



Sharing Information Across Boundaries

MetroGIS 2006 Performance Measurement Report

For the period October 1, 2005 through September 30, 2006

December 21, 2006

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**Excerpt
MetroGIS Policy Board Meeting Summary
January xx, 2007**

a) 2006 Annual Performance Measurement Report

TBD included after Policy
Board meeting

Table of Contents

I.	Authority and Context.....	3
II.	Summary of Key Findings	4
III.	Findings by Performance Measure	6

Figures:

1a and b:	Data Discovery Activity via DataFinder	7
2a and b:	Data Downloads Via DataFinder.....	9
3a and b:	Downloads Via Café Relative to Total Data Downloads	9
4:	Downloads of Regionally Endorsed Datasets Relative to Total Downloads	11
5a and b:	General Information Website Activity	13
6:	Data Downloads by Location of User.....	15

Tables:

1:	Download Events for Endorsed Regional Datasets.....	6
2:	Total Data Downloads	8
3:	Downloads of MetroGIS Endorsed Regional Datasets.....	11
4:	Download Events for MetroGIS Endorsed Regional Datasets	12
5:	Usage of General MetroGIS Website	12
6:	Usage of MetroGIS Endorsed Web-based Applications.....	12
7:	Metadata Records Searchable on DataFinder	16
8:	Datasets Directly Downloadable via DataFinder	16
9:	Compliance with Custodial Responsibilities	17
10:	Entities Publishing Metadata Records via DataFinder.....	17
11:	Entities Publishing Geospatial Data via DataFinder	18

Appendix:

	Explanation of Detailed Source Data Captured Monthly for Each Measure	20
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I. Authority and Context

This report is the fifth in series of annual reports on Performance Measurement Results for MetroGIS's efforts, covering the period from October 1, 2005 through September 30, 2006.

In April 2002 MetroGIS adopted a Performance Measurement Plan¹, to more clearly state desired outcomes, demonstrate accountability for results, and support continuous organizational improvement. This process is also designed to foster continued dialogue about outcomes that MetroGIS should focus on and how MetroGIS can demonstrate value to its stakeholders.

The foundation for measurement of MetroGIS's performance is its Mission Statement that was established in 1996:

MetroGIS's mission is to provide an ongoing, stakeholder-governed, metro-wide mechanism through which participants easily and equitably share geographically referenced graphic and associated attribute data that are accurate, current, secure, of common benefit and readily usable.

The Performance Measurement Plan identifies four "outcomes", to be achieved through MetroGIS's efforts, which parallel MetroGIS's core functions².

These "outcomes" involve desired improvements in the following general areas:

- *Ease of data discovery and access*
- *Data currency*
- *Internal efficiencies, level of cooperation*
- *Decision making, service delivery*

Ten performance measures provide the structure through which to assess progress toward achieving the four outcomes. Key findings are summarized in Section II and a detailed explanation of the results for each of the ten measures is provided in Section III.

The focus of these performance measures is not only on data-related preferences from the user's and producer's perspectives but also on broader desired organizational efficiencies and effectiveness. Assessment of MetroGIS's progress, by way of these measures, to achieve the desired outcomes comprises the substance of this annual report, culminating a year-long process. Performance measurement data are generally analyzed by staff on an ongoing basis to better understand trends that may be occurring, and reports are made quarterly to the Coordinating Committee and annually to the Policy Board. In past years, on a quarterly basis, staff raised for discussion with the Coordinating Committee one or more anomalies in the data or trends that had been detected. In 2006, due to transitions in available staffing, quarterly reports to the Coordinating Committee could not be produced. They will be resumed in 2007.

The first annual performance measurement report, accepted by the MetroGIS Policy Board in January 2003, established baseline measurement information. It was largely descriptive. After the initial year of experience, more detailed metrics were devised. Consequently, some measures include data for 2002 and some do not.

This 2006 report provides more insight into trends as at least three years of data are now available for all of the current metrics. As a result, a better understanding of causal relationships between resources allocated to specific activities and desired outcomes is possible. The expectation is that MetroGIS leadership will continue to revise and shape MetroGIS's activities and programs based, in part, on what is learned through this performance measurement process.

II. Summary of Key Findings

Key results for 2006 are summarized in this section for each of the ten established performance measures arranged by their respective statement of desired outcome. No attempt is made to explain the meaning of these results in this Section. A more in-depth analysis of findings for each measure is provided in Section III, including comparison and contrast with results for similar monitoring data captured in previous years.

OUTCOME A. EASE OF DATA DISCOVERY AND ACCESS

Understanding the purpose and components of the MetroGIS DataFinder (www.datafinder.org) application is important to gleaning the meaning of the performance measures data used to report on progress toward achieving Outcome 1. A summary of the functionality achieved via DataFinder is provided in Section III.

Four distinct performance measures have been adopted to evaluate progress relative to the “Ease of Data Discovery and Access” performance outcome, each of which is related to MetroGIS DataFinder. The trend in each case, despite problems experienced using DataFinder Café during the 2006, was essentially the same or a slightly greater amount of activity than experienced in previous years. A fifth informal measure was added in 2003 by staff following adoption of the 2003-2005 Business Plan in accordance with growing interest in defining a role for MetroGIS in fostering collaborative solutions to common application needs. Key findings for 2006 were:

1. Number of visitor sessions to DataFinder (*Data Discovery via Catalogue and Café*)
15,720 events, **up .04 percent from 2005**
2. Number of partial or whole datasets downloaded via DataFinder (*Catalogue and Café*)
7347 events, **down 1.6 percent from 2005**
- 2a. Number of visits to regional applications (informally added when two applications added)
1389 visits, **up 151 percent from 2005**
3. Number and type of sector/stakeholder groups using Web Mapping Services
(No means to measure available until 2007)
- 3a. Location of sector/stakeholder groups accessing data from DataFinder
(informally added 2005).
4. Number of datasets downloadable and metadata records on DataFinder
205 metadata records, **up 17 from 2005**
158 datasets, **up 7 from 2005**

OUTCOME B. DATA CURRENCY, USEFULNESS

One performance measure has been established for this outcome. Eight MetroGIS-endorsed regional data solutions have been implemented. No new regional data solutions were implemented in 2006.

5. Percent of regionally endorsed datasets maintained to agreed upon currency specification
100 percent, as was the case in 2005

There was no change in the number (**21**) of custodian roles and responsibilities associated with maintaining these regional solutions that are performed by **10** different **organizations**.

While these solutions comprise only 4.5 percent of the total datasets available via DataFinder, they continue to be the **most popular datasets** downloaded, increasing from 31.3 percent of the total downloads in 2005 to **46.0 percent** in 2006, for an **increase of 14.7 percent**.

OUTCOME C. INTERNAL EFFICIENCIES, LEVEL OF COOPERATION

Four distinct performance measures are used to evaluate progress relative to this “Internal Efficiencies, Level of Cooperation” performance outcome. Data is not available to utilize two of the measures. Key findings in 2006 were:

6. Number of manual vs. self-service requests for data (by producer type)
(No effective means defined to measure)
7. Hours of staff time saved in data distribution tasks (by producer type – focus on counties and the Metropolitan Council)
(No effective means defined to measure)
8. Number (and names) of entities listing metadata records (which includes entities listing datasets) on DataFinder
18 publishers of metadata, same as 2005
(The names of each are maintained in the source performance data file)
9. Number (and names) of entities using DataFinder as a data distribution method
10 publishers of data, same as 2005
(The names of each are maintained in the source performance data file)

OUTCOME D. DECISION MAKING, SERVICE DELIVERY

One performance measure has been established for this outcome.

10. Testimonials/case studies on how data access and delivery, and the MetroGIS forum, were used to improve operations/systems/decision-making by sector/stakeholder group
9 testimonials, increase of 1 from 2005

The subject of the testimonial produced in 2006 was Professor Shekhar’s team at the U of M. The focus of this testimonial is an emergency evacuation planning application they developed. To quote Professor Shekhar “...the research team needed a variety of geospatial data, including road maps with capacity information and basic daytime population estimates. Much of the required data were available free of charge on the MetroGIS DataFinder website. If we didn’t have easy access to these datasets then the use of our algorithms would be extremely difficult if not impossible”.

In a related effort, the Metropolitan Council completed a year-long independent evaluation of MetroGIS’s efforts and value obtained from its investment in the effort. The findings corroborated substantive internal efficiencies that the Council and other organizations are experiencing as a result in participating in MetroGIS’s efforts.

III. Summary of Results by Measure

INTRODUCTION

In this fifth annual report, the following findings and conclusions are identified for each of ten performance measures, organized by each of the four outcomes described in the previous section.

With the data obtained during the 2006 reporting period, at least four years of comparable monitoring data are available for many of the ten defined performance measures. In 2007, MetroGIS's Performance Measurement Plan is scheduled to be updated following an initiative to update the MetroGIS Business Plan. Updating of the Performance Measurement Plan is to insure consistency between outcomes and related policy presented in the two documents. During these update processes, the desirability of setting performance targets for several of the measures is anticipated to be a matter of consideration.

Note to the Reader: In preparation for this 2006 annual report, the source data files were consolidated and reformatted to both automate and improve comparative analysis and charting. In the process of doing so, a few errors in the counts and in embedded formulas were detected which resulted in minor deviations from metrics reported in previous annual reports for Performance Measures 4, 8 and 9.

OUTCOME A. EASE OF DATA DISCOVERY AND ACCESS

Preface: A key to understanding the meaning of the measures associated with Outcome 1 is one's understanding of the mechanism developed by MetroGIS to support online discovery and access to geospatial data³ produced by others which is important to carrying out business responsibilities of other organizations. This mechanism is MetroGIS DataFinder (www.datafinder.org).

MetroGIS DataFinder is intended to provide a one-stop-shop through which MetroGIS stakeholders discover and obtain geospatial data which are produced by multiple entities and which pertain to the seven– county, Minneapolis–St. Paul Metropolitan Area. DataFinder has two principle components – Catalogue and Café. The Catalogue contains metadata records⁴ for each dataset available via the DataFinder website and for a limited number of datasets that one must go directly to the producer to obtain. For those datasets available via DataFinder, a hyperlink is provided in the corresponding metadata records searchable in the Catalogue. Clicking on a hyperlink permits the user to download a particular dataset in its entirety⁵. Café, on the other hand, provides the user with the ability to download self-selected portions of available datasets, as well as, bundle selections of multiple datasets in to a single download event. The Catalogue initially went on line in spring 1998 DataFinder and Café was initially launched in summer 2002.

By 2006, Café's software and hardware platform had become obsolete and were no longer fully functional. Anticipating these problems, software and hardware improvements were defined through a user satisfaction-based process that was initiated in May 2005. A preferred solution was approved in early winter 2006 and implementation proceeded spring 2006. The resulting improvements were fully operational in November 2006, several weeks after the close of the current reporting period. These improvements⁶ once again establish MetroGIS DataFinder as a state-of-the-art data discovery and access tool.

INTRODUCTION

While DataFinder Café was not working properly, it is not known to what extent users switched to using the FTP (File Transfer Protocol) option offered via links from the DataFinder catalogue to obtain data they needed or elected to forego obtaining new data.

PERFORMANCE MEASURE 1: Number of visitor sessions to DataFinder (Data Discovery via Catalogue and Café)

Table 1: Total Visitor Sessions to DataFinder

Year	Events	Annual Change	Change since inception	Target
2003	13,841			N/A
2004	15,258	10.2 %		Not Set
2005	15,658	2.6 %		Not Set
2006	15,720	0.4 %	3.0 %	Not Set

Website visit activity collected via WebTrends software is used to measure use of DataFinder for discovering data through searching metadata records, reviewing data characteristics provided in the metadata, and viewing the actual data online. Supporting a Web-based tool to improve efficiencies related to data discovery and distribution (DataFinder) is a core function of MetroGIS.

FINDINGS:

Notwithstanding the operational problems experienced using Café during the 2006 reporting period, **data discovery activity**, via MetroGIS DataFinder, remained essentially the same as last year with an **increase of .04 percent** to a total of 15,720 events versus 15,658 events experienced in 2005 or up 3.0 percent since 2003. This finding could be the result of the user community becoming more knowledgeable about the data available and choosing to download the data without first viewing the metadata, as metadata is bundled with each downloaded file.

The monthly pattern in data discovery-related visits that appeared to be emerging from review of the 2004 and 2005 monitoring data did not repeat itself in 2006. In the past, the highest activity was occurring February through April and the lowest activity was occurring July through September. Conversely in 2006, a slight reversing of the patterns occurred along, with less variation in the monthly differences. More monitoring data is needed to determine if the 2006 activity was an anomaly or the beginnings of a new trend. Staff continue to evaluate whether predictable patterns exist in this activity.

Figure 1a. Data Discovery Activity via DataFinder – Quarterly 2003-2006

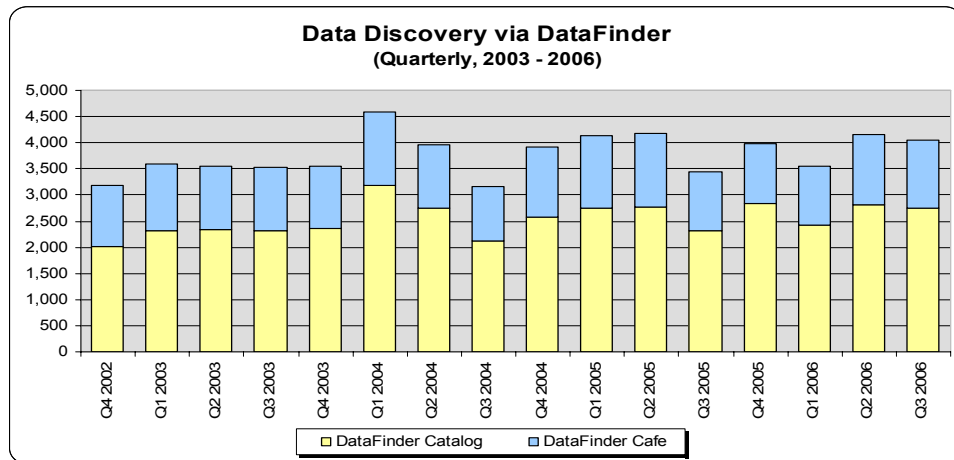
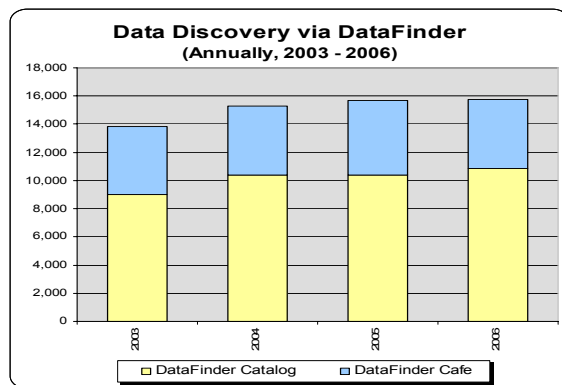


Figure 1b. Data Discovery Activity via DataFinder – Annually 2003-2006



DataFinder **Café activity** continued to comprise over 30 percent of the data discovery activity supported by DataFinder, as a whole, despite software aging problems⁷ that compromised Café’s functionality for a large portion of the reporting period. In 2006, **31.1 percent of total data** discovery activity was via Café. This, however, was lowest percentage experienced since monitoring began. The highest percentage occurred in 2003 with Café accounting for 35.1

percent of the total data download events. Software problems experienced by Café (see Endnote 2) may have been a factor in the reduction in Café's usage in 2006. These problems should be corrected as of December 2006. This modest decrease could also be related to the leveling off of data discovery activity associated with the DataFinder Catalogue, as noted above.

In addition to maintaining data discovery metrics for DataFinder, metrics are also maintained for discovery of data activity experienced via the **MetroGIS Socioeconomic Resources Page**. Use of the Socioeconomic Web Resources Page has **doubled** in each of the last two years. In 2006, the average monthly usage increased to 108.9 visits per month that involved viewing of at least one data source page. (See the Regional Applications section, below, for additional information.) When the Performance Measurement Plan is updated, staff suggests that an effective means to integrate these application related metrics with other data discovery metrics should be investigated to insure the breadth of data discovery activities are comprehensively monitored.

PERFORMANCE MEASURE 2: Number of whole or partial datasets downloaded through DataFinder [Catalogue and Café] (by dataset, and by sector/stakeholder group if possible).

The primary benefit of DataFinder is that it provides a centralized location from which to obtain geospatial data pertaining to the seven-county, Twin Cities Metropolitan Area. DataFinder Café, a component of DataFinder, also supports subsetting of data and multiple data formats, which help the user put needed data into to use more quickly once downloaded.

The DataFinder website serves as a one-stop-shop home for 150 datasets, eight of which have been endorsed by MetroGIS as meeting high-priority common information needs for the region, and as meeting MetroGIS-defined data standards. The other datasets, although not components of current endorsed regional solutions, are being made accessible via DataFinder to act on the goal of maintaining a one-stop-shop for data access and because some of these data datasets may be of potential regional interest.

Table 2: Total Data Downloads

Year	All Data Download Events	Annual Change	Change since inception	Target
2003	7,073	-	-	N/A
2004	7,608	7.6 %	-	Not Set
2005	7,463	-1.9 %	-	Not Set
2006	7,347	-1.6 %	3.8 %	Not Set

FINDINGS:

Notwithstanding the operational problems experienced using Café during the 2006 reporting period, **data download activity** was also **essentially the same** as last year with only a slight decrease of 1.6 percent to 7347 events, as opposed to 7463 events experienced 2005 but up 3.8 percent since 2003 .

The lack of substantive growth in data downloading, despite an increase in the number of available datasets, may be associated with the software problems experienced with Café. Or, it could mean that the target user community capacity has been reached, at for the time being. More information is needed to determine if a change in MetroGIS policies or procedures is in order to address this finding. This topic may be a good candidate to include in the User Satisfaction Survey proposed as a component of the pending 2007 Business Plan Update project.

Figure 2a. Total Data Downloads via DataFinder – Quarterly, 2003-2006

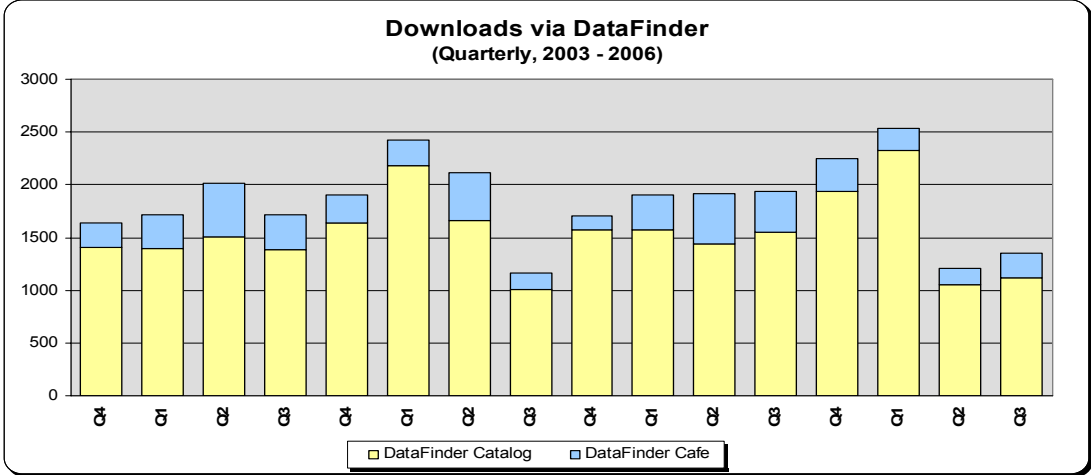


Figure 2b. Total Data Downloads via DataFinder – Annually, 2003-2006

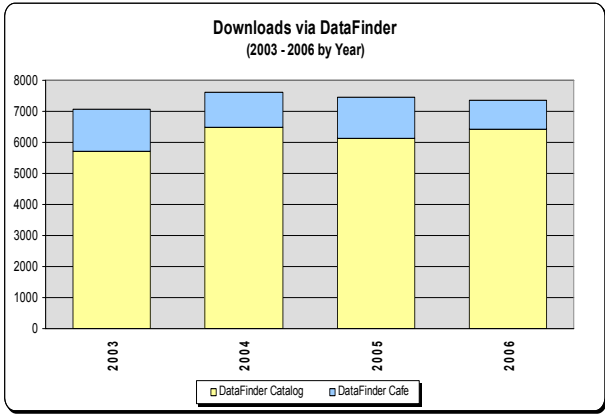


Figure 3a. Percent Downloads Via Café – Quarterly, 2003-2006

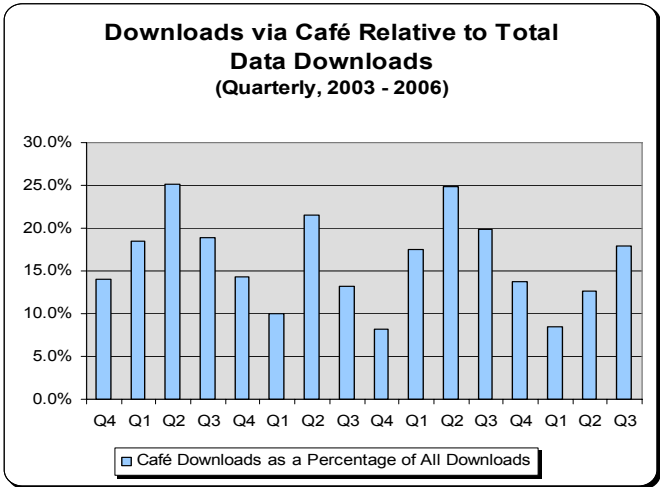
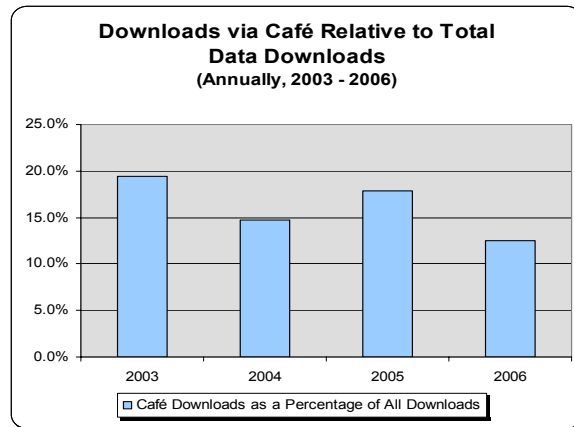


Figure 3b. Percent Downloads Via Café – Annually, 2003-2006



The existence of a relatively flat trend in overall downloads is in contrast to a substantively increasing portion of download events that are comprised of endorsed datasets (Table 3, below). This finding suggests that less downloading of the other 152 datasets available on DataFinder is occurring even though there has been growth in the number of other datasets. Another possible explanation for a portion of the decrease in overall downloading activity is that DataFinder Café was not working properly for most of the 2006 reporting period (see Endnote 2). Software improvements were partially installed in July but were not fully operational until November 2006, after this reporting period closed. As there was no significant drop off in total downloading activity, it is assumed that users either elected to use the FTP data downloading option accessible via the DataFinder catalogue to obtain data they needed or the software incompatibilities with the new version of JAVA were not widely experienced. The latter means few of the users elected to upgrade the JAVA component of the Café application. More monitoring information is needed to understand the effect of Café not properly functioning for much of the year. To simplify the DataFinder tool and minimize the potential for this type of software incompatibility in the future, the new version of Café no longer requires the user to download component software (JAVA code) to their own systems before they can utilize Café.

Even though there is little to report concerning total downloading activity, three other observations are noteworthy:

First, the **temporal pattern of data downloading activity** experienced in 2006 was **different** from that experienced in 2004 and 2005 as well as different from the pattern for data discovery. The large decrease in overall downloading activity witnessed during the 3rd quarter of 2004, which repeated in 2005, once again was also evident in 2006. The explanation previously offered for the 2004 drop off in activity was the absence of access to the regional parcel dataset. Since the regional parcel dataset was available for all of 2006, that explanation no longer seems to fit. Additional monitoring is needed to determine whether a change in usage is in progress or if the 2006 usage pattern is an anomaly.

Second, **DataFinder Café continues to exceed over 30 percent of the total discovery events**. Up until now, this metric was the only way MetroGIS could attempt to monitor interest in online browsing of geospatial data, as an end in itself, as opposed to prospective users evaluating data for their particular need prior to downloading it. The consistent use of Café's web mapping data for their particular need supports a possible future trend identified in the current Business Plan that asserts an increasing number of users may wish to obtain some of the geospatial information they need online, as opposed to downloading all data for use on their internal systems. The new software platform (Geocortex IMF) that now supports DataFinder Café provides a direct means to distinguish monitoring of the browsing of data for fitness of use versus actual use of the data available via Café (e.g., web mapping service) for decision support. This may be a topic to be pursued in the pending 2007 User Satisfaction Survey.

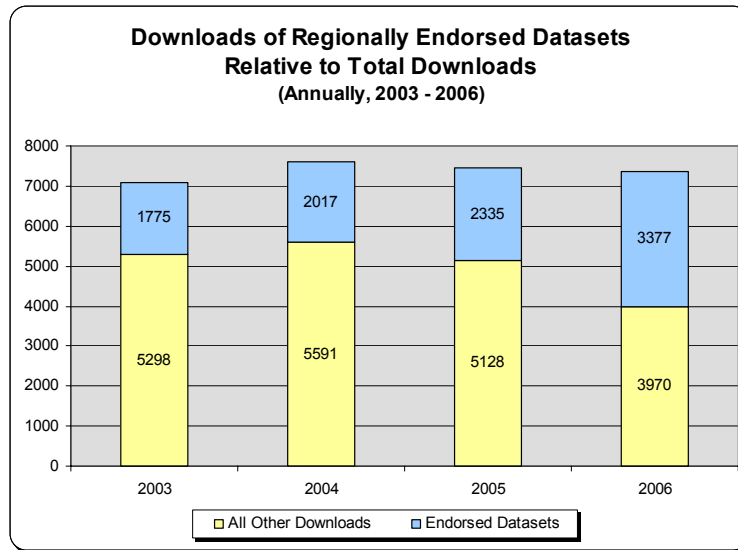
Third, of the increasing number of total datasets available via DataFinder, the six MetroGIS endorsed regional datasets⁸ have been consistently among the top ten datasets downloaded. In 2006, the **regional endorsed datasets were all among the top eight downloaded datasets**, accounting for **46.0 percent of the total data downloads**, the highest to date, despite addition of 20 new non-endorsed datasets for a total of 150 other datasets available via DataFinder in 2006. The relative **popularity** of the regional endorsed datasets has also **nearly doubled** (90.2 percent increase) **since 2003** when they comprised 25.1 of the total downloads.

Table 3: Downloads of MetroGIS Endorsed Regional Datasets

Year	MetroGIS-Endorsed Regional Dataset Download Events	Annual Change	Change since inception	Percent of Total Downloads	Target
2003	1,775	-	-	25.1 %	N/A
2004	2,017	13.6%	-	26.5 %	Not Set
2005	2,335	15.8%	-	31.3 %	Not Set
2006	3,377	44.6 %	90.2%	46.0 %	Not Set

Facilitating effective long-term solutions to priority common information needs, known as endorsed regional datasets, constitutes one of three core MetroGIS functions. The data downloading statistics described herein, together with user testimonials (PM #10), are definitive evidence of the value of continuing efforts to address common information needs through regional solutions

Figure 4. Downloads of Regionally Endorsed Datasets Relative to Total Downloads



A partial explanation for the increasing relative popularity of the MetroGIS's regionally endorsed datasets may be that the number of entities **licensed to access** the regional parcel and street centerline datasets both increased in 2006 for a combined **increase of 15.2 percent** over 2005 or (a total of 272 total licenses in 2006 versus 236 in 2005). Increased trust in the data may also be a factor. The User Satisfaction Survey that is proposed as a component to of the 2007 Business Plan Update process should include questions targeted to a better understanding of the increase in popularity of endorsed regional datasets and whether any changes in policy or procedures are warranted to sustain this situation.

Table 4: Download Events for MetroGIS Endorsed Regional Datasets

Dataset (2006 rank)	Number of downloads				Percent change
	2003	2004	2005	2006	From 2003 / From 2005
County & Municipal Boundaries (1)	441	484	479	832	+88.7% / 73.7%
Census Demographic Profiles (2)	295	479	516	793	+168.8% / +53.7%
Parcels (3)	255	258 ⁽¹⁾	576	793	+211.0% / 37.7%
Street Centerlines (4)	218	249	322	419	+92.2% / 30.1%
Census Geography (7) (e.g. tracts and blocks)	286	244	228	311	+8.7% / 36.4%
Planned Land Use (8)	260	288	208	183	-29.6% / -12.0%
Subtotal	1,755	2,002	2,329	3,331	
<i>All other downloads</i>	<u>5,318</u>	<u>5,606</u>	<u>5,134</u>	<u>4,016</u>	
TOTAL	7,073	7,608	7,463	7,347	+3.9% / -1.6%

⁽¹⁾Access to parcel data via MetroGIS ceased in February 2004 due to the lack of a Data Sharing Agreement. Access was reinstated January 2005.

PERFORMANCE MEASURE 2A: Number of visits to regional applications (informally added in 2003 was added by staff following adoption of the 2003-2005 Business Plan and following availability of two applications implemented as MetroGIS initiatives)

Table 5: Usage General MetroGIS Website

	1998	1999	2000	2001	2002	2003	2004	2005	2006
General Information Website						56,653	75,718	89,138	83,251

Table 6: Usage of MetroGIS Endorsed Web-based Applications

	2004	2005	2006
Mailing Labels	-	106	82
Socioeconomic Web Resources Page	124	446	1307
Total	124	552	1389

FINDINGS:

No new regional endorsed web-based applications were launched in 2006. Comments follow about each of the applications currently supporting a MetroGIS initiative.

In addition, funding was authorized in 2006 for a Regional GIS Pilot Project to develop a web-based application to assist prospective users locate existing geospatial-related applications and web mapping services that meet their needs. The project’s goal is similar in concept to how DataFinder expedites discovery of existing geospatial data resources. Once this “ApplicationFinder” tool is available, less reliance on direct outreach efforts should be required to get the “word out” about the availability of the geospatial applications cited below.

- a) General Information Website (www.metrogis.org). This website was initially launched in 1997. It includes information about every aspect of MetroGIS, in effect serving as its institutional memory. It is one of several communication and outreach methods supported on an ongoing basis in conjunction with another of MetroGIS’s core functions – support a “forum” to foster coordination through knowledge sharing and use of best practices. Support of activities, which foster knowledge sharing, are acknowledged as critical to continued innovation to achieve the most effective and efficient services possible.

Use of MetroGIS’s general web site (www.metrogis.org) as a primary means to share information was slightly down (-7.1 percent) in 2006, with 83,251 total visits, as opposed to 89,138 total visits experienced in 2005. Experiencing fewer visits in 2006 than in 2005 is not unexpected as visits in 2005 were up over 18 percent from the 2004 traffic. This

level of usage was directly the result of MetroGIS receiving several national and international recognitions in 2005, which was not the case in 2006.

In 2006, staff is aware of only one such recognition, Professor Ian Masser published an article about MetroGIS in the European Journal "GeoInformatics. As such, it is not surprising that the rapid growth realized in the past mitigated somewhat in 2006.

Figure 5a. General Information Website Activity

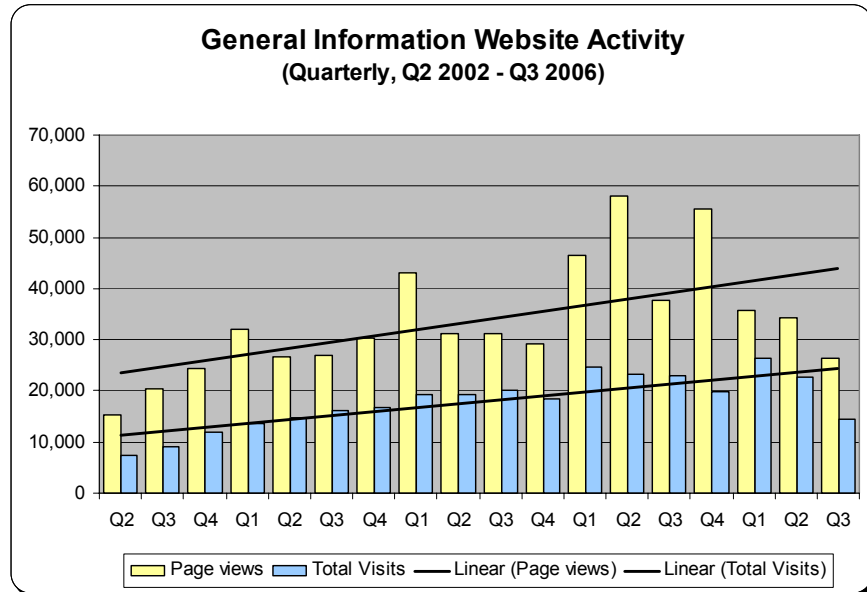
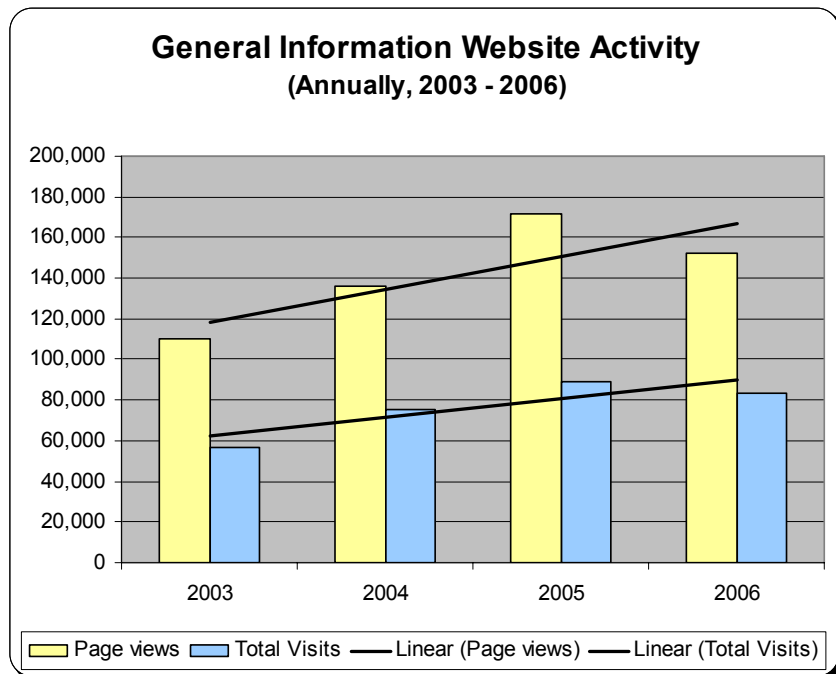


Figure 5b. General Information Website Activity



Need to update the following text when the data become available. In 2006, the top visited pages include a host of standards and guidelines, as well as organizational information. Top downloaded documents include the DataFinder Café scope of work and functional design criteria, Business Object Framing Model, Organizational Structure, Performance Measurement Plan, and Business Plan.

b) Socioeconomic Web Resources Page

(www.datafinder.org/mg/socioeconomic_resources/index.asp)

This webpage was implemented in April 2004. Monthly average use nearly doubled from 37.2 to 108.9 visits per month during the 2006 reporting period. In 2005, usage nearly tripled from 10.3 to 37.2 visits per month. The first year's growth was not unexpected once availability of the site became more widely known but another doubling in the second year was not expected. One or two years of additional monitoring should provide sufficient information to understand a typical level of use.

c) Regional Mailing Label Application (www.datafinder.org/labels/login.asp)

This application became fully operational in November 2005. It was especially designed for users who want to make mailing labels for geographic areas that cross county boundaries, as it runs on the regional parcel dataset. Users must be licensed to access the regional parcel dataset, of which there are currently 88 licensees. The current reporting period provided the first complete year of monitoring data, which showed a decrease from 106 lists created in 2005 to 82 created in 2006 or a decrease of 22.6 in usage during the current reporting period. The peak usage in 2006 was in April with 25 mailing lists created, down from the 2005 peak of 39. An explanation for this decrease in usage is not readily apparent. More information is needed to determine if the application is meeting current needs or if prospective users are unaware of its existence. In an attempt to gain this understanding, MetroGIS staff intends to send a notice to each of the 88 entities licensed to use the underlying regional parcel dataset to inquire if they have any concerns regarding the application's functionality. This topic should also be addressed in the pending User Satisfaction Survey to be conducted as part of the Business plan Update process.

d) Regional Emergency Preparedness Application

This application was launched in 2005. Since that time it has been used strictly as a training tool by the Emergency Preparedness Workgroup to educate emergency managers. The main focus of this outreach effort has been on demonstrating the value of GIS technology to addressing emergency management related data and analysis needs pertaining to disaster planning, response, and recovery. Access to the application is password-protected. If and when this application is moved to a production environment, metrics will be established to monitor its use.

PERFORMANCE MEASURE 3: Number and type of sector/stakeholder groups using Web Mapping Services

FINDINGS:

(No means to measure use web mapping service available until 2007.)

BACKGROUND:

Up until the software platform that supports DataFinder was updated this past year, technology did not exist to allow us to distinguish between a user browsing/viewing data online via Café as part of their evaluation of fitness for use prior to downloading a particular dataset and actual use of the data to support decision making. Beginning with the 2007 reporting period, staff believes the Geocortex IMF software that now serves as the platform for DataFinder Café will provide this capability. This new capability is important to achieving a better understanding of the use of currently supported web services and related Web-based applications⁹. This understanding is, in turn, important to deciding future policy regarding preferences for regional web-based applications, in particular, those that are intended to run on endorsed regional data solutions.

In the past, events attributed to Café in Performance Measure #1 metrics¹⁰, as a component of all discovery activity, were used to estimate online data browsing/viewing activity. For instance, in 2005 this logic was used to corroborate the findings of a 2005 survey of DataFinder users which documented that browsing (viewing) data was the most often used Café function. This preference (browsing as opposed to downloading) showed up in the 2005 metrics as a nearly two-to-one (33.5 verses 17.9 percent) use of Café as a browsing tool to its function as a data downloading tool. Applying the same logic to 2006 metrics, similar preference results are realized with 31.1 percent using Café as a browsing tool, as opposed to 12.5 percent using it for a data downloading tool.

Policy guidance, as to the preferred role for MetroGIS regarding the topic of online applications, is planned as a topic of discussion during the forthcoming Business Plan Update process. Once policy direction is clear, tools such as the new monitoring capabilities that will be available in 2007 can be put to the most effective use.

When the Performance Measurement Plan is updated in 2007, a means to reconcile how to best measure web services activity relative to use of the Socioeconomic Web Resources Page, and Regional Mailing Label Application usage counts, not included in this year's assessment, should also be investigated.

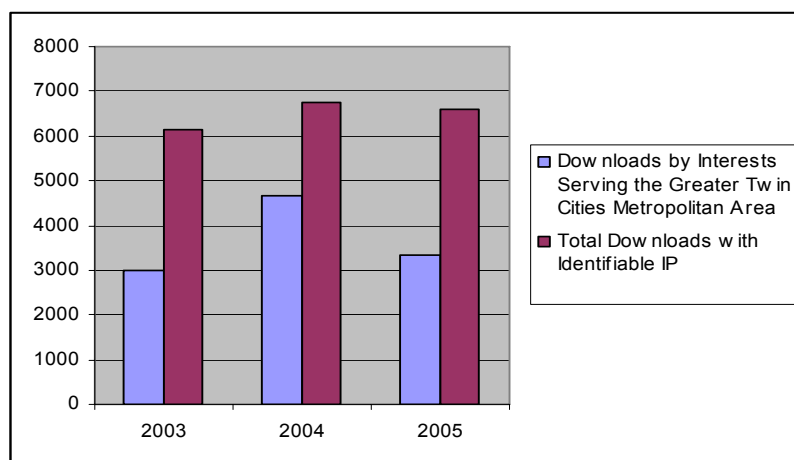
PERFORMANCE MEASURE 3a: Number and type of sector/stakeholder groups accessing data from DataFinder (informally added).

This measure was added to the Annual Performance Measurement Report in 2005. Prior to that time, information about where data obtained via MetroGIS DataFinder was going when downloaded (e.g., measure whether the majority of the users are located within the seven-county, Minneapolis- St. Paul Metropolitan Area) was not available. When staff learned that records contained within the DataFinder log files could be assigned geographic coordinates, through a process developed by Quova, Inc., a service agreement was secured with for a fee of \$250. *In 2006, Quova reorganized and, as of this writing; progress had been made on a new agreement but the final agreement had not been reached to continue this service. If an agreement is reached, the following text from the 2005 report will be updated. Otherwise it will be left as is for historical purposes.*

FINDINGS:

From the 2005 Report: From October 1, 2004 to September 30, 2005, 50.8 percent of 6,579 identifiable download events via DataFinder were by interests located within the Minneapolis-St. Paul DMA¹¹, down 22 percent from 2004. The 2005 level of "In Metro Area" use is similar to that experienced in 2003 (49.4) but down from that experienced in 2004 (69.0 percent).

Figure 6. Data Downloads by Location of User (Within and Beyond Seven County Area)



The large increase in “Non-Metro Area” data downloading activity during 2005 should be monitored but may be an anomaly due to significant attention received this past year by national and international interests. The most prominent being:

- Recognition in a book published by ESRI International Press in March that focused on MetroGIS’s governance structure,
- MetroGIS’s data distribution architecture being highlighted in March by the Open Geospatial Consortium (OGC) as its top example of a successful regional system,
- URISA selecting MetroGIS’s accomplishments among its top 15,
- Presentations made at a November Innovations in Governance Program at the Kennedy School of Government, and
- The National Map (TNM) linkages to web services distributed via DataFinder is likely because MetroGIS’s services were highlighted at least one major conference that promoted TNM.

An assumption made in the initial Performance Measurement Report recognized the likelihood that local usage could be expected to decrease as communities of interest outside of the area learn of the wealth of data resources provided via DataFinder. Notwithstanding, the user satisfaction survey that is anticipated in 2007 as part of Business Plan Update initiative should explore any concerns of local users that may be impeding their use of DataFinder.

As in the past, those entities using DataFinder the most during current reporting period were academic institutions of higher learning and state, regional, and local government interests. Dakota County and Hennepin County are again listed among the top 25 download recipients, with activity at essentially the same level as in 2004. It should, however, be noted that downloading activity associated with local planning and engineering firms, the third highest user community in 2004, was down over 59 percent. This is a potential concern, as the majority of their activity is assumed to be on behalf of the area’s government units. Some of this decrease could be attributed to coincidental 63.4 increase in use by government users. The survey proposed as part of the next Business Plan Update project that should include questions to investigate this situation.

The user-based information used for this analysis was obtained from a \$250 report generated for MetroGIS by Quova, a web-tracking firm. Although some questions remain with certain aspects of the methodology used, the Quova report represents the best information available. Thus, a report from Quova should again be pursued for the 2006 MetroGIS Performance Measurement Report.

PERFORMANCE MEASURE 4: Number of datasets and metadata records on DataFinder

In accordance with its policy to promote leveraging of investments within the community, MetroGIS should continue to encourage data producers to publish metadata, as well as their actual data holdings, via the DataFinder tool in an effort to continue to improve user and producer efficiencies related to discovery and distribution of geospatial data.

Table 7: Metadata Records Searchable on DataFinder

Year	Searchable Metadata	Annual Change	Change since inception	Target
2002	136	-	-	Not set
2003	166	22.0 %	-	Not set
2004	183	10.2 %	-	Not set
2005	188	2.7 %	-	Not set
2006	205	9.0 %	50.7 %	Not set

Table 8: Datasets Directly Downloadable via DataFinder

Year	Directly Downloadable Datasets	Annual Change	Change since inception	Target
2002	107	-	-	Not set
2003	136	27.1 %	-	Not set
2004	145	6.6 %	-	Not set
2005	151	4.1 %	-	Not set
2006	158	4.6 %	47.7 %	Not set

FINDINGS:

Even though the number of entities participating did not change, the number of **metadata records searchable** on DataFinder increased from 188 to 205 or **up 9 percent** and number of **datasets downloadable** via DataFinder increased from 151 to 158 or **up 4.6 percent**.

OUTCOME B. DATA CURRENCY, USEFULNESS

The 2002 MetroGIS Performance Measurement Plan established one measure of the “Data Currency” outcome. 2006 results and 2002-2006 trends for this measure it is as follows:

PERFORMANCE MEASURE 5: Percent of regionally endorsed datasets maintained to agreed-upon currency specifications.

Table 9: Compliance with Custodial Responsibilities

Year	Percent Compliance	Annual Change	Change since inception	Target
2002	100	-	-	Not set
2003	100	0 %	-	Not set
2004	100	0 %	-	Not set
2005	100	0 %	-	Not set
2006	100	0 %	0 %	Not set

FINDINGS:

A total of twenty-three (**23**) **custodial roles and responsibilities** defined by MetroGIS have been assumed by ten (**10**) separate **willing organizations** with appropriate support resources. Twenty one (21) of these custodian roles and responsibilities are associated with maintaining regional data solutions endorsed by MetroGIS. All of these data maintenance-related **responsibilities** were also supported **in accordance with agreed upon specifications**, as has been the case in the past.

The other two responsibilities -- support a one-stop, Web-based data discovery and distribution mechanism (DataFinder) and support a forum to foster collaboration – were also supported in accordance with expectations. The Metropolitan Council supports these latter two responsibilities.

The idea of promoting use of DataFinder to a broader group of producers, who are not currently using it to distribute their data (or who are using it minimally), is among the topics planned for discussion topic at the pending Strategic Directions Workshop¹².

OUTCOME C. INTERNAL EFFICIENCIES, LEVEL OF COOPERATION

Four distinct performance measures are used to evaluate progress relative to this “Internal Efficiencies, Level of Cooperation” performance outcome. No means is available to monitor two of measures, although the trend is toward increased involvement by data producers. Findings for each of these measures follow.

PERFORMANCE MEASURE 6: Number of manual vs. self-service requests for data (by producer type)

PERFORMANCE MEASURE 7: Hours of staff time saved in data distribution tasks (by producer type) – focus on counties and the Metropolitan Council

FINDINGS (PM#s 6 and 7):

(No effective means yet defined to measure)

PERFORMANCE MEASURE 8: Number (and names) of entities listing metadata records (which includes entities listing datasets) on DataFinder.

In accordance with its policy to promote leveraging of investments within the community, MetroGIS’s strategy has been to encourage data producers to publish metadata, as well as their actual data holdings, via the DataFinder tool in an effort to continue to improve user and producer efficiencies related to discovery and distribution of geospatial data.

Table 10: Entities Publishing Metadata Records via DataFinder

Year	Searchable Metadata	Annual Change	Change since inception	Target
2002	15	-	-	Not set
2003	16	6.7 %	-	Not set
2004	18	12.5 %	-	Not set
2005	18	0 %	-	Not set
2006	18	0 %	20.0 %	Not set

(The names of participating entities are maintained in a separate source data file)

FINDINGS:

There was no change during this reporting period in the number of organizations using DataFinder to advertise availability of geospatial data holdings. The number remains at 18. This lack of growth may be at least partly due to less time spent on networking and outreach activities over the past year or so. Staff resources were more limited in 2005 and 2006 than in the past and higher priorities dominated staff resources, resulting in less opportunity for outreach activities. Notwithstanding, the number of metadata records increased from 188 to 205

PERFORMANCE MEASURE 9: Number (and names) of entities using DataFinder as a data distribution method.

In accordance with its policy to promote leveraging of investments within the community, MetroGIS’s strategy has to encourage data producers to publish metadata, as well as their actual data holdings, via the DataFinder tool in an effort to continue to improve user and producer efficiencies related to discovery and distribution of geospatial data

Table 11: Entities Publishing Geospatial Data via DataFinder

Year	Directly Downloadable Datasets	Annual Change	Change since inception	Target
2002	7	-	-	Not set
2003	7	0 %	-	Not set
2004	10	42.8 %	-	Not set
2005	10	0 %	-	Not set
2006	10	0 %	42.8 %	Not set

(The names of participating entities are maintained in a separate source data file)

FINDINGS:

There was no change during the reporting period in the number of organizations using DataFinder as a data distribution mechanism. The number remains at 10. This lack of growth may be at least partly due to less time spent on networking and outreach activities over the past year or so. Staff resources were more limited in 2005 and 2006 than in the

past and higher priorities dominated staff resources, resulting in less opportunity for outreach activities. Notwithstanding, the number of number of datasets downloadable via DataFinder increased from 151 to 158.

OUTCOME D. DECISION MAKING, SERVICE DELIVERY

PERFORMANCE MEASURE 10 (NON-QUANTITATIVE MEASURE): Testimonials/case studies on how data access and delivery, and the MetroGIS forum, were used to improve operations/systems/decision-making by sector/stakeholder group.

FINDINGS:

A ninth testimonial¹³ was added in 2006 to benefits realized from MetroGIS's efforts. The subject was an Emergency Evacuation Planning tool developed by Professor Shekhar's Department of Computer Sciences Team at the University of Minnesota. This and the previous eight testimonials that have been produced continue to indicate a high level of satisfaction and perceived value associated with processes and tools developed through MetroGIS's efforts. The 2007 workplan calls for the production of 1-2 additional testimonials.

BACKGROUND (Related to PM#s 6, 7 and 10):

None of the MetroGIS Performance Measurement efforts to date has included quantitative measurement of efficiencies gained by data producers through tools and processes developed and supported by MetroGIS. The primary reason is that quantifying this benefit is extremely complicated due to the variety of business models used by various producers. Staff brought this need to the 2005 Innovations in Governance Program at the Kennedy School of Government, as a component of a MetroGIS case study. The consensus was that an economic model does not exist that could be used for this purpose. Most agreed that an organization-by-organization evaluation of cost to benefit to participate in a collaborative solution versus pursuing a solution on their own is likely the only reasonable way to approach this need.

As a component of its Performance Measure Plan Update project proposed for 2007, MetroGIS will investigate changes to this measure or seek additional ways to document efficiencies gained by producers of data that are components of endorsed regional data solutions. Benefits related to leveraging existing resources, such as Washington County's use of the DataFinder web server to save significant hardware and software startup costs, as well as, monthly Internet Service Provider (ISP) expenses to host an ArcIMS application, are among examples of modifications that might be included in future evaluations.

Source Data for Metrics

Detailed data are captured monthly for each performance measure. These detailed source data are maintained in a complex spreadsheet along with related summary set of tables and graphics. These detailed data are the foundation from which staff identify anomalies, both positive and troublesome items, for discussion with the Coordinating Committee on a quarterly basis in an attempt to better understand the causes and identify any desirable mitigating actions that should be pursued.

The Source Data are maintained by Measure in the same manner as reported herein:

A. Outcomes for Data Users - Ease of discovery and access

PM #1: Visitor sessions to DataFinder web site

PM #2: Datasets downloaded through DataFinder

PM #3: Sector/stakeholder groups

PM #4: Datasets and metadata records on Data Finder

B. Outcomes related to Users - Data Currency

PM #5: Percent of Datasets Updated

C. Outcomes related to Producers - Internal efficiencies; level of cooperation

PM #6: Manual vs. self-service requests for data (by producer type)

PM #7: Staff time saved in data distribution tasks (by producer type)

PM #8: Entities listing metadata records on DataFinder

PM #9: Entities using DataFinder and DataFinder Cafe as a data distribution method

D. Ultimate Outcomes – Improved decision-making and better service to the public

PM # 10: Testimonials (Non-quantitative)

Endnotes:

- ¹ The adopted MetroGIS Performance Measurement Plan can be viewed at www.metrogis.org/benefits/perf_measure/index.shtml.
- ² Section 1.3.2 of MetroGIS's 2003-2005 Business Plan identifies three functions core to MetroGIS's efforts:
 - Support a "forum" to foster coordination through knowledge sharing and use of best practices.
 - Facilitate effective long-term solutions to priority common information needs (regional datasets), and
 - Support an efficient mechanism for Internet-based data discovery and retrieval (MetroGIS DataFinder)
- ³ Features with a geographic component, such as the location of parcels of land and descriptive information about each parcel, location of city boundaries, location of lakes and descriptive information about each lake, etc.
- ⁴ Metadata provides information about geographic data important to evaluating its fitness for use, such who created the data, when created, source from which created, data projection, explanation of descriptive attributes, update cycle, etc.
- ⁵ Links through with to download data via the DataFinder Catalogue utilize FTP (File Transfer Protocol) technology.
- ⁶ See <http://www.metrogis.org/data/datafinder/index.shtml> for a summary of the process utilized to define desired improvements, establish functional design specifications, and evaluate software options to accomplish desired specifications.
- ⁷ Problems with Café's functionality began to be noticeable spring 2005 with a new release of JAVA that was incompatible with the Café application developed by Syncline, Inc., originally installed July 2002. The result was that parties that had been using Café could continue to do so, as long as they did not upgrade the component JAVA code. No new users could access Café. Café's security module also experienced software problems that resulted in having to discontinue password-protected access to parcel and street centerline data via Café. Users could still obtain these datasets but they had to do so via FTP, which does not support subsetting that was one of the main reasons for developing Café in the first place. In October 2006, the software platform for DataFinder Café was changed to Geocortex IMF, licensed through Latitude Geographics. As with the previous Café, we will be able to count the number of downloaded datasets, but now we will use the Statistics extension from Latitude Geographics. In addition, this Statistics extension will let us measure the direct use of DataFinder map services (in desktop GIS, web-based and other applications), which we were unable to do before. DataFinder now offers OGC (WMS and WFS) and ArcIMS (image and feature) map services and we plan to measure their usage in the performance measures report next year. We anticipate that examining these numbers in relation to numbers of downloaded datasets may reveal trends on preferences for using GIS data directly over the internet or for download the datasets, or a mix of both.
- ⁸ See <http://www.metrogis.org/data/index.shtml> for a listing of endorsed regional datasets (solutions to common information needs) and information about the specific data content specifications, custodial roles and responsibilities, and general history of the regional solution. (Note: eight regional solutions have been enacted by MetroGIS but only six are tracked for purposes of Performance Measurement Reporting. Land Cover is distributed by DNR, its custodian. The Land Cover metadata record is posted on DataFinder but directs the user to DNR's website. The Unique Parcel ID solution is a component of the Regional Parcel Dataset and, thus, not tracked separately.)
- ⁹ In October 2006, the software platform for DataFinder Café was changed to Geocortex IMF, licensed through Latitude Geographics. As with the previous Café, we will be able to count the number of downloaded datasets, but now we will use the Statistics extension from Latitude Geographics. In addition, this Statistics extension will let us measure the direct use of DataFinder map services (in desktop GIS, web-based and other applications), which we were unable to do before. DataFinder now offers OGC (WMS and WFS) and ArcIMS (image and feature) map services and we plan to measure their usage in the performance measures report next year. We anticipate that examining these numbers in relation to numbers of downloaded datasets may reveal trends on preferences for using GIS data directly over the internet or for download the datasets, or a mix of both.
- ¹⁰ Performance Measure 1 (33.5) was used as a proxy for online browsing and Performance Measure 2 (17.9) was used as a proxy for measure use of the data.
- ¹¹ DMA (Designated Market Area) is a geographic area used for this analysis. The Minneapolis St. Paul DMA includes the 7-county metropolitan area, the 12 collar counties (including 3 in Wisconsin) adjoining in the metro area, and a few counties beyond the collar counties.
- ¹² This idea was identified as a collaboration opportunity at MetroGIS's November 15, 2005 forum entitled "Beyond Government Users: New Directions for MetroGIS".
- ¹³ Each of the nine referenced testimonials can be viewed at http://www.metrogis.org/benefits/perf_measure/index.shtml