PLANNING DECISIONS
Research & Planning

An Examination of the Spatial Aspects of Fiscal Impact Analysis

For: The New England Environmental Finance Center
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Purposes & Approach

The purpose of this project is "to assemble and evaluate the information necessary to develop a spatially-based cost of community services tool that can aid local governments in making sounder analyses of the fiscal impacts of growth decisions." Planning Decisions' approach to this task is fourfold:

1. Specify a theoretical model identifying the factors that determine the cost of community services and allow the isolation of those that are "spatially based;"

2. Identify the major categories of fiscal impact model now commonly used and evaluate each with respect to its ability to isolate and measure the "spatially based" factors specified in task 1;

3. Identify the data needs and general programming requirements of a model that will meet the goal of helping local governments make "sounder analyses of the fiscal impacts of growth decisions."

4. Estimate the cost necessary to complete task 3.

This report consists of a description of the work undertaken to complete each of these four subtasks.

1. Locational Factors Contributing to the Cost of Community Services: The Elements of a "Spatially Based" Fiscal Impact Model

For the purposes of this report, we will use the definition of fiscal impact analysis offered by Mary Edwards.[1] Fiscal Impact Analysis is a process which:

- ✓ Assembles existing information about a community;
- ✓ Gathers new information about a prospective development in that community;
- ✓ Puts the information into a common framework; and
- ✓ Uses the framework to predict the fiscal results for the community of the proposed development.

Following this definition, a fiscal impact model is the "framework" that both defines the information needed and manipulates it to produce a prediction. Given the "desired goals" specified for this project, a "good" fiscal impact model is one that:

- ✓ Identifies the impact of spatial differences among projects;
- ✓ Utilizes readily available information;
- ✓ Promotes fairness and consistency in the development process; and
- ✓ Encourages responsive and informed decision-making.

At base, fiscal impact analysis is a subcategory of microeconomic analysis. As such, it involves the examination of demand, supply and price. The demand for a particular public service in a community will, like the demand for any service, depend on the preferences and incomes of the residents of the community. The cost of providing that service will depend on the number and type of households and enterprises in the community, their location and density and the current capacity of the community to provide the service. In more formal terms, the cost of a community service (COS) may be thought of as a function of the quantity of service demanders (Q) of type t (household, business, non-profit enterprise), their location [measured by distance (M) and density (D)] and the community's current capacity to provide the service (C).

(1) $$COS = f(Q\ (t), M, D, C).$$

For example, the cost of providing education in a community is a function of the number of students by grade level, their miles from the schools, their dispersal over the landscape and the current capacity of the school system as measured by classroom space, number of teachers and quantity of vehicles and equipment. For

[1] Mary Edwards Community Guide to Development Impact Analysis
http://www.lic.wisc.edu/shapingdane/facilitation/all_resources/impacts/analysis_intro.htm

a comprehensive analysis of community services, similar sorts of functional relationships must be specified to identify the independent variables (or cost drivers) of the other major categories of community service such as public safety, public works, public utilities, waste disposal, administration and social services.

For the purpose of focusing exclusively on the *spatial* determinants of cost, it is necessary to separate the elements of cost into those affected by location and those independent of location. In large part, this distinction depends on who bears the cost of transportation. Registering to vote, licensing a car or dog, getting a building permit. All these activities generally involve citizens coming to Town Hall. The cost of transportation is borne by the citizens. Other than the occasional decision about where to build a new Town Hall, the cost of administrative services are largely independent of the location of those who demand the services. The same might be said about a public library or a public park. The cost of education, public safety and highway maintenance, on the other hand, clearly vary with the location of those demanding the service. Table 1 separates the spatial and non-spatial components of providing community services and indicates who bears the spatial portion of the cost depending on how the service is provided.

Table 1
Spatial and Non-spatial Elements of Community Services

(1) Service	(2) Non-Spatial Element	(3) Spatial Element	(4) Burden of Cost
Education	Teaching	Transportation to school or events	Public if tax supported bus system
Police	Administration, Dispatch. General Patrol	Responding to calls	Generally public except for private security services
Fire/Rescue	Administration, Dispatch	Responding to calls	Generally public
Highway Maintenance	Administration, Equipment Repair	Plowing & maintaining roads	Generally public except for private roads/parking
Water/Sewer	Administration, Operation of Plant	Pumping stations	Generally fee for service except for public utilities
Waste Disposal	Administration, Operation of Transfer Station or Disposal Site	Collection of trash	Private if fee for service or pay per bag; public if provided as utility
General Administration	Serving customers	Coming to Town Hall	Private unless there is public transportation
Civic and Social Services	Serving customers	Coming to Town Hall	Private unless there is public transportation
Public Transportation	Administration, Dispatch Equipment Repair	Operating routes	Private if fee for service; public if subsidized

Based on the above analysis, it is clear that a fiscal impact model that meets the purposes specified for this project will be one that identifies those elements of any proposed development that fall in Column 3 of Table 1 and that integrate those elements into a framework that allows a comparison of projects *solely on the basis of their spatial implications.*

It is important to note here that the spatial or locational elements of cost are not purely a function of the recipients of the municipal service. They are also a function of the manner in which the service is provided. The examples of education and fire protection help explain this distinction. When a fire call comes in, a fire truck goes to the fire. It doesn't wait for two or three calls to arrive and then determine the shortest route to all the fires. For fire service, therefore, the spatial element of cost is clear. It is the distance (or response time) between the fire station (point of capacity) and the fire (point of service). For each new house built in a community (a new point of potential service), the locational element of cost is the distance (or response time) between the new house and the fire station. The marginal cost of providing fire service to a property 10 miles from the fire station will be greater than the marginal cost of providing fire service to a property 5 miles from the fire station. More generally, a development that adds 1,000 miles to a community's cumulative point-of-capacity to point-of-service distance will use up whatever fire protection capacity the community may have faster than a development that adds only 500 miles to the cumulative distance.

The provision of education transport, snow plowing and garbage pick-up, in contrast, are not based on the distance between point-of-capacity and point-of service, but on a circulating *route of service*. The spatial element of the cost of each additional student or mile of road or garbage can is not their cumulative distance to a point-of-capacity but their distance from (or disruption of) a given service route. These spatial elements of cost depend not on pure distance but on a more complex pattern of density, the fabric of a community. This fabric density is better envisioned as the isobars of a geodesic relief map than as the straight line or even road distances between two discreet points. Similarly, the calculation of the incremental cost of a new unit of service demand is more complicated and demands some initial measure of circulation routes from which to make a marginal calculation.

In sum, a *spatial* fiscal impact model must answer four questions:

1. Which municipal services have transportation costs that are borne publicly?

2. Which of those services are provided by a point-of-capacity to point-of-service model and which by service route model?

3. How can the incremental service distance and or service route disruption of a given development be measured?

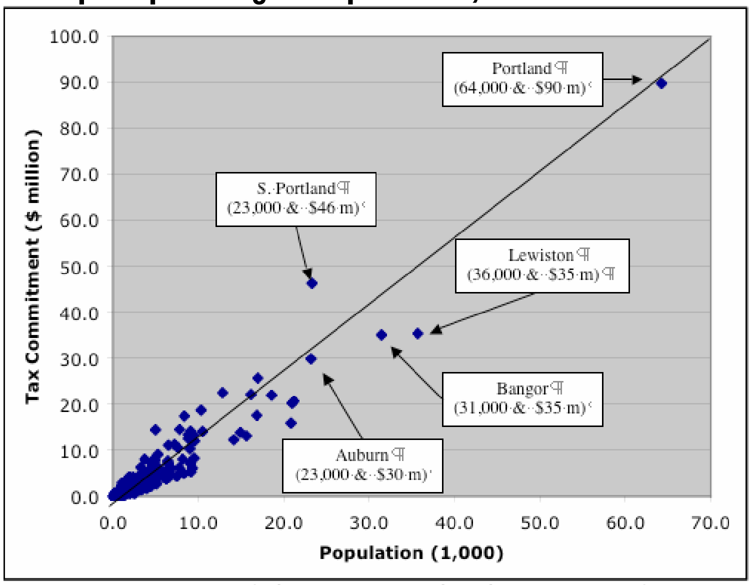
4. How much of a community's service capacity does a given incremental service distance or service route disruption use?

2. Types of Fiscal Impact Models

a. Background: Municipal Costs and Population

As a general principal, the cost of municipal services tends to rise as the population of a community rises. More people tends to mean more municipal costs. Figures 1, 2 and 3 show how this relationship holds true for Maine communities.

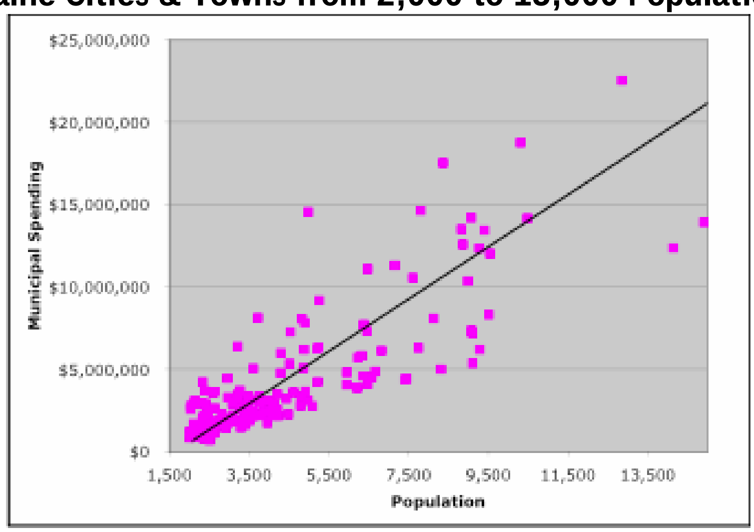
Figure 1 Municipal Spending & Population, Maine Cities & Towns, 2000



Sources: U.S. Bureau of the Census and Maine Bureau of Revenue Services.

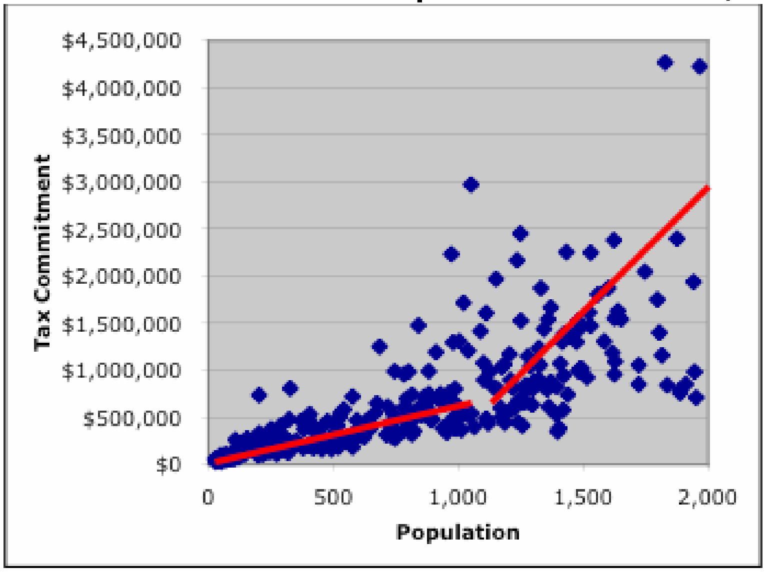
Limiting the communities to those with populations between 2,000 and 15,000 shows that the relationship, while not precise, is still generally true.

Figure 2 Municipal Spending & Population, 2000
Maine Cities & Towns from 2,000 to 15,000 Population



For small towns, spending growth tends to jump after reaching a population level of approximately 1,000, but the generally positive relationship remains valid.

Figure 3 Municipal Spending & Population, 2000
Maine Cities & Towns with Populations less than 2,000



b. Modified Average Cost Models

Because of the generally positive relationship between population and municipal costs, most fiscal impact models are based on some variation of an average or per capita cost. What is the average cost of a municipal service for its driving variable—student enrollment driving education spending for example? Given that average cost, tell me how many more students will arrive as a result of a proposed development and I will tell you what increase in education costs you should expect.

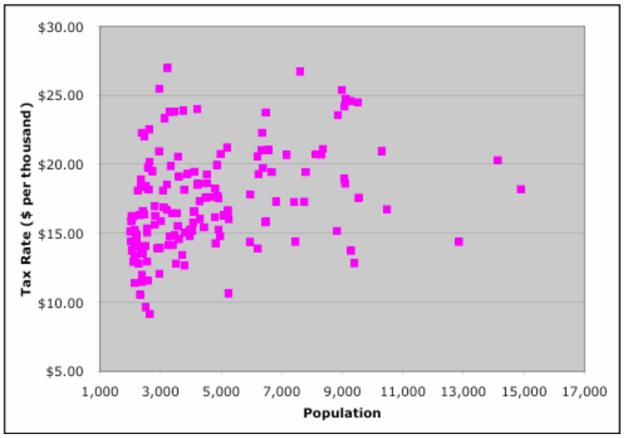
The obvious failing of such models is that they fail to account for the difference between average and marginal cost. The marginal cost of adding a 24th student into a classroom of 23 students is clearly less than the average cost per student of the initial 23. By the same token, if adding a 25th student leads school administrators to split the group into two classes and hire an additional teacher, the marginal cost of the 25th student is clearly more than the average cost of the first 24 students. In short, average cost models ignore the impact of demand drivers on the municipality's level of capacity to provide a given service. Similarly, average cost models necessarily fail to identify the spatial impacts of development because by using average costs they implicitly treat all new development as having the same cost regardless of location.

To overcome the shortcomings of average cost analysis, two major variations have been developed—"prototype activity" analysis developed by Tischler & Associates and prototype location analysis developed by Fishkind & Associates.

1. Prototype Activity Model[2]

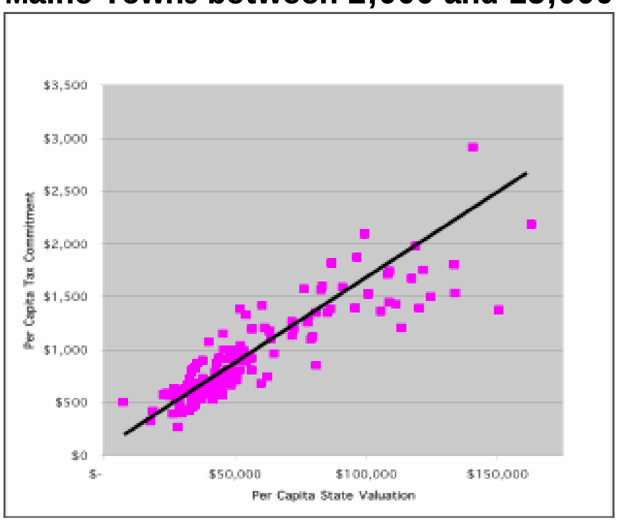
While municipal spending tends to increase with population, property tax rates do not exhibit a similarly positive relationship, particularly for Maine towns with populations between 2,000 and 15,000.

Figure 4 Population & Municipal Tax Rate, 2000, Maine Towns between 2,000 and 15,000



However, when municipal spending and property valuation is standardized to a per capita basis, a more direct relationship emerges.

Figure 5 Per Capita Valuation & Spending, 2000, Maine Towns between 2,000 and 15,000



[2] Tischler & Associates, Inc. Fiscal Impact Analysis of Residential and Nonresidential Land Use Prototypes prepared for Town of Barnstable, Massachusetts, July 1, 2002.

In short, more property per person is associated with more municipal spending per person.

This fact has led some analysts to change the focus of their models from the cost drivers of individual municipal services to the type of development proposed. Clearly, residential growth creates a different type of demand for municipal services than industrial growth, than commercial growth, than whatever category of growth one cares to specify. This observation has led some—most notably—Tischler Associates—to develop models focusing on the type of development proposed as a means of predicting fiscal impact. A fast food restaurant, for example, will create one level of demand, a professional office complex another, a big-box retail store another, single family homes another and multifamily homes still another. Such models tend to use state or national averages for type of services demanded by types of development to predict what the impact will be of a particular development on a particular community.

Tischler specifies four residential prototypes and eight non-residential prototypes. He then uses calculated numbers of households, people, vehicles, vehicle trips and a proxy for human activity called equivalent dwelling units (EDU's) to define each prototype and its fiscal impact on a town—both revenue and cost. Each of the prototypes used in Tischler's model is a "snapshot" that "determines the revenues and costs" for various land use alternatives.[3] In short, Tischler moves from an overall average cost to a prototype-specific average cost.

The Tischler model does not, however, address the spatial aspects of development. In calculating the costs of any given prototype land use—a single family home or a fast food restaurant—Tischler applies those costs to any single family home or fast food restaurant regardless of where it may be located. By differentiating only between prototypes not between the locations of a prototype, Tischler effectively ignores the spatial impacts of development. In terms of the baseline theoretical equation (1) above, Tischler has specified several types of demand Qt, but ignores entirely the spatial elements location (M) and density (D).

Tischler has recently added a GIS component to its model. This module is called FISCALS GIS. Once the Tischler model has been customized for a community, the FISCALS GIS module allows a user to draw new land uses on a map and calculate the fiscal impact of that development. However, this new module is simply a more user-friendly interface for the existing Tischler model. It does not calculate the differential impact of service delivery based on the geographic location of the new development in the community.

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[3] Ibid. p. 2.

2. Prototype Location Model[4]

Attempting to address the spatial shortcomings of the Tischler model, Fishkind & Associates created what might be called a locational prototype model. Instead of developing activity prototypes—single-family home, big box store, industrial park, etc.—Fishkind developed what might be called locational prototypes. "To capture the effects of location on capital costs a three-part classification system was developed. The land in each community is categorized into one of the following.

- ✓ **Urban Core/ Activity Center / New Town -** This category is for areas where urban densities and intensities exist or are encouraged and permitted under the existing land use plan for the community. Trip rates and trip lengths on the roadways are expected to be somewhat below average and levels of service on the roadways somewhat lower due to congestion that typifies urban places.

- ✓ **Urban Services Area -** The urban service area is where local governments plan to provide urban services. In this three-part system it is net of the urban core area described above.

- ✓ **Rural Area -** The rural area consists of all the remaining land in the community. It comprises areas where local governments do not plan to offer urban type services now or in the future."[5]

Fishkind then gathers a wide range of data for each of the "prototype" areas which he then uses to calculate the likely fiscal impact of any given development based both on its activity—single-family home, fast-food restaurant, etc.—and on its location.

With respect to consideration of the spatial impacts of development, the Fishkind model is clearly an advance beyond the Tischler model. Nevertheless, it still has several shortcomings.

- ✓ Its definitions of locational prototypes may or may not apply to Maine municipalities;

- ✓ It requires gathering all data for all towns to create the cost matrix embedded in an excel table that is used to calculate the estimated fiscal impact.

- ✓ It does not make use of readily available and increasingly accessible GIS data to make community-specific cost projections.

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[4] Fishkind and Associates State of Florida Department of Environmental Protection Fiscal Impact Analysis Model (FIAM) http://www.fishkind.com/dep/prototype.html.

[5] Ibid. section 3.3.

c. GIS-Based Locational Models

A third, and explicitly more spatially oriented, approach to fiscal impact analysis is to incorporate the growing availability and accessibility of GIS data. ArcGIS by ESRI is the industry standard GIS program, and several extensions have been added to ArcGIS that increase the modeling power of the technology. CommunityViz, developed by the Orton Family Foundation, is the most popular modeling extension for planning and land use management.

CommunityViz extends the power of ArcGIS in two ways. First, it improves presentation. The importance of this feature is difficult to understate because public support is a critical element contemporary planning. CommunityViz helps convey complex and technical ideas to the general public with images. These images can capture changes through time (with a time series) and allow real-time adjustments to a model's inputs.

Second, CommunityViz has a dynamic formula module that allows a user to customize the software. This customization helps users "see" how changing input assumptions (such as building setbacks, development costs, open space requirements) can affect how an area is developed.

CommunityViz makes second-dimension modeling possible. The Tischler and Fishkind models are first-dimension fiscal impact models. They require input from the municipality (capacity levels and service delivery costs) and information on the characteristics of the new development. Second dimension modeling adds the capacity to incorporate measures of location (both distance and density) and thus to consider the spatial impact of a proposed development apart from its purely functional average cost. The model can apply a cost/distance equation to determine how the geographic location of the new development would affect the service delivery costs.

In its most basic form, CommunityViz utilizes straight-line, bird-flight distance and not travel distance. Additional programming would be necessary to incorporate travel distance into the model's calculations. In addition, CommunityViz would need to incorporate a delivery route location factor in order to address the "fabric density" quality of location discussed on page 4 above.

CommunityViz has several strengths and weaknesses for it to become the foundation for a geographically-based fiscal impact model in Maine:

- ✓ The technology is inexpensive and the data to create this model are widely available. ArcGIS is the industry leading GIS application, and CommunityViz is an inexpensive and powerful extension to this service that can easily be customized into a new model. The geographic data necessary to create this model are widely available for most communities in Maine.

- ✓ Combining the power of GIS with an average cost-based fiscal impact model (such as the Tischler model or a Maine-specific case study model) would creates a powerful fiscal impact tool that would account for both capacity costs and service delivery costs.

- ✓ In its current form, CommunityViz ignores how similar the new development is with its neighboring land uses (what we call the fabric density component of locational analysis). However, by defining service delivery routes as a GIS overlay, this shortcoming could be overcome.

- ✓ In its current form, CommunityViz also assumes that all municipal services are delivered at the same cost per distance. But again, adjusting model formulas could offset this current weakness.

3. Building the "Best Model" for Maine Communities

Models are built of compromise. The simplicity of the *average cost model* makes it the most widely applicable, but it is compromised by its inflexibility when considering types and locations of uses. The *modified average cost model*—such as Tischler and Fishkind—is more flexible with types and locations of uses, but it only superficially addresses the spatial differences among otherwise similar developments. The *case study* can address these spatial differences, but its results are only applicable in a community at a point in time.

This section describes the unique spatial components of the "best model" and its data requirements. For Maine, the "best model" will meet four criteria.

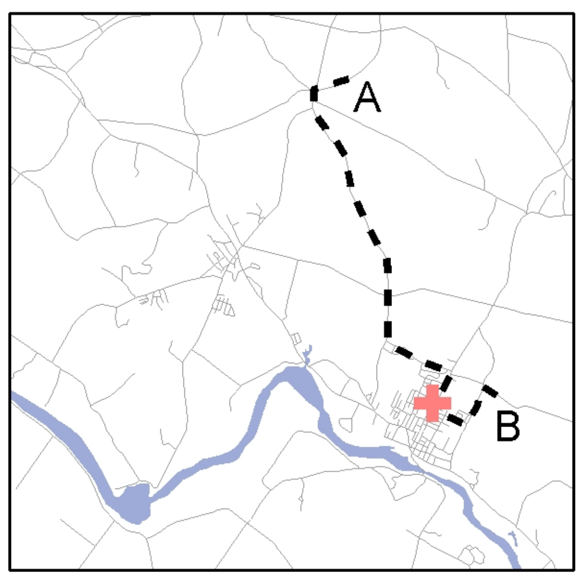
1. It will function under dissimilar levels of service from one community to the next. In other words, the model itself will be semi-customizable to match how services are delivered in each community.
2. It will utilize available data.
3. It will allocate service delivery costs on a scale from strictly point-to-point services to strictly fabric density services (see page 4).
4. It will be easy to learn and inexpensive to use.

Based on our review of existing models, we believe that the "best model" for Maine will combine a spreadsheet template and a geographic analysis. Most of the inputs will come from state and local data that has already been generated. Most of the spatial inputs will come from a combination of state and local sources, although some of this data might need to be modified so that it complies with the "best model's" specifications.

In order to evaluate the truly spatial characteristics of alternative developments, the "best model" must include ways of assessing both point-to-point and fabric density information.

Point-to-point information is the travel distance[6] between a proposed development and a municipal point of service. This travel distance is the most important geographic variable for services that require discrete trips (e.g. fire protection). The "best model" will be able to calculate this distance for any proposed project based on:

Point to Point Travel Time

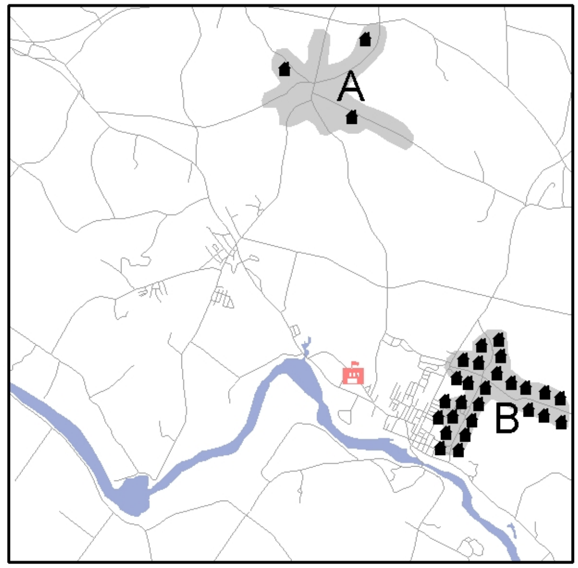


A – 12 minutes travel time
B – 5 minutes travel time

[6] Since all geographic services are delivered by the road network, any discussion of distance refers to travel distance along a road network.

- ✓ The community's road network will be uploaded to the model;
- ✓ The model asks the user to point-and-click on the location of each municipal facility that provides services in the community; and
- ✓ The model asks the user to point-and-click on the potential development locations.

Fabric Density Example



A – 3 units of housing within 2 minutes
B – 26 units of housing within 2 minutes

Fabric density information is necessary to identify service delivery costs for proscriptive services that can be preplanned (e.g. school bus routes). Theoretically, it would be possible to locate existing routes for school buses, snow plows, police patrols in a GIS system. However, identifying these routes are exceedingly expensive and tend to change through time. Therefore, locating specific routes is not practical.

A more practical approach to fabric density is to measure the amount of similar land uses within a specific travel time. Underpinning this approach is the assumption that a community's delivery costs will not change much when a 20-unit subdivision is located in the midst of 300 housing units, whereas those delivery costs will increase if the same subdivision is located in a rural area without any neighboring housing units.

The fiscal impact of a new development is determined by how it changes this fabric density. In our opinion, the best way to measure fabric density is to:

- ✓ Segment the proposed development into five types of uses (single-family residential, multi-family residential/condominiums, service/retail commercial, industrial/manufacturing commercial, and institutional/other);
- ✓ Measure the surrounding density of each of these types of uses within a set travel time from the proposed development;
- ✓ Compare each of the existing use densities with the density being proposed in the new development; and
- ✓ Create a fabric density metric for each type of land use in the proposed development.

The "best model" would allow the user to semi-customize the service delivery costs for each service to meet the service delivery strategy in each community. For example, some police chiefs use a call-response system for their police cruisers, while others use a patrol coverage network. In the first case, the user would weight point-to-point service more heavily to account for the call-response system. In the second case, the user might weight fabric density more heavily to account for the patrol coverage network. In each case the cost to provide service could be allocated by the user based on a combination of fabric density and point-to-point distance from the police station.

4. Data for the “Best Model” for Maine Communities

A Fiscal Impact Model requires two sets of data—one set describing the current condition and historic trends of the community and another set describing the characteristics of the project or projects whose impacts are to be predicted.

These data can be further divided between those that can be gathered for all Maine communities on a regular basis and maintained by a model builder. These data are analogous, for example, to income and employment data gathered from national sources and updated regularly in several Maine economic forecasting models. This general data comes from national, state and local sources and include both pure numerical data maintained in spreadsheets or databases and geographical data maintained as layers in a GIS program.

The second set of data contains both tabular and GIS data, comes primarily from local sources, and must be added to an impact model as part of a specific simulation run. The best sources of land use information for this analysis are the parcel maps and the assessing database. The assessing database provides information on the type of uses occurring across a community. The parcel map would be able to take this land use data and assign it to particular parcels in the entire community. These two sources would be the foundation for the fabric density calculations.

Table 2 lists the data required by variable and source. Ideally, these data, once identified, could be gathered on a regular basis from standard sources and maintained in a common database available for repeated use. Some of the data listed here may not apply to certain communities where a service is not provided (public transportation, for example) or where the service is provided on a fee for service basis (solid waste disposal, for example). In addition, this table contains only those services for which there is a clearly identified spatial component as identified in Table 1 above.

Table 2
Data Elements Required for a Spatially Based Fiscal Impact Model

Variable	Quantity/Volume (10 year history)	Data Source	Location Measure
1. People	Number of People	U.S. Census	Parcel maps by use
	Number of Households	U.S. Census	Parcel maps by use
	School Enrollment	ME D of Educ	
	Number of Vehicles	U.S. Census	
	Traffic Count	ME DOT	
	Solid Waste Disposed	ME DEP	
	Resident Employment	ME DOL	
	Jobs Provided (employment by place of work)	ME DOL	Parcel maps by use
	Retail Sales	ME SPO	Parcel maps by use

Variable	Quantity/Volume (10 year history)	Data Source	Location Measure
2. Property	Number of Units, SF, Assessed Value, Sales Value by Type of Property		
	Residential	Local Assessor	Parcel maps by use
	SFH	Local Assessor	Parcel maps by use
	MFH	Local Assessor	Parcel maps by use
	Condo	Local Assessor	Parcel maps by use
	Commercial	Local Assessor	Parcel maps by use
	Industrial	Local Assessor	Parcel maps by use
	Waterfront	Local Assessor	Parcel maps by use
	Agricultural/Forest/Open	Local Assessor	Parcel maps by use
3. Capital	Miles of Road		
	School Buildings	Local school dept	Add to local GIS
	SF	Local school dept	
	student capacity	Local school dept	
	School Transportation Equipment	Local school dept	
	number of vehicles	Local school dept	
	number of routes	Local school dept	
	miles travelled	Local school dept	Calculate from GIS
	DPW Buildings	Local interviews	Add to local GIS
	DPW Vehicles	Local interviews	
	Public Safety Buildings	Local interviews	Add to local GIS
	Public Safety Equipment	Local interviews	
	Water/Sewer Buildings	Local interviews	Add to local GIS
	Water/Sewer Equipment	Local interviews	
	Waste Disposal Buildings	Local interviews	Add to local GIS
	Waste Disposal Equipment	Local interviews	
	Public Transportation Buildings	Local interviews	Add to local GIS
	Public Transportation Equipment	Local interviews	
4. Municipal Expenditures	Education		
	Public Safety	Municipal repts	N.A.
	Public Works	Municipal repts	N.A.
	Water/Sewer	Municipal repts	N.A.
	Waste Disposal	Municipal repts	N.A.
	Public Transportation	Municipal repts	N.A.
5. Municipal Revenues	Property Taxes		
	Excise Taxes	Municipal repts	N.A.
	Licenses & Fees	Municipal repts	N.A.
	State Education Aid	Municipal repts	N.A.
	State Revenue Sharing	Municipal repts	N.A.
	Other	Municipal repts	N.A.

5. Building and Using the "Best Model" in Maine Communities

The cost of building the "best model" can be separated into development costs and application costs. Development costs are associated with developing a detailed explanation of the framework for the model, programming the model, and testing the model's accuracy. Application costs are associated with using the model with communities around the state.

Development costs have been greatly decreased by the commoditization of computer technology. GIS capability was once a luxury that many programmers and communities were fortunate to have. Today, GIS capability in communities is more the norm than the exception. Even relatively small communities under 2,000 residents are digitizing parcel maps and linking them with their assessing databases. This trend is going to continue, which will make the "best" model more applicable to communities across the state.

In addition, programming costs have decreased dramatically because the level of technical knowledge in the state has increased dramatically and the number of modules available for GIS – like CommunityViz – has increased. Concurrently, experience with GIS in community planning has improved.

Development costs for the "best" model will be significantly lower than would have been necessary five years ago. We estimate that development costs would be approximately $35,000. Of this, $5,000 would be to develop the model framework, $20,000 would be to actually program the model, and the remaining $10,000 would be to test the model's accuracy and improve the user interface.

Application costs would vary depending on the level of technological sophistication available in each community. A sophisticated community could be modeled for a nominal fee while a community with very limited spatial data could be modeled for approximately $10,000. Since more and more communities are increasing their spatial databases, we anticipate that the "best" model will increase its applicability rapidly in the next five years.

Using the "best model" will be user friendly, but it won't be able to be used by an amateur. Several assumptions about how services are delivered in each community must be made. While the model will have recommendations as default functions, the user must be able to make reasonable service-delivery decisions.

At the same time, the model will prompt the user for data at each step, which will greatly simplify using the model and decrease the likelihood for error or manipulation. Once the model has been set up, users will be able to conduct sensitivity analyses on various variables to help determine the model's reliability.

Upon starting the model, the user will be prompted for the following data:

A. Input Tabular Community Data
    1. enter the data from Table 2 in a standard spreadsheet
    2. data prompts will be in a template
    3. the model will query the template for its tabular input

B. Input Tabular Development Data
    1. enter the proposed development in standard spreadsheet template
    2. data to be entered includes
        i. acres of development
        ii. types of Uses
            1. single-Family Residential
                a. # of units
                b. anticipated persons per unit
            2. multi-Family/Condominium
                a. # of units
                b. anticipated persons per unit
            3. service Commercial
                a. square feet of development
            4. manufacturing/Industrial Commercial
                a. Square feet of development
            5. institutional/Noncommercial
                a. Square feet of development
        iii. public roads or private roads

C. Input Spatial Data to "best model" in CommunityViz
    1. import transportation network from state database
    2. import community parcel maps from local database
        i. note that this data might have to be adjusted before it can be used by the "best" model
    3. identify service locations (point and click)
        i. note that only those town services delivered spatially are required
            1. school locations
            2. public works department
            3. fire station
            4. police station
            5. transfer station
    4. identify locations of new development (point and click)
        i. development location A
        ii. development location B
        iii. development location C

D. Enter Service Delivery Parameters
    1. education
        i. school bussing costs per mile
        ii. distance around school where children walk
        iii. weighting of service delivery
            1. note – default is 15% point-to-point and 85% fabric density
    2. public works service
        i. proposed development has public/private road network
        ii. plowing costs per mile
        iii. weighting of service delivery
            1. note – default is 15% point-to-point and 85% fabric density
    3. fire protection
        i. level of fire protection (full-time, per diem, volunteer)
        ii. service delivery costs per mile
        iii. service delivery costs per service event
        iv. weighting of service delivery
            1. note – default is 90% point-to-point and 10% fabric density
    4. public safety protection
        i. level of public safety protection (town-provided, county-provided)
        ii. service delivery costs per mile
        iii. service delivery costs per service event
        iv. weighting of service delivery
            1. note – default is 50% point-to-point and 50% fabric density
            2. weighting depends on philosophy of police coverage
                a. service call response (higher point-to-point)
                b. cruising coverage (higher fabric density)
    5. transfer station
        i. level of waste hauling (public or private responsibility)
        ii. service delivery costs per mile
        iii. weighting of service delivery
            1. note – default is 15% point-to-point and 85% fabric density

E. Run the Model

F. Interpret Results
    1. spreadsheet output identifies:
        i. fiscal impact of development
        ii. percent of impact that depends on location
        iii. detail statistics on service delivery costs
        iv. sensitivity analysis of each service delivery assumption