



PUTTING OPEN DATA TO WORK FOR COMMUNITIES

JUNE 2014

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ACKNOWLEDGMENTS

The authors would like to thank Alaina Harkness of the John D. and Catherine T. MacArthur Foundation for supporting NNIP's focus on open data. In addition, we would like to acknowledge the partners who contributed their open data stories in our companion briefs: Todd Clausen (Milwaukee), Bob Gradeck (Pittsburgh), and Steve Spiker (Oakland). Their experiences and advice informed many of the recommendations in this report. We would also like to acknowledge the assistance of the partners serving on the 2013 NNIP Executive Committee: David Bartelt (Philadelphia), Todd Clausen (Milwaukee), Matthew Kachura (Baltimore), Jeff Matson (Minneapolis), Kurt Metzger (Detroit), and Max Weselcouch (New York City). Emily Shaw and Rebecca Williams of the Sunlight Foundation also contributed helpful comments. Finally, many other local partner staff shared valuable insights at the session at the partners meeting in Columbus in June 2013.

This paper was supported by the John D. and Catherine T. MacArthur Foundation. The views expressed are those of the authors and do not necessarily represent those of the MacArthur Foundation or the Urban Institute, its trustees, or its funders.



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INTRODUCTION

In the early 1990s, six organizations funded by the Rockefeller Foundation's Confronting Persistent Poverty project began negotiating for address-level local administrative data, shaping the raw records into meaningful indicators, and helping low-income communities leverage the information to have a voice in how their neighborhoods evolved. These groups aligned with the Urban Institute (Urban) in 1996 to form the National Neighborhood Indicators Partnership (NNIP) in order to share lessons and spread the model to other cities. NNIP grew from these original six partners to 35 local partners in 2014.

After 15 years of translating local government data for use by communities, NNIP partners were introduced to another movement: open government data. In 2010, the NNIP codirector and local NNIP partners from New Orleans, Milwaukee, and Chicago joined more than a hundred local government officials, developers, designers, advocates, and journalists at CityCamp in Chicago to share ideas on how cities could “add value to citizens' lives using the Web as a platform.” The sessions covered open data, citizen engagement, and civic technology.¹ The NNIP partners shared their experiences obtaining government data and working alongside community groups to use the data for planning and decisionmaking. The meeting participants came from all sectors and had different perspectives, but common ground surfaced over the two days: the need for accurate, relevant, easily accessible information so residents and community groups can engage with their government and make better individual and collective decisions.

The event catalyzed the NNIP network to explore how the open data and NNIP movements relate to each other and how they might work more closely together. The network began the conversation in spring 2011 at the partners' meeting in Detroit and launched a formal project with the support of the John D. and Catherine T. MacArthur Foundation in early 2012. Over the past two years, the two communities have had more chance to interact, and a few partners have joined with advocates in their localities to promote open data policies and practices. While this document reflects what we have learned about open data over this period, we recognize that our thinking will need to continuously evolve to adapt to this fast-paced field.

¹ For information about the original CityCamp, see <http://barcamp.org/w/page/25504543/CityCamp-Original>.

The paper documents NNIP partners' roles in the open data movement and the openness of NNIP data today. The paper then describes the complementary strengths of the local NNIP partners and the open data community and what they can learn from each other. It concludes with recommendations for the NNIP network to continue engaging with the open data community and more effectively advocate for open government data at all levels.

Four accompanying briefs describe how our Chicago, Milwaukee, Pittsburgh, and Oakland partners have engaged with open data advocates.² These accounts paint a richer picture of how information environments are shaped by the local institutional and political context in four very different cities.

² The four Partner Perspectives are available from the NNIP website at <http://neighborhoodindicators.org/activities/projects/nnip-and-open-data>.

THE NATIONAL NEIGHBORHOOD INDICATORS PARTNERSHIP

Organizations that join NNIP as local partners are committed to three primary functions: the assembly, transformation, and dissemination of data; the application of data to achieve impact, particularly to address the opportunities and needs of distressed neighborhoods; and the use of data to strengthen civic capacity and governance (see Kingsley et al. 2013 for more information about the NNIP model and network). The institutional arrangement of NNIP partners varies considerably across sites; as of Spring 2014, 14 are nonprofit organizations, 10 are university departments or research centers, four are local funders or government agencies, and the remaining 7 are formal partnerships between two or more these types of organizations.

ASSEMBLY, TRANSFORMATION, AND DISSEMINATION OF DATA

NNIP partners are one-stop shops for data, building relationships with local agencies and obtaining administrative data from diverse sources. Partners typically hold both confidential and nonconfidential administrative data on the sale and characteristics of properties, foreclosures, vital statistics, student or school enrollment and performance, crime, and public assistance. Local agencies trust NNIP partners to handle confidential data responsibly, releasing only aggregate indicators.

Having data from diverse sources in one place makes it easier for community organizations, residents, and local agencies to find and access information about their neighborhoods. Additionally, the “one-stop” concept allows users to view the many facets of policy issues that affect neighborhoods. For example, one could look at how the foreclosure crisis is affecting housing prices, or look more broadly at how the crisis is affecting housing, student and school mobility, and crime in and around vacant homes. Partners are committed to maintaining data over the long term. They regularly update their data, often serving as the only archive for publicly available data sources that are typically overwritten (like property sales histories). This archiving capability enables partners to create longitudinal datasets and examine trends over time.

NNIP partners share a goal to “democratize information,” and making data easier for a wide range of people to use is central to the NNIP model. Even for experts, working with raw

administrative data to create useful measures is challenging and can be very costly, especially when creating an indicator that combines data from several sources. NNIP partners' expertise includes knowing the quality of the data, cleaning the data, creating metadata, understanding the policy issues the data can be applied to, aggregating data to neighborhood-level indicators relevant to their communities, and developing new ways to visualize data. NNIP partners typically disseminate the data locally via their own websites (see the State of NNIP and Open Data section for more details) or at meetings, forums, and events with community organizations and city agencies.

APPLICATION OF DATA TO ACHIEVE IMPACT

Beyond the data and neighborhood indicators themselves, NNIP partners help city agencies, foundations, community groups, and neighborhood residents use the data to improve neighborhoods and residents' lives. Working interactively with these clients helps them understand data and feel ownership over the final products. Often partners endeavor to increase the ability of governments, foundations, and community organizations to identify emerging neighborhood issues and to target resources and investments efficiently. Partners may use data to inform the design of a neighborhood improvement initiative, work with funders to conduct community needs assessments, help a nonprofit organization use data for performance management, or conduct independent program evaluations. In addition to working with organizations or initiatives one by one, NNIP partners use their data to catalyze new collaborations and help break down silos to improve the chances of influencing policy. Partners have many stories of local groups that had not worked together coming together around a fresh examination of data and going on to collaborate.

USE OF DATA TO STRENGTHEN CIVIC CAPACITY AND GOVERNANCE

Like the open data movement, NNIP partners seek to strengthen the data capacities of other local institutions. Partners do this by providing general advice, technical assistance, and training to agency staff and community practitioners, helping them build internal data capacity and improve the quality of their data systems. Although limited everywhere by funding constraints, many NNIP partners also run "help desks" that local groups can call for hands-on help with data tasks. The NNIP network encourages its partners to lead the local development of a community of practice among local stakeholder organizations that can promote the effective use of data in decisionmaking. This may include the partner convening regular meetings where all participants can share innovative applications, identify gaps in local practice and ways to

address them, and build a constituency for productive data efforts, such as local government open data portals.

THE NETWORK

The Urban Institute, a nonpartisan policy research organization, coordinates the NNIP network. Through the network, NNIP partners share what they know, learn from each other, and uncover new ways to revitalize neighborhoods and improve lives. The network also carries out multicity action projects to dive into selected topics and produces guidebooks and other materials. To spread the word about NNIP, Urban staff advise other interested cities and participate in national conversations to promote the need for local capacity to use data for decisionmaking.

THE OPEN GOVERNMENT DATA MOVEMENT

The principles of open government data were born from the broader open government concept, which promotes transparency in government decisions and actions. Open data proponents assert that technology can make processes and information more obvious so that citizens can hold governments accountable. Other complementary arguments have been added over time. Advocates view government data as a public good that should be available to the taxpayers who funded its creation. Open data can also encourage citizen engagement in government decisionmaking. Another motivation for opening government data is the economic value this information can generate from related private-sector activity. The most-cited example is the massive industry built on the foundation of government-generated weather data.

In 2007, a working group met in Sebastopol and outlined the eight principles of open government data (later expanded to ten) to operationalize the open data concept and establish standards for judging openness (Tauberer 2012). The rest of this section highlights some developments of the open data community relevant to NNIP. A more detailed history of principles, guidelines, and practices is available in Tauberer (2012) or on the Sunlight Foundation website.³

One characteristic of the open data movement is the active involvement of software developers, both as entrepreneurs looking to start businesses and as residents that want to use their skills to benefit their communities. The tech culture emphasizes more efficient delivery of information and technology-based solutions that overcome barriers to information. In general, developers' contributions are products, not processes.

Developers in the open data movement often are also proponents of open source, nonproprietary software code that others can use without licensing fees. This causes some confusion among lay people, but the two ideas are not necessarily synonymous. Open data

³ See Rebecca Williams, "Your Guideline to Open Data Guidelines Pt. 1: The History," June 4, 2013, accessed March 30, 2014, Sunlight Foundation, <http://sunlightfoundation.com/blog/tag/guidelines-to-guidelines/>; and Rebecca Williams, "Your Guidelines to Open Data Guidelines Pt. 2: Stages of Development, September 16, 2013, accessed March 30, 2014, Sunlight Foundation, <http://sunlightfoundation.com/blog/tag/guidelines-to-guidelines/>.

can be shared through proprietary systems (such as the Socrata data portal), and open source software can be used internally or with proprietary data. Nonetheless, the two ideas are often linked since the organizations and individuals promoting open data often work in both spaces and can reinforce each other.

Formal organizations have also emerged to guide and connect the various communities supporting open government and open government data. The Sunlight Foundation, a nonprofit organization founded in 2006, plays a major role in promoting government transparency. It fulfills its mission through advocacy, education and community-building, and supporting new open source tools to create and disseminate open data. The foundation's early agenda focused on federal government transparency, but in 2013, it launched a project promoting an open data policy in local government.⁴ The new project highlights issues around select individual datasets (like crime), tracks developments in municipal open data initiatives, and publishes model open data policies for state and local governments.

Other civic groups followed Sunlight with the specific mission to engage directly with local government officials and provide encouragement and tools to open up their data. OpenPlans promotes technical standards for government data, such as Open 311, and creates open source tools that local governments can share. Code for America began in 2011 with a fellows program to pair talented technologists with interested cities and build open source solutions to defined problems. Their programs expanded to a local volunteer Brigade program and a Peer City network. The publicity and products from groups such as these directly affected the participating cities, but also indirectly furthered the open data movement by providing media exposure and examples for other state and local governments.

The Obama administration raised the national profile of open data through its 2009 open government directive, with stated goals of transparency, participation, and collaboration.⁵ The directive instructed agencies to publish nonconfidential information, while recognizing that government agencies would need to change their culture and policies to accomplish these goals. As a visible demonstration of the commitment, in 2010 the federal government launched the data.gov website, a consolidated platform for delivering federal data across agencies.

⁴ <http://sunlightfoundation.com/policy/local/>

⁵ "Open Government Directive," memorandum from Peter Orszag, director of the Office of Management and Budget, to the heads of executive departments and agencies, December 8, 2009, accessed November 5, 2013, http://www.whitehouse.gov/sites/default/files/omb/assets/memoranda_2010/m10-06.pdf

While experts debate the directive's success (Evans and Campos 2012), it did encourage open data supporters within government agencies and offered principles that state and local governments could emulate.

The administration advanced the cause again in May 2013 with a new directive that stated all data should be open and machine-readable by default, unless subject to privacy or security concerns.⁶ It required agencies to collect or create information in a way that supports downstream information processing and dissemination activities, build information systems to support interoperability and information accessibility, strengthen data management and release practices, and strengthen measures to ensure that privacy and confidentiality are fully protected and that data are properly secured. Obviously, these changes will not happen overnight, but the principles are in place to hold agencies accountable for progress in these areas.

National and local events also helped spread open-government data ideas and build a community of proponents. Since 2009, Sunlight has sponsored the annual event TransparencyCamp, an unconference that brings together diverse people to discuss issues around government transparency through technology and advocacy. Following the success of CityCamp in Chicago, cities around the country organized similar events. The federal and local governments have hosted Apps contests, where cash or other prizes are given for developing applications with open data, and codeathons, where technologists meet for a concentrated period to create applications.

The efforts of the national nonprofits and individual activists (developers and non-developers, both inside and outside governments) have paid off. Increasing numbers of governments have embraced open data in rhetoric, policy, and practice. While much of the media coverage on open data has focused on large cities like New York, Chicago, and San Francisco, the ideas are spreading to other cities, as shown by our *Partner Perspectives* in Milwaukee and Pittsburgh (Clausen 2014; Gradeck 2014).

While NNIP and open data advocates share an overarching goal of expanding access to information, the typical types of data, audiences, and delivery approaches of early open data

⁶ "Open Data Policy—Managing Information as an Asset," memorandum from Silvia M. Burwell, director of the Office of Management and Budget, et al., to the heads of executive departments and agencies, May 9 2013, accessed November 5, 2013, <http://www.whitehouse.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf>.

efforts did not match NNIP's mission-driven priorities. Aiming for greater government transparency and accountability, the open data advocates focused on political contributions, government spending, legislative, and similar data, which the NNIP partners had not traditionally collected. The target audiences also differed. The primary customers of open data portals were advanced users and developers, not the nonprofit and neighborhood constituencies of NNIP partners. The higher-profile apps focused on improving service delivery and delivering information to individuals for private actions, such as locating buses, finding parking, or tracking a service call. In contrast, NNIP partners generally work with groups looking to identify community-level issues and address them with collective action or policy changes. This work often requires indicators and trends over time (such as patterns in crime rates by category) as opposed to the location and time of an individual crime.

The emphasis on smart phone apps as an open data delivery system excluded residents unable to afford the devices, appearing to reinforce (if not actually reinforcing) the digital divide. NNIP was founded to level the playing field for residents and organizations in distressed communities to both access and use information; delivering data to individuals without context or engagement for action seemed an ineffective way to further that mission.

A Living Cities–funded scan of civic technology documented the challenges of having this new resource help low-income people. Researchers found that communities grapple with creating tools that reflect community needs, navigating data privacy issues, allocating funding from tight budgets, and accessing people with high-tech skills (Hebbert 2012). The authors end with some suggested approaches to help civic technology support low-income families and neighborhoods more often and at a deeper level.

However, the field is evolving in positive directions as the open data community learns about working in communities and local groups learn how best to leverage the skills and innovative approaches of open data and new technologies. Examples in the *Partner Perspectives* collection document very early steps to link open data to community-based work (Clausen 2014; Gradeck 2014; Spiker 2014). In Chicago in particular, partners are forging partnerships to have neighborhood development goals drive data and technology efforts (Pettit 2014). One example is the University of Chicago–based Eric and Wendy Schmidt Data Science for Social Good fellowship, which encourages aspiring data scientists to work on machine learning, big data, and projects with social impact. The fellows partner with governments and nonprofits across a range of real-world issues. LISC-Chicago is also engaging with the Smart Chicago Collaborative to explore how technology can support resident-driven agendas.

THE STATE OF NNIP AND OPEN DATA

We believe that NNIP's mission to further the democratize information makes NNIP partner organizations natural collaborators with open data advocates. However, from an outsider's perspective, NNIP partners could be seen as gatekeepers to raw data that should be publicly accessible. A police department may believe that its exclusive data-sharing agreement with an NNIP partner organization fulfills its open data obligations, despite not releasing record-level crime data to the public. To address this concern, the network wanted to assess the current relationship of local NNIP partners with their open data communities, and to demonstrate how the NNIP partners' distribution of data adhere to the ten principles of open data. This baseline review will enable us to track the network's progress over time.

NNIP INVOLVEMENT IN LOCAL OPEN DATA MOVEMENTS

Much of the recent national media coverage on open data has been about either the federal movement or the leading cities in open data, such as Chicago and Philadelphia. Having a network of local data intermediaries that are apt to pay attention to new data movements provides one snapshot of how widespread the open data movements are and how they have changed the local information environments to date. The *Partner Perspectives* briefs look in depth at NNIP and open data in four places, but we still wanted a sense of the status of the open data movement in all partner sites, not just the pioneering ones. To capture this information, the NNIP partners were surveyed in summer 2012 about their awareness of the open data movement and related activities in their areas. This section summarizes the responses from 32 partners.

NNIP partners were first asked about their organization's connections to specific open data constituencies, such as public agency staff working on open data, civic-minded individual programmers, or government transparency advocates. Awareness of and connections to open data constituencies have grown over the past few years. Half of partners had at least one informal connection to one of these constituencies before 2011, and over four-fifths had an informal connection by 2012. In addition, 37 percent of partners had formal partnerships with one of these constituencies before 2011. By 2012, 47 percent had formal partnerships.

NNIP partners were most likely to have *formal* partnerships with public agency staff working on open data—as might be expected, given partners long-term efforts to obtain and work with local administrative data (table 1). Partners were much more likely to have *informal* connections with civic developers (59 percent) or government transparency advocates (47 percent) than formal partnerships (9 and 19 percent, respectively). Only 9 percent (or three partners) had no connection to any of these open data constituencies.

Table 1. NNIP Partners' Connection to Open Data Constituencies, 2012

	Public agency staff working on open data	Civic-minded individual programmers	Government transparency advocates
Partnered formally as of 2012	38%	9%	19%
Connected informally as of 2012	38%	59%	47%
Not connected at all	25%	31%	34%

While NNIP partners reported many partnerships and informal connections to open data constituencies, they were less likely to have had staff attend local or national open data events such as unconferences, meet-ups, codeathons, or traditional conferences since 2011. Of the 32 partners who responded to the survey, 49 percent had never attended an open data event, 38 percent had attended one to five events, and 13 percent had attended more than five events.

Attendance at open data events reflects partners' awareness of the open data movement in their communities. Twenty-eight percent of partners (representing a range of city sizes) reported either no movement or not one they are aware of in their area. Almost 60 percent of partners responded that either local government or another organized group is working on open data at the city level. Fewer partners were aware of groups working at the county level (38 percent), metropolitan area level (31 percent), or state level (34 percent).

Reflecting NNIP partners' strengths around data and collaboration, their awareness about specific open data activities in their communities varied by the type of activity; more partners were aware of informal meetings and planning for open data portals than codeathons or apps competitions (table 2). About two-thirds of the partners who were aware of information meetings around open data or open data portals were somehow involved in them.

Table 2. NNIP Partners' Involvement in Open Data Activities, 2011–12

	Number of partners aware of activity	Share involved in activity	Share not involved in activity
Meet-ups or other informal meetings	21	67%	33%
Operating or planning an open data portal	19	68%	32%
Communication by email lists or Facebook	16	50%	50%
Apps competitions	13	31%	69%
Codeathons	13	31%	69%
CityCamp or other conference	12	50%	50%

NNIP partners were most often aware of local government staff involvement in open data activities (63 percent), as well as civic-minded individual programmers (56 percent) or government transparency advocates (47 percent). About 40 percent of partners each knew of journalists or universities involved in open data. Partners were least likely to be aware of the involvement of private firms (31 percent) or government watchdog groups (13 percent). All NNIP partners who could identify the type of participants in the open data movement mentioned at least two types of groups; 61 percent named two to four types of groups, and 39 percent named five to seven types of groups.

As the survey reveals, NNIP partner involvement in the open data movement ranges from no involvement to organizing codeathons and advocating for or creating open data portals. In addition to involvement in the open government data movements, many partners make data available on their own websites. The next section explores how well our partners are able to meet open data standards and principles when they release data.

HOW OPEN IS NNIP DATA?

Since the inception of NNIP, partner organizations have worked to “democratize data.” One way to do this is to post data and indicators on their websites for residents, neighborhood groups, and city agencies to access. We evaluate the state of open data among NNIP partners as found by scanning their websites in winter 2013. To structure the discussion, we use the “ten

principles for opening up government information” published by the Sunlight Foundation.⁷ While applying open data standards meant for government agencies to mostly nongovernmental NNIP partners raises issues, many of the principles are adaptable. Logically, these standards are not being used to evaluate the “openness” of confidential data, which NNIP partners are prohibited from sharing in raw form. According to our scan of NNIP partner websites, nearly 60 percent of our 37 partners at that time have some form of “open” data that can be downloaded from their websites. Other partners may not focus on making data available on their website if they can fulfill their mission to serve nonprofits and residents in their communities in other ways, such as by working directly with groups to get them the data and information they need. Table 3 summarizes our findings from the scan.

Table 3. Results from the Website Scan of NNIP Partners, Winter 2013

Feature	Number of partners	Percent
Downloadable data	22	59 (of all partners)
Machine-readable format	22	100 (of those with downloadable data)
Excel only	8	36
CSV only	9	41
Multiple formats	5	23
Data query system	15	68

Note: Downloadable data is typically summarized at the neighborhood level or other subcounty/subcity geography.

An important feature of good open data is machine readability, which describes how easily the data can be processed by data software and machines. Portable document formats (PDFs), of scanned images, for example, are not machine-readable and can add significant time to data processing. All NNIP partners with downloadable data post them in a form other than PDF on their websites. The most common formats are comma-delimited text files (CSVs) or Microsoft Excel (XLS) files, though several partners post data in multiple machine-readable formats.

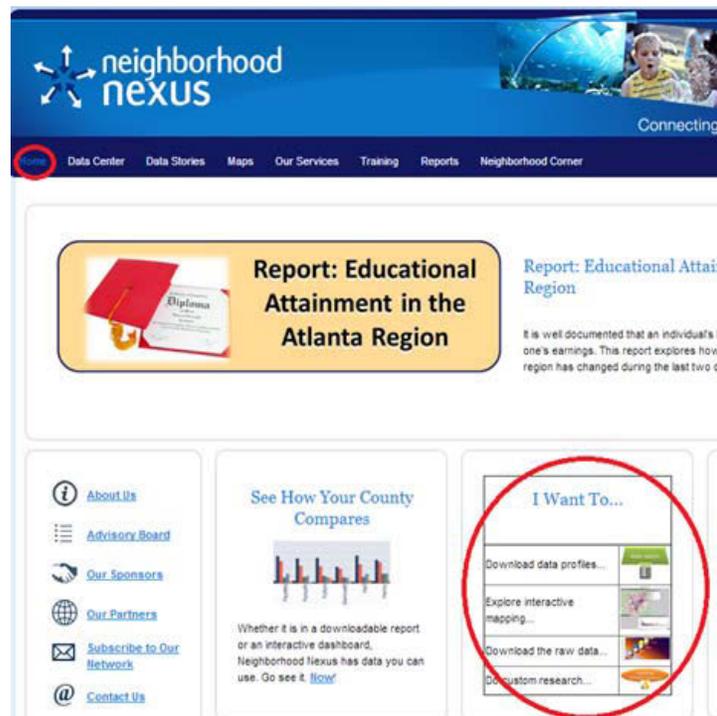
While machine readability is critical to open data, advocates also believe that data should be shared using nonproprietary file formats. To avoid losing access to data because of corporate

⁷ “Ten Principles for Opening Up Government Information,” blog post, Sunlight Foundation, August 11, 2010, accessed March 26, 2013, <http://sunlightfoundation.com/policy/documents/ten-open-data-principles>.

policies, open data advocates prefer file formats owned and governed by an open community. The open government working group cited Microsoft Excel as one example: the program is widely available but costs money to purchase. The introduction of Google Drive eliminates software costs for spreadsheets and word processing, but Google could decide charge for this product or remove it at any time.

Of partners that have websites with downloadable data, 36 percent offer data only in Excel, and 41 percent offer data only in CSV files. Partners who offer data in multiple formats typically include at least one nonproprietary format, such as CSV or Extensible Markup Language (XML), along with formats such as Shapefiles (used with ArcGIS, an ESRI product) or SAS (a statistical software program). When deciding in which format to post data, NNIP partners may be catering to the needs of their users, which are largely nonprofits and government agencies. These groups predominantly use Excel and Microsoft Office products, and providing data via Google Drive or as CSVs may actually introduce new barriers for lay audiences. NNIP partners generally do well on the use of commonly owned standards, particularly given their audience and the advent of free programs to view the data obtained from their websites.

Another principle of good open data on which NNIP partners tend to do well is ease of access to the data. Two-thirds of the 22 partners with downloadable data have a data query system that allows users to personalize the data they want to download. Only a few partners require users to register in order to access the data. Ease of access also refers how easy it is to locate and download the data. Some partners recognize and address this need well. For example, Neighborhood Nexus, the NNIP Partner for Atlanta, has a link on its homepage explaining how to find



Accessing Data from Neighborhood Nexus in Atlanta

Source: <http://www.neighborhoodnexus.org>

and use the data on its website. On other sites, the ability to download the data may be several layers beneath the home page; this placement may make the data difficult to locate, frustrating existing users and lowering the odds that new users would be able to find the data.

The principle of nondiscrimination addresses another potential barrier to accessing the data: restrictions on who can access the data or what they must do in order to access it. For example, registration or membership requirements can be obstacles to data usage. Anyone who visits most of the NNIP partner websites can have access. Some websites require registration and logging in to access the data. Others have a tiered system, publicly releasing aggregate indicators but restricting access to detailed data (like parcel-level data) to close working partners.

The websites that restrict usage have various reasons for doing so. Some make users log in because this helps the partner determine its audience and the intended uses of the data. Tracking data users may also help partners either justify their current funding or apply for new funding. There is also a concern that the data will be misused and therefore tarnish the organization's integrity or negatively impact another community group. For example, NeighborhoodInfo DC, the District of Columbia partner, produces weekly lists of houses in foreclosure that are sent directly to housing counselors and local government agencies. These lists are not posted online because of concerns that individuals running foreclosure prevention scams could target these properties. Additionally, the data provider may place conditions on who the NNIP partner can release data to (such as restricting access to nonprofits) in the original data use agreement. Therefore, the partners that require logins or provide data only to certain groups may be either abiding by legal restrictions or meeting the mission and interests of the organization or the community they serve.

Usage costs are not a barrier to open data for NNIP partners. NNIP excels in this area because almost all partners who provide data on their websites do so at no cost.⁸ This is critical to NNIP's mission to "democratize information" because otherwise the pool of people who could access the data would be restricted to those who could afford it, and that would perpetuate existing information disparities.

For five principles of open government data (primacy, completeness, licensing, permanence, and timeliness) it was either difficult to judge how well NNIP partners honored the principle or the

⁸ The one known exception is Pittsburgh, which charges for-profit entities for access to its online data system.

principle was not applicable because most partners are not government agencies. For example, NNIP partners should not be judged on the primacy of the data they post as they mainly handle secondary administrative data. Some partners, however, do undertake primary data collection efforts, such as surveys of property conditions, and do make that data available on their websites.

Ideally, posting raw government administrative data is the role of the government and need not fall under the domain of an NNIP partner. Posting complete raw datasets is an important principle for open government data because it allows data users to understand and examine the data in detail. However, it is less relevant for NNIP partners who are primarily posting data that they have cleaned and transformed into indicators that are easier for various audiences, including those with limited analytic capacity, to prepare on their own.

Completeness of data also means that metadata or a “data dictionary” that defines how the data work, along with formulas and explanations on how to use the data, are available. NNIP partners are generally very good about including metadata for their data, with 22 of the 37 partners (62 percent) providing metadata. However, the quality and “findability” of the metadata varied considerably across sites. The website of the Data Center in New Orleans provides an excellent model for metadata.

Open data proponents emphasize the importance of clearly defining data as available without usage restrictions and as public domain. While most partners do not have clearly defined public domain data, it is implied to be open for public use. On the other hand, NNIP partners have almost always add considerable value to the data they share on their websites. Partners take raw data, review and clean it, and often combine it with other data sources to create indicators and information that would be difficult for the average individual to obtain from a raw data file

Definitions & Source Links

 You may find it helpful to print these pages so the definitions are available as you refer to the data.

Source links: Scroll to bottom of page for helpful links to source web sites.

Total numbers

Population: All people, male and female, child and adult, living in a given geographic area.

Total households: A household includes all of the people who occupy a housing unit. A housing unit is a house, apartment, or mobile home. The occupants may be a single family, one person living alone, two or more families living together, or any other group of related or unrelated people who share living quarters. People living in group quarters are not considered to be living in households. Group quarters includes institutions such as prisons, military barracks, nursing homes, and juvenile institutions.

Family households: A family includes a head of household and one or more other people living in the same household who are related to the householder by birth, marriage, or adoption. All people in a household who are related to the householder are regarded as members of his or her family. A household can contain only one family for purposes of census tabulations. Not all households contain families since a household may be a group of unrelated people or one person living alone.

Gender

Female: The percent of the total population that is female. Individuals were asked to mark either “male” or “female” to indicate their sex.

Male: The percent of the total population that is male. Individuals were asked to mark either “male” or “female” to indicate their sex.

Metadata from The Data Center in New Orleans

Source: <http://www.datacenterresearch.org/data-resources/neighborhood-data/definitions/>

without the knowledge and expertise of an NNIP partner. A few partners require users to read terms-of-service agreements before accessing the data. For example, NEO CANDO, the data system of the partner in Cleveland, Ohio, requires users to agree to the terms of service before accessing the data. Certain terms-of-agreement statements may be necessary for partners to protect the integrity of their organizations and the value that they have added to the data; these statements are also a way to increase transparency on how the data can be used. But, these terms could be considered a barrier to open data because they clearly state that the data belong to the organization and therefore can be removed or altered at any time.

The permanence of the data online is another key component of open data, but this principle is difficult to judge based on a one-time scan of partner's websites. Ideally, data should remain online and in the same location (to avoid broken links and difficulty locating the new location), with version-tracking and archiving so the information is available over time. Permanence of the data is important to NNIP partners even if it is addressed inadequately online. All partners develop and maintain data warehouses and store longitudinal datasets offline. Importantly, NNIP partners can serve as the only source of archived administrative data; local jurisdictions commonly overwrite datasets online, keeping only the most recent data.

Timeliness is another important component of open data because it increases the data's value and usefulness for users. While most data are posted by NNIP partners with no longer than a year delay, postings vary even within sites. Generally, partners consistently update their data, but no NNIP partner provides real-time updates. This is reasonable considering most partners work with secondhand data, and updates are often restricted by the frequency of data releases and the need to minimize the work for agencies providing data.

NNIP partners generally have relatively open data. NNIP partners address three of the ten principles well: machine readability, usage costs, and nondiscrimination. They also do fairly well

Please check all of the following boxes to indicate that you have read about the limitations of NEO CANDO data and you agree to abide by the conditions of use.

- * **I have read, understood, and agree to the NEO CANDO legal disclaimer**
Click here to access the NEO CANDO legal disclaimer
- * **No fees may be charged for use or distribution of NEO CANDO data**
All persons are granted a limited license to use and distribute these data, but you may not charge a fee for the data if you distribute it to others.
- * **Cite NEO CANDO appropriately**
Publications, presentations, and research reports based on data from the NEO CANDO database, must cite it appropriately. Click here for appropriate citation protocol.
- * **Send us your citations using NEO CANDO**
We request that users send us citations to publications, research reports, media articles, or educational material making use of the data or documentation. Please send your citations to neocando@case.edu.
- * **Use NEO CANDO for GOOD -- never for EVIL**

Terms of Use for NEO CANDO data in Cleveland

Source: <http://neocando.case.edu>

on use of common standards and ease of access, though they could make the data easier to find. The remaining five principles are either difficult to judge or not applicable because partners are not primary providers of government administrative data. Many principles of open government data have already been interwoven into NNIP partners' work, but the network intends to periodically review the partners' websites to learn about partners' progress as providers of open data.

HOW THE OPEN DATA MOVEMENT BENEFITS NNIP PARTNERS

Several NNIP partner institutions, including those featured in the *Partner Perspectives* briefs, have already joined forces with other individuals and organizations to advocate for open data and promote its use. For other NNIP partners not connected with local transparency proponents or civic technologists, the open data movement offers new opportunities to evolve and increase the audience for their work. Whatever their local government's progress on open data or their current role in furthering open data, all of the partners have much to learn from the local and national open data movements.

NNIP partner organizations may directly and indirectly benefit from the growth in open data without any change in their focus or strategy. For example, having datasets published in open data portals removes any hurdles to obtaining raw data. Staff can spend less time negotiating for nonconfidential datasets, like reported crime, and likely get more timely data. The data portals could offer new types of data less commonly held or analyzed by NNIP partners. For example, information on city budgets and spending and on 311 service calls could be paired with contextual data, such as demographics and home sales, to describe spending and services across neighborhoods.

In addition to easier access to data for partners' own work, the growth in open data can indirectly strengthen NNIP partner organizations. A stronger culture of data-sharing may make local officials more open to negotiations for access to more-sensitive data sources, such as education or health. Increased availability of raw data should also spur increased demand from the broader community for understanding what the data can reveal and what the implications are for both governmental and nongovernmental decisions. Partners are prepared to respond to this expanded interest, with expertise in a wide variety of local administrative data sources and in helping nontechnical audiences understand and use data.

As illustrated by the *Partner Perspectives*, partner organizations can reap even more value from open data by active engagement with open data actors and activities, from participating in local conferences to leading in open data advocacy and applications. Civic technologists interested in developing apps with open data represent a new audience for NNIP partners. Partnerships on projects through individual developers or organized groups like the Code for

America brigades give NNIP partners access to skills they may not have in house. The applications from open data also expose partners to newer technology that could offer more efficient and effective data processing, cleaning, and display. Local technologists can also give feedback to how NNIP partners are currently disseminating data: file formats, prominence of download options on the website, and so on. The Baltimore Neighborhood Indicators Alliance at the Jacob France Institute (BNIA-JFI) has improved access to its data without additional investments in technology by posting them on the city's open data portal (<https://data.baltimorecity.gov/>). BNIA-JFI receives credit by being listed as a separate data category on the site.

More broadly, the focus on open data can help NNIP partners see how promoting government transparency can advance their own goals, such as equal access to information, empowerment of low-income residents, and neighborhood revitalization. While open data advocates may use different language and rationales than data intermediaries, their objectives of wider access to information about our government and communities are consistent with NNIP founding values. The inclusion of data on legislative, financial, government meetings, and campaign finances in the open data conversation relates less directly to some NNIP partners, but certainly policy deliberation, government spending, and election implementation directly affect outcomes for residents and neighborhoods.

In our review of partner experiences to date, we see that the open data movement helps NNIP partners focus on the value they add to the data. Release of the raw datasets encourages partners to examine their strengths, strategize about their roles in the local community information ecosystem, and assess where they need to develop new capacity and organizational priorities.

NNIP'S CONTRIBUTIONS TO THE OPEN DATA MOVEMENT

From what has been presented to this point, it is evident that the open data movement offers tremendous potential for the betterment of communities throughout America. Many productive applications have already been implemented. But even in places where there have been important open data successes, work remains to encourage richer and more active use of the datasets that have been released. And there seems a general recognition that while acceptance is quite solid now in some cities, the adoption of open data can be spread to many other places.

Our experience confirms these conclusions. While the movement is making progress, we believe that NNIP (the network itself, its partners, and lessons learned from them) can help it overcome remaining barriers and accelerate the momentum. This can happen in two ways: first, by local data intermediaries facilitating more and broader use of the datasets being released; and second, by motivating and supporting the adoption of open data by more local governments and civic leaders.

We recognize that many individuals and groups, like Code for America and Sunlight Foundation, are already advancing open data in localities. However, we suggest that progress on open data could be enhanced if these groups cultivate partnerships with local data intermediaries. NNIP partners' roles will necessarily vary based on their missions and staff capacity and what gaps exist in their communities.

FACILITATING MORE ACTIVE AND PRODUCTIVE USE OF RELEASED DATASETS

It is already central to the mission of NNIP partners to facilitate use of data to improve neighborhoods and local policy. Their capacity in this area augments the open data movement through transforming and releasing value-added data, advancing the application of open data, and using data to strengthen civic capacity and governance. Throughout all three categories of work, NNIP partners bring their commitment to collaborative action, to enhancing the capacity of those in distressed neighborhoods to use data, and to improving conditions and opportunities for residents in all neighborhoods.

Transforming and releasing data

NNIP partners take administrative datasets and make them easier for nonprofits, government agencies, local foundations, and community groups to use. Partners understand how the data are collected, determining any issues regarding missing data or inconsistent fields (often without any data documentation from the government). With this knowledge, partners select and craft indicators—that is, neighborhood crime rates rather than point locations of crime incidents, or percentage changes in the number of food stamp recipients. With substantive knowledge of the mission and activity of the likely user groups, NNIP partners know which indicators will be relevant. Government officials or civic developers could do this cleaning and calculating, but NNIP partners have developed long-standing relationships with data creators and deep knowledge of the source data over time. In addition, partners will be familiar with the policy issues and community interests. Given this expertise, division of labor with the local data intermediary may be more efficient. The NNIP partner in Milwaukee plays this role as a member of the Milwaukee Data Initiative, sharing insights on the reliability of particular data fields and geocoding anomalies in datasets (Clausen 2014).

In other cases, applications of open data may require two or more datasets, which complicates the work considerably for developers. For example, the application may require combining two datasets about properties, one that uses addresses and one with only parcel identifiers. Often the datasets that users want to integrate come from several different agencies. This does not just mean different agencies within the same government; frequently, some will come from the records of city departments and others from county and state agencies. One of the most important services NNIP partner have performed over the years is integrating a number of datasets across agencies and topic areas, then cleaning and transforming them as needed to ensure records can be linked to specific geographies uniformly over time.

NNIP partners contribute to open data in two other unique ways. Several have created new data through surveys of individual properties. For example, Data Driven Detroit (D3) is partnering with a local technology company on the vacant property inventory of the city. D3 determined which information needed to be gathered, and the tech company developed the mobile app for surveyors to record the data on each property. D3 will then prepare the parcel-level data for public dissemination, informing decisions about neighborhood development in the city.

The earlier section also described partners' role in archiving public data that gets overwritten by governments. For example, assessors' offices may only need to keep the amounts for the last two sales for operational purposes, or tax liens may be removed from the record when they are

paid. Partners also create indicators from confidential data, such as summarizing birth records to report the share of births with adequate prenatal care or student records to create absenteeism rates for neighborhoods.

Advancing the application of open data

Many of the implemented open data applications are oriented toward citizen service. For example, several recent applications in Chicago “show which streets have been cleared after a snowfall, what time a bus or train will arrive, and how requests to fix potholes are progressing.”⁹ NNIP partners tell us that application developers working in their cities are eager for advice from knowledgeable locals that can help focus their efforts to support resident engagement and neighborhood improvement.

Local intermediaries could become responsible for promoting more extensive use of the newly available data. Given their knowledge of local issues and the policy environment, they should be well positioned to think creatively about additional high-value applications of those datasets. As trusted partners of community groups, several NNIP organizations have also brokered interactions between technologists and nonprofits, whether formally at code-a-thons or one on one for specific projects. Pittsburgh’s entry in the *Partner Perspectives* series provides one example; Baltimore, Boston, and Minneapolis have also cohosted codeathons associated with local or national conferences (Gradeck 2014). Local data intermediaries may dive in to develop portals or mobile apps that collect and display the open data, either independently or in partnership with developers.

An NNIP partner could also help catalog the progress of open data locally and across institutions and jurisdictions. Where open data are moving rapidly and many players are involved, there is considerable potential for duplication and false starts because there is no easy way to find out what other stakeholders in the community are working on. A local data intermediary could spearhead and manage an effort to prepare and frequently update a comprehensive catalog (identifying released datasets, completed applications, and applications in process or in planning) and disseminating it widely. (This assignment has recently been suggested as one element of a restructured public data support environment in Chicago; see Pettit and Kingsley 2013).

⁹ “Cities and Data by the Numbers: Cities are Finding Useful Ways of Handling a Torrent of Data,” *The Economist*, April 27, 2013, <http://www.economist.com/news/united-states/21576694-cities-are-finding-useful-ways-handling-torrent-data-numbers>.

Using data to strengthen civic capacity and governance

Beyond data transformation and specific uses of the data, NNIP partners should help promote open data generally and contribute to the local action agenda. NNIP partners have already established relationships with local government officials in many different agencies and can informally facilitate introductions to open data ideas and advocates. The NNIP partner at the University of Pittsburgh convened interested developers and academics, and thus was able to help connect the incoming mayoral administration to open data advocates and practitioners (Gradeck 2014).

Our partner organizations also know which issues are most pressing for their grassroots and nonprofit partners, so can provide input on which data sources would have the greatest payoff for community action. Given our network's focus on distressed areas, NNIP should raise equity issues and encourage examination of how low-income neighborhoods and communities of color are benefiting from open data. The NNIP partners have the right combination of relationships and analytic skills to help address the barriers to civic technology noted by Hebbert (2012).

Other partners will take on additional roles to further open data and understand its potential in improving local government operations and transparency. NNIP's partner in Oakland, the Urban Strategies Council (USC), has been the most active in policy advocacy and tool-building to advance open data in its community (Spiker 2013; Spiker 2014). Steve Spiker, USC's Director of Research and Technology, drafted the Oakland open data policy and coleads OpenOakland, the area's Code for America's brigade.¹⁰ Depending on the mission of each NNIP organization, some will explicitly join or even convene coalitions to advocate for open data policies and actions. For open data portals outside governments, NNIP partners can directly participate in the design and governance of the systems.¹¹ Finally, university-based centers may use their research capacities to document the progress and outcomes of having more open data available to the public.

¹⁰ See <http://www.codeforamerica.org/author/steve-spiker/> for Steve Spiker's blog postings.

¹¹ One example an outside-government system is the OpenPhilly portal, maintained by the Philadelphia Public Interest Information Network (<http://ppiin.org/>).

FUTURE STEPS FOR NNIP'S PARTNERS AND NETWORK

Over the past few years, individual partners and our network have developed ties with the local and national open data movements. We now realize that NNIP's interest in open data is not a limited to the duration of its Macarthur-funded project. We need to integrate open data principles into the network's model for local data intermediaries and our joint activities.

All our current partners should support their local open data movements and determine which roles fit their missions and local context. Some practices recommended by the open data movement are relevant to all partners, such as the release of data in developer-friendly formats and with complete metadata. We expect many partners will choose to advance open data more actively and will share these activities through the Open Data section on the NNIP website (<http://neighborhoodindicators.org/issue-area/58>). Presentations on open data from outside experts and NNIP peers have generated a great deal of enthusiasm, so we will offer more of these opportunities at partner meetings and webinars. Our Minneapolis partner sees an urgent need for NNIP partners to help their communities navigate the fast-changing world of available data and technology in a way that supports our principles of equitable access and capacity-building.

Unlike the early days of NNIP, partners are not the sole data providers. Partner organizations can thrive in this new world of open information if they clearly articulate the value of their data transformation and their role as analysts and translators. They are also joining with civic-minded commercial firms to combine their high-quality community data services with the latest data-collection and data-visualization technology. Several NNIP partners have already started connecting technologists, government agency staff, and community groups. They are also informal content and policy experts for developers unfamiliar with the contents or significance of the various open datasets. Partners still need to find ways to pay for these intangible services, but they are working to make the case to their funders.

To expand awareness to new audiences, NNIP will include an introduction to open data as we present the NNIP intermediary model at national events. We are also working with more than a dozen local areas interested in NNIP, and we will encourage our contacts to connect with open data advocates early in their planning. We will continue to learn and engage with other open data organizations, such as Sunlight Foundation, Code for America, and the new Open Data

Institute. In addition, we will continue collaborating on open data issues with networks of local actors including the National League of Cities and International City and County Managers Association and with topical networks including the Center for Community Progress and KIDS COUNT. Through our connections with federal agencies, we can advocate nationally for the federal government to implement President Obama's open data agenda.

The activities above mainly extend current efforts. NNIP also has a role to play in the evolution of open data concepts and practice. The creation of the US-based Open Data Institute announced in October may provide a forum to identify opportunities that strengthen the field. For example, a collaboration of interested groups, including NNIP, could better articulate the necessary technological and institutional components—inside and outside government—for successful release and use of open data. In addition to the conceptual framework, we need real stories of how open data have changed opportunities and conditions for low-income residents and neighborhoods. This would help extend the measures of progress beyond merely counting how many datasets are posted or apps are released.

NNIP partners can also improve the quality and utility of administrative data by developing, adopting, and applying data standards. Within a city, this can mean standardizing data across agencies; the Pittsburgh NNIP partner, for example, is encouraging the various local data producers to use the same parcel numbering format. Across cities, these efforts can include a shared database design structure across cities (like the transportation data). Designing common data structures could be informed by the experience of our partners in three-dozen cities, and implementing national standards will happen more quickly with local actors with national ties.

These ideas are just some of many that would increase the adoption and payoff of open data practices. The intersections between NNIP and open data have grown broader and deeper since 2010, and we expect the trend to continue as more localities embrace open data. NNIP's MacArthur-funded project on NNIP and open data has enabled us to reflect on how the two movements can work together to further expand access to government data, whether for community decisionmaking, citizen engagement, or government transparency. The release of data is an important first step, but insufficient in itself. Putting that open data to work requires the efforts of many players: NNIP partners, Code for America brigades, community organizers, and other local actors. By learning from each other and coordinating activities, we can all use data more effectively to improve our communities.

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NNIP is a collaboration between the Urban Institute and partner organizations in more than three dozen American cities. NNIP partners democratize data: they make it accessible and easy to understand and then help local stakeholders apply it to solve problems in their communities.



For more information about NNIP, go to www.neighborhoodindicators.org or email nnip@urban.org.