Warren (New Orleans), Junious Williams and Steve Spiker (Oakland), Sandy Ciske and David Solet (Seattle), and Peter Tatian (Washington, D.C.). Additionally, Kathy Pettit of the Urban Institute was interviewed.

[41] John W. Kingdon, *Agendas, Alternatives, and Public Policies*. 2nd ed. (New York, NY: Longman 1995), 122.

foundational idea is that technology can advance understanding and action to alleviate urban poverty. By combining web-based data warehouses with maps and other analytical tools, neighborhood information systems offer stakeholders resources for raising awareness and advocating change in communities where they live and work.

As a means of shedding light on the entrepreneurial activities of these organizations, interviews were conducted with individuals affiliated with sixteen NNIP projects.[42] These individuals were identified through a list of partner contacts provided on the website of the NNIP.[43] The interviews were semi-structured in format. Contacts were asked about the conditions, obstacles, and resources of their municipalities and neighborhood information systems. Questions particularly probed city and project-specific issues of adoption and diffusion that cannot be readily understood solely on the basis of existing documentary materials. The aim of each interview was to bring to light the considerations, both national and local, that led to the formation of the NNIP and the subsequent processes through which neighborhood information systems have spread across municipalities.

Overall, the qualitative evidence points to the importance of the availability of resources for overcoming barriers—financial, institutional, and otherwise—to the adoption of neighborhood information systems. Four of the six founding partners of the NNIP—Boston, Cleveland, Denver, and Oakland—had previously been

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[42] Fourteen of these projects have been developed by nonprofit organizations. The exceptions are the Assessment, Policy Development and Evaluation unit of the King County, Washington Department of Public Health, Public Health Seattle & Washington County, "Data, publications and reports by Public Health," http://www.metrokc.gov/HEALTH/reports/index.htm (accessed October 22, 2008), and the Children's Trust, a special taxing district in Miami-Dade County, Florida, http://www.thechildrenstrust.org (accessed October 22, 2008).

[43] The list is available at National Neighborhood Indicators Partnership, "NNIP Partnership Directory," http://www2.urban.org/nnip/loc_list.html (accessed October 22, 2008). Twenty-nine National Neighborhood Indicators Partnership locations were approached about participating in an interview. New Haven was not approached because at the time the interviews were conducted, there was not a National Neighborhood Indictors Partnership project in operation in New Haven. Interviews were ultimately conducted with the sixteen locations that responded affirmatively. These municipalities were Atlanta, Baltimore, Boston, Camden, Chicago, Cleveland, Columbus, Dallas, Denver, Los Angeles, Miami, Minneapolis-St. Paul, New Orleans, Oakland, Seattle, and Washington, D.C. In addition, an interview was conducted with a staff member at the Urban Institute who is centrally involved in the National Neighborhood Indicators Partnership.

participants in the Rockefeller Foundation's Community Planning and Action Project. This project, which operated from 1987 until 1992, drew attention to the problem of persistent poverty, the proliferation of inner-city neighborhoods "characterized by a growing separation from the rest of society, its norms, and especially its resources."[44]

These locations were chosen because, in the words of the Rockefeller Foundation, "each city offers outstanding institutions or leaders and in some cases the promise of collaboration with local foundations or other financial supporters."[45] These municipalities, in other words, possessed internal resources for overcoming obstacles to identifying and characterizing the persistent poor and taking actions to address the root causes of hard-core poverty. In its first year of operation, for example, the Boston project demonstrated that underemployment can be as problematic, for those who are persistently poor, as not having a job at all. In Denver, the project targeted two of the city's poorest neighborhoods for a particularly intensive effort, working closely with school officials to develop strategies for improving elementary education in these areas.[46]

By the early 1990s, the Community Planning and Action Project had begun to facilitate the "regular exchange of information and experiences" among participants.[47] Members took part in a national campaign to assist low-income families in applying for the Earned Income Tax Credit, a rebate that was at the time worth as much as $1,192 per household. The Rockefeller Foundation also brought members together with participants in municipal poverty projects sponsored simultaneously by the Ford Foundation and the Annie E. Casey Foundation.[48]

These external activities were fundamental in laying the groundwork for the formation of the NNIP. When interviewed,

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[44] Rockefeller Foundation, *President's Review and Annual Report* (1987): 43, http://www.rockfound.org/library/annual_reports/1980-1989/1987. The reports issued from 1987 through 1992 provide information about the development of the Community Planning and Action Project and the activities of its members.

[45] Ibid., 44.

[46] Rockefeller Foundation, *Rockefeller Foundation 1989 Annual Report*: 12, http://www.rockfound.org/library/annual_reports/1980-1989/1989.pdf.

[47] Rockefeller Foundation, *President's Review and Annual Report* (1991): 6–13, http://www.rockfound.org/library/annual_reports/1990-1999/1991.pdf.

[48] Ibid., 38. The Rockefeller Foundation's 1991 annual report highlights these networking efforts.

founding partners without fail mentioned their prior involvement in the persistent poverty project.[49] This involvement was crucial in two respects. First, contacts discussed how the Community Planning and Action Project emphasized the combining of data analysis with an orientation toward action at the neighborhood level. Second, contacts highlighted the fact that a staff member at the Rockefeller Foundation who was central to the Community Planning and Action Project eventually took a position at the Urban Institute.[50] The Urban Institute, therefore, emerged as a natural institutional setting for the continued advancement of these municipalities' efforts in understanding and remedying persistent poverty.

Since its inception, one of the main goals of the NNIP has been to facilitate the development and integration of neighborhood information systems beyond the founding municipalities. The Urban Institute, in tandem with partner organizations such as the Annie E. Casey Foundation, has fostered this diffusion in a number of ways. In some instances, staff members have approached already existing neighborhood information systems about becoming partners of the NNIP. In 2002, the Greater New Orleans Community Data Center launched a website that presents and makes available for analysis demographic information at the neighborhood level. After this launch, the Data Center was contacted about joining the NNIP.[51] The Center for Regional and Urban Affairs, in Minneapolis-St. Paul, is another example of an already operating neighborhood information system that was invited into the NNIP.[52]

In other municipalities, the NNIP has played an active role in bringing about the creation of neighborhood information systems. In 1998, the Annie E. Casey Foundation began to explore, along with the Association of Baltimore Area Grantmakers, the possibility of developing a neighborhood information system in Baltimore. This exploration kicked off an extensive planning process that involved

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[49] Author interviews with Charlotte Kahn (Boston), Claudia Coulton (Cleveland), and Junious Williams and Steve Spiker (Oakland) neighborhood information systems, June 11, 2008, June 18, 2008, and June 24, 2008, respectively.

[50] Interviews with Charlotte Kahn (Boston), and Junious Williams and Steve Spiker (Oakland).

[51] Author interview with Denice Warren of the New Orleans neighborhood information system, June 16, 2008.

[52] Author interview with Will Craig of the Minneapolis-St. Paul neighborhood information system, June 16, 2008.

government officials, neighborhood associations, and a variety of nonprofit organizations. The end result was the formation, in 2000, of the Baltimore Neighborhood Indicators Alliance, which has since operated as the city's partner in the NNIP.[53]

Similarly, in 1999, the Annie E. Casey Foundation awarded a planning grant that led to the development of CAMConnect, Camden's NNIP project.[54] The foundation provided ongoing assistance to CAMConnect through 2006, after which it sought to help the project become financially self-sufficient. In this regard, CAMConnect's operations are currently funded by member dues, fee-for-service arrangements with data clients, and the sponsorship of the Cooper Health System's Department of Family Medicine.[55]

The diffusion of neighborhood information systems has not only taken place as a by-product of the activities of national organizations, but also through the learning and emulation that have occurred between NNIP partners and prospective municipalities. In 2000, the City of Columbus, the United Way of Central Ohio, and the John Glenn Institute for Public Service and Public Policy at The Ohio State University founded Community Research Partners.[56] This neighborhood information system was explicitly modeled on the Northeast Ohio Community and Neighborhood Data for Organizing project, a data indicators initiative operated by the Cleveland partner of the NNIP.[57] This emulation ultimately led Community Research

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[53] The creation of the Baltimore Neighborhood Indicators Alliance is documented at Baltimore Neighborhood Indicators Alliance, "About BNIA," http://www2.urban.org/nnip/desc_bal.html (accessed October 20, 2008) and http://www.ubalt.edu/bnia/about/index.html (accessed October 19, 2008).

[54] National Neighborhood Indicators Partnership, "NNIP Partnership Spotlight Camden," http://www2.urban.org/nnip/desc_cam.html (accessed October 19, 2008).

[55] Author interview with Derek Ziegler of the Camden neighborhood information system, June 12, 2008.

[56] National Neighborhood Indicators Partnership, "NNIP Partnership Spotlight Columbus," http://www2.urban.org/nnip/desc_col.html (accessed October 19, 2008).

[57] Author interview with Jung Kim of the Columbus neighborhood information system, June 13, 2008. Information about Cleveland's neighborhood information system can be found at the website of the National Neighborhood Indicators Partnership, "NNIP Partnership Spotlight Cleveland," http://www2.urban.org/nnip/desc_cle.html (accessed October 20, 2008).

Partners to approach the Urban Institute about being considered for selection into the NNIP.[58]

Other neighborhood information systems have also sought partnership in the NNIP. The Advanced Policy Institute, for example, approached the NNIP about being designated as the Los Angeles partner, a request that was granted in 2002.[59] Such designation is valuable to neighborhood information systems for a variety of reasons. Many contacts pointed to the sharing of expertise and experiences across neighborhood information systems as a principal benefit of involvement in the NNIP. One municipality might advise another on, for example, what company it hired to redesign its website or how it was able to quickly procure government data on foreclosures.[60] Contacts also highlighted the local credibility that being a partner of a national partnership confers on their neighborhood information systems.[61] One indicator of this benefit is the fact that a number of municipalities advertise their involvement in the NNIP on their home page or in another prominent location on their website.[62]

In sum, the interviews and documentary materials demonstrate that there is no single pathway to the development of neighborhood information systems. The founding partners of the NNIP were among the first municipal projects to bring systematic data analysis to bear on the problem of persistent poverty. Since the formation of the NNIP, additional neighborhood information systems have become partners through entrepreneurial activities at both the national and local levels. This combination of municipal innovation and the sponsorship of organizations such as the Urban Institute and Annie E. Casey Foundation has fostered the diffusion of expertise, experience, and other critical resources. Such resources have made it possible for

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[58] Author interview with Jung Kim of the Columbus neighborhood information system, June 13, 2008.

[59] Author interview with Neal Richman of the Los Angeles neighborhood information system, June 19, 2008.

[60] Author interviews with Matthew Kachura (Baltimore) and Matt Barry (Denver) neighborhood information systems, June 19, 2008 and July 7, 2008, respectively.

[61] Author interviews with Claudia Coulton (Cleveland), Tim Bray (Dallas), and Denice Warren (New Orleans), June 18, 2008, June 11, 2008, and June 16, 2008, respectively.

[62] Examples of this advertising include The Ochs Center for Metropolitan Research, "The Ochs Center," http://www.ochscenter.org/ (accessed October 18, 2008) and SAVI Interactive, "What is SAVI?," http://www.savi.org/savii/about/savi.aspx (accessed October 20, 2008).

projects to overcome barriers to adoption that are naturally present even in municipalities with environments that are broadly conducive to the development of neighborhood information systems.

V. NONPROFIT ORGANIZATIONS AND TECHNOLOGY INNOVATION

Neighborhood information systems are technology innovations that have "revolutionized public recordkeeping" by using the Internet and analytical tools such as maps to make data about municipal conditions and trends readily accessible to residents and community organizations.[63] At this stage in development, one institutional characteristic of neighborhood information systems is the great variation in adoption and diffusion across municipalities. In some cities, relatively sophisticated neighborhood information systems were established years ago, while other cities do not yet have such projects. This article has examined the factors behind this variation, focusing on the municipal environments that are generally associated with the development of neighborhood information systems and the entrepreneurial activities that have been crucial to the creation and maintenance of specific projects in the NNIP.

In addressing these issues, the article's conceptual approach has been to treat neighborhood information systems as organizational innovations. This approach draws attention to the objective conditions that tend to be associated with the adoption and diffusion of new policies and projects. In the context of neighborhood information systems, these conditions have been twofold. First, neighborhood information systems are most likely to be present in large, densely populated cities, the kinds of environments that serve as laboratories for virtually all types of municipal innovations. Second, cities with large minority populations and high unemployment rates are more likely to have NNIP partners than cities that are less disadvantaged economically and demographically. These patterns, although uncommon in municipal innovation, are consistent with the NNIP's orientation toward understanding and alleviating persistent poverty.

The diffusion of neighborhood information systems has also been a function of the obstacles that nonprofit organizations, the main catalysts of the NNIP, routinely encounter when it comes to the adoption of technology innovations. Such obstacles constitute an

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[63] Sarah Treuhaft, and G. Thomas Kingsley, "Transforming Community Development with Land Information Systems," (Lincoln Institute, 2008): 5, http://www.community-wealth.org/_pdfs/articles-publications/cross-sectoral/report-treuhaft-kingsley.pdf.

"innovation divide" that distinguishes nonprofit organizations from governments, and especially private sector entities.[64] This divide stems from three specific factors.[65] First, technology research and development tends to be oriented toward the needs and capabilities of business firms. Second, many nonprofit organizations lack the resources to invest in technology and its associated training and maintenance requirements. Third, there is a general lack of information among potential adopters about innovations that have been or could be applied to activities in the nonprofit sector.

Given these obstacles, what separates municipalities where cities have overcome the innovation divide from cities where NNIP projects have not yet been established? Entrepreneurial activities at both the national and local levels have provided nonprofit organizations with resources for overcoming barriers to the implementation of neighborhood information systems. In some municipalities, these resources have been the byproduct of community-based institutions—for example, universities and foundations—that have been at the forefront of the movement to use technology as a means of specifying and taking action in the area of persistent poverty. In other cities, information about the democratization of data and the operation of neighborhood information systems has been disseminated through the work of the Urban Institute and other organizational sponsors of the NNIP.

This combination of local initiative and national collaboration has been a hallmark not only of the diffusion of neighborhood information systems, but in the adoption of other community-building innovations as well. For example, more than five hundred microenterprise development programs are currently in operation around the country.[66] These programs foster business ownership among groups such as "immigrants and refugees, people of color, veterans, individuals transitioning off of welfare, and persons with disabilities."[67] The work of microenterprises has been greatly aided by the existence of two Internet-based nonprofit intermediaries—MicroMentor and Count Me In—that have facilitated the exchange of expertise and experiences among entrepreneurs working in disparate

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[64] Treuhaft, and others, "Bridging the Innovation Divide," 10 (see n. 2), http://www.policylink.org/pdfs/Innovation_Divide.pdf.

[65] Ibid.

[66] Ibid., 43.

[67] Ibid.

locations.[68] Such organizational similarities underscore the general importance of both community-specific and cross-jurisdictional resources in overcoming the innovation divide in projects where technology is central to the efforts of nonprofit organizations.

Finally, although the article has highlighted the aims of the NNIP, it has not given systematic attention to the issue of the impacts of neighborhood information systems.[69] What kinds of stakeholders take advantage of the indicators, reports, and interactive tools that are provided by neighborhood information systems? Do these stakeholder activities make a difference in either the processes of local governance or the outcomes that are realized in communities served by neighborhood information systems? Systematic demonstrations that neighborhood information systems are widely used and are routinely effective can themselves be valuable resources for entrepreneurs seeking to extend the reach of the NNIP in the years ahead.

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[68] Ibid.

[69] A handful of reports focus on the activities of neighborhood information systems, including Cowan (2007); Kingsley (1998); Kingsley and Pettit (2004); Treuhaft, et al. (2007); and Treuhaft and Kingsley (2008).