U.S. Department of Commerce, Economic Development Administration

Construction Grants Program Impact Assessment Report

Volume I *– Report on Investigation and Results*

September 30, 2008

In partnership with . . .

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Acknowledgments

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With thanks to the following Federal programs for sharing techniques, insights and best practices . . .

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USDA, Economic Impact Grants - Commercial Facilities Economic Impact Grants

USDA, Rural Business Enterprise Grant Program

USDA, Intermediary Relending Program

Department of Health and Human Services (DHHS), Community Services Block Grant

U.S. Small Business Administration (SBA), Section 504 Certified Development Company Loan Program

SBA, Historically Underutilized Business (HUB) Zone

SBA, New Markets Venture Capital

U.S. Department of the Treasury (DOT), Community Development Financial Institutions Fund

DOT, Bank Enterprise Award

DOT, Native Initiatives

Environmental Protection Agency (EPA) Brownfields Revitalization Program

Appalachian Regional Commission

Denali Commission

Neighborhood Reinvestment Corporation (NeighborWorks)

Executive Summary

The Economic Development Administration (EDA) asked Grant Thornton to perform an assessment of the economic impacts and federal costs of its construction program investments. We drew on recent scholarship, the academic and program management credentials of our team and the knowledge/insights of other Federal grant- and loan-making program officials to improve on EDA's existing study, performed by a team of Rutgers University and Princeton University economists in 1997. Our method:

- Dealt with criticisms lodged by GAO about that study,
- Unearthed and dealt with other potential criticisms of the Rutgers-Princeton method, not noted by GAO, and
- Relied on public use data, thereby giving EDA a more easily and efficiently repeatable and updateable analysis.

In the end, despite these refinements, our results largely corroborated the results produced by the Rutgers team. Specifically, our study shows that:

- EDA investments in rural areas[1] have a statistically significant impact on employment levels in the communities in which they are made, generating between 2.2 and 5.0 jobs per $10,000 in incremental EDA funding, at a cost per job of between $2,001 and $4,611,
- The impacts of these investments vary significantly, depending on the type of project funded,
- EDA's strategic focus on innovation and entrepreneurship makes sense, in that investments in business incubators generate significantly greater impacts in the communities in which they are made than do other project types, and
- These results are generally consistent with the impacts observed in urban areas based on a limited number of site visits made to projects in urban areas.

Table A (next page) summarizes our results by project type.

[1] Rural area projects are defined as those projects occurring in counties that are not located within an established Metropolitan Statistical Area (MSAs). MSAs are geographic entities defined by OMB for use by Federal statistical agencies in collecting, tabulating and publishing Federal statistics.

PROJECT TYPE	EST. LOCAL JOBS GENERATED (per $10,000 incremental EDA Investment)	FEDERAL COST PER JOB
Business Incubators	46.3-69.4	$144-216
Commercial Structures	9.6-13.4	$744-1008
Roads & Other Trans.	4.4-7.8	$1,291-2,293
Ind. Park Infrastructure	5.0-7.3	$1,377-1,999
Community Infra.	1.5-3.4	$2,920-6,872

Table A – Local Jobs Generated Per $10,000 and Cost Per Job

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Section 1 Introduction

In April 2007, the Economic Development Administration (EDA) of the U.S. Department of Commerce contracted with Grant Thornton LLP to conduct an assessment of the impacts of its construction project grants. Over the next 15 months, a team consisting of Grant Thornton LLP of Alexandria, Virginia and ASR Analytics LLC of Potomac, Maryland developed an econometric approach and tool for estimating impacts of these grants. This report details the Grant Thornton team's approach, methodology and results. It also provides some guidance for enterprise implementation of the tool, as well as recommended next steps for EDA.

This section provides an introduction to our report. Specifically:

- Subsection 1.1 provides relevant background about EDA, its programs, its construction grants, its prior impact estimation study, Government Accountability Office (GAO) response to that study, other concerns about that study and subsequent scholarship,
- Subsection 1.2 outlines the specific purposes of this study,
- Subsection 1.3 defines the scope of this study,
- Subsection 1.4 describes the structure and roles of the project team,
- Subsection 1.5 provides an overview of the organization of the remainder of this document.

1.1 Background

1.1.1 The Economic Development Administration

EDA was established within the Department of Commerce in 1965. EDA directs Federal resources to economically distressed rural and urban communities that lag behind the rest of the United States in terms of economic development, industrial growth, employment, and per capita personal income. EDA assistance is available to rural and urban

areas experiencing high unemployment, low income, or other severe economic distress. The agency's stated mission is, "[t]o lead the federal economic development agenda by promoting innovation and competitiveness, preparing American regions for growth and success in the worldwide economy."

EDA makes grants and provides other forms of economic assistance to such communities to generate jobs, help retain existing jobs, and stimulate industrial and commercial growth in economically distressed areas of the United States. EDA grants are made with the basic principle in view that distressed communities must be empowered to develop and implement their own economic development and revitalization strategies. As such, EDA works in partnership with state and local governments, regional economic development districts, public and private nonprofit organizations and Indian tribes to promote locally and regionally developed economic development activities.

EDA's budget authority for Fiscal Year 2006 (FY06) was $281 million, of which approximately $250 million was obligated for economic development grants. This funding occurs under six different programs, as depicted in Figure 1.1, with FY06 funding levels in parenthesis.[2]

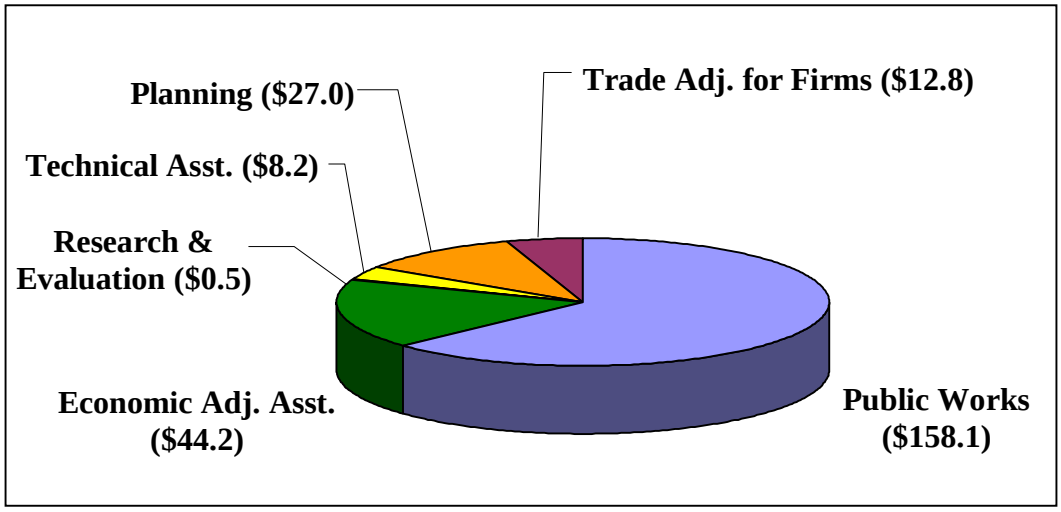


Figure 1.1 – Distribution of EDA Funding ($m) by Program

[2] The laws and regulations governing EDA's activities provide specific guidance on the types of projects for which funding under particular EDA programs can be utilized, the characteristics of the geographic areas in which these projects can take place, and the types of entities that can apply for such funding and carry out such projects. See CFR Title 13—Business Credit and Assistance, Chapter III Economic Development Administration, Department of Commerce.

Public Works (PW) grants are designed to help distressed communities attract new industry, encourage business expansion, diversify their economies and generate long-term, private sector jobs. *See 13 CFR III Part 305.*

Economic Adjustment Assistance (EAA) grants are designed to assist in the development and implementation of strategies to address structural economic problems resulting from sudden or severe economic dislocation, natural disasters and economic dislocation related to the closure of defense installations and military bases. *See 13 CFR III Part 307.*

Research & Evaluation grants are designed to fund research (including evaluative research) projects to promote competitiveness and innovation in urban and rural regions throughout the United States. *See 13 CFR III Part 306*

Technical Assistance grants are given to national, local and university entities. As defined in 13 CFR III Part 306, these grants are designed to promote economic development and alleviate unemployment, underemployment, and out-migration in distressed regions by:

- Investing in institutions of higher education to establish and operate University Centers that provide technical assistance to public and private sector organizations with the goal of enhancing local economic development,
- Supporting innovative approaches to stimulate economic development in distressed regions,
- Disseminating information and studies of economic development issues of national significance, and
- Financing feasibility studies and other projects leading to local economic development.

Planning grants are designed to provide support to Planning Organizations (as defined in 13 C.F.R. 303.2) for the development, implementation, revision, or replacement of a Comprehensive Economic Development Strategy, short-term planning efforts, and State plans designed to create and retain higher-skill, higher-wage jobs, particularly for the unemployed and underemployed in distressed communities. *See 13 CFR III Part 303.*

Trade Adjustment for Firms grants are designed to provide assistance to firms and industries adversely affected by an increase in imports of directly competitive or similar articles with articles produced by the firm, and to help implement the firms' strategies to guide their economic recovery. *See 13 CFR III part 315.*

1.1.2 EDA Construction Grants

One subclass of EDA grants, made under both the PW and EAA programs, is broadly termed "construction grants." These are grants made to support local communities in the acquisition or development of land and improvements for use for a public works, public service, or development facility. Construction grants can also be made for the acquisition, design and engineering, construction, rehabilitation, alteration, expansion, or improvement of such a facility, including related machinery and equipment. Specifically – for purposes of this project – construction grants are all of those projects funded under the PW program as well as those funded under the EAA program meeting the above stated description as defined under 13 CFR Part 307.3(b)(1). In addition to providing direct assistance, construction grants are intended to leverage local and private sector matching funds, generally fifty percent of the total project costs. Annually, around 80 percent of EDA grant money funds construction projects, exclusively through the PW and EAA programs. Figure 1.2, for example, provides construction project and non-construction project funding for each EDA program in 2004.

Program	**All EDA Funding**	**Construction Program Funding**	
	$ m	*$ m*	*% of all EDA*
Total	311.1	249.7	80.3%
Public works	205.0	200.2	97.6%
Economic Adjustment Assistance	73.6	49.6	67.3%
Research and Evaluation	0.9	*na*	*na*
Trade Assistance	2.0	*na*	*na*
Planning	17.6	*na*	*na*
TAAF	12.0	*na*	*na*

Figure 1.2 - Total and Construction Project Related Funding by Program in 2004

1.1.3 The Rutgers Study

EDA headquarters uses tools to forecast and report jobs and private investment resulting from its projects. EDA's current prospective targeting tool and its Government Performance and Results Act (GPRA) reporting tool rely on multipliers developed under a study commissioned by EDA in the late 1990s, conducted by a team from Rutgers

University and Princeton University (hereafter "the Rutgers Study.")[3] That study addressed the economic impacts of EDA construction grants.

The Rutgers Study approach involved direct observation of direct impacts for a sample of 203 grants completed in 1990. Rutgers applied two econometric techniques - input-output analysis and regression analysis - to document the effects of EDA's Public Works investments on the employment growth of the counties receiving grants.

The Rutgers Study became the basis for the multipliers used in the EDA targeting tool and GPRA reporting tool. Its three, six and nine year measurement cycles also became the structure in which EDA develops targets and reports impacts.

In 1999, GAO performed a review of the Rutgers Study, providing some guidance on how the study could be improved and expressing some concerns about aspects of the methodologies used. For instance, GAO noted that the regression analysis performed as part of the Rutgers Study did not include variables to account for the prior level of a county's employment and population. Further, GAO's inclusion of these variables yielded results indicating that EDA's PW grant funds did not have a significant effect on post-grant employment levels. GAO concluded that by not taking these variables into account, the Rutgers Study may have shown only that larger counties with high levels of employment tend to receive the most grants.

Since the Rutgers Study and GAO response, no further study of these issues has been undertaken by EDA. That study, nonetheless, forms the basis for EDA's forecasting and reporting of its jobs and private investment figures.

The Rutgers Study and the GAO response are discussed in more detail in Subsection 2.7.

1.2 Purposes of this Study

In the spring of 2007, EDA contracted with Grant Thornton to again study the matter of estimating the impacts of EDA's construction grants. EDA defined the purposes of our effort in four ways, as discussed in the following four subsections.

1.2.1 Update the Rutgers Study

The first and most practical objective of our study was to give EDA an updated and improved version of the Rutgers Study to support both its evaluation of the competitiveness of grants and its external reporting of the impacts of its grants. As discussed in Subsection

[3] The effort actually involved the conduct of two related studies - "*Public Works Program: Performance Evaluation*" and "*Public Works Program: Multiplier and Employment-Generating Effects, Final Report.*" Hereafter, these studies are collectively referred to as "the Rutgers Study."

2.7, the Rutgers Study was based on 1990 data. As such, static and aged program data and impact analyses lie at the heart of EDA's current targeting and reporting efforts.

1.2.2 Account for Implementation and Enterprise Management Issues

EDA asked us to develop an approach and method that accounts for implementation and enterprise management issues. For example, the Rutgers Study was based on direct observation of 203 projects funded by EDA grants that were completed in 1990. EDA has used multipliers developed by this study as a basis for forecasting and reporting impacts ever since. EDA has no way to update or refresh these multipliers based on other, later projects, in part because of the static-ness of the Rutgers Study and also due to the nature of its performance reporting architecture and processes.

Moreover, EDA cannot rely on self-reported grantee data to accomplish this purpose due to the universal problems agencies such as EDA face in collecting and validating such data (see Subsection 2.5). For another example – as discussed more fully in Subsection 2.1 – EDA in general and the construction program in particular have undergone changes in strategic direction in recent years. EDA's current methods for predicting and measuring impacts do not tie well to strategy. As such, EDA is unable to assess the effectiveness of changes in strategy in terms of their influence on community impacts.

EDA asked us to develop an approach, method and implementation plan that accounted for these and other enterprise management realities. This was the case both in terms of the immediate implementation of our results within EDA's performance reporting architecture (see Figure 2.1 in Subsection 2.4) and in terms of an overall vision for how EDA could capitalize on our method to enhance the efficiency of its program management resources. At the most basic level, this meant that our project involved more than simply conducting a study. We also developed a tool, implemented it and – working closely with EDA – developed a vision of how EDA could use our study and tool over time from an enterprise management perspective.

To address this purpose, our team began this project by performing an enterprise needs assessment, as discussed in Section 2. This helped us to formulate some specific needs and objectives for the method and implementation of the resulting tool. This process is discussed in Subsection 3.1.

1.2.3 Rely on and Contribute to Leading Edge Scholarship

EDA tasked us to rely on up-to-date scholarship to create an academically defensible approach and method. This included addressing concerns about the Rutgers Study. More broadly, it involved assessing the state of the art scholarship in terms of economic development theory and impacts modeling. EDA wanted us not only to draw upon this scholarship but also to contribute to it.

This reflects a broader philosophy of EDA toward this effort and toward the problem of impact measurement by it and its sister grant- and loan-making programs. EDA

recognizes that substantial academic questions and differing academic philosophies are at hand in the complex matter of econometric estimation of the impacts of economic development efforts. Probably no single study could definitively resolve the myriad of academic and theoretical issues involved in such impacts measurement. In that context, EDA asked us carefully place our study in the context of recent scholarship, both contributing to it and framing issues that require further study. Subsection 3.2 includes a discussion of how our study contributes to the scholarship in the area of measuring economic development investment impacts.

1.2.4 Use a Robust Approach

During the course of this project, we discovered that one of GAO's concerns about the Rutgers Study related to the concept of robustness. It is desirable to use statistical methods that are "robust" in the sense that they do not force conclusions that are inconsistent with the data, or rely too heavily on small parts of the data. For instance, GAO observed that when population was added as an input to the Rutgers model, the results – the estimated jobs and private investment levels – changed significantly. Most of classical econometric analysis lays out the assumptions under which the procedures will produce good statistical results. Increasingly, more diagnostic and specification tests are becoming available to researchers which provide the capacity to make these checks, and good econometric studies use these tests. However, some basic assumptions are difficult to check, and they are too often accepted in econometric studies without serious examination. Fortunately, in many economic applications the analysis is more robust than the assumptions, and sensibly interpreted will provide useful results even if some assumptions fail. Further, there are often relatively simple estimation alternatives (such as those used in our study) that provide some protection against failures, such as the use of instrumental variables. As new developments in econometrics unfold, the menu of procedures that provide protection against failures of classical assumptions continues to expand.

1.3 Scope of This Study

This subsection formally defines the scope of our effort. As discussed in the following subsections, six factors defined the scope of this study.

1.3.1 Programs / Funding Impetus

This analysis included only EDA construction grants. As discussed in Subsection 1.1.2, construction grants are any grant made under the PW program, along with a subset of grants made under the EAA program. The defining characteristic of a construction grant is that it is made for the acquisition or development of land and improvements for use for a public works, public service, or development facility including the design, engineering, purchase or rehabilitation of such a facility. EDA's data system of record, the Operations and Planning and Control System (OPCS), identifies construction grants in the "Project

Type" field with a code of "C" (for construction) or "B" (for both construction and non-construction.)[4]

We have further organized construction grants into the following three "funding impetus" types.

- Proactive,
- Reactive, and
- Special Needs.

The construction grants awarded under the Public Works program are "proactive" in that they address EDA's mission to help communities become more economically competitive within the U.S. and international economies. The construction grants awarded under the EAA program, on the other hand, are "reactive" in that they respond to specific economic distress in communities, such as the loss of a major employer or effects of a natural disaster. We also identified a third category of construction grants that cuts across both programs. These are "special needs" grants, which EDA awards on the basis of certain special circumstances within communities, such as Base Realignment and Closure (BRAC) activities.

1.3.2 Geographic Scope

This study included all construction project grants made by EDA within all counties in the United States, excluding the U.S. territories. Impacts were estimated based on county level data. Our results, however, are not specific to any county. They represent nationwide aggregates. We did not produce differentiated estimates for either sub-regions of the United States or specific projects.

We did not include in our analysis any program data from U.S. territories (Puerto Rico, Guam, and the Virginia Islands). There are unique issues regarding public use data in these areas, resolution of which were outside the scope of this study. (See subsection 1.3.6.)

1.3.3 Time Period

The time period of this study was grants awarded between and including FY 1990 and FY 2005. This time period was selected to maximize the number of grants subjected to analysis within the framework of the EDA program data and public use data available for

[4] Note that, later in this Introduction – in Subsection 1.3.4 – we introduce a classification of projects that we developed, called "Project Type." That classification addresses the characteristics of the funded project (i.e., business incubator, road, sewer line, community infrastructure or industrial park infrastructure.) That classification is more detailed than the data in this OPCS field, which simply identifies the broader type of the project (e.g., construction).

analysis. Public use data is not available past the designated period. Reliable EDA program data is not available prior to 1990.

1.3.4 Project Types

Virtually all construction grants, as defined in Subsection 1.1.2, were included in the scope of this study, regardless of the characteristics of the underlying project. To identify differential impacts associated with different project types, we categorized those grants based on an analysis of descriptive fields in OPCS.[5] Ultimately, we identified five project types.[6] Figure 1.3 provides a frequency distribution across these project types for the study's time period.

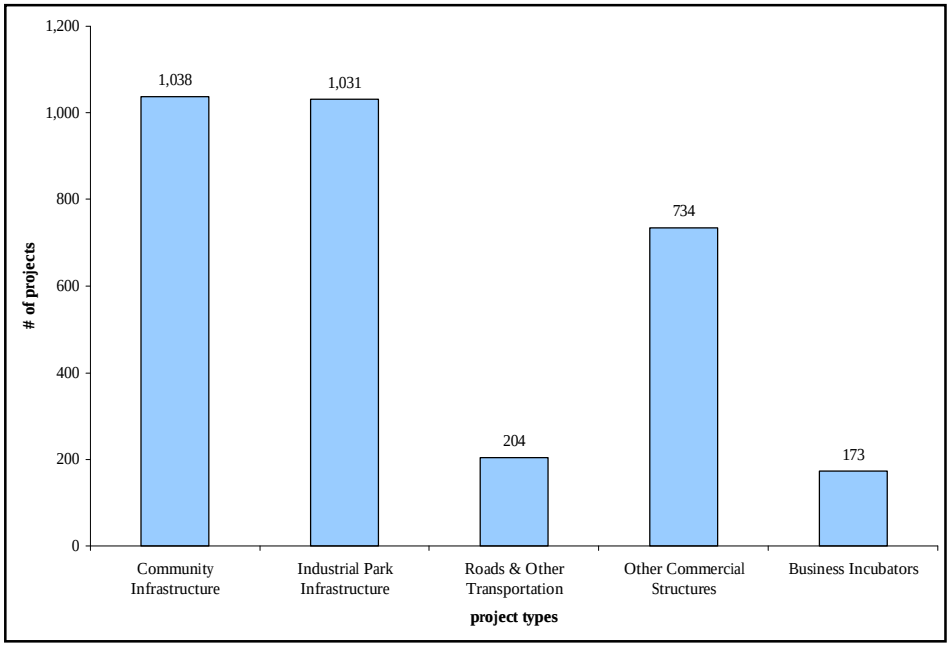


Figure 1.3 – Distribution of EDA Project Types Across Categories

1.3.5 Recipient Types

The scope of this study includes all construction grants made to all recipients, regardless of various distinguishing characteristics among recipients. Nonetheless, our study did account for differences among recipients in terms of the economic conditions of their communities and surrounding counties. Our methodology allows EDA to examine impacts in terms of these distinctions. Our recipient type classifications were based on a method used by the Appalachian Regional Commission (ARC), which segregates counties into

[5] See footnote 4.

[6] The OPCS data fields reviewed included Short_Description, Scope_of_Work, Causal_Description, Pressing_Needs, and General_Description.

Distressed, At Risk, Transitional, Competitive and Attainment statuses, based on their relative rankings considering various measures of economic distress during the last three years. Figure 1.4 depicts the ARC index.

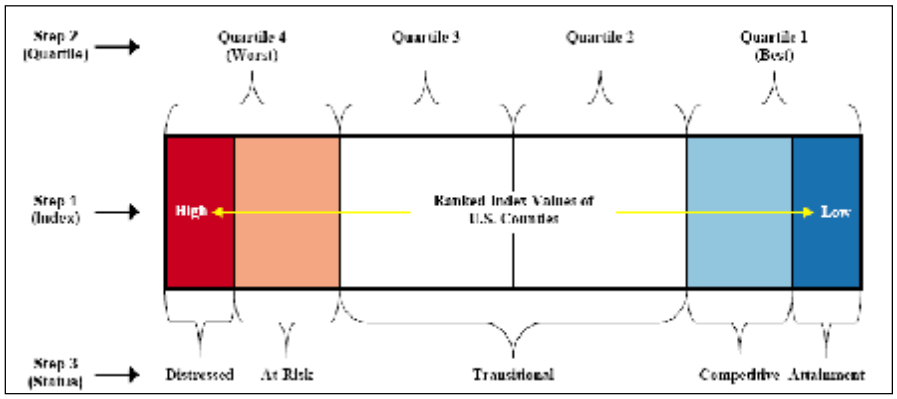


Figure 1.4 – Recipient Types

1.3.6 Exclusions, Limitations and Adjustments

Our analysis led to certain scope exclusions and limitations, or adjustment to certain data points. Specifically:

- Though the OPCS data provided by EDA included only those projects coded as either construction or both construction and non-construction, there were a few projects deemed non-construction upon further review, which we consequently excluded from our analysis. Appendix A.1 presents the OPCS data tables and table fields provided to us.
- Our dataset for this analysis included all "accepted" projects, meaning those applications for grants that were accepted by EDA and slated for funding. However, our impact analysis was based on only those projects that were completed. The accepted but not completed projects were included in the dataset because they were relevant to our analysis of how EDA strategy has influenced project funding.
- One of the funding impetus categories into which we coded all projects in our dataset was special needs projects. The OPCS data identifies special needs projects only back to 2000. As such, our special needs category does not exist prior that year and therefore our proactive and reactive categories contain some projects that would have been classified as special needs after 2000.
- Certain counties in Virginia presented unique issues. Bureau of Economic Analysis (BEA) public use data for some Virginia cities and nearby counties are combined. In order to use this data, therefore, we

had to mimic this combination in other sources of public use data and in grouping EDA's program data.

1.4 The Project Team

Figure 1.5 depicts the structure and roles of our study team.

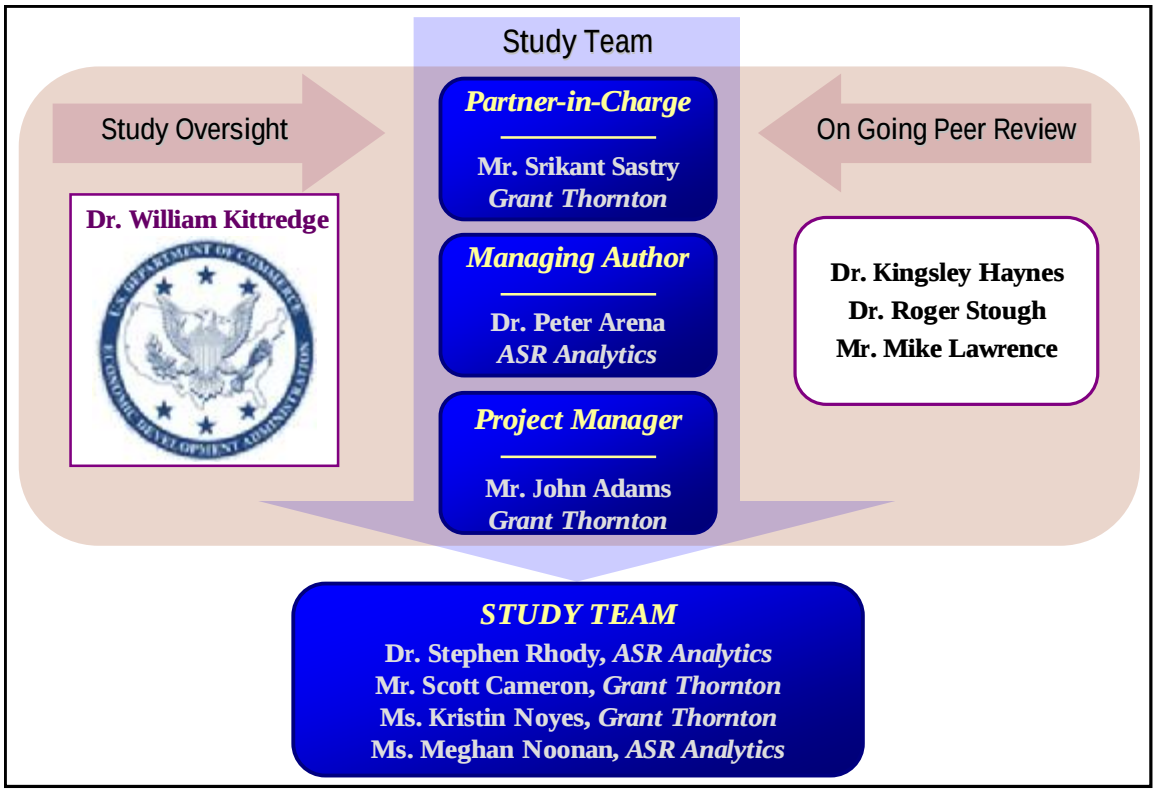


Figure 1.5 – The Study Team

As the blue areas in the middle of Figure 1.5 shows, our study team reflected the purposes of the study as defined by EDA, as discussed in Subsection 1.2. To whit, our team combined the recognized government enterprise management capabilities and expertise of Grant Thornton LLP with the analytics and econometrics thought leadership of ASR Analytics. The bios and resumes of the individual team members can be found in Appendix B.

1.4.1 On Going Peer Review

As the study team developed and executed our method, we subjected our work to the frequent review and advice of several highly regarded academics with vast experience in the areas of economic development and econometric estimation techniques. This peer review committee operated on a quasi-independent basis. Although they worked on a subcontract to Grant Thornton, they were specifically advised to remain independent from EDA and to not consider EDA's interests in advising us. The sole and explicit role of the committee was

to provide independent and objective guidance concerning and critique of the methodology and interpretation of the results. The study team briefed the advisory committee throughout the iterative process of designing an initial methodology, analyzing results, interpreting their significance and revising the methodology. Given their academic and professional credentials and relatively low level of budgeted hours on the project, the advisory committee had a large stake in ensuring that our estimation method was even-handed, neutral and free of outcome oriented biases.

The resumes and biographical information for the members of the advisory committee can be found in Appendix B.

1.4.2 Engagement of External Stakeholders

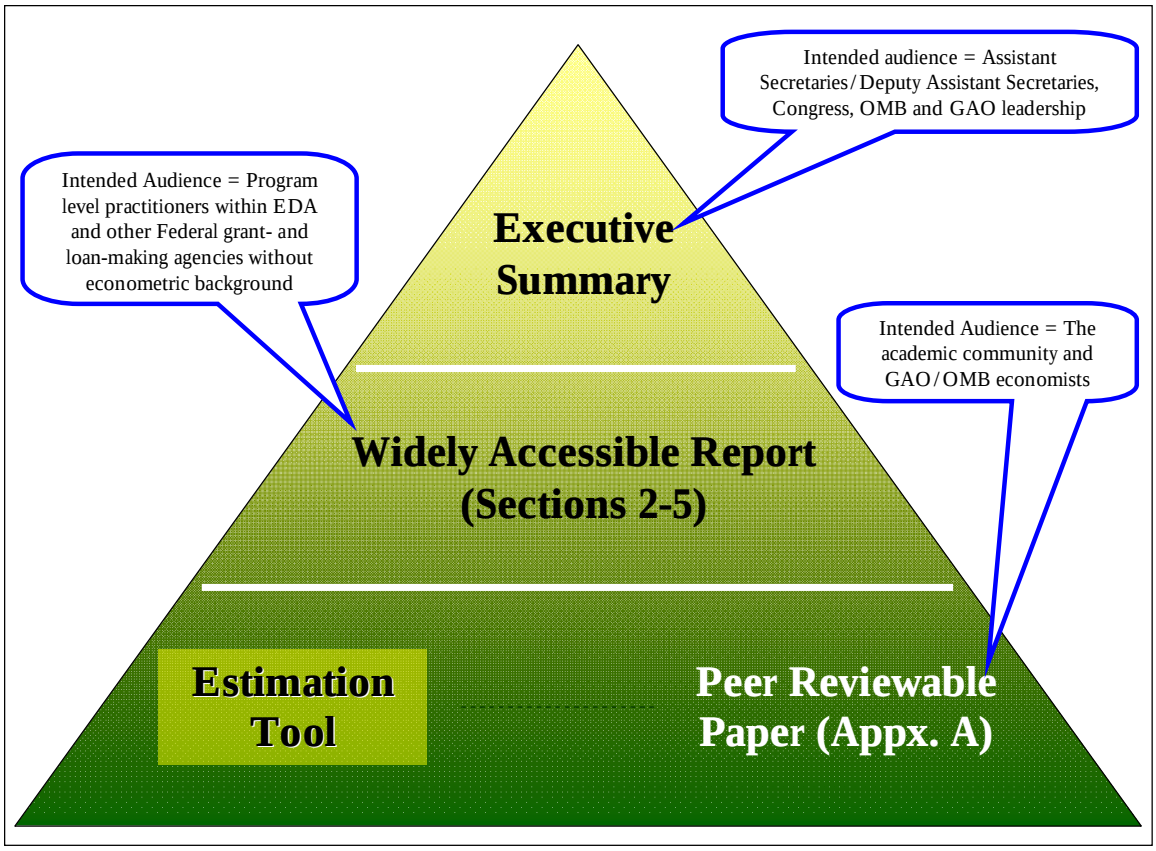
One important innovation of our study was the engagement of critical external stakeholders in the process of developing our method. Early in the process of designing the estimation model, we briefed both the Office of Management and Budget (OMB) and the GAO on our proposed method. During these meetings we obtained important feedback which we considered in tailoring the methodology presented in this report. This report reflects ardent efforts by the study team to ensure that our approach and method recognize and address the needs and concerns of these critical stakeholders.

1.5 Organization of This Document and Its Intended Audiences

There were four major components of this effort, as follows.

- Development and peer reviewable documentation of an academically defensible approach for estimating the impacts of EDA construction grants,
- Development of a tool that would allow EDA to more easily repeat and refresh impacts estimation,
- Development of a widely accessible report on the methods used and results obtained, suitable for the review of a sophisticated but not econometrically trained government audience concerned with impact measurement and the implementation of impact measurement tools, and
- Development of an executive summary, suitable for quickly presenting the results and benefits of our method to an executive audience, including the Assistant Secretary of Commerce for Economic Development and – potentially – Members of Congress.

Figure 1.6 (next page) shows the relationship among these four components of this effort. The call outs describe the intended audience for each portion of the report.



1.6 - Overview of Report and Intended Audiences

In this context, many audiences of this report will find the most meaningful presentation of the methods and results in the executive summary. For audiences interested in more technical detail, but not necessarily versed in econometric methods, the body of this report may be more meaningful.

Appendix A is specifically geared toward audiences with an academic perspective on our econometric efforts. The paper provided in Appendix A was written with the possibility of stand alone publication in a scholarly journal in mind. Appendix A will also be most useful to external stakeholders interested in subjecting our work to rigorous review.

The body of this report also serves another purpose. As depicted in Figure 1.7 (next page), it narratively reflects the steps we undertook to execute EDA's commission to us, as discussed in Subsection 1.2. As such, the body of our report is geared toward the interests of government economic development practitioners. It is particularly intended for program management staff within EDA, tasked with responsibility for implementing and maintaining our tool, understanding its capabilities and limitations, and who are responsible for using it among multiple tools to manage the construction program.

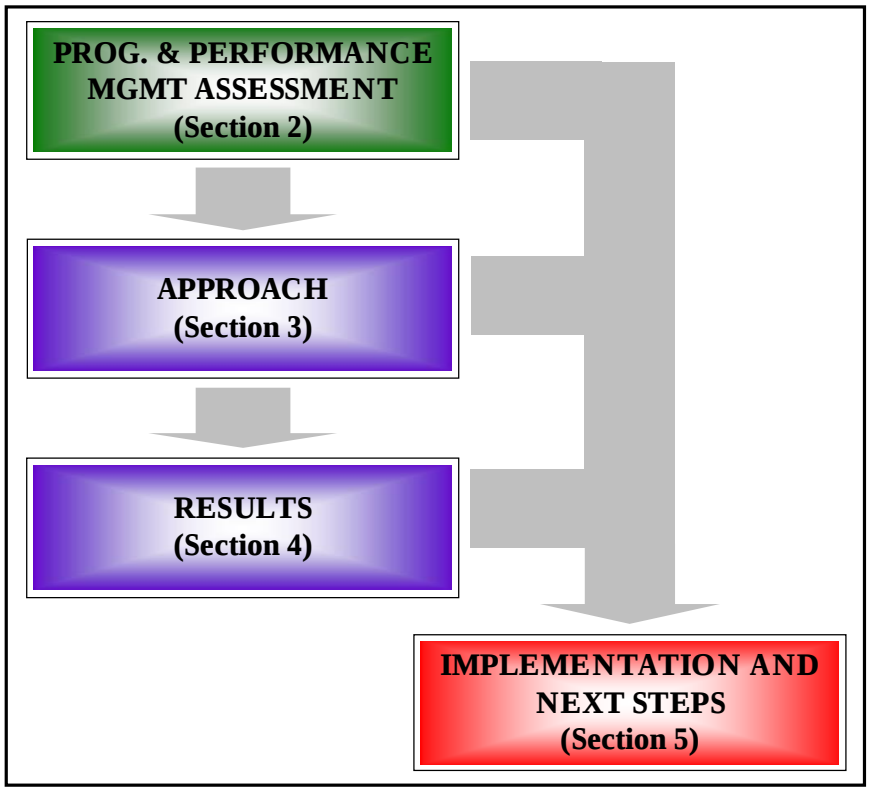


Figure 1.7 - Overview of Study Methodology

As detailed in Section 2, we first performed an analysis of EDA's program management and measurement needs and limitations. As discussed in Section 3, we then translated the findings of this needs analysis into requirements for this project, Based on those requirements we developed and weighed alternative approaches for EDA and finally settled on a particular method and tool for estimating EDA impacts. As depicted in Section 4, we obtained results based on this method and tool. As outlined in Section 5, we then developed for EDA conclusions and recommendations concerning the implementation of our method and tool, as well as next steps and opportunities for EDA.

Section 2 Program and Performance Management Assessment

In order to translate EDA's broad purposes for this study (see Subsection 1.2) into an actionable approach (see Section 3), we undertook an assessment of EDA's program management and measurement needs and limitations. This assessment included a review of EDA's enterprise management systems and processes, as well as its data. It also included a review of the Rutgers Study, as well as recent scholarship and innovations used by other Federal grant- and loan-making programs to measure the impacts of their investments. Specifically, our assessment of EDA's program management and measurement needs and limitations involved the following inquiries.

- A review of EDA strategy with respect to the construction program (as discussed in Subsection 2.1),
- An assessment of EDA's grant making processes (as discussed in Subsection 2.2),
- An assessment of EDA's impact measures (as discussed in Subsection 2.3),
- An assessment of EDA's performance reporting architecture (as discussed in Subsection 2.4),
- An assessment of EDA's program data (as discussed in Subsection 2.5),
- A review of the practices and measures used by other Federal economic development grant programs (as discussed in Subsection 2.6),
- A review of the Rutgers Study and the GAO response to it (as discussed in Subsection 2.7), and
- A review of other literature and scholarship, relevant to the development of our approach (as presented in Subsection 2.8).

2.1 Strategy

The EDA was created in 1965 with the passage of the Public Works and Economic Development Act (PWEDA)[7]. At that time, EDA carried forward essentially the same strategic mandate as its predecessor agency, the Area Redevelopment Administration (ARA). Like the ARA, the role of the EDA at its inception was primarily to fund public works projects in economically distressed regions. The eligibility criteria utilized by the ARA was carried forward to the EDA, along with language giving the new agency the ability to broaden those eligibility guidelines. The stated purposes of EDA at its inception were threefold:[8]

- To promote self-sustained economic development,
- To increase planning capacity through the promotion of sound, long-range economic planning at all levels of government, and
- To maintain a rural focus of aid, although this was not legislatively mandated.

Secondary objectives included:

- To maximize national economic efficiency.
- The achievement of equity as compared to other regions through economic growth.
- Relief of effects of cyclical economic distress.
- Geographic dispersion of assistance limited to 15 percent of EDA expenditures per state.

EDA's mission and strategies have evolved through the years, driven by changing political views and associated administrative agendas, and certain legislative measures. Significant evolutions of EDA strategy have included:

- Expansion of focus to include urban areas, although limiting its focus to rural areas had never been explicitly mandated (early 1970s)
- Separation of short-term emergency assistance and funding from long-term development plans (early 1970s)
- Expansion of mandate to include: response to natural disasters; relief to areas affected by federal environmental policies; technical assistance to firms or industries hurt by international trade; and grants to public entities to assist private firms seeking to remain, expand or locate in economically distressed areas (early 1970s)

[7] 42 U.S.C. § 3121, 'Public Works and Economic Development Act of 1965'.

[8] Glasmeier, Amy and Tracey L. Farrigan, "Economic Development Administration Legislative History," Penn State University through grant from the Ford Foundation, 2000.

- Consolidation of eligibility criteria for public works and economic adjustment grants down to three basic distress factors – high unemployment, low income and special need (1998 Reauthorization)

This most recent strategic evolution is reflected in the change of EDA's published mission statement. Prior to the change, that mission statement read as follows.

> To help our partners across the nation (states, regions, and communities) create wealth and minimize poverty by promoting a favorable business environment to attract private capital investment and higher-skill, higher-wage jobs through work-class capacity building, planning, infrastructure, research grants and strategic initiatives.

In 2001, the Bush administration changed the mission statement to read as follows.

> To lead the federal economic development agenda by promoting innovation and competitiveness, preparing American regions for growth and success in the worldwide economy.

This change reflects the Bush administration's economic development strategy to focus broadly on innovation and entrepreneurship. This includes support for high-performance computing, next generation manufacturing, upgrading communication systems and business innovations focused on new technologies and new markets. For EDA, this means incorporating these types of projects into their investment guidelines and funding priorities. These guidelines are discussed in more detail in Subsection 2.2.

Within EDA's current performance measurement architecture, there is no means by which strategy – and changes in strategy – can be assessed in terms of impacts. EDA's reporting tools generate gross, nationwide impacts across all project types based on funding levels and multipliers derived from the Rutgers Study. As such, were a strategy change to increase EDA's effectiveness merely by shifting EDA's outputs (*i.e.*, investment dollars) to projects and recipients that tend to generate more jobs, EDA's current tools would not reflect that change. As discussed in Subsection 1.2.2, EDA specifically asked us to address this issue. Our approach and method give EDA an important tool to help it tie the performance of its grants, in terms of jobs impacts, to its strategy.

2.2 Grant-Making Processes

EDA has a formal process by which the agency selects investments. This process is based on an evaluation of the potential effectiveness of a proposed project and the manner in which the project fits with published agency investment guidelines and funding priorities. EDA's application process provides for significant interaction between regional EDA staff and potential grant recipients; the intent being to put forward only well developed and refined project proposals to the application phase.

Investment decisions are made at the EDA regional office level and the pre-application and formal application documents are uniform across the regions. These application documents provide a written expression of the merits of the proposed project and recipient entity against which EDA can evaluate each project in a similar manner across regions. The grant application process includes eight primary steps.

- **Project development -** This phase is led by regional office staff and characterized by extensive coordination between regional office representative(s) and potential applicants on issues such as eligibility, funding sources, local support, engineering and other construction planning issues, and alignment with the applicant's Comprehensive Economic Development Strategy (CEDS), *etc*.
- **Application**. This phase is led by regional offices, which perform a number of reviews based on the nature of the grant and/or the procedures put in place by each office's Regional Director.
- **HQ approval -** Funding for the grants selected at the regional level is secured by Headquarters during this phase.
- **Award -** EDA's grants office issues a grant award (Form CD-450), which is the authorizing financial assistance award document. The grantee must sign and return that document within 30 days to finalize the agreement.
- **Post - Approval -** Various disbursement requests, project monitoring and recipient reporting procedures take place during this phase depending on the nature of the grant. Construction grants require recipient reporting on number of jobs created and private investment leveraged at three, six and nine year intervals following project award.
- **Project Closeout -** Within 90 days of the end of the award period, a grantee compliance review is performed by regional office staff to determine project compliance with all terms and conditions of the award agreement.
- **Performance Monitoring -** As included in the post-approval phase, grantees are responsible for reporting performance as required under each EDA program. Construction grants require recipient reporting on number of jobs created and private investment leveraged at three, six and nine year intervals following project award. EDA, in turn, is responsible for reporting performance to Congress under GPRA.

EDA's eligibility criteria are fairly structured. The first two of the pre-application document's three categories of potential eligibility are empirical tests, involving a comparison of the recipient community's unemployment and income levels to national averages. If certain thresholds are met, the recipient is deemed eligible.

The third eligibility criterion affords EDA greater latitude in determining eligibility. It allows for a determination that a community faces "special needs", the existence of which could make that community eligible for EDA funding even if neither of the first two criteria

is met. Such special needs arise with the "actual or threatened severe unemployment or economic adjustment problems resulting from severe short-term or long-term changes in economic conditions."[9] This is defined broadly and includes:

- Substantial population loss,
- Underemployment,
- Base Realignment and Closure (BRAC) activities,
- The loss of defense-related jobs,
- Natural disasters or emergencies,
- Extraordinary depletion of natural resources,
- Closing or restructuring of an industrial firm or loss or other major employer,
- Negative effects of changing trade patterns, or
- Other circumstances set forth in a Federal Funding Opportunity issues by EDA.

Because of the broadness of the special needs eligibility category, the majority of U.S. communities – at some point during the period of our analysis, 1990 – 2005 (see Subsection 1.3.3) – were eligible for EDA funding under one of its three criteria.

One problematic element of this process arises under the post-approval and performance monitoring phases. It involves the collection and validation of useful grantee, self-reported data on direct impacts of projects, in terms of jobs and private investment. That issue is discussed in Subsection 2.5, which assesses EDA's program data.

The EDA grant making process relies significantly on the first-hand knowledge of its regional office staff about the projects seeking funding. Regional office staff includes Regional Directors, Economic Development Representatives and other economic development specialists. We found that their expertise and tacit knowledge is often at hand in the selection of meritorious projects that may otherwise not have appeared to be attractive investment opportunities based on eligibility criteria and historically reported performance measures.

One example of this phenomenon is a project approved by the Chicago District in Kenewa City, Michigan to winterize a tourist lodge. It was clear at the outset that this project would not generate a lot of jobs, a central indicator of the success of a Federal economic development investment. The familiarity of EDA personnel with the economic development landscape in the Kenawa City area, however, was instrumental in EDA going forward with this investment. Tourism is the most significant industry in Kenewa City. In

[9] 13 C.F.R. § 300.3 defines a "special need" for purposes of eligibility for EDA construction grants.

fact, there are very few alternative industries in the entire county beyond tourism. Investment in this project, therefore, was critical to the region.

Another example is the Lake Pine Bluff project awarded in the Austin region. In this case, a significant community asset, a lake, had not been maintained. EDA approached the local development entity and suggested the agency may be interested in investing in the lake. Spurred by EDA's initiation of the issue, EDA and the local development authority defined a project, which EDA then funded, and a pavilion was built. As a result of this project, the Austin Regional Director reported witnessing critical community improvements that are difficult to communicate within the standard performance measures currently used to reflect the efforts of Federal economic development improvements. These included:

- Increased vitality in the surrounding community,
- Other lake-side entities, including a university, improving their portions of the lake after the pavilion was built, and
- The creation of an attractive and highly utilized community gathering spot that did not previously exist.

Although the grant award process and the investment guidelines against which projects are evaluated are uniform across EDA's regions, certain economic, demographic and geographic circumstances unique to each region also influence funding decisions. For example, the Chicago Region covers the six state region of Ohio, Illinois, Indiana, Michigan, Minnesota and Wisconsin. This region has a particularly short potential construction period due to weather conditions. This fact influences, to some degree, the types of construction projects that are put forward for consideration in that region. It also influences the likelihood that certain projects will be funded, depending on the time of year they are presented for consideration. Further, it impacts the regional office's thinking in terms of evaluating the potential time frame for realization of various types of impacts or returns on investment.

Another example of these regional influences is manifested in the Denver region. This region includes many geographic areas facing population losses greater than those experienced by the rest of the nation. Consequently, workforce shortages are a new and growing threat to the economy of the Denver region. Matching the available workforce with any new or existing economic activity is a primary goal in this region. The Denver region takes this trend into account when applying EDA's investment guidelines and funding priorities to the proposed projects they have available for evaluation. To whit, projects that address this issue are just as important in the Denver region as those that create significant numbers of new jobs.

A project funded in Wichita, Kansas provides a specific example. Wichita was facing a shortage of skilled workers in its biggest industry, aircraft manufacturing. EDA invested in a jobs assessment/job skills center in this community, which helped to focus training on the industry that most needed the workers in that particular community. This project was not about creating jobs, but rather about industry retention.

As these and other examples show, the tacit knowledge of Federal economic development oriented programs and their familiarity with the beneficiary communities is often an important factor in determining the success of Federal economic development efforts. This is particularly the case in terms of the improvements of quality of life, which are historically difficult to capture. While jobs and private investment are and should be central, quantitative measures of the success of EDA's investments, EDA's effectiveness in promoting jobs and private investment depends in part on the tacit knowledge and expertise of its regional personnel, as discussed above. As discussed in 5.1.4, our method affords EDA an opportunity to explore opportunities for more fully capturing, and perhaps reporting, these other impacts of EDA's economic development estimates.

2.3 Measures

GPRA provides a mandate to Federal agencies to measure and account for their performance, the results of which are integrated into their strategic planning, program review, and budgeting systems. EDA's functions and activities fall under the Department of Commerce's Strategic Goal 1, which is "to provide the information and the framework to enable the economy to operate efficiently and equitably."

Within this framework, EDA has established two performance goals and measures associated with each. EDA currently uses these measures to communicate to external stakeholders and the general public the effectiveness of its activities. EDA's construction grants primarily serve Performance Goal 1.

- **Performance Goal 1:** Promote private enterprise and job creation in economically distressed communities.

  Measures:

  - Private sector dollars invested in distressed communities as a result of EDA investments.
  - Jobs created or retained in distressed communities as a result of EDA investments.
  - State and local dollars committed per EDA dollar.
  - Percentage of investments to areas of highest distress.
  - Percentage of EDA dollars invested in technology-related projects in distressed areas.

- **Performance Goal 2:** Build community capacity to achieve and sustain economic growth.

  Measures:

  - Percentage of Economic Development District (EDD) and Indian tribes implementing economic development projects from the CEDS process that lead to private investment and jobs.

- Percentage of sub-state jurisdiction members actively participating in the EDD Program.
- Percentage of University Center (UC) clients taking action as a result of the assistance facilitated by the UC.
- Percentage of those actions taken by UC clients that achieved the expected results.
- Percentage of Trade Adjustment Assistance Center (TAAC) clients taking action as a result of the assistance facilitated by the TAAC.
- Percentage of those actions taken by TAAC clients that achieved the expected results.
- Percentage of local technical assistance and economic adjustment strategy investments awarded in areas of highest distress.

As noted above, EDA's construction grant programs primarily support Performance Goal 1. The outcome-oriented measures for this goal include number of jobs created or retained, and private sector dollars leveraged as the result of EDA investments. The other measures listed above are primarily output measures, capturing the direct outputs of EDA processes, as opposed to the impacts on recipient communities. These two outcome measures are the standard measures, long used to evaluate economic development-related public investments. However, as we discovered through our literature review (see Subsection 2.8), and through discussions with other agencies engaged in economic-development activities (see Subsection 2.6), there exists a common belief among the personnel responsible for administering these investments that these two measures do not fully capture the value and impact of these investments on their target communities. As discussed in Subsections 2.3 and 2.6.3, many of these personnel recognize that there are important benefits attributable to economic development-related investments that do not necessarily result in an increase in the number of jobs created or in private investment. Though some of these benefits are simply impossible to quantify, there are certain measures beyond jobs and private investment that do speak to these positive community- level impacts.

These other measures generally fall into one of two categories. The first category is welfare and utility measures such as poverty rates, homeownership rates, number of jobs with benefits, *etc.* These measures attempt to quantify the social value of economic development investments. As discussed in more detail in Subsection 2.6.3, there are a number of these types of measures currently reported by other Federal economic development-related programs as well as some that, though not reported, are tracked by these Federal programs for their own program management purposes.

The other category includes measures based on an analysis of the impact of investments on productivity or, alternatively, reductions in cost for the same level of output. The central idea behind these outcome measures is that public capital (such as that which would be created as part of an EDA-funded project) is one of several inputs to the production process. These productivity measures, such as number of new establishments,

business creation or capital investments, seek to examine whether additional investment in public capital provides marginal rates of improvement in productivity or marginal decreases in costs.

Our approach, method and tool (as presented in Subsections 3.1, 3.2 and 3.3, respectively), although focused on jobs, provides EDA with the means to quickly and efficiently develop a broader suite of management measures that will allow it to more fully identify investment opportunities and report on them. Subsection 5.1.4 discusses this opportunity in greater detail.

2.4 Performance Reporting Architecture

This subsection discusses EDA's performance reporting architecture.[10] Figure 2.1 (next page) provides an overview of the tools and data flows used by EDA to measure and report the performance of its construction grants.

The centerpiece of EDA's performance reporting architecture is the OPCS database. It houses and provides access to detailed project level information. This data is entered by regional personnel and includes project level data, much of which is taken from the grant applications. OPCS is a relational database organized into six modules, each containing a number of different tables. These modules are described below. The full OPCS Data Dictionary is provided as Appendix A.1.

- **Module I: Audit** – includes three tables tracking audit information and processes and providing the ability to link Contract Grant and Agreement (CGA) audits to the underlying EDA projects.
- **Module II: Project Entity** – includes 18 tables containing information on the major processes of a project life cycle.
- **Module III: Project Component** – includes 14 tables housing data related to project account, budget, milestone, beneficiary, amendments, applicant contacts, site visitation, *etc*.
- **Module IV: Geo (Geographical, Social and Economic Data System)** – includes 31 tables containing data collected from other official sources within Federal agencies, such as Bureau of Labor Statistics (BLS) and Bureau of Economic Analysis (BEA), on socioeconomic statistics and geographical data used to determine eligibility and grant rate determinations of areas related to project location.
- **Module V: OPCS Requirement Documents –** includes 11 tables containing data to support the approval review documents required for a project, which may be specific to the section under which the project was created.

[10] The term "performance reporting architecture" as used herein refers to the tools, data, data flows and processes employed by EDA to measure and report performance.

§ **Module VI: OPCS References** – includes 34 lookup tables providing various background information on EDA projects such as EDA contacts, project locations, applicant contact information, contractors and program-related data. OPCS reference tables usually change slowly over time and are not modified on a periodic schedule.

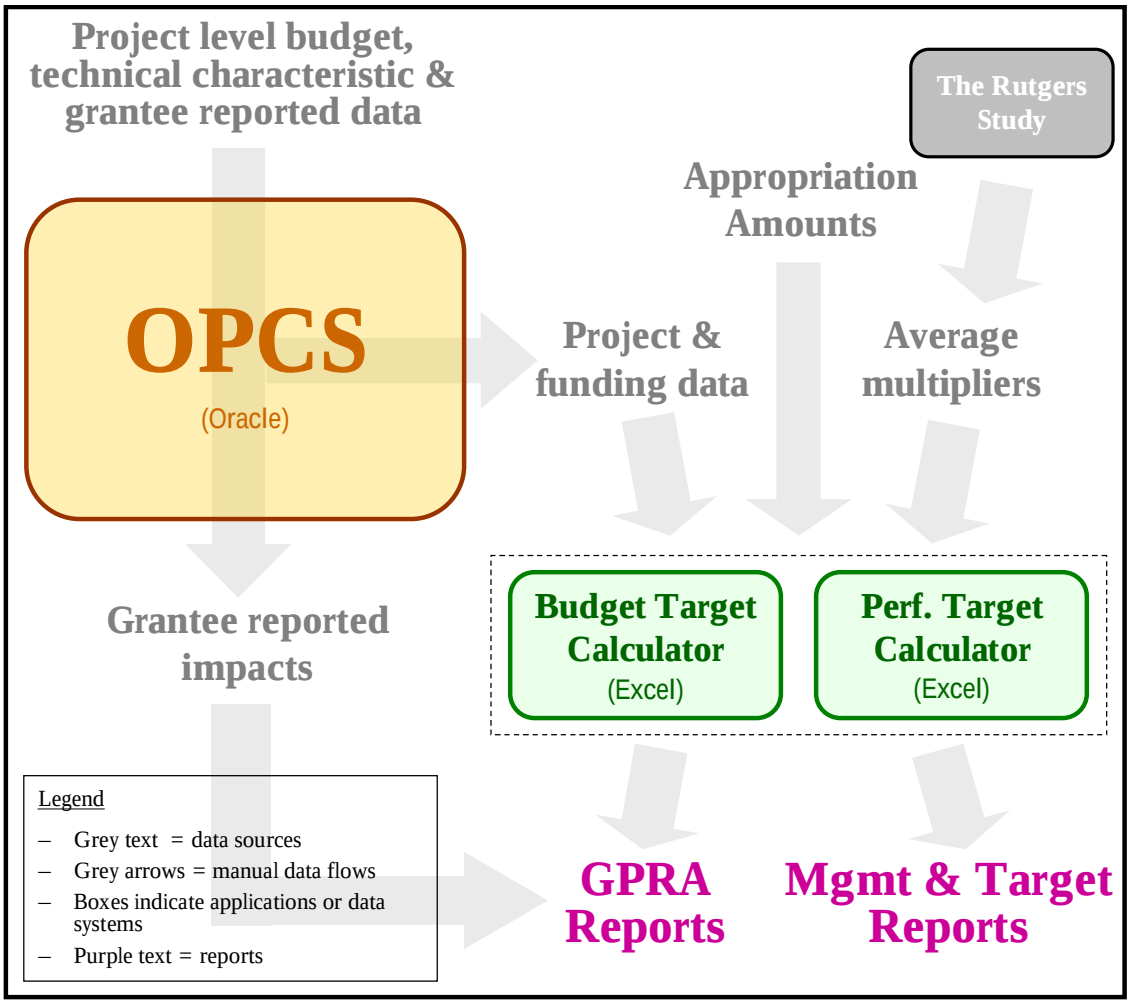


Figure 2.1 – EDA Performance Reporting Architecture (Construction Programs)

Table 12 MEASURE_CONSTRUCTION within the Project Entity Module contains the performance measures data related to EDA's construction projects and relevant to the three, six and nine year performance reporting structure. This performance data is entered by EDA regional administrators and collected directly from EDA grantees.

As Figure 2.1 illustrates, a number of other tools and data flows combine with OPCS to form EDA's performance reporting architecture for its construction programs. The current architecture yields two types of impact reports, as shown in purple at the bottom of Figure 2.1. These are its externally reported GPRA measures and internal management reports that are used to set regional targets.

EDA's annual and quarterly GPRA reports submitted to OMB include both targeted and actual impact measures for its construction programs. Recall from the discussion in Subsection 2.3 that EDA includes two traditional and widely accepted measures in these reports, jobs and private investment. To establish its reported targets, EDA headquarters uses the Budget Target Calculator, which is a prospective targeting tool. The targets are based on budget appropriations data for EDA's construction programs, which the tool subjects to various multipliers and discount factors developed under EDA's previous impact assessment study.

EDA's reported actual impacts come from OPCS queries of grantee reported jobs and private investments impacts for the three, six and nine year points after project award. These reported impacts are subjected to the same discount factor as the reported targets, which are also developed according to this three, six and nine year cycle.

Similarly, EDA generates internal quarterly and annual targets for its regional offices in order to manage its projects. The Performance Target Calculator, a retrospective targeting tool, is used for this purpose. The Performance Target Calculator produces quarterly management targets for each of EDA's regions. This tool takes actual obligated funding amounts for EDA's construction programs and applies the same multipliers and discount factors utilized by the Budget Target Calculator to establish impacts estimates for the same three, six and nine year cycle. So for each year, each region has targets for the grants awarded three, six and nine years prior.

As Figure 2.1 shows, the current EDA performance reporting architecture is defined by a multitude of manual data flows. On a quarterly basis, various OPCS data elements are extracted and entered into Microsoft Excel™ tools. Grantee, self-reported impacts data are also separately downloaded and input directly into EDA's GPRA reports. EDA personnel also load appropriation amounts into the Microsoft Excel™ tools. As we learned during our review of EDA's performance reporting architecture, this process is time consuming, often requiring a week of dedicated work to complete. As discussed in Subsection 1.2.2, EDA asked us to develop an approach that would help streamline this process. As presented in Subsections 3.1, 3.2 and 3.3, our approach, method and tool provide EDA significant progress toward a cost-effective, more automated and more effective performance reporting architecture.

2.4.1 The EDA Balanced Scorecard

In 2004, EDA adopted a Balanced Scorecard (BSC) approach to support a strategic transformation of the agency. As discussed in Subsection 2.1, that transformation was largely the result of EDA's response to President Bush's 2001 management agenda, which included the statement that there should be a role for federal involvement in economic development and that the programs that most efficiently and effectively provided that service to the nation would be supported by his Administration.

In implementing its Balanced Scorecard, EDA has developed a number of financial and operational performance metrics that measure the consequences of EDA resource investments on community economic development. These measures were developed

around each of EDA's identified strategic elements, which represent EDA's activities falling under the categories of Stakeholder, Financial, Customer, Internal Processes and Learning and Growth. These measures have been developed enterprise-wide as well as for each office and regional office within EDA. In this way, the Balanced Scorecard serves as a link between EDA's strategic activities or elements, HQ office and regional office performance and down to individual performance within the organization.

EDA's BSC measures include a number of both output and outcome measures. Some of the BSC outcome measures are similar to EDA's GPRA-reported impact measures as discussed in Subsection 2.3 and which are the subject of this impact assessment study. Examples of these GPRA-related measures as included in the BSC include:

- Private sector leverage of EDA investment
- Regional jobs multiplier
- Average expenditure (cost) per higher skill / higher wage job created
- Number of higher skill, higher wage private sector jobs created

Beyond the relationship between these specific BSC measures and EDA's GPRA impact measures, EDA's BSC efforts are related to its impact assessment efforts in that some of the BSC output measures serve to categorize EDA's activities in terms of agency strategic priorities. In this way, the BSC, as with our impact assessment efforts, seeks to provide a link between EDA's activities, its impacts and its mission or strategy. Examples of BSC measures demonstrating this point include:

- Percentage of investments that deal with new partners
- Percentage of EDA's projects that have multi-jurisdictional partners
- Percentage of EDA investments that are leading edge
- Percent of projects that support entrepreneurship

As with EDA's GPRA reporting process discussed in Subsection 2.4, EDA's current BSC reporting involves labor intensive, manual processes to extract actionable information from the scorecard. EDA has recognized this fact and is currently engaged in an effort to design, develop and implement an automated BSC system. This effort will greatly reduce the labor intensive manual efforts for the generation of the BSC and its quarterly reports by automating the data collection and measures calculations involved in the BSC approach.

As mentioned above, some of the BSC outcome measures are similar to EDA's GPRA reported impact measures, which will be estimated by the tool resulting from this study. Because of these similarities and especially in light of the current efforts to automate EDA's BSC processes, opportunities exist for interaction between the two processes and their tools. More specifically, the implied jobs and cost per job multipliers developed through the impact assessment tool might be able to support the development of the BSC regional jobs multiplier measure and possibly be adjusted to feed the BSC average expenditure per higher skilled/higher wage job measure. Currently, the BSC uses the projected jobs figures reported by grantees in their grant applications to develop this measure.

Similarly, over time, the project type categories developed as part of the impact assessment measurement effort (see Subsection 3.2) could be expanded or adjusted to coincide with some of the various BSC output measures such as *Percentage of EDA investment that support entrepreneurship* or *Percentage of EDA investment that are leading edge*. For example, though the impact assessment tool only develops differentiated impacts for five project type categories, the OPCS data was actually coded as part of the assessment method development process into thirty different project type categories (see Subsection 3.2.) As such, even with no adjustments, the impact assessment effort could provide the ability to calculate the percentage of EDA investments falling into as many as thirty different categories.

Finally, the improvements to the GPRA reporting process achieved through the implementation of the new assessment tool could present the opportunity for EDA to create additional BSC measures that reflect the agency's achievements towards more accurate and efficient impacts targeting and GPRA reporting. This and other opportunities for integrating the BSC with our tool are discussed in Subsection 5.2.

2.5 Program Data

We conducted an assessment of EDA's program data. This helped us to understand the range and quality of the program data available to EDA for assessment purposes. Our analysis focused on data relevant to impact measurement and reporting. As shown in Subsection 2.4, however, OPCS also contains data not relevant to this inquiry, including geo-spatial and other social and economic data related to determining applicant eligibility and project location. We did not assess the quality or usefulness of these other data elements.

There are two types of OPCS data relevant to impact measurement and reporting. The first kind – characteristic data about the projects themselves - is derived largely from the grant application. The program data in OPCS includes project specific information on funding impetus, funding amounts, various construction-related and funding milestone dates, scope descriptions, recipient characteristics and contact information, *etc*. This data was found to be relatively complete and sufficiently accurate for use for assessment purposes. We found these data elements to be reliable and – for the most part – fully populated. If the application is approved and the project is funded, that unique record will eventually contain additional data about the project, providing EDA access to a wide range of program data. The accuracy and completeness of this data owes in part to the intensive and collaborative nature of the application and screening process.

The second type of OPCS data relevant to impact measurement and reporting is grantee self-reported impacts data. Recall from the discussion centering on Figure 2.1 in Subsection 2.4 that this data is manually utilized in the generation of the GPRA reports. For a variety of reasons, this data is not always complete and there exist indications of its inaccuracy.

For one thing, it has proven difficult for EDA to collect reliable and accurate data of this type. This stems in part from the turn-over in staff in recipient communities. Currently, EDA prompts grant recipients to report impacts at three, six and nine years after grant award. In many cases the individuals presented with such inquiries were not directly

involved in the project and perhaps were not even employed by the community during the grant application or project construction phases.

Another issue sometimes clouding the collection of reliable grantee data is the lack of incentive for grant recipients to report accurate data. EDA's construction grant application provides for impact data reporting at three, six and nine years post award. Once a project has been funded and built, however, there is no real reason for grant recipients to put significant effort into addressing EDA's requests for data.

EDA's efforts to collect reliable data from grantees are further hampered by the fact that grant recipients may not fully understand the nature of the data being requested and different recipients may interpret the request differently. It may be difficult to determine, for example, a job that is the direct result of the EDA project as opposed to one that may have been generated indirectly.

Another factor that contributes to the unreliability of the grantee self-reported data is the fact that data validation efforts are not rigorously or universally implemented throughout EDA. Each EDA regional office, to differing degrees based on staffing levels and other considerations, performs some very limited data validation, primarily consisting of ad hoc checks on apparent outliers or obviously unreasonable grantee responses. Resource constraints prevent EDA from conducting anything like the large scale survey and validation efforts required to collect reliable data from grantees.

The resources required to conduct a large scale data collection and validation effort to obtain reliable grantee reported data are currently not available without compromising EDA's fulfillment of its mission requirements, such as the evaluation of grant proposals and the awarding of grants. While this finding is based primarily on our interviews with EDA regional staff, we believe it is valid, for two reasons. For one thing, in our estimation and based on our experience collecting data through survey instruments, implementation of the processes, tool and required FTE (as well as the associated training, and implementation costs) required to effectively educate and survey grantees, provide them with sufficient incentives to cooperate with the survey effort, and then to validate the data they provide would involve dramatic changes in EDA's operational budget. Moreover, as discussed in Subsection 2.6, during our interviews with the other Federal grant- and loan-making programs (see Subsection), we discovered that this problem with grantee data – as well as the corresponding infeasibility of fixing the problem without dramatic changes the to the program's operational budget – besets most of the other economic development-related entities/programs.

2.6 Processes, Measures and Methods Used by Other Federal Grant Making Programs

Several years ago, OMB and EDA compiled a list of twenty-nine Federal programs that – like the EDA's construction program – make grants or loans to spur economic

development at the community level. Together, these programs comprise the broad, Federal economic development community.[11] These programs were:

- Within the U.S. Department of Housing and Urban Development (HUD) . . .
  - The Community Development Block Grant Program,
  - The Community Development Loan Guarantees (Section 108),
  - The HOME Investment Partnership Program,
  - The Urban Empowerment Zones Round II Grants,
  - The Brownfields Economic Development Initiative,
  - The Rural Housing and Economic Development,
  - The National Community Development Initiative,
  - The Indian Community Development Block Grant Program,
  - The Native American Housing Block Grants,
  - The Self-help Homeownership Opportunity Program (SHOP), and
  - The FHA Asset Control Area Program;
- Within the U.S. Department of Agriculture (USDA) . . .
  - The Community Facilities Program,
  - The Economic Impact Grants - Commercial Facilities Economic Impact Grants Program,
  - The Rural Business Enterprise Grant Program,
  - The Intermediary Relending Program, and
  - The Rural Empowerment Zones (EZ)/Enterprise Communities Program;
- Within the Department of Health and Human Services (DHHS) . . .
  - The Community Services Block Grant Program, and
  - The Urban and Rural Community and Economic Development Program;
- Within the U.S. Small Business Administration (SBA) . . .
  - The Section 504 Certified Development Company Loan Program,

[11] Depending on the approach to formulating this list, other Federal programs arguably could also have been included, such as the Tennessee Valley Authority and Department of Labor, Workforce Innovation in Regional Economic Development (WIRED) program.

- The Historically Underutilized Business (HUB) Zone Program, and
- The New Markets Venture Capital Program;

§ Within the U.S. Department of the Treasury (DOT) . . .
- The Community Development Financial Institutions Fund
- The Bank Enterprise Award Program, and
- The Native Initiatives Program;

§ Within the Environmental Protection Agency (EPA) . . .
- The Brownfields Revitalization Program;

§ As well as four programs not aligned with a Federal Department or Agency . . .
- The Appalachian Regional Commission,
- The Denali Commission,
- The Delta Regional Authority, and
- The Neighborhood Reinvestment Corporation (NeighborWorks).

A brief description of these programs is provided in Appendix C. In order to capitalize on their experiences with impact measurement issues, we met with representatives of most of these programs.[12] The purpose of these meetings was to determine what practices, processes and measures each is using to manage and report the impacts of its loans or grants. This was an important step in our assessment of the optimal method for EDA because it allowed us to borrow on best practices and lessons learned. The remainder of this subsection reports the major findings of that effort that are relevant to the selection of our primary estimation approach and development of our methodology, as discussed in Section 3.

2.6.1 Diversity of Programs

OMB and EDA identified these twenty-nine other programs as having missions that overlapped with EDA's mission. It is true that – at the most general level – the broad purposes of these programs are similar to or the same as EDA's. To whit, the common

[12] We were unable to schedule interviews with Delta Regional Authority; USDA Rural Empowerment Zones/Enterprise Communities; HUD SHOP, FHA Asset Control Area, Native American Housing Grant, Indian Community Development Block Grant, Rural Housing and Economic Development, Brownfields Economic Development Initiative, and Urban Empowerment Zones Round II Grants Programs.

mission of these programs is to spur economic development, particularly within economic troubled communities. Moreover, these programs overlap in their flows of funding to distressed communities. It is common, for example, for multiple programs to engage in varying types or levels of investments in the same communities at the same time. In fact, in some instances EDA's construction program funds projects that also are funded by other Federal agency programs such as those administered by ARC, SBA and Department of Agriculture.

Despite these commonalities, there exist significant differences among them in terms of their means, methods, scope, coverage and specific strategies for spurring growth. For instance, we found that these programs exhibit wide diversity in terms of their:

- **Organizational structure** – for example, some programs (such as Treasury) are centralized, while others (such as EDA, USDA and EPA) are decentralized, operating through a number of field offices with significant levels of autonomy.
- **Size** – annual appropriated budgets for these programs range from the low millions to several billions of dollars.
- **Types of assistance provided** – for example, some programs (such as SBA HUBZone or USDA EZ Communities) administer the certification of businesses allowing them access to various tax incentives , while others (such as SBA NMVC) provide financing for community-level organizations supporting various economic development-related projects.
- **Geographic scope** – for example, some programs (such as ARC, Denali Regional Authority and the Delta Commission) provide services to only specifically mandated states or regional areas, while most others serve communities throughout the country.
- **Characteristics of recipient communities** – for example, some programs (such as HUD's Indian Community Block Grant Program) for example, serve only Native American communities, while others (such as USDA RBEG or HUD RHED) serve only rural communities.
- **Investment evaluation mandates and processes** – for example some programs (such as EPA Brownfields) have very rigid grant application evaluation mandates allowing for little latitude in ranking or selecting applications for award, while others (such as EDA) have relatively broad evaluation criteria, allowing for significant latitude in the selection of projects for funding.
- **Discretion in the disposition of program funds** – for example, some programs (such as ARC) have high levels of discretion over how their funds are dispersed, providing grants for only specific projects, while others (such as DHHS CSBG) provide funds to the states that in turn distribute the funds to local agencies that carry out various economic development projects affording DHHS only very limited control over the projects ultimately funded.

- **Execution processes** – some programs (such as EPA Brownfields) administer and manage their grants or other services locally through their regional offices, for example, while others (such as DHHS CED) manage their programs through a headquarters office.
- **Needs and capabilities with regard to managerial and externally reported data and measures** – some programs have not come under as close of scrutiny as others in terms of OMB's opinions on their measures and impact reporting processes. Similarly, some programs have been subjected to OMB's Performance Assessment Rating Tool review, whereas others have not.

Based on our examination of these differences, we determined the sister programs can be categorized into four distinct groups, as depicted in Figure 2.2).

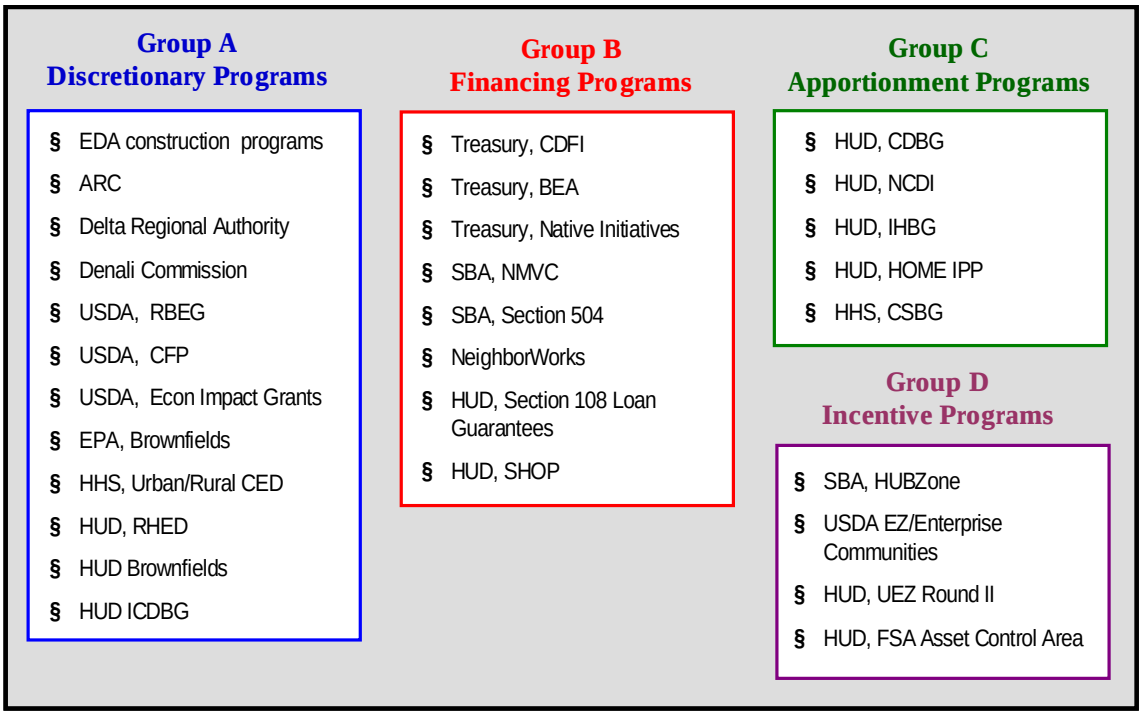


Figure 2.2 – Categories of Federal Grant- and Loan-Making Programs

- **Competitive / Discretionary Grant Programs**, the group to which EDA belongs, provides project specific funding on a competitive basis directly to applicant grantees for economic development-related purposes.
- **Organizational Underwriting Programs** underwrite organizations that provide a source of financing to local governments or other eligible entities for specific local economic development-related projects.
- **Block Grant / Apportionment Programs** distribute funds to local governments based on an index of need; funds which are then utilized by

those local governments for economic development-related projects with minimal Federal oversight in terms of the disposition of those funds.

- **Certification/Tax Incentive Programs** administer the certification of government or business entities to allow them access to Federal tax and other financial incentives designed to promote economic development. These programs are sometimes a funding priority or mandated component of programs in other groups.

2.6.2 Assessment Methods

We found that most programs interviewed assess impacts based on self-reported grantee data or through program studies, or both. The program studies tend to be conducted on an *ad hoc* basis and utilize data collected either through case studies or direct observation data collection efforts. These studies typically apply econometric techniques, such as regression analysis and/or input-output analysis to develop multipliers to be applied to the sample data collected in order to generate aggregated impacts estimates. A few exceptions exist.

The exceptions really represent more of a difference in the interpretation of the usefulness of the results of the types of methods described above as opposed to the application of completely different measurement techniques. For example, some of the programs interviewed feel that to capture the successes and impacts of their activities, it is imperative to incorporate the results of a number of different kinds of both quantitative and qualitative assessment techniques in order to "tell the story" from a broader perspective. This could mean both reporting on a more diverse set of measures as well as combining the results of regularized and coordinated program assessment activities, such as case studies, validation site visits and other program analyses into an overall impact assessment report.

The point expressed by many programs is that there is no one stellar impact assessment approach or set of impact measures that will concretely and universally speak to any particular program's performance. There is, however, a suite of tools available that can be used to develop the most compelling story as possible to demonstrate the successes of a particular program.

A representative of one program used the analogy that performance measurement needs to be approached as a lawyer approaches a case - the goal being to demonstrate success beyond a reasonable doubt. A specific example of this philosophy is the NeighborWorks program. NeighborWorks has developed two different impact assessment models – one an Input-Output type model, the other a macroeconomic model based on publicly available sources of data. Their view is that these tools are two of several, including site visits and case studies, that can and should be used to tell a compelling story of program success.

2.6.3 Impact Measures

We found that there exist a fairly limited set of reported impact measures among these programs, focusing mainly on private investment leveraged and jobs created/retained.

Beyond these two measures, reported measures largely consist of output measures such as number of loans approved, number of houses constructed, number of education or job training opportunities implemented, number of households assisted, *etc.* The limited use of other outcome measures included:

- Homeownership rate,
- Number of families living in substandard housing,
- Number of drug-related crime or health related hazards, and
- Housing values, employment, and household income associated with new employment.

Many programs expressed concern that economic development-related activities in general result in community and quality of life improvements that are difficult to quantify. Moreover, even if appropriate measures were identified to measure these types of outcomes, they are subject to such a vast array of influences, not the least of which is other Federal economic development efforts. As such, it is difficult to attribute that outcome, or a portion of that outcome, to a particular project or program.

Despite this fairly limited set of reported measures, we found that some of these programs are beginning to explore the use of additional, more innovative and diverse impact measures in addition to their reported measures. Programs have seized on these measures as a means to enhance their program management efforts. Non-reported measures either recently implemented or under development by interviewed programs include:

- Business creation or number of new establishments,
- Median home loan amounts (from Home Mortgage Disclosure Act) of census tracts receiving program funds,
- Number of abandoned buildings,
- Number of acres ready for reuse,
- Property tax values,
- Number of jobs with benefits, and
- Achievement of living wage in low income areas.

Several programs expressed the opinion that some of these non-traditional measures may eventually be valuable as reported measures. A more diverse set of measures could be one part of a larger set of tools necessary to capture the success and impact of their program's work.

2.6.4 Data Issues

We found that, like EDA, all of the interviewed programs struggle in one way or another to collect valid, reliable direct impact data from grantees/funding recipients that can be used to support managerial processes and reporting requirements. Some programs collect no impact data from recipients beyond those estimates included in the original

application. Of those that do collect grantee data, most engage in little if any significant data validation efforts. Obviously, without reliable grantee data the calculation of meaningful direct impacts using this data is essentially impossible.

Difficulties with grantee data collection and validation expressed by programs include:

- A lack of government resources to collect data through site visits or to effectively validate grantee self-reported data,
- The administrative difficulties (e.g. Paperwork Reduction Act) and/or perceived difficulties in requiring grantees to report data at a meaningful level of specificity, frequency and/or duration,
- The inability to motivate or incentivize grantees to provide data or to impress upon them the importance of providing accurate data,
- The inherent lag in direct impacts associated with economic development projects coupled with the high rate of turn-over of staff associated with such projects in local, often rural, areas,
- The lack of sophistication of some grant recipients in terms of identifying direct impacts, and
- The lack of automated data collection processes making the process unduly burdensome on both program staff and grant recipients.

In addition to these issues, economic development projects often are funded by more than one Federal program. Data collection issues become even more complex when different programs have influence over different phases or portions of a particular project. For example, ARC administers project-specific construction grants, but the actual construction of those projects, including the ARC funding involved in the construction, is managed by EDA. In such cases, ARC does not receive any post-construction or project close-out data.

Despite the difficulties in collecting grantee data, some best practices exist among these agencies/programs. Though virtually all programs interviewed expressed some difficulty with collecting reliable data from grantees, a few demonstrated useful tools and processes worth noting in terms of making the data collection process easier and more manageable and the data collected more meaningful.

- Several programs, including the Appalachian Regional Commission, NeighborWorks, USDA RBEG, and SBA NMVC, conduct site visits on all or, more frequently, some representative sample of projects in order to validate the impact data provided by grant recipients.
- Some programs utilize automated data collection forms, such as those used by EPA's Brownfields Program or various HUD programs. EPA's form is available to grant recipients on-line and includes very detailed instructions and embedded data validation mechanisms. HUD's automated data collection system, which collects impact data related to a

number of different programs, was developed through extensive consultation with their grantee community. Significant effort and resources were expended to train their recipient community on its use.

- One program interviewed pushes the data collection responsibility on to a state or local government partnering entity whenever possible. The theory being that data collection efforts would mostly likely always be performed more efficiently and effectively by state or local-level partners as they are closer to the effort and better equipped in terms of personnel, systems and other resources.

2.7 The Rutgers Study and the GAO Response

As discussed in Subsection 1.1.3, an evaluation of EDA's public works program investments was conducted in 1997 by Rutgers University in coordination with Economic Modeling Specialists, Inc. and Princeton University. In 1999, the GAO performed a review of the Rutgers Study and provided some guidance on how the study could be improved and expressed some concerns about aspects of the methodology and interpretation of the impacts. As a part of our assessment of EDA program management and measurement needs and limitations, the Grant Thornton team independently reviewed the Rutgers Study and the GAO response. This subsection presents the results of those evaluations.

The Rutgers effort actually involved the conduct of two related studies. The first, entitled, "*Public Works Program: Performance Evaluation*" used a combination of surveys, seminars for grantees and site visits to obtain performance information from 203 EDA construction projects that received their final grant funding payment in 1990. The second study, the "*Public Works Program: Multiplier and Employment-Generating Effects, Final Report*" employed two econometric techniques - input-output analysis and regression analysis - to document the effects of EDA's Public Works investments on the employment growth of the counties receiving grants.

The input-output analysis utilized the direct observation data obtained from the first study to generate the direct permanent employment and private-sector investment impacts of EDA investments and the IMPLAN Model to generate the indirect and induced effects resulting from the observed direct effects. The regression analysis provided a more dynamic view by allowing the current structure of economic activities to change and be controlled for, thereby allowing the specific impact of the EDA investment to be isolated and quantified apart from other factors that may impact a county's employment and/or employment compensation. The analysis employed multiple regressions as the primary econometric technique with separate equations constructed for both employment and compensation.

Key findings of the research included:

- For every 10 jobs that can be directly attributed to an EDA project, an additional 5 jobs will be created or moved to the county in which the project was performed.

- Each $10,000 increment in EDA public works grant investment spending yields, on average, nine jobs for an estimated cost of $1,100 per job created or moved to a county in which an EDA project is placed.

EDA has utilized the findings of this report to populate the measures it uses to report performance as part of its GPRA reporting requirements. In March 1999, the Government Accounting Office (GAO) performed a review of the Rutgers Study and provided some guidance on how the study could be improved and expressed some concerns about aspects of its methodology.

GAO's review was quite targeted based on a request by then House Budget Committee Chairman, John Kasich. GAO was specifically asked to examine the report's regression analyses in order to determine whether the report's results would be similar if additional variables were included in the analysis that directly took into account the prior level of a county's employment or population. In addition, GAO was asked to determine whether the Rutgers Study job creation estimates included only new jobs or might also include jobs relocated from another area. Finally, GAO was asked to examine any other technical issues that in their opinion might affect the reliability of the job creation estimates included in the Rutgers Study.

The GAO had previously determined in its 1996 study, "*Economic Development: Limited Information Exists on the Impact of Assistance Provided by Three Agencies*," (GAO/RCED-96-103, Apr. 3,1996), that attempting to quantify the gains from economic development programs is very difficult. GAO stated that "[a] persuasive study of the impact of a development program would have to demonstrate an improvement in the economy of an area receiving assistance, link that improvement to an agency's programs, and rule out alternative causes." GAO concluded that they found no evidence of such a study ever having been done. It was, in part, because of this observation that EDA commissioned the Rutgers Study.

Within this context, GAO's specific findings regarding the Rutgers Study were:

- GAO noted that the regression analysis performed as part of the Rutgers Study did not include variables to account for the prior level of a county's employment and population. Further, GAO's inclusion of these variables yielded results indicating that EDA's PW grant funds did not have a significant effect on post-grant employment levels.
- GAO concluded that by not taking these variables into account, the Rutgers Study may have shown only that larger counties with high levels of employment tend to receive the most grants.
- GAO also noted that the regression analysis in the Rutgers Study was unable to distinguish new jobs from jobs relocated from another area.
- GAO concluded this fact rendered unfounded certain statements in the report regarding EDA's role as a contributor to "…the productive capacity of the country…."

2.8 Other Relevant Scholarship

Seeking to incorporate recent scholarship into our methodology, the Grant Thornton team also conducted a thorough literature review. We focused on studies documenting econometric and other impact assessment techniques as applied to the measurement of economic and community development-related public investment impacts. A more complete discussion of literature relevant to our method is provided in the academic paper included as Appendix A to this report.

The literature review yielded a number of key findings that affected our choice of an approach, as discussed in Section 3. These included specific examples of the application of various analytic and econometric techniques for measuring economic development-related impacts. These also included more general findings related to the benefits and pitfalls of the use of various types of economic measures and the issues surrounding the application of various economic theories within the context of impacts measurement. As a practical matter, it is sufficient to say that the literature in this area is voluminous and somewhat inconclusive on the variables driving economic growth, as well as the econometric specifications for modeling such growth.

The literature review revealed that a good number of different types of assessment methods have been applied to attempt to estimate the impacts of public sector investments in economic-development-related activities, none of which have emerged as the most used or superior method. This is largely because of the vast array of activities, types of investments, types of recipients and types of anticipated outcomes inherently involved in the broad arena of economic development (see Subsection 2.6.1.) For example, investments could be in the form of tax incentives for businesses, funding for infrastructure, funding directed to individuals, funding directed to businesses, indirect funding provided to local governments to redirect to a variety of recipients for a variety of types of projects, funding focused on housing, training, narrowly targeted recipient communities, *etc.* (See the references in Appendix A to Fisher, 1997 and Courant, 1994.)

No one method could reasonably be expected to perform equally well in terms of demonstrating the impacts of this wide variety of activities. Most analysts have concluded that when selecting an impact measurement method and the techniques to apply within that method, it is necessary to consider the unique aspects and specific characteristics of the investments and/or projects being analyzed. (Courant, 1994.)

Another broad theme in the literature is the discussion of the appropriate measures to be applied to economic development-related activities. The measurement of benefits as a result of local economic policy is clouded by difficulties in identifying outcome measures that clearly capture economic benefits. (Wasylenko, 1997.) Relatedly, much of the uncertainty about the effectiveness of local economic development programs has been attributed to unmeasureable or unmeasured – but nonetheless significant – local differences in economic conditions (Courant, 1994).

Nonetheless, a range of diverse measures have been applied in an attempt to measure economic development impacts. (Fisher, 1997; Holtz-Eakin, 1994; and Haughwout, undated.) Among these, job creation has emerged as the standard and most important measure in economic development policy circles despite the arguments made for other measures of economic development success. (Wasylenko, 1997 and Fischer, 1997.)

Finally, the literature also demonstrates successful efforts in applying certain econometric and data collection techniques to help mitigate the problems associated with economic development impact analysis. For example, as stated above, part of the problem with measuring the success of economic development-related investments is that the benefits are often fairly localized, unique to the project or investment and/or accruing amidst a variety of other influences.

These problems imply the need for individualized analyses of specific projects and their outcomes in order to determine impacts. This type of analysis can be quite costly in that it has to be applied to a sample large enough to be able to draw conclusions about broader practices, repeated frequently in order to yield meaningful results, and requires time and labor intensive direct observation efforts. Consequently, several studies have sought to and succeeded in identifying methods and techniques that use publicly available sources of data that can serve as reasonable measures or proxies for a variety of community level social, economic, demographic and/or housing characteristics. (Galster, Hayes and Johnson, 2005; Haughwout, 1999)

Similarly, several studies have applied econometric techniques such as regression analysis and quasi-experimental approaches to isolate the impacts of specific economic development-related activities or investments. Again, some successes have been documented in the use of these methods. Moreover, the literature serves to instruct on the appropriate circumstances for the application of these various techniques. (Haughwout, 1999; Isserman and Merrifield, 1987.)

Despite these successes, the literature also documents issues associated with economic development investments that complicate these sorts of econometric and data collection techniques. One such issue raised by the literature is the fact that regional economies are complex and interrelated with larger national and global economies. This is magnified in urban areas, where even substantially-sized economic development projects can simply be dwarfed by ordinary levels of economic activity and local economies are more likely to be strongly linked to national and international economic success. (Lambert and Coomes, 2001.) Where these circumstances exist, it can be difficult, for example, for public use data to capture the impacts of these relatively small investments. It can be equally difficult for accepted econometric techniques to isolate the impacts of such investments to a statistically significant degree under such circumstances.

Section 3 Approach

The purpose of this section is to define how we relied on the findings of the assessment depicted in Section 2 to determine the optimal method for EDA to estimate impacts in the future. As stated in Subsection 1.2.2, we viewed this question not only from a quantitative methods perspective, but also from an enterprise management perspective. In that context, this section addresses three topics central to the development and execution of our approach.

- Subsection 3.1 recounts the analysis we conducted to determine an estimation method that best suited EDA's program management requirements and limitations,
- Subsection 3.2 provides an overview of our econometric method, as is fully articulated in Appendix A,
- Subsection 3.3 discusses the estimation tool that we delivered to EDA.

3.1 Alternatives Assessment from an Enterprise Management Perspective

Section 2 of this report included a number of findings from the assessment conducted as part of this study of EDA's program management and measurement needs and limitations. These findings directly influenced our evaluation of alternative methods in terms of their value within EDA's overall enterprise management framework. In that context, the purpose of this section is to present our assessment of the best approach to impacts measurement and reporting for EDA, given its programmatic and enterprise management realities, in particular the difficulties it experiences in obtaining valid impacts data.

As discussed in Subsection 2.4, EDA's current impact assessment approach involves two tools: the prospective budget targeting tool and the retrospective performance targeting tool. Both of these tools are based on the following two major data components.

- Multipliers derived from the Rutgers Study, and

- § Detailed program data captured during the grantee application process, including levels of total and EDA funding, project type information, and key milestone dates, *etc*.

EDA possesses an additional data source potentially useful to this process. It is the self-reported data they collect from grantees. Per the structure of the Rutgers Study, this data is collected at three, six and nine years after project award.

Methodologically, EDA's impact estimation processes and tools are sound, although EDA may have some room for improving on them (see, generally, the discussion throughout Section 2). The Rutgers Study, however, is itself ten years old and based on data from 1990. More broadly, as discussed in Subsection 2.7, the Rutgers-like approach to estimating impacts is "static," in that such program studies depending on direct observation data collection are difficult and costly to conduct. This is particularly so for an agency with a small operational budget. As such, it is not a feasible alternative for EDA to routinely conduct Rutgers-like direct observation studies every three to five years. As a consequence, at any given point in time, EDA is likely to be using multipliers that are based on out-of-date program priorities, policies and practices, as well as potentially different economic conditions, compared to those at hand when its multipliers were established.

In addition, the costliness of direct observation studies imposes a further limitation on meeting one of EDA's objectives for impact measurement. To whit, EDA would like the ability to better express impacts in terms of its strategic goals. To do this, it would help EDA to have differentiated impact measures by project type. This would help EDA because the investment guidelines and funding priorities guiding their investment decisions change over time with respect to this and other factors.

The Rutgers Study does not consider these distinctions, in part of necessity. In order to develop differentiated impacts for project types, the sample size of a direct observation study would likely increase, perhaps dramatically, thus increasing its costliness. As already stated, the cost of such program studies limits their usefulness to EDA because it limits how often they can be updated. As such, within the current business framework, direct observation studies cannot provide a link between strategy and impacts.

An alternative to conducting direct observation studies does exist. Ideally, EDA would use grantee, self-reported impacts data as the basis for Rutgers-like econometric analysis, instead of direct observation data. As discussed in Subsections 2.5 and 2.6, however, self-reported grantee data is notoriously unreliable across all Federal grant- and loan-making programs, including EDA's construction programs. As such, this potentially useful data source is not – at present – helpful in improving the enterprise management approach to measuring and reporting impacts.

We briefly considered undertaking the effort to improve the quality of the self-reported grantee data and use it as the basis for an econometric study of impacts. Such a method would be extremely beneficial to EDA because it would allow for the reporting of

actual impacts rather than – as in the Rutgers Study – impacts derived from an examination of a sample. Ultimately, it may be that Federal grant- and loan-making programs will be able to institute the procedures and processes necessary to use self-reported grantee data in this manner. But for this project, that initiative was far too ambitious. At a minimum, in order to make the self reported grantee data useful for this purpose, EDA would have to expend a vast amount of currently unprogrammed resources in additional site visits and follow ups with grantees. Moreover, EDA would probably have to change or establish various processes throughout its organization to ensure that these activities were performed in a consistent manner across regions and field offices. Beyond that, EDA may even have to alter the grant covenants themselves to ensure grantee compliance with reporting requirements, because – at present – the program oversight in many recipient communities lacks the expertise and continuity over time required to consistently report valid figures.

In light of the above analysis, it was clear to us that EDA needed an innovative alternative. Fortunately, as discussed in Subsection 2.8, an innovative analytical method that gets around source data problems has become more widely accepted in recent years. One example of this method is a 1999 study conducted by Andrew Haughwout of Princeton University. It estimated impacts of EDA investments on county labor markets by examining changes in publicly available data sets produced by the Bureaus of Economic Analysis (BEA), Census and Department of Labor (DOL). Like the Rutgers Study, the Haughwout study applied an econometric technique, regression analysis, to isolate EDA's impact and to control for other factors influencing county labor markets.

Similarly, another study completed by Andrew Isserman and John Merrifield, used public use data to measure the impacts of a public investment. In this study, however, Isserman and Merrifield applied a different econometric technique, the quasi-experimental method, to determine the impacts on economic and spatial structural change associated with investments such as highways, airline service, plant closings, tourism activities, dam construction, development initiatives, energy booms, and growth poles. In simple terms, the quasi-experimental method quantifies the difference between a treatment group (e.g. those counties receiving EDA construction project funding) and a control group (e.g. those counties that could have received EDA construction project funding, but did not) as measured against public use data such as employment figures.

Approaches such as these based on public use data have obvious appeal for EDA given the universal problems associated with self-reported grantee data and the budgetary infeasibility of relying on direct observation studies. Public use data sets are free, updated annually (in some cases even quarterly), and available dating back to at least 1980, allowing for the development of a time series data set. These attributes make an estimation method that relies on them updatable and repeatable at a relatively inexpensive cost, and dynamic as opposed to static. Moreover, the relatively inexpensive use of publicly available data sets could also free EDA to expand its impact assessment to cover projects completed over a number of years and to explore any number of project data subsets in order to produce differentiated impacts.

There are other additional benefits to EDA associated with the use of public use data as the basis for estimating impacts. Public use data is collected on a number of different statistics beyond jobs figures. Though job creation is of the utmost importance to EDA in terms of measuring and reporting its impacts, public use data could provide EDA access to a means of measuring its activities against many other variables of significance to economic develop such as poverty rates, transfer payments, income statistics, *etc.* It would benefit EDA to have access to these types of additional measures that, though not necessarily reportable[13] in terms of GPRA, would allow EDA to more fully capture and demonstrate its achievements towards its mission.

Despite the many potential benefits for EDA offered by an approach relying on public use data, there are also associated risks. The use of any econometric technique utilizing public use data, though applied to EDA investments by Haughwout, is not an extensively studied or commonly-applied method.

The most obvious risk is that EDA's grants are relatively small - typically between $250K and $1M – which is quite small when compared the size of the economy of even a small, rural U.S. county. Relatedly, the availability of the public use data of interest dictates that the analysis be conducted at the county level (as opposed to at some lower level of geographic granularity.) Consequently, EDA's grants may be too small to be detectible within the public use data at the county level. The question is whether a $200,000 EDA investment in an office building that might reasonably be expected to house two companies employing twenty people each be detectable to a statistically significant degree in the employment statistics of a typical rural county.

To elaborate on this potential data granularity issue, EDA's mission dictates that it make investments in areas that are economically distressed in some way. Sometimes that economic distress exists in a pocket or within a particular community within a county. This fairly typical scenario would exacerbate the potential problem of the relative size of an EDA investment as compared to the size of the economy measured by the public use data.

In terms of being responsive to GAO's criticisms, we determined that a method relying on public use data would address GAO's concerns with the Rutgers Study as well as would a revised Rutgers-like method. This is because either approach would utilize an econometric technique, and all but one of GAO's criticisms[14] relate to technical points surrounding the construction of the econometric model developed by Rutgers. The criticisms have nothing to do with the data collection method employed or data sources in general.

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[13] Measures included in agency GPRA reports must be approved by OMB.

[14] GAO's specific criticisms included: (1) the method did not provide an explanation of how its reported job impacts should be interpreted in terms of differentiating between new versus displaced jobs; (2) the method did not calculate impacts in a manner that accounts for existing economic conditions in recipient locations; and (3) the method did not account for variations in impact related to the relative sizes of the grant and recipient community.

Similarly, GAO's other criticism is a matter of interpretation of the calculated impact results, and not related to data source issues. Again, the ability to be responsive to this point is not dependent on the data source used by the method. Consequently, any method pursued by EDA using an alternative data source would be equally poised to address this issue as well.

We also examined EDA's alternatives in terms of initial investment and operational costs. As discussed above, the affordability of the repeated direct observation and improved grantee data approaches is low.

Given the emergence of the public use data approach, EDA's options at the outset of this study could be summarized as follows.

- EDA could repeat a Rutgers-type direct observation study, or
- EDA could embark on a major, multi-year investment and business process reengineering necessary to improve the grantee self-reported data, or
- EDA could pursue an alternative approach based on public use data, or
- EDA could do nothing and simply maintain the status quo, continuing to rely on the aged Rutgers Study.

To some extent, deciding among these alternatives was a risk-reward decision for EDA. As summarized in Figure 3.1 (next page), the net program benefit of the public use data approach is transparent. Figure 3.1 qualitatively describes how each of the alternatives discussed above (represented in columns) satisfies one of EDA's interests (represented in the rows). When EDA's interest is satisfied well by the alternative, the cell is shaded green. When EDA's interest is not well satisfied by the alternative, the corresponding cell is shaded red. In some cases, the corresponding cell is shaded yellow to indicate that EDA's interest is partially or incompletely satisfied by the alternative.

Figure 3.1 clearly shows the relative virtues of an econometric method utilizing public use data. As described earlier, however, such an approach presents some risks. Specifically, it could be that EDA grants – typically on the order of $250 k to $ 1 m – may be too small to detectably influence public use data.

The study team and EDA carefully weighed the rewards of the public use data approach against the aforementioned risk. Ultimately, EDA decided that the benefits of the alternative approach – particularly the far ranging enterprise management benefits – outweighed the risk. We, therefore, pursued impact assessment alternatives utilizing publicly available data.

Benefits \ Approach Options	Status Quo (Do Nothing)	Repeat Rutgers-like study	Improve Quality of Grantee Data	Econometric Method Using Public Use Data
Updateability / currency of impact estimates	low	low	high	high
Reliability, defensibility and quality of impacts estimates	medium	medium	high	high
Ability to tie impacts to strategy	low	low	high	high
Scalability to include additional measures	low	low	low	high
Initial Investment Cost	zero	low	very high	medium
Operational Cost	medium	medium	high	low

Figure 3.1 – Summary of Costs and Benefits by Alternative

Once EDA had made this decision, another issue arose. As mentioned earlier, there were two econometric techniques discovered through the literature review that could be pursued using the public use data – a pure regression method and a quasi-experimental method. The pure regression approach would seek to isolate and quantify the explanatory power of EDA funding on a dependent variable, in this case public use jobs data, while controlling for a number of other independent variables identified through knowledge of economic theory as having a potential impact on jobs. The quasi-experimental approach would seek to quantify the difference in public use jobs figures (or other publicly available data) between a treatment group, e.g. counties that received EDA funding, and a carefully constructed control group made up of counties that were similar in terms of their distress level to the treatment group, but which did not receive EDA funding.

Both econometric techniques would be attractive for EDA for the reasons summarized in Figure 3.1. Beyond those benefits, the pure regression approach is a traditional tried and true approach that has the benefit of being commonly accepted and understood in the academic community as an impact estimation method. The quasi-experimental approach, though untested in this context, offers the advantage of presenting the impacts of EDA's activities in a very concrete and understandable way. To whit, the message behind a quasi-experimental approach is that EDA systematically compared like counties that received and did not receive EDA funding. This approach is very intuitive and would produce an easy to communicate message for EDA.

Under both econometric techniques, different models were fully developed for projects completed in rural counties versus projects completed in urban counties. This was done based on our assumption that methods relying on public use data may have problems detecting EDA impacts in larger economies. The parameters associated with the independent variables used under both techniques did, in fact, reveal that the explanatory effect of these variables on jobs figures was very different between urban and rural settings. This indicated that, as expected, urban and rural economies operate very differently. This

proved that to accurately determine the impacts of EDA investments in these two types of areas, different estimation models would be required.

In fact, as discussed in Subsection 4.1, we discovered that for urban areas our modeling strategy does not develop statistically significant estimates for the effect of EDA funding, regardless of the estimation technique used. In fact, in most cases, our urban areas results point to the counter-intuitive result that EDA funding is correlated with lowered levels of employment growth. Our conclusion is that – while public use data may be satisfactory for estimating the effects of EDA funding in rural areas – it does not provide a strong basis for estimating similar models in urban settings. Our direct observation work (see Subsection 4.3) anecdotally showed that grant in urban areas have impacts similar to those observed via our primary methodology in rural areas. Moreover, our urban area observations were consistent with the results of the Rutgers study.

The pure regression and quasi-experimental efforts resulted in two basic findings. The first finding was that neither approach is able to produce statistically significant results in terms of measuring EDA's impact on jobs associated with projects completed in urban counties. This finding was not unexpected given the relatively small size of EDA's grants as compared to the average size of an urban U.S. county economy and the level of granularity available in the public use data of interest. The second finding was that the pure regression approach is able to produce statistically significant results in terms of EDA's impact on jobs associated with projects completed in rural counties.

In other words, the findings indicated that the pure regression approach was able to detect EDA impacts in rural areas while the quasi-experimental approach was not. We recognized that this fact might be seen to undermine the robustness of the results obtained within the pure regression models. We believe, however, that this is not case. The quasi-experimental method attempts to match counties based on a preliminary clustering of counties based on employment, population density, the ARC Index and the percent of county industry in the Services sector, followed by a comparison of five years of history for the dependent variable in each prospective pair of counties in order to find a good match. The quasi-experimental method therefore has as many observations as there are treated counties. In contrast, the regression models include information for all counties that meet our selection criteria, regardless of whether they received a treatment in the year in question or not. Another important difference is the selection criteria themselves. Prior studies of EDA grants have not controlled for grants awarded sequentially to the same county in succeeding years. Our quasi-experimental methodology could not simultaneously correct for this issue and make the closest matches based on the matching criteria. We believe that the differences between the quasi-experimental results and the regression results are largely explained by the multiple-grants issue. Also, the pure regression approach simply does a better job of accounting for the myriad of factors – independent of predicted similarity between counties – that may affect job creation across a broader spectrum of counties.

After significant empirical investigation of the quasi-experimental approach we concluded that the data and methods are not sufficiently mature to guide policy analysis for

several reasons. First, several assumptions are necessary that are in direct contract to much of the generally accepted literature in this area. A sufficient volume of research has been conducted to demonstrate that places do not demonstrate spatial independence (hence violating several statistical assumptions of the quasi-experimental method). Second, researcher subjectivity is required in the construction of the control groups. Control group identification is driven by empirical outcomes, typically the findings of a cluster analysis, which are highly sensitive to researcher judgment. Third, as is discussed extensively in the literature, claims of causality are suspect. Fourth, the method is atheoretical, driven by empirical outcomes, and not underlying reasons of the underlying relationships between economic growth and its key drivers. If the academic community can develop better methods for selecting control groups and interpreting the statistical results, quasi-experimental methods may have promise in improving our understanding of basic issues associated with urban and rural economic growth. While we do not base our recommendations or assessments on the quasi-experimental approach, we do discuss some of the general findings below.

Our efforts to explore both the quasi-experimental and pure regression techniques focused exclusively on EDA's impact on jobs. As such, we ignored the other widely accepted measure of economic development efforts, private investment. This was not due to a shortcoming of the methodology. Expanding the method to provide additional impact measures beyond jobs would involve determining what publicly available data element best serves as a proxy for the desired measure, acquiring and incorporating that public use data into the data set created for the analysis, and then running it through the developed regression models.

We did not undertake to develop the private investment measure for this project. Unlike public use data for jobs figures, some interpretative latitude exists in terms of the best proxy variable to use as a private investment measure. Before developing such a measure using our method, EDA must first define – in collaboration with external stakeholders – whether using a proxy variable for this measure is acceptable and – if so – what public data source is best suited to be a proxy measure of private investment. Prior to expending the effort to develop and test multiple regression models for a private investment measure, EDA should clearly define which measure is a suitable proxy. Moreover, as discussed in Subsection 5.2, there may be a more efficient alternative for EDA to routinely measure private investment.

The feasibility of quickly and efficiently implementing a private investment measure points to a broader virtue of our approach. Specifically, a number of other publicly available data sources could be used as internal management measures to reflect EDA's activities. Some of these types of measures are used by other Federal grant making entities (see subsection 2.6). Opportunities for EDA to develop additional management measures using our approach are discussed in Section 5.1.4.

3.2 Overview of Estimation Method

The assessment described in Subsection 3.1 led us to select a pure regression method to measure the impact on jobs, as measured by public use data, of EDA's construction projects in rural areas. This subsection provides a high level overview of the estimation method. Our characterization of it here is in terms of its technical benefits and limitations and the basic steps involved in its implementation. The method is discussed in technical and academically defensible detail in Appendix A.

3.2.1 The Data Set

The first step in pursuing this method was to create the data set for analysis. This subsection describes our efforts toward that end.

OPCS is the data source of record for EDA's program data (see Subsection 2.5). It contains a unique record for every grant application received by EDA. If the application is approved and the project is funded, that unique record will eventually contain additional data about the project. For our purposes, the most critical pieces of information in OPCS were funding amounts and various funding and construction-related milestone dates. As discussed in more detail later in this subsection, various other fields of OPCS data were also used in order to determine the type of project being constructed. EDA provided us with certain OPCS data for all construction project grants awarded between 1990 and 2005.

The publicly available dataset selected to measure jobs impacts was the employment data collected and maintained by the Bureau of Labor Statistics (BLS). The BLS is the official government source of employment, unemployment and labor statistics. The employment data is collected through a monthly nationwide survey of non-farm businesses and government agencies and reflects the number of both full and part time persons on establishment payrolls. County-level BLS employment data was downloaded from the BLS website for the years 1990 – 2006. Counties are uniquely identified in the BLS employment data, and other publicly available datasets, by 5-digit Federal Identification Processing Standard (FIPS) code.

Beyond the BLS employment data, various other public use datasets were collected covering the same years for two purposes. First, other datasets were required in order to develop the control variables utilized in the regression analysis. In addition, though our analysis focused exclusively on EDA's impact on jobs, recall from Subsection 3.1 that a benefit of this method was its ability to be expanded to include other measures. To allow for this, we collected several other public use data sets so EDA could explore the use of this method on other measures in the future. Since counties are identified by FIPS code in all publicly available data sets, this meant that all of the data collected could be merged with the EDA program data for use in the regression model either now or in the future. There were 3,096 common FIPS codes within all the publicly available datasets collected.

It was determined that the appropriate time period for analysis was grants awarded between and including FY 1990 and FY 2005. This time period was selected to maximize the number of grants subjected to analysis within the framework of the EDA program data and public use data available for analysis.

We recognized in creating our dataset that we needed to account for the possibility that multiple EDA projects could have been ongoing in varying phases of construction or completion in the same county over the course of the time period of our analysis. To address this, we identified those counties that received no EDA funding in each given year within the analysis timeframe, and those counties that received funding in a given year, but not in the three years prior or the five years after. In other words, we identified counties that received funding in year four of a nine-year period, and those counties that received no funding over a nine year period. The nine-year period was selected based on the 3 year average construction phase for EDA projects and our desire to characterize the relative permanence of the jobs impacts of EDA funding by measuring them for 5 years after project completion. Given that the time period for analysis was 1990 – 2005, this meant that the project completion years included in the impacts analysis were 1993 – 2000.

Expanding on this point, if multiple EDA projects, beginning and completing at different times, were ongoing in the same county over the course of the analysis there would be both construction-related and more permanent post-construction jobs impacts occurring. Our goal was to account for permanent jobs created and not to capture jobs associated with only the construction phase of a project. Identifying the counties in the way described above allowed us to control for the construction-related jobs impacts and to measure only the post-construction phase jobs impacts.

Following the identification of the counties in this way, the EDA funding was summed for each county for each of the project completion years 1993 - 2000. This funding data was then merged with the county-level public use employment data using the unique county FIPS codes. The result was a dataset containing one record for each of the 3,096 counties for which there was public data available with indicators for the years in which they received funding.

As discussed in Subsections 3.1, different regression equations were developed to measure impacts for grants to rural and urban areas. This required separating EDA's program data into grants to urban areas and grants to rural areas. Urban areas were identified as those areas located within an Office of Management and Budget (OMB) designation Metropolitan Statistical Area (MSA). An MSA contains a core urban area of 50,000 or more population, consisting of one or more counties and includes the counties containing the core urban area, as well as any adjacent counties that have a high degree of social and economic integration (as measured by commuting to work) with the urban core. MSAs are geographic entities defined by OMB for use by Federal statistical agencies in collecting, tabulating and publishing Federal statistics. All other grants were considered rural.

Recall from Section 3.1 that an attractive attribute using a regression analysis method in conjunction with public use data, was the ability to develop differentiated impacts that would allow EDA to tie the calculated impacts to the agency's strategic investment decisions. In order to be able to develop and report differential impacts associated with different EDA project types, we categorized construction grants based on an analysis of descriptive fields in OPCS.

By looking at these OPCS fields, projects were coded as one of thirty-five project types. Ultimately, these were rolled-up into five broader project type categories. These project types, including a definition of the construction activities included in each are listed below.[15]

- **Business incubators** - any project involving the construction, rehabilitation or purchase of a structure for the express purpose of setting up a business incubator.
- **Other commercial structures** - any project involving the construction, purchase, improvement or rehabilitation of a commercial or industrial structure other than for use as a business incubator, including those projects where additional infrastructure work was performed specifically related to the newly constructed, renovated or purchased structure. Also includes those projects involving site preparation or demolition, engineering design, architectural design and/or planning work related to construction of a commercial or industrial structure absent any actual construction.
- **Roads and other transportation-related** – any project involving the construction of a new road, access road or bridge expanse or the expansion or improvement of an existing road, access road or bridge expanse, including widening, repaving, curb repairs, lighting, median redesign, *etc.* Also includes any project involving the construction of a new rail line or expansion of existing rail line; the construction of new marine, terminal or port structures such as docks, piers, moorings, *etc.* and/or the improvement or rehabilitation of such existing structures.
- **Targeted industrial park infrastructure** – any newly constructed, improved or renovated form of infrastructure including water/sewer lines or systems; wastewater plants or systems; water storage tanks; electric, gas or other utility; or any combination of these types of activities including road or access road work provided for a specifically identified industrial park. Also includes any project not falling into any of

[15] Projects involving training activities and equipment purchases exclusive of any other construction-related activities were deemed to be outside the scope of our study and were excluded from the analysis.

the other identified project type categories or for which there was inadequate information to make a determination of project type.

- **General community infrastructure** - any newly constructed, improved or renovated form of infrastructure including water/sewer lines or systems; wastewater plants or systems; water storage tanks; electric, gas or other utility; streetscaping; structural flood control or any combination of these types of activities including road or access road work provided for general community purposes.

3.2.2 The Regression Model

With the data set in place, we were able to develop the regression models. Generally speaking, regression analysis is a technique used to estimate the influence of individual factors, while holding constant or controlling for the effects of other factors. In our case this meant estimating the impacts of EDA funding on county employment levels while controlling for other factors, known through economic theory, to influence employment including population density, poverty rate, employment levels, and the share of large and small businesses in the local economy.

Our regression models were based on and build upon the previous econometric work included in the Rutgers Study. The Rutgers Study, while not free from methodological controversy as discussed in Subsections 2.7 and 3.1, provided both a basis for comparison for results in this study, and a valuable starting point for the analysis involved in building the models.

Two regression techniques - Ordinary Least Squares (OLS) and Two-Stage Least Squares (2SLS) - were used to estimate the impacts of EDA funding. 2SLS is a commonly used technique in the econometric literature to control for endogeneity in regression models – in our case, the potential endogeneity between employment, EDA funding, and payroll. Utilizing these two regression techniques allowed us to both develop a baseline of comparison to the results obtained from the Rutgers Study – which also used OLS and 2SLS in their econometric modeling.

For the most part, the methodological issues raised by the Rutgers Study surrounded the potential endogeneity of certain independent variables (also referred to as "explanatory," "control," or "predictor" variables) in the model. Endogeneity is when the value of one independent variable is dependent on the value of the other independent or "predictor" variables. So, for example, in EDA's case, the specific variables that had been previously identified as potentially endogenous were payroll, which should increase with the number of employed individuals, and EDA funding itself, which might increase with county population. Our method advanced the econometric analysis in the Rutgers Study by controlling for both the potential endogeneity of payroll, which had been previously addressed, and of EDA funding, which had not.

The regression techniques we employed yielded a range of job impacts resulting from EDA funding. The final step in our method was to take these results and use them to estimate the marginal effects of additional EDA funding on county employment levels. As in the Rutgers Study, our method identified the impact on jobs of increasing the EDA construction project size by $10,000, assuming the average size of an EDA construction grant.

Considering the technical merits of our method discussed in this subsection within the context of some of the program management issues discussed in Subsection 3.1, our methodology can be viewed as improving upon EDA's past impact assessment efforts in several important ways:

- We estimate the effects of EDA funding over a five year horizon, obtaining year-by-year results that provide a view into the permanence of the jobs created by EDA investments. In contrast, earlier work estimated a single coefficient which in effect assumed a constant effect of EDA spending over a five year horizon.
- We estimate effects for different types of EDA projects, such as roads, public infrastructure, commercial infrastructure, *etc.* This allows us to make comparisons of the effectiveness of changes to EDA's investment strategy over time. Past studies have considered all EDA projects to have the same type of impact on jobs creation.
- We control for potential additional EDA funding during the study period by restricting our sample to areas in which no EDA funding had been received in the three years prior to the completion of selected EDA projects, and no funding was received in the five years following project completion. Previous studies have not controlled for the possibility that multiple EDA projects could have been ongoing in the same county, resulting in potential confusion about the cause of observed changes in employment.
- We include counties where no EDA funding was provided over a nine-year period in our regression models in order to provide additional information about general and local trends in employment. Previous studies have considered only those counties receiving EDA funding in the sample dataset.
- We identify the effects of undertaking more than one EDA project at a time. Previous work has lumped all EDA projects together when they occur simultaneously.
- We examine the influence of econometric questions that have been raised about the potential endogeneity of EDA funding and certain explanatory variables with county size. These issues formed the basis for the majority of criticism leveled at an earlier study produced by the Rutgers team.

- We estimate changes to the efficiency with which jobs have been created by EDA projects based on changes to EDA funding strategy over the fifteen years we study. Previous studies have estimated a single figure for the marginal impact of additional EDA funding on jobs in counties receiving grants.
- We estimate different models for rural and urban areas. This allows us to take into account the different economic structures typical of urban and rural areas. In contrast, earlier studies have include both urban and rural areas in the same linear regression model and distinguished between them with an indicator variable.

3.3 Overview of Estimation Tool

This subsection describes the tool that was developed in order to implement the method described in Subsection 3.2. Recall from the discussion in Subsection 3.1, that updateability was an important factor for EDA in terms of selecting an impact assessment method. This tool, along with certain of the properties of the method itself, provides EDA with the means to easily update or refresh their impact estimates annually or on what ever schedule they deem appropriate.

The dataset used for the analysis (and described in Subsection 3.2) was developed using SAS™. SAS™ is an analytic software tool that allows both for efficient data management, modeling and analysis; and the development of user-friendly data entry interface screens and reports.

The SAS™ tool was designed to use the results generated by the regression models in combination with inputs from the user to generate reports of EDA's impacts. The tool walks the user through a series of decisions regarding the details of the program data, e.g. fiscal year to consider, *etc*. and type(s) of impact data to be reported, for example, in total or by project type, *etc*. and develops customized impact assessments and resulting reports based on these inputs.

A Quick Start Guide was developed for the tool to assist EDA in implementing and maintaining the tool. It is provided in Appendix D. This Guide provides step-by-step instructions on how to run the tool including discussion of the inputs that will be required and the various outputs that can be generated.

Section 4 Results

This section provides a synopsis of our results. Specifically:

- Subsection 4.1 provides an overview of the results of our estimation efforts, with more technical detail presented in our peer reviewable paper, provided in Appendix A,
- Subsection 4.2 discusses the robustness of our results, and
- Subsection 4.3 discusses our qualitative findings about urban area grants based on our direct observation work.

4.1 Overview of Results

We found that EDA construction grants exhibit a statistically significant influence on jobs at the county level, as reflected in public use data. Our results demonstrate that – on average – EDA investments produce between 2.2 and 5.0 jobs per $10,000 increment in funding. Put another way, it costs EDA between $2,001 and $4,611 in project funding, on the margin, to produce a single job. As Figure 4.1 (next page) demonstrates, our results are generally in accord with the Rutgers results. Both studies indicate that EDA investments have a statistically significant impact on jobs levels in recipient communities.

We also found that for rural areas the type of project is an important determinant of the number of jobs created. Business incubators projects are the most effective, while roads projects are the least effective. Figure 4.2 (next page) shows our implied jobs per $10,000 cost per jobs figures by project type.

The remainder of this subsection (beginning on page 57) discusses some observations and findings related to these results presented in Figures 4.1 and 4.2.

Estimate / Study	Implied Jobs / $10 K	Implied Cost / Job
Grant Thornton / ASR Range Results	2.2 - 5	$2,001 - $4,611
Rutgers Study Results	9	$1,100

Figure 4.1 – Overview of GT/ASR Range Estimates Compared to Rutgers Study Results

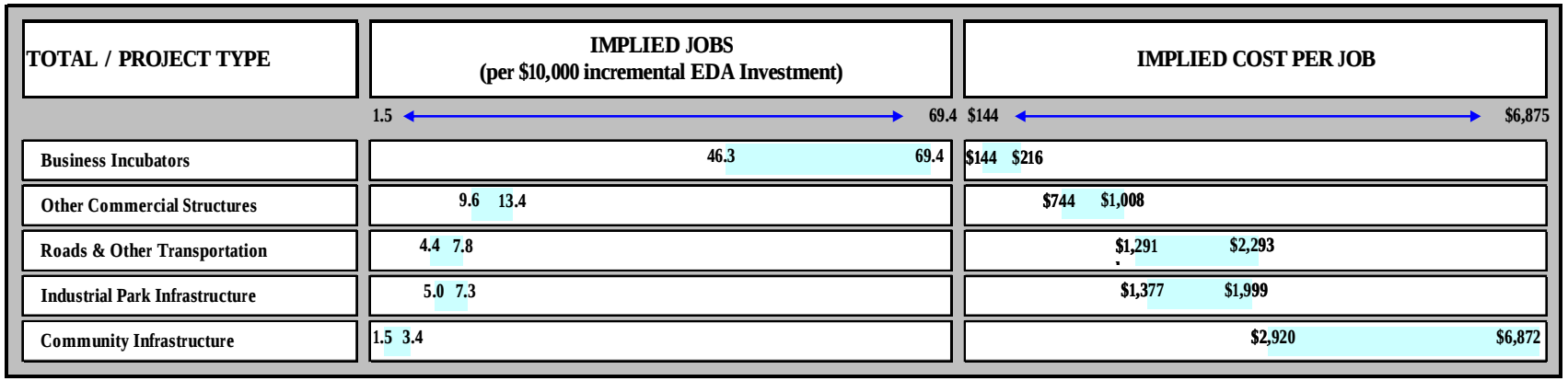


Figure 4.2 – Implied Jobs Figures By Project Type

4.1.1 Importance of Economic Conditions of the County

The results of our estimation indicate that factors such as project type, economic condition of the county, the level of distress of the recipient community (as measured by the ARC index[16]) and the percent of employment concentrated in large or small firms, and other state specific factors influence employment growth. Therefore, the economic impacts of EDA investments will vary based on these conditions for an individual county.

4.1.2 Importance of Project Type

The estimate of the cost per job created by additional funding for EDA projects depends somewhat on the estimation strategy and the addition of variables capturing population density and economic distress. However, it depends to an even greater extent on the type of project that was undertaken.

Breaking out the project types into five separate categories illustrates that some projects appear to be more strongly correlated with employment growth than others. Funds spent on business incubators appear to have the largest correlation with future economic growth, while funds for community infrastructure appear to have the smallest estimated coefficient. In this context, it can be seen that EDA's strategic emphasis over the last several years on entrepreneurship makes sense in terms of its jobs figures.

Project type may be capturing various local factors that have not been identified as independent variables. For instance, EDA can only fund those projects for which it receives an application. Those communities that apply for funds for a business incubator might also be undertaking other efforts to increase economic growth, such as creating enterprise zones or providing tax holidays in exchange for new investment in plant and equipment. Without data on local market conditions, we cannot say whether incubators in and of themselves are more effective than other forms of investment. However, EDA should still carefully consider business incubator grants, as they do appear correlated with successful outcomes. Likewise, other types of projects, such as community infrastructure should be examined to determine if a different project type might not produce better results. The needs of each community will be different, and this sort of examination should take place on a case-by-case basis.

4.1.3 Permanence of Jobs

For most of the models we estimated, the average cost per additional job is fairly constant over time, although some variation is evident in later years. This indicates that the

[16] The ARC index takes into account public data available for three economic indicators (three-year average unemployment rate, per capita market income, and poverty rate) for each county in the nation as compared with national averages. The resulting values are summed and averaged to create a composite index value for each county.

jobs created by the investments are likely longer-term in nature and retained over the period examined.

4.1.4 Consistency with Previous Results

The results presented here square in general with previous work performed in this area. For instance, the Rutgers study found that jobs associated with the EDA investment program cost in a range of $715 to $1,359 per job. This is consistent with most of our results, which appear to be in the range of $1,000 to $4,000 for most project types and estimation methods.

A key distinction between the results presented here and those obtained in earlier work is that our models have been estimated using counties that received EDA funding only in year four of a nine-year period, or counties which received no funding in a nine-year period at all. This is in contrast to earlier work, which did not control for the potential receipt of multiple grants. Second, we do not assume that EDA funding creates permanent jobs, but instead estimate models over successively longer time frames in order to characterize the relative permanence of the economic impact of EDA funding.

4.1.5 Urban Areas

For urban areas[17], we found that our modeling strategy does not develop statistically significant estimates for the effect of EDA funding, regardless of the estimation technique used. In fact, in most cases, our urban areas results point to the counter-intuitive result that EDA funding is correlated with lowered levels of employment growth. This is true despite the fact that we specifically examined urban areas and specified different coefficients for our urban area models. We concluded that – while county level public use data may be satisfactory for estimating the effects of EDA funding in rural areas – it does not provide a strong basis for estimating similar models in urban settings. This, most likely, is the case because the sheer size of urban economies makes it nearly impossible to detect the comparatively small influence of $250k to $1 million dollars invested by EDA. Were the public use data to be consistently available at a lower level of geographic specificity, e.g. census tract or zip code level for example, it is possible this limitation of the model could be mitigated.

Qualitative research, primary data collection and direct observation, can often be used to supplement quantitative research when data may not exist or may not be reported at a level consistent with the topic under study. These primary data elements and direct observations can be used to describe the meanings and influences the actual experiences of EDA funding sites. The main tasks are to record and understand the context of the investments made by EDA. This direct observation research can be used to uncover hidden evidence on both a factual and meaning level. First, by recording the facts of what has occurred at a particular site, and second the meaning of why those outcomes happened.

[17] See Subsection 3.2.1 (page 50) for a discussion of how MSAs are defined.

Interviews are particularly useful for surfacing the story behind an EDA investment. Given the limitations of the pure statistical methods that were found instructive for rural settings, for urban areas we augmented the study with this more qualitative approach so that we could provide actual evidence from people and places involved with many of EDA's investments over the past several years.

4.2 Range Estimates and Robustness of Our Results

The results of any regression analysis depend on the variables included in (or excluded from) the model, subject to the judgment and expertise of the econometrician. When relatively consistent results are observed even as changes to such variables are made, that model is said to be "stable" or "robust." On the other hand, when results change as variables are included or excluded from the analysis, the model lacks stability or robustness. The use of statistical methods that are "robust" is desirable because they do not force conclusions that are inconsistent with the data and they do not rely too heavily on small parts of the data.

One example of the issue of robustness arose in one of the criticisms GAO raised about the Rutgers Study. GAO pointed out that the Rutgers model excluded population as an explanatory variable. If population were included in the model, the results changed dramatically. Differing approaches to and opinions on the matter of impact estimation for economic development investments exist, some of which do and some of which do not necessarily regard population as an important variable.

Most of classical econometric analysis lays out the assumptions under which the procedures will produce good statistical results. Increasingly, however, more diagnostic and specification tests, are becoming available to researchers to aid in this process. These provide the capacity to check for failures of classical assumptions, and good econometric studies use these tests. However, some basic assumptions are difficult to check, and they are too often accepted in econometric studies without serious examination.

Fortunately, in many economic applications the analysis is more robust than the assumptions, and sensibly interpreted will provide useful results even if some assumptions fail. Further, there are often relatively simple estimation alternatives, such as those used in our study (see Appendix A), that provide some protection against failures, such as use of instrumental variables. As new developments in econometrics unfold, the menu of procedures that provide protection against failures of classical assumptions continues to expand.

As discussed already in Subsection 1.2.4, one purpose of this study was to develop robust range estimates that quantify to a high degree of certainty the empirical realities of the impacts of EDA construction grants. With that mandate, we went to great lengths to assess the stability and robustness of our estimates by creating several alternative model specifications, accounting for a myriad of economic development-related circumstances such as levels of economic distress and population density and estimating differential impacts by

project type. As explained in more detail in Appendix A, we used both OLS and 2SLS models, yielding a range of results. While there are various technical issues regarding the interpretation of OLS and 2SLS models,[18] the broad point here is that we specified various models using various explanatory variables and two different econometric approaches in order to establish robust range estimates. That is, the range estimates we presented in Figures 4.1 and 4.2 are robust, not only because we switched out multiple values across the various models specified, but also because we presented our results in terms of a range that reflects the uncertainty resulting from the differing estimates yielded by these models.

As discussed in Appendix A, reviews of previous studies have questioned the extent to which some of the variables included in traditional models have the necessary statistical properties for these techniques to function properly. One specific variable that has been identified as potentially endogenous include total payroll dollars within the county, which should increase as the number of employed individuals in the county increases. Also, EDA funding itself has been cited as potentially endogenous, with more populous counties receiving more funding. Earlier studies of the effects of EDA funding employed two-stage least squares techniques to control for the potential endogeneity of payroll, but not for the potential correlation between the number of employed individuals and EDA funding. We build on previous work by controlling for both of these potential issues in most of our regression models.

4.3 Direct Observation of Urban Area Projects

As discussed in Subsection 4.1.5, our primary analytic method did not yield statistically significant impacts on jobs for EDA construction projects in urban areas. Over the period of our analysis, however, approximately twenty-one percent of EDA's construction projects were in urban areas. Therefore, to supplement our primary analysis, we visited a number of urban area[19] projects to observe anecdotally whether or not EDA's investments in these areas have a measurable impact in terms of jobs and private investment and, if so, if that impact was on the magnitude and of the type witnessed through our primary methodology.

This direct observation effort was based on a convenience sample. Sites were selected based in part on their proximity to one another. This allowed us to maximize the number of sites visited. No attempt was made to develop an imputable sample of sites or to impute the results of the site visits in terms of a general proposition about the impacts of EDA construction grants on urban areas. Instead, our more narrow objective was simply to make direct observations of grant-funded projects in urban areas and to compare these

[18] For instance, in general, while econometric tests for endogeneity indicate that it is a valid conceptual criticism, the point estimators for EDA funding effectiveness obtained under these approaches are, for the most part highly similar. As is to be expected with 2SLS, the level of statistical significance for those variables for which instruments are used are lower than in the case of OLS.

[19] Recall that – as discussed in Subsection 3.2.1, for purposes of this study, an "urban area project" was defined as any project located inside an MSA.

observations to the results yielded by our primary method for rural areas and to the Rutgers results. In terms of EDA's use of our study to improve its construction program's performance reporting architecture, we believe this insight will be useful.

Beyond collecting these data, our goal was also to collect detailed information on the purpose, impetus and nature of the EDA investments profiled, and to observe first hand the results of the EDA investments. We also sought to observe the impacts of these grants in terms of other more qualitative indicators of community and/or economic development success. Further, we assumed that – especially given the broad definition of "urban area" applied in this instance (see footnote 19) – many of the observations obtained through this effort may also be applicable to EDA projects in more rural areas. For example, the City of Forsyth, Georgia was the location of two site visits conducted under this effort. These projects were categorized as urban for purposes of this project because Forsyth is located within the Macon, GA MSA. Forsyth, however, is not an area one would typically identify as "urban." It is a City of approximately 5 square miles with a population of about 4,000 people located within a County (Monroe County) where agriculture and agricultural businesses are the backbone of the economy. As such, the impacts of this project on its local community may be highly similar to the impacts of projects in rural areas, as defined for this study.

Finally, another purpose of this effort was to establish for EDA a protocol for conducting project site visits in the future. As discussed in more detail in Subsection 5.2, with the implementation of our primary analytic method and other performance measurement initiatives that we recommend, EDA will be in the position to potentially re-allocate resources exclusively toward data collection and validation of urban area projects. This effort establishes the methods and guidelines for conducting such data collection and validation efforts and produces a base of information on which urban area project data can be accumulated going-forward.

The remainder of this Subsection is organized as follows:

- Subsection 4.3.1 discusses our approach followed in conducting each site visit including the site selection process and site visit protocols.
- Subsection 4.3.2 presents our findings in terms of jobs and private investment and discusses observed trends in these data; and
- Subsection 4.3.3 discusses general observations made in terms of the nature of EDA's investment impacts, especially as compared to the results obtain through our primary method and EDA's previous impact analyses.

Full site visit reports are provided for all visits in Appendix E.

4.3.1 Approach

The number of site visits conducted was limited by the budget, schedule and scope of this contract. As such, this effort represents a qualitative report on a selected number of EDA urban area construction projects and does not represent a formal survey effort based on a scientific sample of project sites.

We selected sites for direct observation based on the following two factors.

- The project was within an urban area, meaning with an MSA (see Subsection 3.2.1), and
- The EDA funded portion of the project be completed between 1990 and 2007.

Working within these parameters, we developed a site selection process that allowed for a variety of different types of projects to be visited located within three of EDA's six regions.

Specific sites for observation were selected by first organizing the projects within our EDA construction project dataset by location; *i.e.*, city, county and state. We then organized projects into three different site visit trip cost levels based on their distance and accessibility by various modes of transportation from the points across the country where our site visit personnel resources were located. Finally, we generated preliminary lists of potential projects for site visit and forwarded them to each of the EDA regions within which our site visit resources were located including the Philadelphia, Atlanta and Seattle regions.

We held discussions with representatives from each of these EDA regional offices regarding the potential sites on their list. We asked the regional offices to provide input on projects that should either:

- Be removed from the list because of significant extenuating circumstances surrounding the project that would make it inappropriate for a visit (e.g. the project was cancelled or there was no construction completed for some reason), and
- Be added to the list (provided they met the criteria identified above) because they were missed in our sorting process and would be a useful addition, given the limited budget for this direct observation effort, based on their proximity to other identified projects.

From this input, we developed a draft list of sites and asked regional office representatives to provide updated contact information for each project on the list.

The final step in the site selection process was to confirm that a contact person with knowledge of the project could be identified and reached, and that a visit could be scheduled within the timeframe available for this effort. Using the contact information provided by the

EDA regional offices a final set of 24 project site visits were scheduled and conducted over the eleven week period between June 26, 2008 and August 12, 2008.

We developed a protocol for the activities required at each site visit based on the purposes identified for this effort. These activities were developed in coordination with the COTR and were aligned with EDA's established GPRA site visit protocols. A list of these activities along with a visual summary of the purpose and methods employed for the site visit effort is provided in Appendix E. We also developed a data collection form based on these activities to assist in the conduct of each site visit. The data collection form was designed to ensure that the results of each activity were recorded in a way that could ultimately be reported on. This form is included as Appendix F to this report. Finally, we developed a template for a site visit report. Each site visit report includes details on the background of the project, contact information, the EDA work performed, funding information and impact results collected. The completed site visit reports are included as Appendix G.

4.3.2 Findings

Figure 4.3 (next page) presents the jobs and private investment figures collected for each site visit as well as basic information on the type, location and size of each project investigated. As it shows, we found that – for the projects evaluated – EDA's investments in urban areas do appear to have a positive impact in terms of jobs and private investment on the communities in which they occur.

Moreover, we found that the projects evaluated exhibited a similar pattern of jobs impacts when compared with the results of our primary methodology for non-urban areas. Figure 4.4 (page 64) summarizes the jobs results provided in Figure 4.3 in total and by project type. These jobs impacts are expressed in terms of jobs created per $10,000 of EDA investment.[20] The figure demonstrates that, as with the results obtained through our primary method, jobs impacts vary by project type. Further, our urban area jobs impact results are generally on a magnitude that is consistent with our rural area results, with the average jobs generated per $10,000 in EDA funding for urban area projects being 2.2. This falls within the range of estimates generated by our primary methodology of 2.2 to 5 jobs per $10,000 in EDA funding.

[20] The jobs impacts for rural areas developed through our regression methodology are actually expressed in terms of the marginal increase in jobs resulting from an additional $10,000 EDA investment. This is slightly different than the average jobs resulting from each $10,000 EDA investment, which is how the urban results are presented.

Report #	Project Name	Location	Project Type	EDA Funding ($M)	Total Funding ($M)	Jobs[1]	Private Investment ($M)
1	ETC - Eastern Facility	Baltimore, MD	Business Incubator	$1.1	$2.4	178	$4.9
2	ETC - Canton Facility	Baltimore, MD	Business Incubator	$1.0	$2.0	299	$0.8
3	Swans Market	Oakland, CA	Commercial Structure	$1.7	$2.4	85	$6.9
4	Fruitvale Transit Village	Oakland, CA	Road/Other Transportation	$1.4	$3.2	400	$32.0
5[2]	PAID - UPENN/CHOP	Philadelphia, PA	Community Infrastructure	$2.0	$4.7	3,200	$1.8
6[3]	University Technology Park (UTP)	Chester, PA	Commercial Structure	$2.0	$5.7	85	$6.3
7[4]	Chester Riverwalk	Chester, PA	Industrial Park Infrastructure	$2.5	$3.1	1,500	$75.0
8	Brownfield Redevelopment	Lancaster, PA	Community Infrastructure	$1.2	$2.3	47	$2.6
9	Dallmeyer Building	York, PA	Community Infrastructure	$1.0	$5.0	119	$1.5
10	Murata Business Park	Carlisle, PA	Business Incubator	$0.7	$1.4	64	UNK
11	Fruitvale Shopping Center	Oakland, CA	Industrial Park Infrastructure	$1.1	$1.8	UNK	UNK
12	PAID - Navy Yard League Isl Blvd	Philadelphia, PA	Road/Other Transportation	$3.3	$5.3	415	$24.4
13	PAID - Navy Yard Bldg Renov	Philadelphia, PA	Commercial Structure	$0.2	$0.3	38	UNK
14	PAID - Navy Yark Demo & Renov	Philadelphia, PA	Commercial Structure	$3.5	$7.2	100	UNK
15	Monroe County Industrial Park	Forsyth, GA	Industrial Park Infrastructure	$0.2	$0.5	161	$6.8
16	Rumble Road Industrial Park	Forsyth, GA	Industrial park infrastructure	$1.0	$2.0	69	$4.0
17	Technology Enterprise Park	Atlanta, GA	Industrial Park Infrastructure	$1.1	$2.2	250	$22.1
18	Waterfront Technology Center	Camden, NJ	Commercial Structure	$1.0	$1.5	391	$15.0
19	Concord Convention Center	Concord, NC	Industrial Park Infrastructure	$1.0	$2.0	317	$65.0
20	Water Plant	Rock Hill, SC	Community Infrastructure	$1.5	$7.3	1,040	UNK
21	North Charleston Convention Center	N.Charleston, SC	Commercial Structure	$2.0	$27.1	180	$36.0
22	Hotel Industry Training Center	New York, NY	Commercial Structure	$1.6	$3.3	6	$4.5
23	Appollo Theater I	New York, NY	Commercial Structure	$2.0	$6.0	12	$30.0
24	Appollo Theater II	New York, NY	Commercial Structure	$2.5	$4.0	16	$37.5

[1]Jobs figures for business incubators include those associated with employees of current clients and incubator staff.

[2] UPENN/CHOP project jobs figures are estimates. Though EDA portion of project has been complete for several years and both UPENN and CHOP have portions of buildings currently occupied and operational, there are remaining construction phases that are not yet complete. These estimates include current jobs and jobs associated with approved construction phases where approved staffing plans are in place. Private investment figures represent construction costs.

[3]The UTP building has not been accessed by the county yet due to its location in the Keystone Opportunity Zone (KOZ.) The private investment figure represents the value UTP maintains for the building in its asset ledger.

[4]The Chester Riverwalk building has not been assesed by the county due to its location in the KOZ. Th private investment figure represents an estimate provided by the owner of the property based on rental rates and comparable values for other Class A office space.

Figure 4.3 - Overview of Site Visit Jobs and Private Investment Results

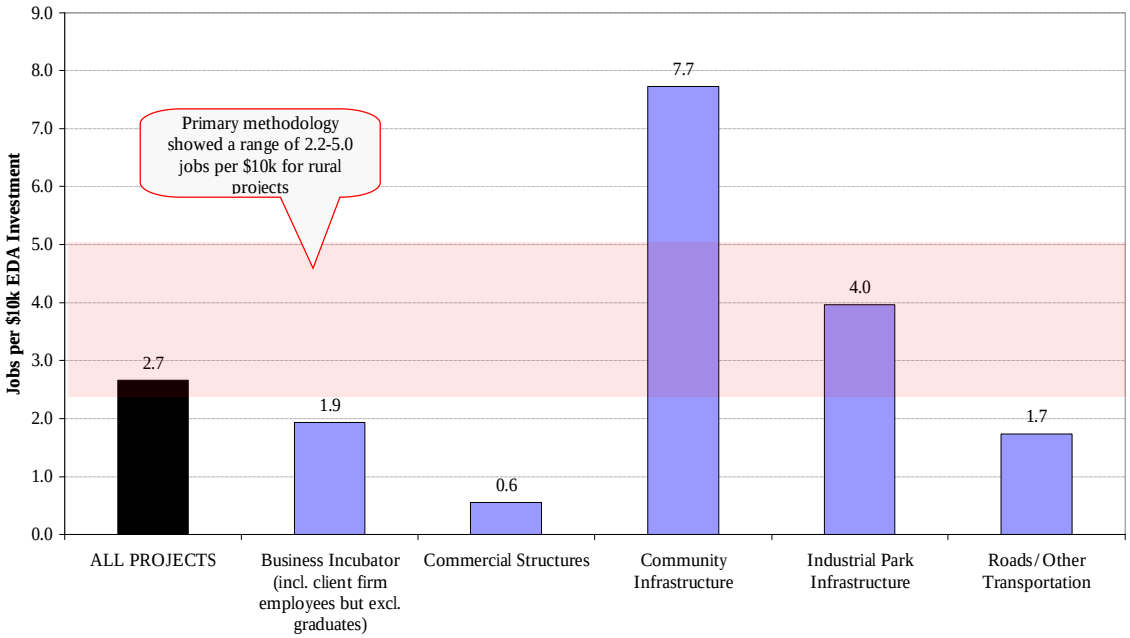


Figure 4.4 – Urban Area Jobs Impacts Total and by Project Type

Dividing the total number of jobs within our convenience sample of urban projects – 758 – by the total EDA funding involved in theses projects - $35.5M - yields an observed cost per job figure of $3,777 per job. This figure is also generally in line with our rural area results, which ranged from $2,001 to $4,611.

Recall that – as represented in Table 4.2 – our primary methodology showed that in urban areas business incubator projects have a dramatically greater job creation impact than all other project types. Figure 4.4 appears to show a different result within our anecdotal sample. However, Figure 4.4 includes only business incubator jobs related to the operation of the facility itself, excluding the jobs of the business incubator clients and graduates. Our regression methodology detects these impacts because it detects changes in county level jobs that are statistically attributable to EDA investments. The number of jobs related to graduate firms within the same county as the incubator itself are significant. National business incubator industry statistics indicate that approximately eighty four percent of business incubator graduate firms take up business within twenty miles of their incubator facility[21].

Figure 4.5 (next page) compares the jobs impacts per $10,000 EDA investment found through this effort for urban area projects to those found through our regression methodology for rural projects, isolating business incubator projects from all other projects combined. Further, this figure breaks out the three levels of business incubator-related jobs

[21] University of Michigan, NBIA, Ohio University and Southern Technology Council, Business Incubation Works. Athens, Ohio: National Business Incubation Association, 1997.

impacts – incubator staff, incubator staff plus client and incubator staff plus client plus graduate firm.

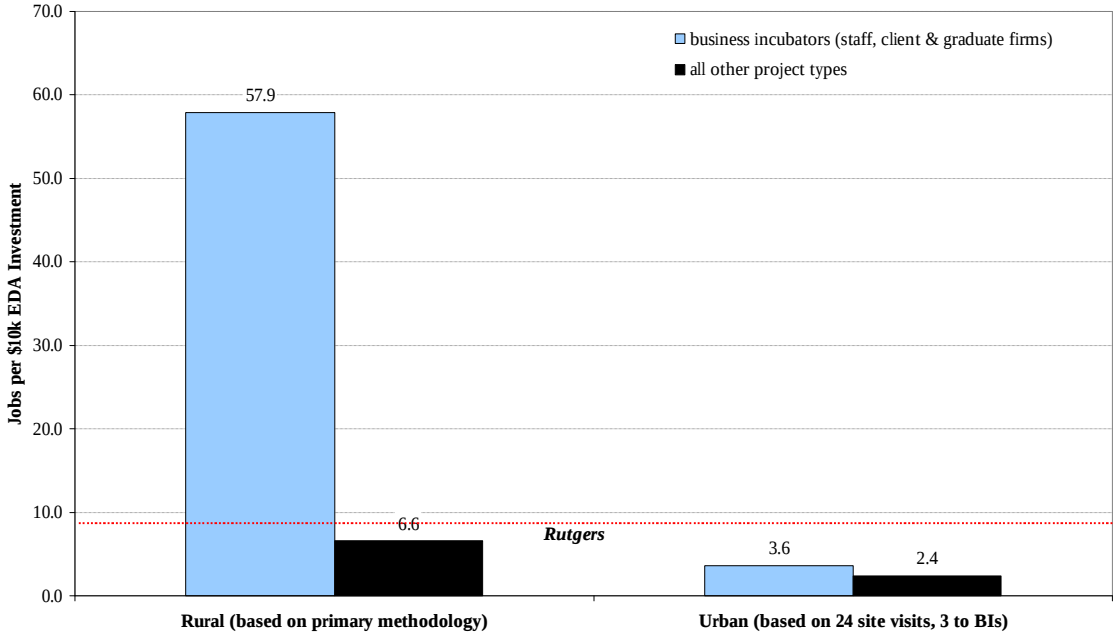


Figure 4.5 – Comparison of Urban and Rural Results by Project Type

Figure 4.5 indicates that, as with rural areas, in urban areas there is a substantially greater number of jobs generated by business incubator projects compared to other project type in urban areas, when client and graduate firm jobs are considered. While the difference is not as dramatic, it is apparent and substantial. While our small sample of direct observations provides no basis for imputing results, we again see indicative data that shows comparability with the results of our primary methodology.

Figure 4.6 (next page) presents the three levels of business incubator-related jobs impacts for those incubators visited in tabular form and more clearly illustrates the job creation power of business incubators. Capturing the jobs created by business incubator graduate firms can be indicative of substantive impacts to the communities in which these incubators are developed. This is because, as noted above, industry statistics indicate that approximately eighty-four percent of business incubator graduates take up business within twenty miles of their incubator facility.

Business Incubator Site Visited	Jobs Impacts				% Δ when graduates included
	Incubator Staff	*Client Firms*	*Graduate Firms*	*Total Jobs Impact*	
Combined Results	7	534	461	1,002	85.2%
ETC Canton	3	296	385	684	128.8%
ETC JHU Eastern	2	176	50	228	28.1%
Murata Business Park	2	62	26	90	40.6%

Figure 4.6 – Detail of Business Incubator Jobs Impacts

Finally, Figure 4.7 compares our observed urban area results in terms of private investment to those reported by the Rutgers Study. As demonstrated, our results are generally consistent with those of Rutgers, with our results showing $8.6 million in private investment generated per $1 million in EDA funding to Rutgers' $10.1 million per $1 million in EDA funding.

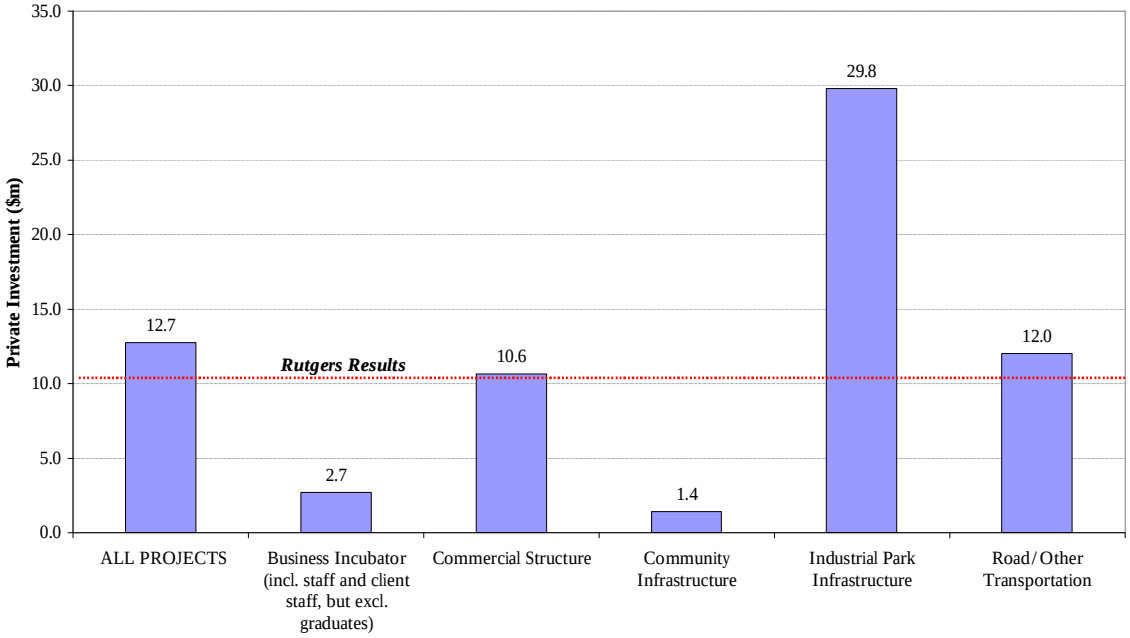


Figure 4.7 – Urban Area Private Investment Results as Compared to Rutgers

4.3.3 Analysis

The site visits performed under this effort yielded a number of general observations about the nature of EDA's impacts and how they relate to the agency's mission and its impact reporting practices. As discussed in Subsection 2, EDA's mission is "[t]o lead the federal economic development agenda by promoting innovation and competitiveness, preparing American regions for growth and success in the worldwide economy." The

measures currently used by the agency to gauge the performance of its construction grants in meeting this mission are jobs created and private investment. Broadly, the observations made during the site visits support the notion that there is an observable lack of coordination between EDA's mission, its construction grant outcomes and the measurement of those outcomes. Specifically we observed that:

- The economic development benefits of EDA's construction projects are frequently not fully reflected by jobs and private investment figures.
- EDA staff appear to employ tacit knowledge in selecting projects to serve EDA's mission and this practice is sometimes in conflict with the measures upon which a project's performance is gauged.
- EDA's involvement in a project frequently serves as the catalyst for further public and private investment in a particular project or other related projects within the same community.

Each of these observations is discussed in further detail in the following subsections

4.3.3.1 Fully Capturing EDA Benefits

The economic development benefits of EDA's construction projects are frequently not fully reflected by jobs and private investment figures.

Regardless of their direct impacts in terms of jobs or private investment, some projects provide other observable, if difficult to measure, benefits to the communities in which they occur. This is the case both for projects with impressive reported jobs and private investment impacts, and sometimes also for projects that do not yield large reported impacts. In some of these cases, these apparently "unsuccessful" projects may carry significant benefits if a different measure is used to evaluate them.

For instance, some beneficial impacts of EDA investments might be reflected in declining crime rates, increases in wage rates, increases in property values, increases in revenue to local governments in terms of property taxes, or indirect impacts in terms of increases in local economies through tourism, *etc.* Interestingly, the method we used to estimate jobs impacts could also be used to capture these and other types of impacts for which public use data exists.

This report takes no position on the value of these other, unmeasured or unmeasureable benefits in terms of assessing EDA performance. However, through our direct observation work, we were able to discern some of these impacts. Because our method in connection with other sources of public use data may provide a means to measure these other benefits, this subsection discusses them.

For instance, two EDA projects for which we performed site visits were directed at the renovation of the Apollo Theater in New York City. These projects demonstrate successes not fully reflected in terms of jobs. These benefits included the development of a

recreational destination within a distressed neighborhood and the revitalization of that neighborhood in terms of income from visitors making purchases at other local establishments. Prior to the series of projects undertaken by the Apollo beginning in 1999 (two of which were funded by EDA for a total of $4.5 million), the Apollo suffered a number of fire code violations, below code in terms of handicapped accessibility and was unable to attract talent due to degraded facilities. In short, the theater was close to closing down and possibly being razed. In part through EDA funding, the code violations and other issues have been addressed and other improvements have allowed the Apollo to continue to operate.

It is likely that – but for EDA grants – a wide variety of private investment, the Apollo would have closed its doors. This leads to the question of whether EDA's contribution to the survival of the theater has contributed to the development of the local economy. EDA's $4.5 million investment – together with many other sources of funding – have produced only about 28 jobs. This translates into only .6 jobs per $10,000 of EDA investment, a figure well below the average observed using our primary methodology (about 2.7 jobs per $10,000). However, the argument that the Apollo provides critical, if intangible benefits to the community of Harlem is bolstered by the attraction of that private investment and philanthropy required to keep it in operation. Specifically, more than $72 million in total improvements have been made to the theater in the last ten years. This level of interest in the theater could be construed as an indication of its intangible or currently unmeasured value to the community. Moreover, according to the representatives we met with, EDA's investment was critical to obtaining these other investments by legitimizing and backing the struggling entity's efforts to revitalize itself. In other words, EDA's funding provided a credible basis for other entities with an interest in the Apollo's local community to step forward and support the theater.

The question, in the case of the Apollo is whether measurement of other types of impacts would help to assess the value of these other perceived benefits of the theater's existence. For instance, can a correlation be established between the existence of EDA funding for so called "cultural anchors" in the community and crime rates. Although the data and methods for exploration of this issue do not yet exist, the approach we took in correlating jobs to EDA investments at the county level could lead to other measures that capture some of these alternative impacts.

Other projects, such as Swans Market in Oakland, CA or the Chester Riverwalk in Chester, PA represent examples where significant observable community development impacts were achieved in addition to more traditional successes in terms of jobs and private investment. Full reports on each site visit are provided in Appendix G.

In the case of Swan's Market, in addition to creating 85 jobs and generating $6.9M in private investment, the renovation of this historic downtown Oakland Market area resulted in the restoration of a major shopping destination present in the East Bay for over sixty years. The existing structure, built in stages from 1917 through 1940, encompasses an entire city block in the Old Oakland neighborhood and remains on the National Register of

Historic Places. The complex provides a vibrant home to the Museum of Children's Art, several restaurants, nonprofit organizations, offices, and the historic Housewives Market, which dates back to the early 20th century.

The Chester Riverwalk turned the riverfront area of Chester, PA, a long-standing high-crime and former industrial area filled with abandoned buildings, into the home of several national leader firms, luxury condominiums, and a tourism destination spot through the development of a stadium and associated retail. The Wharf at Rivertown, the site of the major renovation project in which EDA was involved, provides Class A office space to a number of companies generating approximately 1,500 jobs, but even more importantly, it became the anchor for the two other major development projects, which are all part of a decades long effort to move Chester's riverfront from former industrial town to a tourist destination. Though the 1,500 jobs and $75M in private investment are very impressive and desirable outcomes in terms of EDA's traditional measures, they do not begin to tell the story of the outcomes associated with EDA's investment.

4.3.3.2 Tacit Knowledge

EDA staff employ tacit knowledge in selecting projects to serve EDA's mission and this practice is sometimes in conflict with the measures upon which the project's performance is gauged.

Building on the first observation regarding the existence of broader measures of EDA's successes, we observed that EDA's staff appears to be aware of EDA's potential for impact in these other areas and that knowledge asserts itself through many of the investment decisions the agency makes. The tacit knowledge of EDA staff is evident in the agency's pursuit of projects that may or may not appear to hold significant potential in terms of jobs and/or private investment, but which are nonetheless subjectively adjudged worthwhile in terms of other local economic development goals, and more broadly, the agency's mission. Our interviews with EDA regional leadership revealed that, during the application phase – for example – some projects are more speculative in terms of the number of jobs that may be generated, but appear to simply "make sense" in the context of local economic development efforts or with respect to the agency's desire to foster innovation and competitiveness or both.

During our site visits, we saw examples of how this tacit knowledge results in unmeasured benefits. For instance, the NYC Hotel Association's Training Center project in Queens is an example of this observation. The training center was developed to provide targeted training to hotel and food employees. It has yielded only six full time jobs and was not – at the point of application – projected to create significantly more jobs than that. Also, because the center is relatively small and formerly used as storage space in the adjacent NYC Hotel Association's adjacent medical center, it did not yield very large private investment figures (see Figure 4.3 in Subsection 4.3.2).

Despite this, strong arguments exist that this investment has well served EDA's mission. Low wage grade members of local unions are eligible for participation in the training center's classes. The curriculum is geared toward helping low wage workers increase their skills to take higher wage jobs. It is reasonable to assume that many of these low wage union workers live in the New York City areas most distressed neighborhoods. As such, some of the impacts of these grants are reaching EDA's target communities through the nature of the project itself. This is not something that EDA can measure, but it points back to the value of EDA employee's tacit knowledge in identifying projects that will well serve EDA's mission even when the expected yield in terms of jobs and private investment fail to highlight this potential.

Similarly, the development of the University Technology Park in Chester, PA did not, at least initially, generate a great number of jobs, but it provided the only dedicated office space in the entire City. Chester had been trying for decades to capitalize on its proximity to Widener University and the Crozer-Keystone Health System to promote more technology based employment in Chester. But these types of firms, even when identified and fostered by these two existing entities, had literally no place to locate. With an EDA investment, office space was built and is now occupied by 14 businesses employing approximately 85 people. More importantly, however, Chester has furthered its efforts towards moving away from an manufacturing based economy to a more technology based economy.

In another example, the Dallmeyer Building Brownfields renovation project in York, PA was part of the Crispus Attucks Association's 10-year Boundary Avenue Project to revitalize the Southern Gateway to York City. Crispus Attucks purchased the building in 1997 with a vision to create a new urban environment, one where vacant buildings and lots are utilized to revitalize the city with intensive infill development. Located in a dilapidated, high-density mixed use neighborhood, the five level building has become the anchor of the redevelopment vision. The completed Technology Centre is a flexible use space, and can have as many as eight offices. The project is a candidate to certify Silver in the US Green Building Council's LEED System. According to community representatives, the Tech Centre provides a new definition and identity for the Boundary Avenue neighborhood, encouraging neighbors to restore, revitalize, and move their homes and businesses to the budding district. Though the project's 119 jobs created and $1.5M in private investment are significant, the full impact to the community is not reflected in these numbers.

EDA might consider ways in which its own tacit knowledge can be institutionalized in terms of a broader set of measures. In some cases, the traditional measures of jobs and private investment can be at odds with EDA's mission. A hypothetical demonstrates this. If EDA's only goal were to maximize job and private investment impacts, a good strategy would be to make grants only in fringe communities that were least distressed communities under EDA's eligibility criteria. It is likely that impacts will be greater in healthier communities. However, such an approach, while making for higher reported jobs and private investment, would contradict EDA's mission of providing assistance to the most needy communities. Per that mission, EDA often makes grants that are not expected to have relatively high jobs and private investment impacts, because they understand the harder

to measures impacts that these projects will have. We saw this phenomenon at work in the context of the projects discussed above.

EDA may be able to use our approach to develop other measures that will be better capture these other benefits and test the validity of the tacit propositions that sometimes drive EDA investment decisions. This could include measures based on crime rate statistics, property tax receipts, and others.

4.3.3.3 EDA Investments as a Catalyst

EDA frequently serves as the catalyst for attracting other investors to larger scale economic development projects.

EDA is frequently involved in a relatively small way in terms of investment costs in very large projects. Often, it is EDA's initial investment that facilitates the planning, and/or negotiations required to close large development deals. In this way, EDA frequently serves the roll of being the subsidizer of "sunk costs" that might deter potential investors from a particular location for a larger-scale economic development project. For example, though the cost to clear a site, demolish a few existing dilapidated buildings, or move a sewer line to a more suitable point in a site is relatively low compared to the construction or major renovation of a large commercial structure, a potential investor may choose to put their money elsewhere if such site improvements are not already taken care of. These types of initial investments also demonstrate to potential investors the level of commitment on the part of the local community to move forward with major development plans. These activities allow potential public and private investors to see the potential of a given location for a construction endeavor and to see the savvy and dedication of a community to pursue such endeavors.

We observed a number of projects that demonstrate this point. In Philadelphia, for example, EDA funded site clearing and sewer line relocation on an inner city site that was targeted for development by two adjacently located health systems - the University of Pennsylvania's Health System (UPenn) and the Children's Hospital of Philadelphia (CHOP). Though these two entities were very interested in developing this site because of its strategic location relative to their existing facilities, they were focused on raising the significant funds necessary, largely through private sources, for their research buildings, cancer treatment facilities and laboratories. The Philadelphia Authority for Industrial Development (PAID), which owned the site, was focused on identifying the best use for the site and attracting as many potential users for the site as possible in order to be able to evaluate their options. EDA's involvement in the preparation of the site was pivotal in furthering the ability of UPENN, CHOP and PAID to visualize their common aspirations for the site and to be able to parcel it in a way that worked best for all parties. Clearly, in the mix of a nearly $2 billion construction effort, the cost of the work done by EDA was negligible to both of the two primary investment parties, but having a site ready for development allowed them to more easily market the project to the parties with whom they needed to partner in order to get the required health facilities-related funding.

Similarly, as part of the reuse plan for Philadelphia's Navy Yard area, PAID used EDA grant funding to demolish a number of buildings, clear large areas of land to ready it for marketing to private investors and build a road. Without this relatively low cost effort, PAID would have not have been able to market these sites as easily to the large number of private companies that have now located within the Navy Yard. Directly adjacent to the cleared/improved space, for example, PAID was able to lease five buildings to one company employing approximately 750 people. Though that company had to renovate many of the buildings themselves, they appreciated the space that had been created by the EDA funded work, allowing them to create common areas connecting their buildings. PAID representatives expressed that had this area been littered with the many dilapidated buildings and other unusable structures that occupied the space between many of the usable buildings before the EDA work was done, it would have been very difficult to convince any tenant to take all of the space together.

Section 5 Implementation and Next Steps

This final section of our report addresses implementation issues, next steps and opportunities for EDA related to our study and tool. Specifically, this section discusses the following issues.

- Subsection 5.1 discusses the use and maintenance of the tool, as well as some of capabilities it gives to EDA.
- Subsection 5.2 discusses the opportunities and next steps for EDA from an enterprise management perspective.

5.1 Use and Maintenance of the Tool

We have implemented the impact estimation tool within EDA's current performance reporting architecture. Specifically:

- We have installed the tool on EDA's headquarters server,
- EDA has the requisite licenses to use it,
- We have provided instruction on using the tool to EDA program management personnel, and
- We have provided a Quick Start user guide to assist EDA in operating the tool (see Appendix D, which provides a Quick Start user guide for operating the tool).

Figure 5.1 (next page) shows the role of our tool in EDA's current performance reporting architecture is the generation of multipliers to update EDA's current Budget Targeting Tool and the Performance Targeting Tool.[22] Broadly speaking, there are two sources of data used by those tools to generate EDA's GPRA reports and targets. As discussed in Subsection 2.4, the first data source is the project level budget and technical

[22] Compare to Figure 2.1, which shows EDA's performance reporting architecture prior to implementation of the tool.

characteristic data, as logged into OPCS by field personnel during the grant application and approval process and throughout the life of the project. The second, as discussed in Subsection 3.2, is the public use data utilized by our tool, namely BLS jobs figures. As further discussed in that subsection, our tool utilizes both EDA's program data and the public use data to econometrically determine the average impact of EDA grants, differentiated by both project type and recipient type.

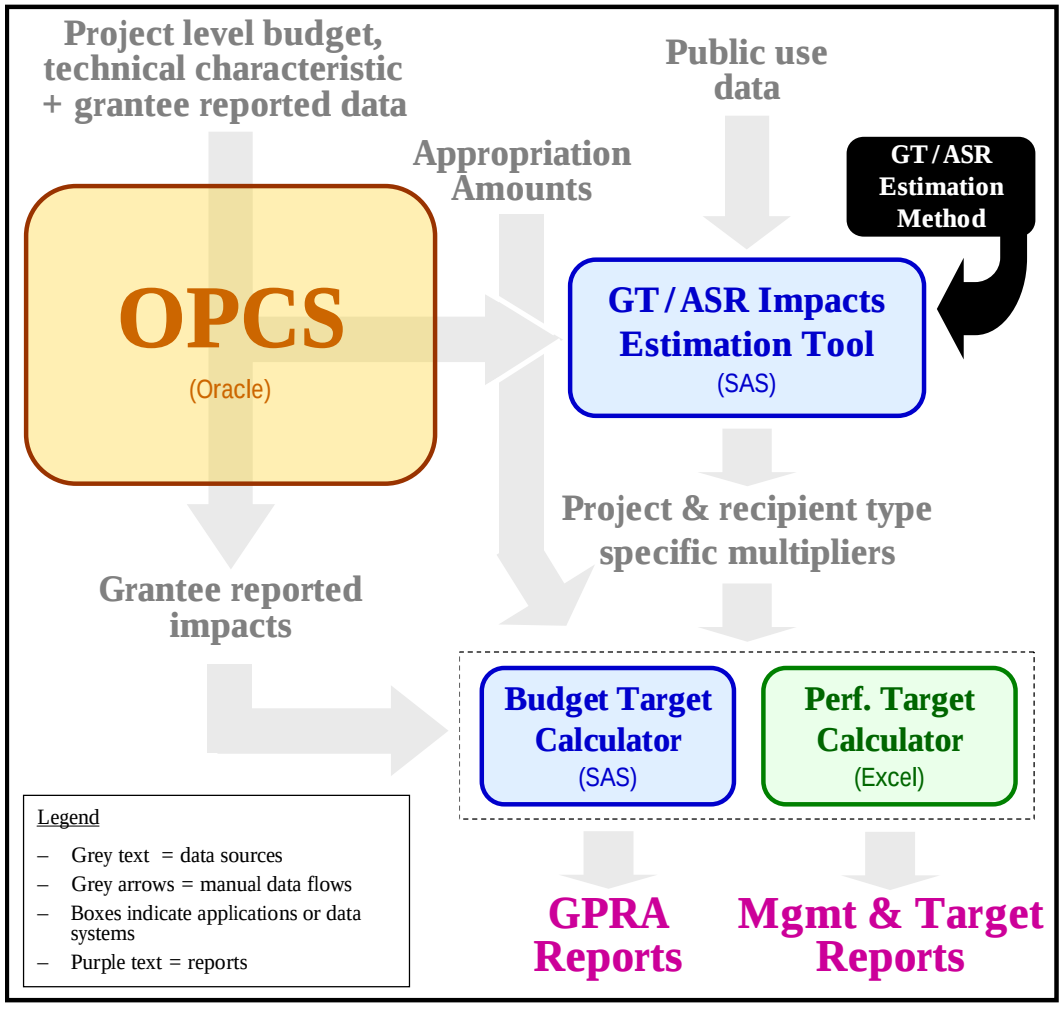


Figure 5.1 – EDA Data Process Related to Construction Program Impacts Reporting and Targets

The implementation of our tool implies several next steps for EDA, and offers EDA some opportunities to refine its current performance reporting architecture and related processes. The following subsections discuss these next steps and opportunities. Appendix D provides a QuickStart Guide for using the estimation tool.

5.1.1 Refreshes and Updates

The estimation tool we delivered to EDA can be refreshed every few years, at a low cost relative to the cost and time involved in either routinely conducting direct observation or reforming the processes involved in collecting and validating grantee self-reported data. Such updates would involve refreshing the public use and program data in the SAS™ model. The timing of updates and refreshes would depend on a number of factors, including the availability of data, the rate at which a given model's accuracy and usefulness will degrade over time and EDA's resources. We made no attempt to balance these considerations, but instead merely recommend that EDA do so, and based on them establish an optimal cycle of refreshes and updates. The SAS™ programming capabilities required to perform these activities would be minimal.

To support updates of the program data in OPCS, EDA will need to make minor modifications to the structure of the OPCS data. Recall that – as discussed in Subsection 3.2 – we performed a coding operation to identify projects by type based on text fields in the OPCS data. We also used an index utilized by ARC to classify recipient counties based on their economic conditions, as determined by a specific formula that draws on public use data. That data is essential to the differentiated project type impacts we developed. Rather than re-engaging a similar coding effort each time the tool's data is updated, EDA could consider instituting the process and OPCS modifications necessary to have field personnel designate the project type categorization within OPCS as project applications are processed.

EDA also has the opportunity to automate part of this process by automating the retrieval of both the public use and OPCS data by the SAS™ estimation tool. So doing would further reduce the program management FTE required to generate performance reports. EDA could run automated ETL processes once annually to cost-effectively update both data sets.

Finally, data refreshes may require further econometric analysis and redefinition of the model's equations, particularly after multiple years of additional data have been added. This, however, should be a relatively low cost exercise compared to this initial undertaking because the necessary data framework already exist and multiple estimation approaches have been tried and documented in this report.

5.1.2 Determination of Reportable Figures

In order to use our tool within its current performance reporting architecture, EDA will have to address one analytical issue. As presented in Section 4, this study resulted in range estimates of both jobs per $10,000 of EDA investment and EDA investment cost per job. As discussed in Subsection 1.2.4, this reflects an underlying philosophy of this study. Our commission was to present highly defensible ranges of estimates that expressed a robust exploration of how different theories of the appropriate explanatory variables resulted in different estimates. As also discussed in Subsection 1.2.4, this approach deferred to EDA judgments concerning the multipliers it should incorporate into its GPRA forecasting and

reporting tools and therefore – in effect – the exact jobs figures it will manage to and report to OMB.

5.1.3 Use of Project Type Multipliers

As our results (depicted in Figures 4.1 and 4.2 in Subsection 4.1, and as discussed in depth in Appendix A) show, different project types have quite different impact patterns. Our tool has given EDA the capability to forecast and report impacts by project type. To take advantage of this capability, EDA will need to update its performance target and budget calculators to calculate impacts by project type. This should be a fairly simple and straightforward exercise.

EDA may also use this occasion to simply consolidate the estimation tool and the two target calculators into a single tool. As Figure 5.1 shows, one of those calculators – the Budget Target Calculator – is already a SAS™ application. At a relatively low cost, EDA could incorporate the functions of these calculator tools into the estimation tool we provided them, eliminating several manual processes, including the manual loading of multipliers into the tool and – in the case of the Performance Target Calculator – eliminate the time consuming manual steps required to update it. For comparison to the as-is, reflected in Figure 5.1, Figure 5.2 shows an integrated SAS™ estimation and reporting tool.

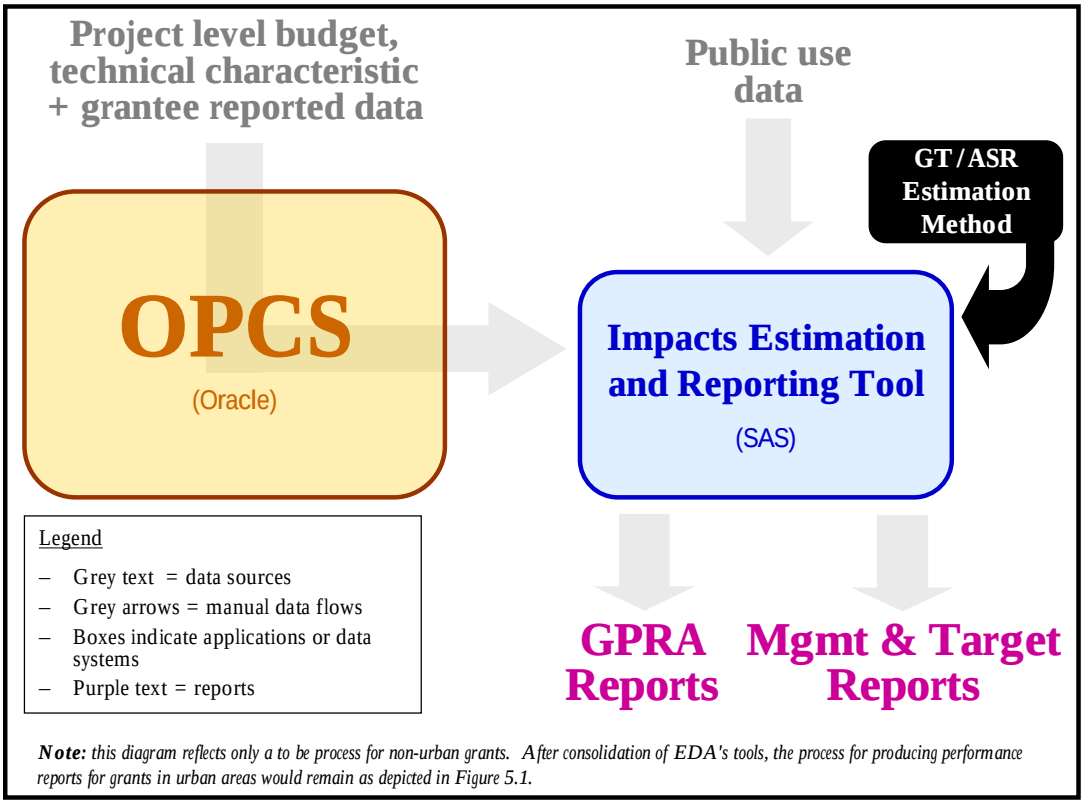


Figure 5.2 – Streamlined EDA Performance Reporting Architecture

5.1.4 Use of Additional Measures

We have established an estimation method that can be fairly easily replicated in terms of other public use data sets. The value of developing additional impact measures, even if those measures are not reported to external stakeholders, would lie in creating a clearer picture of the overall impact of EDA activities from a community development perspective. Monitoring and analyzing such data over time likely would lead to new insights about targeting investments both in terms of recipient characteristics and project types.

For example, EDA might utilize any of the following data sources to develop additional management measures.

- Poverty rates, U.S. Census, American Community Survey,
- Personal income, U.S. Census, American Community Survey,
- Transfer payments, U.S. Census, American Community Survey,
- Property tax values, U.S. Census, American Community Survey,
- Medium home loan amounts, Home Mortgage Disclosure Act (HMDA) data,
- Number of jobs with benefits, BLS National Compensation Survey, and
- Achievement of living wage in low income areas, BLS National Compensation Survey.

EDA could also develop a suite of output measures, such as the following.

- The ratio of funding to distressed communities and all funding
- The ratio of jobs created in distressed communities and all jobs created

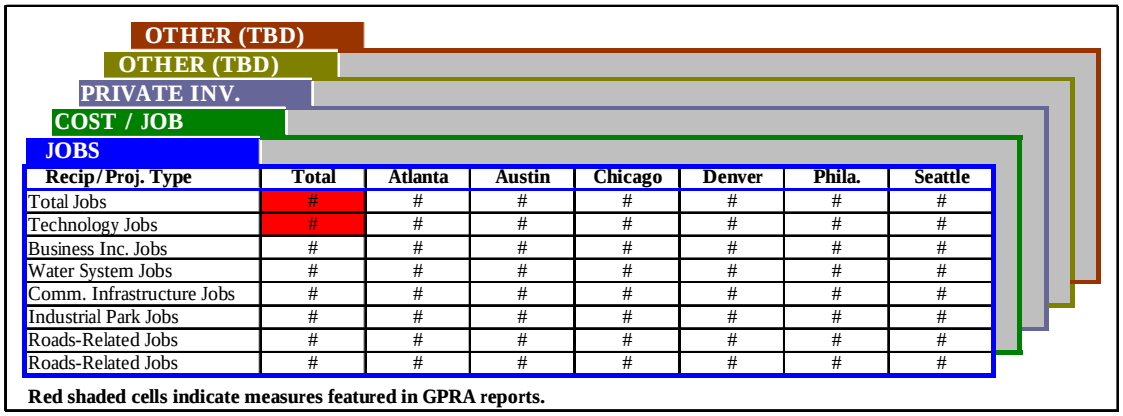
Succinct output measures like these would help EDA to sort through one of the most compelling issues faced by Federal, economic development oriented, grant- and loan-making programs. To whit, their mission is to spur economic development in the nation's most distressed communities, but external stakeholders emphasize measures of performance in terms of jobs and private investment. This presents a quandary for EDA because grants made to the least needy communities often will yield the most jobs and private investment. Outputs measures such as those above would help EDA to make more rational determinations about the optimal levels of grant funding to target to different types of communities.

Using our tool and approach, EDA could also consider developing a proxy measure for private investment. This study did not examine that issue, in part because some degree of consensus would need to be developed concerning the issues of whether a suitable proxy measure for private investment exists in the public use data, and – if so – what the best measure would be.

During the course of this study, we examined various public use data sets that could be considered as a proxy measure for private investment. One such data set is Census' capital expenditures figures. Another publicly available data source that could serve as the basis for a private investment measure is Census' new establishments figures. Implementing a private investment measure using our tool will require EDA and external stakeholders to come to clear agreement on an appropriate proxy measure within the range of available public use data sets. This issue did not arise in the context of our jobs impacts related work documented in this report. If that consensus can be achieved, using our method and tool to estimate private investment impacts could be a useful exercise for EDA.

5.1.5 Reporting Opportunities

EDA's current reporting tools generate nationwide, average impacts, regardless of project type and recipient type. Our tool generates impacts differentiated in terms of project types and utilizes recipient type in terms of the ARC index to estimate impacts. As such, the integration of EDA's reporting tools with our impacts estimation tool would carry the further benefit of allowing EDA to estimate and – where appropriate – report impacts differentiated by project type. This is the case not only in terms of outcome measures (*i.e.*, impacts, the explicit purpose of this study) but also in terms of output measures.[23] Figure 5.3 provides a notional overview of how EDA might structure internal management and GPRA reports using our tool.



Recip/Proj. Type	Total	Atlanta	Austin	Chicago	Denver	Phila.	Seattle
Total Jobs	#	#	#	#	#	#	#
Technology Jobs	#	#	#	#	#	#	#
Business Inc. Jobs	#	#	#	#	#	#	#
Water System Jobs	#	#	#	#	#	#	#
Comm. Infrastructure Jobs	#	#	#	#	#	#	#
Industrial Park Jobs	#	#	#	#	#	#	#
Roads-Related Jobs	#	#	#	#	#	#	#
Roads-Related Jobs	#	#	#	#	#	#	#

Red shaded cells indicate measures featured in GPRA reports.

Figure 5.3 – Notional Overview of EDA Impact Measures Report

[23] For purposes of this discussion, the terms output and outcomes refer to the accepted government performance management terms. Specifically, "output" refers to the products yielded by an organization's processes. In the case of EDA's construction program, the relevant output is investments in projects. The term "outcomes" refers to the impacts of those outputs on EDA's constituency, namely the jobs and private investments that correlate to EDA's outputs. It is important to differentiate this usage of the term "outcomes" from another usage in the realm of econometrics, where the term refers to dependent variables in an estimation equation.

As Figure 5.3 shows, using our tool, EDA can differentiate impact results specific to regions (represented in the columns) and specific to project types and recipient types (represented in the rows) for jobs and other measures that EDA might implement (as represented by the multiple tabs).

5.1.6 Managing Strategy

The robustness of the internal management reports yielded by our tool point to another advantage it confers on EDA. The ability to measure impacts in terms of different project types gives EDA a tie between its impact measures and its strategy. For instance, in the early part of this decade, EDA put a greater strategic emphasis on technology related investments. Our tool gives EDA a way to analyze that shift in strategy from two perspectives. First, EDA can utilize the output measures available through our tool to analyze how well – from an enterprise management perspective – that change in strategy was affected down through its organization. Specifically, EDA can assess whether the change in strategy actually resulted in a greater share of its grants being made to entrepreneurship - related projects. Second, EDA can then address the question of whether that greater share of investments in entrepreneurship, in the form of business incubators, made a difference in terms of EDA's impacts on recipient communities.[24]

5.1.7 Exploration of Opportunities for Collaboration With Other Grant-Making Programs

As we discovered through our discussions with other Federal grant-making programs, EDA construction projects are frequently completed through coordination with ARC, SBA, USDA, EPA and other Federal agencies. EDA's program data, in fact, reveals that approximately ten percent of EDA's construction grants over the time period of our analysis were co-funded to some extent by other Federal agencies. The reliance of our impact assessment methodology on public use data and it's ability to distinguish impacts by project types creates an opportunity for EDA to explore the possibility of working more closely with their Federal funding partners in terms of determining the impacts of their jointly funded projects.

5.2 Enterprise Management Opportunities

Our tool and approach will help EDA to estimate the impacts of its construction investments on jobs in rural areas, defined as areas not included in an MSA. As already discussed, from an enterprise management perspective, our tool – in an of itself – makes EDA's performance reporting architecture more efficient because it obviates the need to

[24] It may take a few more years before EDA can assess this second question with reference to the changes in strategy introduced earlier this decade. This is because the projects funded pursuant to that strategy, for the most part, have yet to complete construction. It will be at least several more years before they are five years past award and the relevant public use data is available.

undertake timely and heretofore ineffective collection and validation of self-reported grantee data, for grantees in rural areas.

Our tool, however, does not address all of EDA's needs with respect to measurement of impacts related to the construction program. For one thing, our tool does not provide impacts in urban areas. For another thing, it does not provide impacts related to the other externally reported measure, private investment leveraged.

Our tool, nonetheless, enables EDA to significantly improve its construction program performance reporting architecture in a way that will address these issues. The potential role of our tool in an improved performance measurement architecture for the construction program is, in fact, one of its primary benefits.

This subsection lays out an enterprise management vision for EDA that uses our tool as part of a broader program to effectively and efficiently measure construction grant impacts. That vision centers on three propositions.

- ***First***, that EDA can use a readily available data source, Marshall Swift™ data, to routinely generate private sector leveraged estimates for each one of its closed projects and record those estimates in OPCS,
- ***Second***, that EDA can consolidate and focus resources currently used to perform GPRA site visits and collection/validation of grantee self-reported data into conducting GPRA site visits for urban area projects, which visits can generate jobs figures for a valid sample of those projects, and
- ***Third***, that EDA has an existing business intelligence platform – being developed for its BSC – that also can be used be used to generate automated performance reports for construction program impacts, based on the data generated by our tool, other data sources used to generate reported impacts, the above-referenced Marshall Swift data and the data generated by above-referenced site visits.

As to the first proposition, Marshall Swift™ is a private company that maintains a database of building construction cost data and a widely used approach for estimating replacement and depreciation costs for commercial structures. Marshall Swift™ also offers a valuation service that is used by appraisers and government entities to assess commercial structures. This includes a complete, authoritative appraisal guide for developing replacement costs and depreciated values of buildings and other improvements. The Marshall Valuation Service™ is an industry standard throughout the U.S., U.S. territories, most major cities in Canada, and selected foreign cities worldwide. As such, it is often the source of the valuations that EDA relies on to establish private investment figures.

One of the Marshall Swift™ products in an on-line look up tool. It allows a user to specify various parameters for a commercial structure, including location data, type of structure, spatial dimensions, fixtures and other features. Based on these and drawing on its

commercial database, this tool yields a valuation figure. The same process can be undertaken manually by simply buying a set of Marshall Swift™ valuation tables. In either case, this data can be used to generate pre-project and post-project-completion valuations of structures influenced by EDA funded projects.

After a brief examination of Marshall Swift™ products, we believe that EDA can cost-effectively use this data to routinely generate private investment figures of record for each project upon its closing. This would involve acquiring a subscription to the Marshall Swift™ data or using the on-line tool on a pay-per-use basis and developing a process by which the private investment figures are generated by EDA and approved.

This method would not be without its complications. Marshall Swift™ does not, for instance, collect cost data, for example, for many industrial/municipal structures such as water plants, sewage plants, *etc*. They do, however, provide rule of thumb estimates for the valuation of these types of structures. Also, though the estimator provides some three hundred different categories of structure types including high tech buildings, laboratories, *etc*., it is possible some projects funded by EDA feature state of the art, technological features that may not be within the scope of Marshall Swift's cost data. For some projects, therefore, some degree of additional analysis may be required to generate an accurate private investment number. Nonetheless, the ability to generate private investment figures without collecting and validating grantee self-reported data will help EDA significantly. Although it remains to be studied, it may be that from an organizational perspective, the Marshall Swift™ method requires no more FTE than the current method. The current grantee, self-reported data, however, is unreliable.

We recommend that EDA pursue development of the processes required to routinely use Marshall Swift™ data to generate private investment figures. Once such a process is implemented, we recommend that EDA discontinue the collection, validation and reporting

Between our tool and the proposed Marshall Swift™ method for generating private investment figures, EDA would have independent and credible data for most of its reported impacts. The missing piece would be jobs data for urban projects. As stated in the second proposition, we recommend that EDA can consolidate and focus resources currently used to perform GPRA site visits and collection/validation of grantee self-reported data and focus those resources on conducting GPRA site visits for urban area projects. EDA headquarters already does a small number of GPRA site visits each year. In fact, we relied on their site visit protocols as the basis for our direct observation protocols, as discussed in Subsection 4.3. In addition, if EDA discontinues the collection of grantee, self-reported data, some amount of headquarters and regional office resources will be freed up to conduct additional direct observation site visits. We recommend that EDA coordinate site visit resources to focus on the collection of jobs data from urban area projects. Such a process could be used to generate reportable jobs figures for these urban grants.

We recommend that EDA consider utilizing our tool, the above-proposed Marshall Swift™ approach and the above-propose focus of resources on urban area direct

observation site visits to re-evaluate and improve its overall performance measurement architecture. EDA currently has a business intelligence platform in place that could be used to automate many of the processes involved in generating these impacts. Figure 5.4 (next page) provides an overview of a possible optimized performance measurement architecture for EDA construction programs.

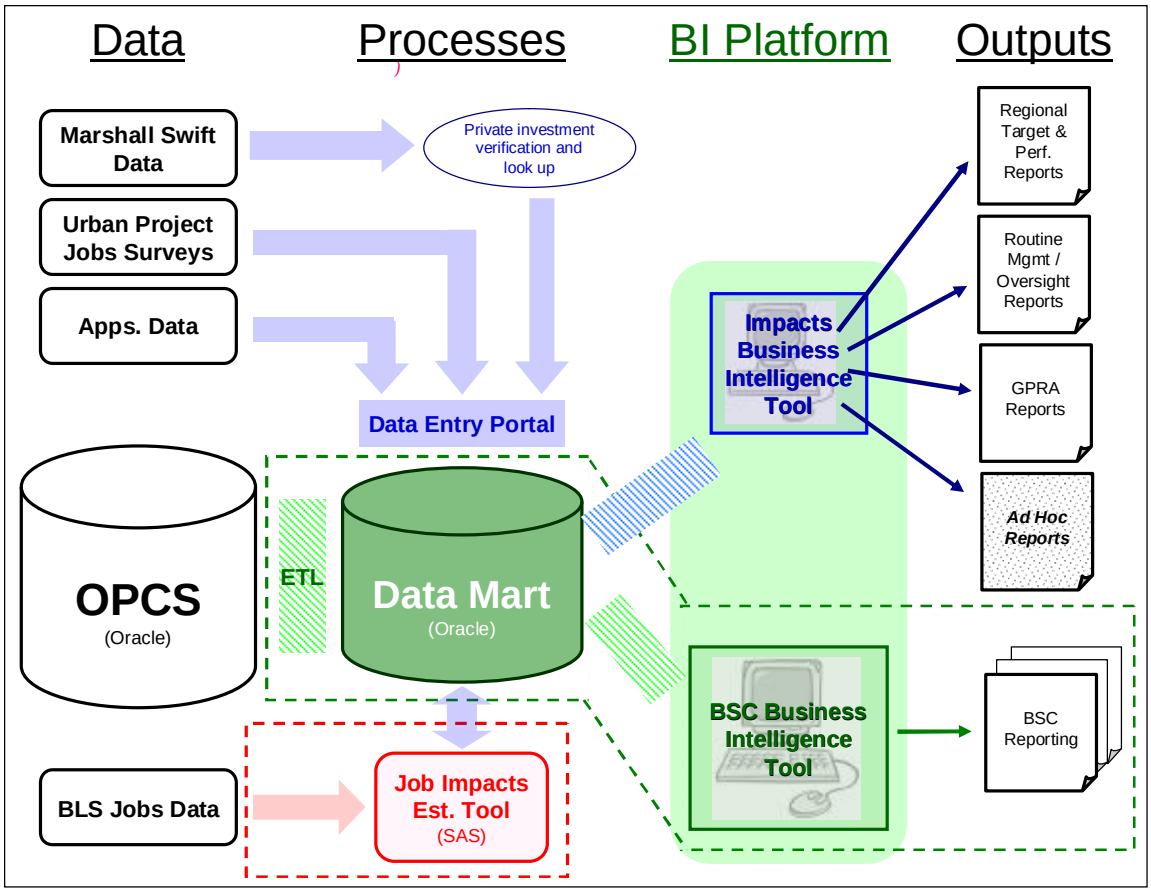


Figure 5.4 – Vision of Performance Measurement Architecture for EDA Construction Programs

Figure 5.4 shows four stages involved in the generation of effective business intelligence. These are the four categories along the top of the figure: data, processes/tools, the business intelligence platform and outputs. Within the processes and BI platform columns, various tools and process are depicted. A process is depicted by a wide, light shaded arrow. An ETL is depicted by a cross-hatched rectangle. A manual data entry portal is depicted by a solid rectangle.

As Figure 5.4 also depicts, EDA has recently invested in a business intelligence platform for its balanced scorecard (the tools and technologies within the green dotted line). EDA – via this report and study – has also recently invested in a tool for generating jobs impacts for EDA funded projects in rural areas (tool within the red dotted line). These advances along with the Marshall Swift™ approach for generating private investment figures and the use of targeted and standardized direct observation visit to projects in urban areas,

represents a significant opportunity for EDA in terms of automating and optimizing its performance reporting architecture.

In order for EDA to implement this vision, the following milestones would have to be accomplished.

- Acquisition of Marshall Swift™ data or tool,
- Development of a process for generating private investment figures of record for entry into OPCS, or the development of a sample based method for imputing private investment figures using Marshall Swift™ data and loading inputting that data into the existing balanced scorecard data mart[25],
- Development of a process by which zip codes can be identified for each project (as the Marshall Swift™ tools require zip code as one parameter),
- Development of an official site visit protocol for direct observation site visits, perhaps relying on the protocols we used for this project,
- Modification of the existing balanced scorecard data mart and related ETLS to include additional data required for a construction performance measures tool, extracted both from OPCS and from the our tool,
- Design and development of a business intelligence tool on the existing platform used by the balanced scorecard tool, and
- Design and development of a data portal that would allow the entry into the data mart of additional data required to generated construction grant impacts.

[25] Note that the latter option is depicted in Figure 5.4.