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## **FROM PUBLIC RECORDS TO OPEN GOVERNMENT: ACCESS TO MASSACHUSETTS MUNICIPAL GEOGRAPHIC DATA**

### **ABSTRACT**

Increasingly citizens are demanding access of raw data from governments to look up facts, hold them accountable, conduct analysis, or create innovative applications and services. Cities and towns create information for geographic information systems such as parcels, zoning, and infrastructure that are useful for a wide range of purposes. Through a public records request to all 351 Massachusetts municipalities, this paper investigates whether this data is accessible to citizens in practice. In an apparent violation of the law, two municipalities refused access to electronic records. Many others charged fees ranging up to \$453 or placed burdensome legal restrictions on the data that could chill or prohibit creative reuses of the data through emerging technologies. Other practical barriers, such as limited technical knowledge or resources and outsourcing to private vendors, restricted public access to data. Most troubling, 23.2% of municipalities did not respond with 29 days, nearly three times the legally mandated 10-day response time. Finally, the paper discusses legal, policy, and technical steps that can be taken by governments to move from a “public records” to an “open government” paradigm for transparency of government data. The policy recommendations for municipalities include publishing GIS data for free online, and with minimal legal restrictions.

## INTRODUCTION

New technologies are making sharing, combining, and analyzing data through the internet more prevalent than ever. The development of standard formats and application programming interfaces (APIs) mean information-rich websites can combine data from multiple sources. Tim Berners-Lee, the inventor of the World Wide Web, has argued that improved means of organizing and sharing data will usher in the next phase of the internet (Bizer, Heath and Berners-Lee 2009). U.S. government agencies are involved in the creation and management of large amounts of data. Public access to this information is required to evaluate the effectiveness of public policies, hold elected officials accountable, and provides value to a range of data users. The growth of the internet has made possible new forms of data sharing and exchange, and increasingly government agencies are making data available in “raw” formats for processing, analysis, and re-use. This trend has been encouraged by scholars who argue it is the most efficient means of realizing the public value of government data (Robinson et al. 2009). A significant portion is geographic data, much of it managed by Geographic Information Systems (GIS) in specialized data formats.

Local governments create unique datasets and establish the technical means and legal rules about how they are accessed. Local governments create and manage data required for local environmental regulation and urban planning but not available from any other sources, including assessor’s data of the assessed value and characteristics of taxable real estate, as well as digital parcel data illustrating the boundaries of property in the town, zoning district boundaries, and local infrastructure.

The purpose of this study is to investigate access to GIS data at the local level through a public records request to Massachusetts municipalities. It seeks to answer the question: what costs do citizens incur obtaining the data, and what licensing restrictions are placed on it that restrict the public uses described above? In addition, what types of data are exempted from public release under the law’s public safety exemption? The paper closes with how existing laws and practices should be changed in order to achieve greater transparency and enable innovation.

There are three arguments for making local GIS data available to citizens. First, the spirit of the federal Freedom of Information Act (FOIA) and the state of Massachusetts Public Records Law (PRL) stresses that all government records should be available to citizen inspection, except for clearly defined exceptions. These laws followed from utilitarian philosophy, which argued that public access to records and meetings was required as a check on government power. Under this reasoning, government agencies should be subject to different rules than private corporations.

Second, access to technical data in particular is often necessary to hold government accountable for regulatory decisions. “We have to be able to see the data the same way when the public agency seeks the data when they make the decision,” said GIS consultant Bruce Joffe in an interview, “whether it’s a zoning variance or tax decision or anything else.” Joffe described a scenario where a for-profit consultant might use public data in order to examine government decisions about property appraisal or zoning decisions (Joffe 2010b). In this way, making data available upon request can help serve the public interest of ensuring consistent and fair decision-making by government regulators.

Third, the release of government data can create a public value. Data about the location and details of government services, if re-used and made more available to citizens, could result in substantial public benefits. Derivative works could help citizens better take advantage of

public services such as community centers, public transportation, or other public facilities where using them requires knowledge of location, hours, and eligibility. Data about street sweeping schedules, zoning and other rules can help citizens avoid unnecessary tickets and fines for unwittingly violating regulations.<sup>1</sup> Increasingly, journalists are turning to government data to produce maps, conduct database-driven investigative reporting, and as a resource for reporting. In the past, large newspapers and media organizations had the resources to develop databases internally. As these entities struggle, and are replaced with smaller organizations, non-profits, and citizen journalists, it may be more important to ensure government records are widely available at low costs for similar information to be available to the public.

For these reasons and others, cities, states, and the federal government have launched initiatives to proactively disclose raw data in public data catalogs.<sup>2</sup> These websites also sometimes have application programming interfaces (APIs) that allow private applications to dynamically query government databases. These new technologies provide a variety of opportunities to strengthen the principle of open access to government information. Making data available through automated systems provides the government the ability to ensure derivative applications are using updated data more easily and at lower costs than before. However, implementing the system requires the resources to produce data as well as implement and maintain the necessary technical systems.<sup>3</sup> These developments constitute a major shift from previous approaches to GIS data dissemination. Previously, governments commonly provided data for sale on CD or DVD discs.

The Federal courts have generally ruled databases are records, and therefore subject to disclosure under the Federal Freedom of Information Act. Some state courts, including Massachusetts, have agreed. However, access to data has been denied on several grounds. In *Sierra Club vs. Orange County*, a California Superior Court ruled in May 2010 a database containing property boundaries constituted “computer software” and therefore the County was justified for charging \$375,000, in a case still under litigation. Other courts have denied requests for data created through contracts with third party vendors, such as in *Brown v. Iowa Legislative Council*. Since many small cities rely on contractors to create and manage public data, guaranteeing the spirit of access to government records may require amending existing freedom of information laws to ensure public access to particular types of data.

Governments are using new technology to make data available to citizens in new ways, in raw formats, feeds, or through APIs. Whether public datasets include some of the most important and how they can be used will depend not only on technical infrastructure but also the licenses, policies, and role of law to guarantee citizen access. Through an empirical examination of current policies and exploration of the access to data in practice, this paper will provide needed analysis of the technical and legal issues for the next generation of government transparency.

## STUDY DESIGN

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<sup>1</sup> For example, an “Apps for Democracy: Community Edition” competition hosted by the District of Columbia resulted in apps that mapped bicycle infrastructure, delivered real-time crime and other alerts to cell phones, and mapped neighborhood amenities. Data retrieved from <http://www.appsfordemocracy.org/application-directory/>

<sup>2</sup> These include the federal Data.gov, city data websites New York City, Portland OR, Seattle WA, Washington DC, and similar efforts in Canada, the United Kingdom, and Australia.

<sup>3</sup> For a discussion of technical considerations, see Goodspeed 2010.

The study encompasses an experiment in access to public information and an analysis of existing policy.

First, I conducted an exploratory study to explore data availability in Massachusetts. Under the Massachusetts Public Records Act, as interpreted by courts and the Secretary of State, electronic records are considered public records (Galvin 2009). GIS data is created and managed by different departments within city and town governments, and no central listing of all municipal offices creating or managing GIS data is available. The departments that can manage GIS data include planning, assessor, engineering, public works, or municipal consultants. Therefore, I sent the request to the town clerk listed on a Secretary of the Commonwealth website.<sup>4</sup> Town clerks serve as a point of contact for many public records, and are generally aware of the functions and government so therefore could route the request. The list obtained from the Secretary of the Commonwealth had one drawback. Since it was created by the Election Division, for 13 large cities it lists not the town clerk but addresses for Boards of Elections, Elections Commissions, or Election Divisions. I found the letters were nonetheless re-routed to the proper offices, and as described below, the websites of these cities were reviewed for order forms and policies.

Using this list, I requested three common GIS layers from the Commonwealth's 351 municipalities to discover which are available publically in electronic format, and what licensing or use restrictions accompany them. The requested layers were parcels, zoning, and wastewater treatment facilities. All towns with a GIS program had a parcel layer, which is a digital version of property boundaries used for assessing and planning purposes. Since municipalities track ownership for taxation purposes, and possess subdivision authority, a state effort to digitize parcels relies on municipal cooperation. Therefore this data is both of presumptive interest and often not available from other sources. Many of the smaller towns did not have zoning either because the town did not have zoning, or only had a small number of zoning districts. Similar to parcels, zoning is determined locally and frequently updated, so municipalities are the unique source of this data, which is important for real estate development, planning, and regional analysis. Finally, I requested a layer containing locations of municipal wastewater treatment facilities in order to test for public safety restrictions. However, it may not have been an ideal layer to request since many municipalities do not have these facilities, because there is no public sewer because their sewer lines are connected to a regional system. Some municipal officials thought I was requesting engineering drawings or other technical information about the sewer system. The law requires the government to respond within ten days, and I received a response from 269 municipalities, or 76.6 percent of the total.<sup>5</sup> I supplemented the survey by visiting the websites of the 20 largest cities and towns by population. Together, these towns are home to 36.7 percent of the state population. I reviewed these town's websites for any GIS data policies, order forms, or viewers.

I received data at no charge from 51 municipalities, and these have the highest certainty of accurately obtaining license, disclaimer, or other policy information. It is possible municipal employees distributed the data without following standing policies regarding fees or licenses, but I expected this to be rare. An additional 23 municipalities provided GIS data order forms, usually accompanied by a license, agreement, or other disclaimer. Others provided prices but no order

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<sup>4</sup> Available online at <http://www.sec.state.ma.us/ele/electk/clkidx.htm>

<sup>5</sup> The request was sent on Monday, November 8<sup>th</sup>, or 29 days before the close of the data collection period on December 7, 2010. As described later, since 59 municipalities contacted me on Tuesday, November 9<sup>th</sup>, I have reason to believe most received the letter within two days.

forms. For these, as well as the municipalities who did not respond, the licensing information may not be included in the dataset. Although the study means I cannot conclude with precision the GIS data policies of every Massachusetts municipality, I have no reason to believe these differ systematically from municipalities where policies were collected. This study sample included municipalities that together contain the majority of the state population.

Second, I reviewed the 39 disclaimers, licenses, and policies collected through the research. This included materials found on the websites of the 20 largest municipalities by population, and any obtained in correspondence responding to my public records request. I obtained both data and disclaimers from five municipalities, most of the remaining 33 accompanied standardized order forms.<sup>6</sup> I reviewed all the forms and identified eight common provisions, and then reviewed all policies a second time recording whether they had each of these eight provisions and noting any special features. These results are reported below.

## PREVIOUS RESEARCH

I reviewed existing research on three topics. First, how widespread is licensing of local geographic data and how have data users reacted to these licenses? One paper found described expansion of these licenses in Wisconsin and the legal measures taken by a public university library. In addition, researchers have proposed a digital rights management scheme for spatial data, but only found one example where such a system has been implemented. Second, how have geographic data managers reacted to homeland security concerns? A large-scale study by the RAND Corporation completed after the September 11, 2001 terrorist attack on the U.S. concluded only a small percentage of federal geographic data could pose a homeland security threat if disseminated to terrorists. I found no empirical studies of how homeland security exceptions were being applied at the local level. Finally, to answer the prospective question, I found a recent study how users of a new data portal were using the data. I will propose these findings, based on demonstrated public benefits, should guide the development of geographic data policies.

In order to comply with the terms of licenses increasingly used by local governments, the library at the University of Wisconsin-Milwaukee developed sub-licenses and protocols to ensure access to library users but prevent copyright infringement. Between 1999 and 2002 Wisconsin counties increased the use of licenses for geographic data by over 100 percent. Limited to access to data on CDs, this onerous process contrasts with the system adopted by the GIS Collection at MIT's Rotch Library. The authors conclude "Despite the 'clear and unambiguous' assertion of Wisconsin Act 339 that geographic data is intended to be in the public domain ... local government agencies remain at liberty to impose licenses on their geographic data because the use of such licenses has never been challenged under Wisconsin open records law" (Day and Maene 2006). In an interview, a staff attorney at the Massachusetts Secretary of the Commonwealth Public Records Division said whether a license violated the public records act would have to be decided on the basis of the specific facts of a case. Libraries at the GIS Laboratory in MIT's Rotch Library reported being able to obtain data from Massachusetts municipalities. However, they routinely negotiate licenses for data from commercial providers and out-of-state cities such as New York City. When conducting these negotiations, they usually seek to avoid statements of liability and ensure sufficient flexibility so the data is useful for

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<sup>6</sup> The five towns were Acton, Framingham, Holyoke, Waltham, and Westwood.

library users (Sweeney 2010). In order to manage diverse data users, researchers have developed a “geoDRM” model to support the administration of rights proposing a sophisticated technical approach to managing different rights for different data users (Joffe and Bacastow 2004). Although this article describes one such system in San Francisco, it does not appear to be widespread.

Using a “demand” and “supply” approach, the RAND Corporation conducted a large-scale analysis of publically available federal geographic information. The study concluded that fewer than 6 percent of 629 datasets examined appeared useful to potential attackers, but fewer than 1 percent were both useful and unique. The study authors observed that diverse alternative information sources exist for meeting the needs of potential attackers, including corporations, non-governmental organizations, and private citizens. They also observed attackers can conduct in-person reconnaissance or adjust strategies based on information available. Joffe argues homeland security considerations should be a reason for public agencies to register data requestors, but agencies should take a context-specific approach. In particular, he reported the criteria that to be withheld the infrastructure information should refer to specific choke points and also not be available from any other public domain source. “It’s a recommendation, but it’s referred to frequently at the [Federal Geographic Data Committee]” (Joffe 2010b).<sup>7</sup>

One preliminary study of data users on the UK national data portal provides empirically-grounded typology of data users (Davies 2010). Through an investigation of how users were using the data, the author proposed five ways the data was used. Although regarding multiple types of information, since GIS data often contains tabular information (attributes) combined with spatial information these findings can be generalized to it. The five use types identified by Davies were:

- Data to fact: Individuals seeking out an individual fact in the form of an individual number or value from a dataset, from online interfaces or downloaded spreadsheets.
- Data to information: Transforming data into visualizations, articles, reports, or graphics.
- Data to interface: Creating new interfaces to interactively access and explore one or more datasets, such as mapping mash-ups and interactive websites.
- Data to data: Sharing derived data that is augmented, combined, or manipulated in some way.
- Data to service: Where data is used “behind the scenes” in an automated service, such as routing requests to the correct government agency.<sup>8</sup>

This study confirms the hypothesized public benefits that may result from greater access to raw government data and provides an empirically-grounded taxonomy of multiple ways citizens use government data.

A recent report completed by the Pew Internet and American Life Project confirms the finding of this UK study that citizens are increasingly turning to government websites to obtain data and information. In order to evaluate the claims of transparency advocates, the study surveyed Americans on whether they had accessed four types of government information online: read legislation (22%), look up campaign donations (14%), see how stimulus money was being spent (23%), or “visit a website that provides access to government data, like data.gov or

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<sup>7</sup> The Federal Geographic Data Committee (FGDC) is an “interagency committee that promotes the coordinated development, use, sharing, and dissemination of geospatial data on a national basis,” and has generated influential policies and practices for GIS data for the federal government, and U.S. government agencies in general.

<sup>8</sup> Adapted from Davies 2010, p. 3.

recovery.gov or usaspending.gov” (16%) (Smith 2010). Although the survey did not investigate the specific websites, and whether users had similar expectations for state and local websites, it suggests government websites are increasingly viewed by citizens as appropriate sources for statistical data.

## RESULTS

### Data Access and Costs

I requested data from 351 cities and towns, within 29 days of the mailed request heard from 269, or 76.6 percent. Among respondents, the average number of days before I heard a response was 6.2. Among the respondents, I could determine if data was available for 195. Of these, 118 had at least one of the layers requested, and 77 reported they did not have such information available. Of those with data, I was able to obtain data at no charge from 55, or 15.7 percent of the cities and towns in the state, which constituted 20.4 percent of the respondents. Of these, 44 emailed the data, 5 sent through other services<sup>9</sup>, and 4 had established public websites where it could be downloaded. A table describing the responses is included as Appendix A.

Massachusetts Municipalities (351)	Response (269)	No Data (77)
		Sent data (55)
		Provide for fee (61)
	No Response (82)	

Fig. 1. Summary of public records request results

Four municipalities had established public websites where GIS data could be downloaded: Boston, Brewster, Northampton and Amherst. Of these three, Boston had parcels but not zoning or wastewater treatment plants available on the public website. Amesbury provided the data through the website ArcGIS.com, however to obtain the URL where the data was required clicking a link that could be open in the proprietary ESRI ArcMap software. City of Northampton’s GIS Coordinator James Thompson said the data has been posted to the website for more than three years. The policy was adopted after layoffs reduced the size of the GIS department, and the city decided this would be a low-cost way of satisfying requests. According to Thompson, Northampton does not license GIS data because they consider it against the public records law. The only concern he voiced was they didn’t have detailed information about how many people were downloading and using the data (Thompson 2010).

A number of municipalities also referred me to private consultants or Regional Planning Agencies (RPA), independent state agencies established under Commonwealth law responsible for mapping and analysis. One consultant and the RPAs provided the data at no cost, however several consultants charged fees similar to the towns that had ordering systems.

Two towns, Rockport and Rowley, refused the request to provide access to the data in apparent violation of the Public Records Act, which the Secretary of the Commonwealth has

<sup>9</sup> Such as DropBox or YouSendIt.

interpreted to cover electronic records for many years. In a letter, Town of Rockport Director of Public Works Joseph P. Pansi Jr. stated “The Town of Rockport does not provide this information to the public in electronic format,” and went on to offer the information in a variety of printed maps (Parisi 2010). Also in a letter responding to my request, the Town of Rowley’s Principal Assessor reported that my request had been considered at a Board of Assessors meeting and the group “voted at that meeting to allow MVPC the permission to release only the hard (paper) copies of the Assessors maps and not the digitized parcel data” (McFadden 2010).

Many towns provided GIS data viewers allowing citizens the limited availability to view local data. As discussed in the policy section below, these viewers provide some access to government GIS data, but since they do not allow the data to be extracted they prevent a wide range of potentially beneficial activities including advanced research, applications, or desktop mapping.

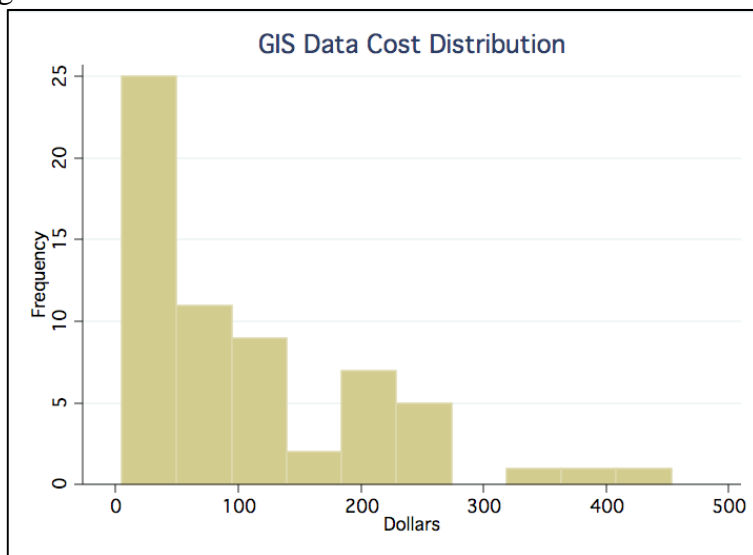


Fig. 2. Frequency distribution of provided data costs

Fifty-nine municipalities charged a fee for some access to the data. The fee structures ranged from a customized quote, prices for standard packages of data delivered on CD, or prices per layer requested. Among the towns charging fees, the prices ranged from \$5 (Bourne) to \$453 (Mansfield), with an average of \$102. Although less than the prices charged elsewhere, such as the fee of \$375,000 charged by California’s Santa Clara County. The higher fees may violate the Public Records Act since under state regulation the fees must be limited to the actual cost of duplication, and any “per hour charge for ... processing may not be greater than the prorated hourly wage of the lowest paid employee who is capable of performing the task.” In addition, the regulation urges that “in the interest of open government, all records custodians are strongly urged to waive the fees associated with access to public records.” In a section specifically regarding copying GIS data the Secretary of the Commonwealth provides the guidance that “Fees assessed for these records cannot serve as a deterrent for access or as a means of generating revenue” (Galvin 2009).

### Licensing Restrictions and Data Policies

I reviewed 38 disclaimers, release agreements, policies, and other documents collected from city websites of the state's 20 largest cities and obtained through the data request. These fell into three main categories: short disclaimers contained on websites or order forms, longer release agreements and license agreements, and two memorandums of understanding. After a preliminary review I identified eight common statements of these documents, summarized below with the number of policies in which they appear:

1. Data provided without warrantee (29)
2. Municipality indemnified and held harmless (20)
3. Data not for legal purposes (11)
4. No claim to data updates (11)
5. Request for credit on data products (10)
6. Request for disclaimer on resulting data products (7)
7. Restrictions on data re-distribution (11)
8. Right of onsite inspection (2)

A group of data release agreements contained nearly identical formats, with the exception of an item concerning restrictions on re-use which only appeared on three. In addition, the Beverly, Brookline, and Weymouth used a memorandum of understanding to request copies of derivative data products from users. This section will discuss four of these common provisions: indemnity statements, credit and disclaimer requirements, restrictions on re-distribution, and onsite inspection.

Twenty of the statements require the recipient of the data indemnify or hold harmless the municipality. In negotiating licenses for data, the MIT Libraries said the university seeks to avoid this kind of language because of the potential to create liability. Possible violations could include unwitting violation of copyright, a liability produced by re-selling the data, or claims made by representations related to financial transactions (Finnie-Duranceau 2010).

Ten of the documents required a credit to the city appear on derived data products, and seven of these also requested a disclaimer. Although reasonable to ask to include on a conventional map, this type of disclaimer may have to be displayed on secondary pages on a website or app. For example, the City of Beverly's disclaimer took up a sizable portion of the iPhone screen.

Eleven of the documents contained restrictions on re-use. Three of these allowed re-distribution with written consent of the municipality. One (Reading) contained a provision discouraging redistribution, urging data users to refer others to the city to obtain the most accurate data. Finally, the City of Boston's specifically granted a limited right for third parties to "have and use the GIS Data solely to assist the Licensed User's business needs and for no other purpose." Several of the licenses restricted re-use of the data to the "internal purposes" of the requestor. For example, this provision appears in the City of Chelsea's agreement:

Digital data received are to be used solely for internal purposes. Secondary distribution of these data is not supported. Data is intended for the sole use of the Requestor. It is not to be distributed or resold to other agencies, organizations, companies or individuals without the prior express written consent of the City Manager. Data may be enhanced, analyzed, manipulated or output by the duly authorized agents of the Requestor but only for the purposes and use of the Requestor.  
(City of Chelsea 2009)

It's not clear whether such provisions would restrict organizations whose "internal" purposes included making the data available to users in modified or limited formats. These provisions could produce a chilling effect, dissuading innovative re-uses such as interactive websites, journalistic information, and applications.

Two documents provided the municipality a right of onsite inspection to see that the terms of the license were being followed:

The Licensee shall agree to allow an agent from the Town of Greenfield to an onsite inspection, if the Town determines that it is necessary, to ensure that the Licensee is complying with the terms of this License.  
(Town of Greenfield 2010)

The Agency agrees to on site inspections for the duration of the use of the Data by agents of Yarmouth to ensure that the Agency is in compliance with the terms of this agreement.  
(Town of Yarmouth 2010)

Both licenses prohibit use of the data other than a specific use that must be designated on the agreement, and also prohibits re-distribution of the data to any other party.

Finally, the Town of Amherst had chosen to share data through ArcGIS.com, a website designed to allow users to share geospatial data and services. The website provides a place for data owners to indicate the data owner and any disclaimers. However, it also required users to agree to two Terms of Service, one for all websites of the parent company (ESRI) and one for the ArcGIS.com website. Although explicitly providing the data user the ability to set the type of copyright and restrictions, this approach may result in requiring citizens to agree to a private company's lengthy terms of use to access the public records of a municipality. In addition, absent a clear description on the data, the content may be eligible for re-sale and licensing under the ESRI terms of use Commercial License provision. In addition, the site works to complement ESRI's proprietary mapping software. For example, clicking to download the public data downloads an XML file containing data in the proprietary "pkinfo" format. Advanced users can extract the URL to the data with a simple text viewer, however others will have to use the company's free viewer or costly mapping software to access the data. This is akin to a photo sharing site only showing thumbnails on the site, requiring you use their proprietary image viewer to access the full-quality photos.

## **Public Safety**

The Massachusetts Public Records Law exempts a number of categories of data from public disclosure including personally identified medical information, standardized exam answers, records of active law enforcement investigations, among others. This list includes the following exemption for disclosure for data which, if released, could endanger public safety:

(n) records including, but not limited to, blue prints, plans, policies, procedures and schematic drawings, which relate to internal layout and structural elements, security measures, emergency preparedness, threat or vulnerability assessments, or any other records relating to the security or safety of persons, buildings, structures, facilities, utilities, transportation or other infrastructure located within the commonwealth, the disclosure of which, in the reasonable judgment of the custodian, subject to review by the supervisor of public records under subsection (b) of section 10 of chapter 66, is likely to jeopardize public safety.

The study could not determine the full extent of how the public safety considerations were effecting access to public data. The location of wastewater treatment plants did trigger several response. The towns of Concord and Falmouth said as a matter of policy they did not disclosure information about the water utility system. The City of Salem's standard GIS data layer listing noted the following layers would be released on a "case-by-case basis" by the city engineer: fire hydrants, sewer, water distribution system, drainage/stormwater system.

## **Copyright**

Two towns withheld data claiming data they possessed was exempt. Sherborn wrote claiming the copyright of their parcel data was owned by Boston Edison. Lincoln's parcels were created by a private organization, and then licensed back to the city for use for planning purposes. The town is now exploring creating their own parcel layer. The Secretary of the Commonwealth's Guide specifically addresses intellectual property concerns, instructing that copyright should not preempt the Public Records Law. The guide instructs government custodians to release the data with a warning that its contents may be subject to intellectual property protections.

## **CONCLUSIONS AND POLICY RECOMMENDATIONS**

### **Statewide Data Policy**

There exists a clear argument for why municipalities should provide data to citizens. Computer records are covered by the Public Records Act, and as described above legal restrictions on the data may prohibit or chill desired uses such as journalistic analysis, new applications and websites, and derivative analysis. Data simply must be available to hold government accountable and support a range of positive uses. However, pragmatic considerations mean the municipalities who create data may not be well suited to manage it. Several towns had only badly out-of-date data, or had data but were unsure how to access the GIS system and extract data since staff with these skills had been laid off. Many municipalities, with populations of a few thousand or less, have limited or part-time professional staff. Addressing these problems and ensuring the sustainable creation and management of property data is an ongoing concern in Massachusetts.

The Commonwealth's Office of Geographic Information (MassGIS) Strategic Plan for Massachusetts' Spatial Data Infrastructure identified the availability of parcel data as a problem for policymakers. The plan observes that this data is required for "activities ranging from open space acquisition to road corridor planning to emergency response and public health monitoring." (Massachusetts Geographic Information Council Strategic Plan Steering Committee 2007) This plan resulted in a limited grant program to encourage data development, and the promulgation of parcel data standards. However, without mandates or incentives not all towns participate. Northampton, with a sophisticated local GIS program, does not participate in the statewide parcel program. In addition, local towns have no incentive to adopt MassGIS's standards for how this data should be structured. The lack of this type of coordination limits the ability of data users to create analysis or work across town boundaries. In addition, despite advances in technology only a tiny number of towns supported direct downloading, and many

continue to burn CDs although other means are possible with the spread of broadband internet. MassGIS, on the other hand, provides both direct data downloads as well as providing the data through a web mapping service (WMS) API.

The steps necessary to fully resolve this issue is beyond the scope of this paper. The Massachusetts experience with parcel data suggests that data intermediaries, such as Regional Planning Agencies and MassGIS, may be better equipped to establish data standards and provide data to users in raw formats and through technically innovative APIs. However, parcels and zoning are the result of administrative processes conducted by the towns. So long as these functions are performed by municipalities, they must be directly regulated and funded to create and update data that meets statewide standards.

## **Municipal Policy Recommendations**

Municipalities which have GIS data should make it available for free, online, and with minimal legal restrictions. These recommendations differ somewhat from existing policy templates, including the Open Data Consortium Project's Model Data Distribution Policy (2003).

The topic of whether governments should charge for GIS data has been extensively discussed in the GIS community. In order to explore the issue and provide a model data sharing policy, a diverse group of public and private GIS professionals formed the Open Data Consortium Project. According to this group, few municipalities make money from data sales. The group suggests GIS operations could be supported through surcharges on increased economic development, increases in tax revenue enabled by access to more precise information, or specific taxes or fees (Joffe 2010a). MassGIS has adopted an infrastructure perspective, arguing data should be viewed as infrastructure, such as roads, which should be provided at no cost as public goods. The Massachusetts Public Records Act restricts fees for public access to data to the costs of duplication. Distributing data through the web, versus through mailed CDs or order systems, would reduce the cost of duplication further.

In the early period of the world wide web, posting GIS data files to municipal websites was rare for a variety of practical reasons. Slow connections and limited bandwidth meant sharing data files was impractical. Furthermore, many requestors were consultants or governments seeking large volumes of data more easily shared through data CDs. Widespread adoption of broadband and declining hosting costs have eliminated technical restrictions on online data sharing. Increasingly, as Davies (2010) shows, an expanded range of data users are seeking raw government data for research, analysis, or development of public applications.

Sixty-five municipalities provided data through GIS data viewers. These tools, which operate in the browser window and are usually written in Adobe Flex or Javascript, allow visitors to view GIS data. Sometimes they contain other functions such as generating a list of abutters, printing a map, or adding annotations. Only two of these viewers, operated by Amherst and Boston, allow users to extract data in original GIS data formats.<sup>10</sup> In addition, many of these were not discoverable through the city website and were discovered only in response to data request or through internet searches of primary vendors.<sup>11</sup> If citizens can find them, these viewers serve the needs of some visitors, however do not allow the multiple uses described that require access to the raw data. Since their data extraction functions are often confusing or

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<sup>10</sup> See Appendix B for URLs and data layers available.

<sup>11</sup> Many were discovered through a domain-specific search of the hosting server of a major consultant which provides GIS services to dozens of Massachusetts municipalities. The domain is <http://host.appgeo.com>.

difficult to find, all municipalities should post links to commonly requested GIS data as flat files in both ESRI Shapefile and Google KML formats on a normal page on the city website. This approach, adopted by Northampton, can reduce staff time needed to satisfy requests and respond to the growing community of citizens interested in raw GIS data.

Finally, municipalities should place minimal legal restrictions on public data. Some of the provisions, such as reminders GIS data are not considered legal property definitions or provided without warranty may not have negative effects on data re-use. The Public Records Act could be amended to make statements of indemnification and hold harmless unnecessary. However, some of the practices may have unintended negative effects. A requirement derivative products contain a small credit may be a reasonable way to remind users of the original source. As discussed above, lengthy disclaimers may impede the development of innovative websites or mobile apps. Most troubling, restrictions on re-use or the right of onsite inspection are contrary the spirit of the law. Municipalities should not restrict the purposes public data can be used, adopting the strategy of Reading to discourage but not prohibit redistribution of the data.

### **From Public Records to Open Government**

Citing utilitarian philosophy, government reformers have advocated for laws that provide access to government records through public records and freedom of information laws. These laws establish the presumption that all records, except certain types, should be available to citizens upon written request. New technologies provide the capability to automate and enhance this practice, enabling citizens to email requests and governments to send electronic records. In the study, although the default practice was still mailed CDs for most municipalities, many were happy to send the files by email after I suggested this option in my request. Beyond automating the existing request-based public records paradigm, the internet makes possible a new paradigm based on expanding proactive disclosure of government information: open government.

Changes to the Federal FOIA in the 1990s and recent federal initiatives provide evidence of this new approach. In response to the expansion of the Internet, Congress enacted the Electronic Freedom of Information Act Amendments (E-FOIA) in 1996. With the intention to encourage proactive disclosure and reduce the number of FOIA requests, the law mandated that Federal agencies post documents commonly requested by citizens and information about how to submit a FOIA request on their websites. In a review conducted in 2007, the nonprofit National Security Archive found only 1 in 5 Federal agencies had posted the required documents and FOIA websites were confusing, disorganized, or nonexistent (National Security Archive 2007). After his election, President Barack Obama has rhetorically connected efforts to create new online sources for government data with reforms to how FOIA requests are handled by federal agencies (Obama 2008).

I argue a similar approach should be taken by municipalities to make electronic records public. The simplest step, posting data to a website allows citizens to access the files without the hassle and expense of submitting a formal request. The request process may incur more expenses than can be offset through legally allowed fees. During this study, although most requests received a response with minimal effort, many were routed to several departments or triggered responses from city attorneys.

Other researchers have begun to explore the other components of a transparency paradigm adapted to new technology. Scholars have urged the development of government technical systems which can be opened to citizens as “FOIA 2.0” (Kubicek 2008). Legal scholars

have approached the issue from the perspective of tensions created with individual privacy, or inadequate conceptions of public records in a digital world. Solove (2002) argues that new technology means we must rethink the regulation of public records, and proposes limiting access and uses of certain information rather than making public records unavailable to the public. Other scholars argued laws should be amended to take into consideration unique characteristics of electronic records, such as records like email which can be deleted and file metadata (Holcomb and Isaac 2008).

In fact, new technology may mean that summary statistics from previously restricted databases could be easily computed, and will continue to introduce new issues about how to ensure electronic data and records are organized, preserved, and made transparent in ways that balance competing principles. To navigate these tensions, Dawes (2010) proposes two meta-principles: stewardship and usefulness. Stewardship includes attention to accuracy, validity, security, and preservation of data, and the idea that “every public official ... is responsible for handling information with care.” Usefulness “recognizes that government information is a valuable asset” and promotes access to and use of government information for a variety of purposes (Dawes 2010). Although this study concerns three datasets determined a priori to be useful, this issue is nontrivial as cities seek to decide which data they proactively publish.

Although all aspects of government data retains a political dimension, increasingly data resources are functioning as infrastructure, a resource which can serve a wide range of public and private purposes.

In response to a request submitted under a long-standing state law, the majority of Massachusetts municipalities responded in the spirit of the public records law, offering to send the requested data. The evolving discussion about Federal government transparency suggests that, shifting to an open government paradigm for Massachusetts GIS data will require changing norms at the local and statewide level. Local diversity means it may be difficult for state policymakers to mandate proactive disclosure of useful data, to use Dawes’ principle, as I found communities had different data depending on their unique infrastructure, geography, and history. In the federal government, E-FOIA mandates disclosure of often requested data but is not upheld consistently. The Obama administration has mandated federal agencies contribute “high-value” datasets to the Data.gov website, but the resulting datasets have been criticized for not being the most useful to citizens. Despite the greater availability of some data, some groups have gone to extraordinary lengths to obtain government data they believe to be more useful than what is posted on official websites (Long and Burnham 2010).

This study documented both problems with compliance with the existing public records law, and a range of issues affecting access to information not fully addressed by the existing law such as distribution technology, costs, licensing, and data structure and management. Open government will require not only moving beyond a narrowly conceived “right to view” records, but also an ongoing discussion of a range of practical, ethical, and legal considerations. These include file formats and distribution technology, balancing openness with privacy and public safety considerations, and the legal and institutional arrangements that are required to achieve a new paradigm of transparency.

## **ABOUT THE AUTHOR**

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## **INTERVIEWS**

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Donald White  
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## APPENDIX A – SUMMARY OF RESPONSES

	Number	Percent of all	Percent of respondents
Massachusetts Municipalities	351	100%	
Responded	272	77.5%	100%
Email	215	61.3%	79%
Phone	61	17.4%	22.4%
Letter	25	7.1%	9.2%
Response received:			
Within 10 days	225	64.1%	82.7%
After 10 days	47	13.4%	17.3%
Among Respondents:			
Have data	118	33.6%	43.4%
No data	79	22.5%	29%
No response	75	21.4%	27.6%
Provided data at no cost	55	15.7%	20.2%
Emailed	44	12.5%	16.2%
Download	4	1.1%	1.5%
Other	5	1.4%	1.8%
Disclaimer or License	40	11.4%	14.7%
GIS Data Order Form	24	6.8%	8.8%
Number with cost	61	17.4%	22.4%