Supporting Economic Development with Highway Investment

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16. Abstract

Federal transportation regulations and law direct State and local transportation agencies to account for economic development plans in transportation planning processes. While Federal law is not prescriptive about how State and local agencies account for economic development, there exists a need for better understanding of how highway projects can support economic development and the economic competitiveness of local and regional economies. This document is a primer on economic development, and includes a glossary of relevant terms, discussion of available economic analysis methods and tools, and descriptions of current practice in estimating economic development impacts by agencies of different sizes. The primer focuses on economic development concepts and economic development impacts generally, in the context of discussing the role of highway investment within a package of economic development actions and policies.

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Contents

Chapter 1. Overview of the Primer

1.1 Purpose of the Primer

The purpose of this primer is to provide Federal, local and regional decision-makers with the tools to stimulate economic development (ED) using transportation investments and to evaluate transportation-related ED claims. This primer provides an introduction to foundational economic concepts, terminology, analysis methods, and their applications to transportation planning. The content focuses on ED concepts and impacts in the context of discussing the role of transportation investment within a package of ED actions and policies. The intended audience is FHWA Planners who have minimal to basic familiarity with economics concepts and analysis methods and how they can be applied to transportation planning. By reading this primer, planners should become more informed on the uses of various economic analysis methods and how to apply them to their job and use them to make informed decisions.

1.2 Organization of Primer

The primer is organized around several key questions that planners may consider when approaching ED. A brief summary of the content discussed in each section is described below:

Chapter 2: ***What is ED?*** This chapter defines ED by discussing the key components and outcomes of good ED. The overall themes that permeate ED are introduced to provide a framework for considering its applications.

Chapter 3: ***What basic economic principles do I need to know to understand ED?*** This chapter describes the basic economic principles that all planners should know when approaching ED planning.

Chapter 4: ***How is ED considered in transportation planning?*** This chapter discusses how ED should be considered in each of the phases of the transportation planning process as well as general strategies for approaching ED.

Chapter 5: ***What analysis do I need to support an ED effort and how can I interpret the results?*** This chapter provides practical tools that planners can use to justify whether their project will achieve ED. The tools discussed in this section will link back up to the "Applications to Planning" section to show which tools could be employed in the use of various strategies.

Chapter 6: ***How do I shape the concepts, methods, and processes to fit the goals of growth, land development, lagging regions, and limited resources available?*** The chapter offers a range of strategies as a means of organizing the methods and concepts presented in the previous chapters to connect objectives to contexts.

Chapter 7: ***How do I apply the concepts and methods in a realistic context?*** This chapter includes six hypothetical examples which describe a range of prototypical contexts calling for ED. At the end of each example are questions that a planner should consider in order to determine whether the project would promote ED.

Appendix 1: ***Data Sources*** There are many public sources of data that are readily available over the internet, tabulated by several Federal agencies.

Appendix 2: ***Miscellaneous Information*** Accessibility and Connectivity are concepts with relevance to economic development, at least as stimulated by transportation improvements.

Chapter 2. What is Economic Development?

Before identifying and implementing projects to support economic development (ED), planners must first understand what ED is. This section defines good ED and discusses the components that make ED successful.

2.1 Defining Economic Development

ED as the process of increasing economic activity and community well-being in a region by creating job opportunities, income growth, and improvements to the human and natural environment. [1] The focus of this report is the role of transportation investment in supporting ED. ED policies can improve the level of economic activity and quality of life in an area by addressing five factors. ED is recognized as the achievement of these conditions in a region. The factors are:

1. Income: increased wage levels and larger numbers of workers;
2. Job choices: increase in the types of jobs available;
3. Activity choices: quality of life;
4. Stability: stability of jobs and income, reduced reliance on mature industries or those subject to severe business-cycle fluctuations; and
5. Amenities: beautifying, added cultural and recreational facilities.

Sustainable versus non-sustainable ED

Hartford legislative leaders planned to improve ED in the region by establishing a Transit Corridor Development Authority to promote construction of housing and business along transit-heavy corridors. This type of long-term effort is more likely to show success than a single project.

Pennsylvania experienced non-sustainable ED when drilling for natural gas. When the resource development ended, it left the community struggling to cope with a variety of residual conditions that compromised its ability to offer a sustainable way of life to its residents.

At a higher level, practitioners should think of ED as having both a spatial dimension (can occur at a local or regional scale), and a temporal dimension (can occur over varying periods of time). Good ED should seek sustainable, long-term growth (e.g., new jobs brought to an area because of real estate development) rather than short-term activity that may fade as the project concludes (e.g., jobs created during construction). To ensure that ED is sustainable, it is important to build it upon a diverse set of industries, a balanced mixture of incomes, and with a high value placed on human capital and community. These persistent long-term efforts are more likely to succeed than short-term, one-off projects. Sustainable ED is also built on the existing structure and interdependencies of the local and regional economies, which are revealed by focused analysis discussed later in this primer. Unsustained ED, on the other hand, relies on a narrow set of extractive and other industries that are sensitive to downturns, exhibit negative externalities such as pollution and poverty, and depend upon low skilled temporary labor with little long-term value added to the local economy.

[1] Forkenbrock and Weisbrod, *Guidebook for Assessing the Social and Economic Effects of Transportation Projects* (2001).

Inputs to the local region or stimulus may come in a variety of forms, such as:

1. Trade with other regions, especially exports from the region that bring in revenue.
2. Investment in human and physical capital within the region from local sources that enhances the productivity of the region to produce outputs (e.g., local taxes support school improvements).
3. Outside private investment in the region (e.g., a biotech firm builds a local facility).
4. Money transfers into the region from outside the region, such as intergovernmental grants from higher levels of government to lower ones (e.g., Federal grants).

These range from drivers that are local initiatives to transfers from outside the region. The latter may be helpful to get ED started. Ultimately, the objective is to encourage private investment that will sustain economic growth without requiring public subsidy

2.2 Goals and Measures of Economic Development

The primary goal of ED efforts is to increase economic activity and progress in a given region. The U.S. Economic Development Administration (EDA), whose mission is to promote innovation and competiveness, states that ED "creates the conditions for economic growth and improved quality of life by expanding the capacity of individuals, firms, and communities to maximize the use of their talents and skills to support innovation, lower transaction costs, and responsibly produce and trade valuable goods and services." In the context of the Federal Highway Administration (FHWA), ED refers to the policies and actions that promote economic goals within a specific region. Each region will have unique, locally determined ED goals. Examples of goals for ED include employment, business activity, land use development, and quality of life, among others. [2]

2.3 Role of Transportation in Economic Development

Transportation infrastructure provides access and connectivity that facilitate employment growth. Transportation policy changes and project investment have the potential to significantly impact ED, but transportation investment is rarely sufficient by itself. Furthermore although *new* transportation projects are not required for ED, transportation will always be a necessary component of ED.

The main mechanism by which transportation affects the economy is by a change in the costs of movement (i.e., reducing the cost of transportation) and improvements in the community's social and natural environment. Reducing the cost of transportation will lower the cost of production, which will lead to more economic activity, and ultimately a higher quality of life. The economic impacts of transportation are indirect, meaning they result from other factors related to the transportation investment rather than the transportation product itself. For example, a new highway segment leading to an office park may increase employment opportunities in areas with access to that particular

[2] Federal Highway Administration, "Economic Development". http://www.fhwa.dot.gov/planning/economic_development/ (Last Accessed: June 24, 2015).

segment. The ED will result primarily from the increase in employment opportunities and subsequent income.

FHWA identifies three levels at which transportation-related ED can occur. They are displayed in Figure 1. The national level refers to how much the nation's highways help the national economy, and Federal agencies are the primary stakeholders involved (notably the Interstate System and the Primary Freight Network). The regional level is concerned with what kinds of transportation investments a region should make to optimize its economic growth. An example of regional transportation-related ED is the I-15 Reconstruction Project in Salt Lake City, Utah. The project involved rebuilding and widening a deteriorated and congested stretch of highway running through Salt Lake City. The project helped accommodate the rapid growth the region is experiencing. Finally, the local level refers to the types of transportation investments that a city or town should implement to increase economic growth. Ports and multimodal facilities may serve several levels simultaneously.

Figure 1. Three levels of scale in economic development.

There is no single transportation project that can create ED in every region or municipality. Rather, there are certain strategies and principles that agencies can employ to figure out which investments will be most successful in their communities.

2.4 Economic Development Themes

When approaching ED planning, there are several underlying themes that arise frequently. These recurring themes help to keep the big picture in mind while working on the details that actually determine whether ED efforts are effective.

1. **Investing in transportation for the primary purpose of creating jobs is not good grounds for policy.**[3] Transportation investment should be primarily justified on the basis of its transportation benefits (time and cost savings). Projects that serve transportation needs well are bound to create more jobs than projects that are weak on transportation benefits. If the projects can be designed to also stimulate local real estate development or serve industries that utilize unemployed surplus labor, then that is an additional benefit.
2. **ED needs to be planned and coordinated, and not undertaken as an incidental afterthought.** ED proposed as a result of a single project or a random group of projects is unlikely to be effective. If development occurs from a single or random group of projects, it probably would have occurred anyway, or is simply transferring activity from one place to another. ED should be

[3] Wachs argues this and the next three points in, "Transportation, Jobs, and Economic Growth," (Spring, 2011).

the result of a comprehensive plan that is reviewed and supported by multiple agencies and jurisdictions and coordinates with investments in other sectors.

3. **For a given ED context, determine where the community lies along the development-potential spectrum ("ED demand exceeds supply" to "economic decline is inevitable")[4].** In some contexts, ED requires no stimulus and the public sector can be concerned with improving productivity (e.g., reducing permitting costs, requiring ground floor retail) and ensuring equity (e.g., affordable housing, open space exactions). In other contexts, no amount of public investment will produce a private sector response. ED planners should be aware of where the location stands on the development-potential spectrum so they know how much effort to invest.
4. **If ED planners believe that the level of ED can be increased beyond what is happening or likely, they should look for sources of market failure as a basis for strategy.** Market failure may take the form of lack of coordination among relevant public, non-profit, and private actors; lack of essential public infrastructure and institutions; negative externalities from existing or previous activities (including highway-caused disconnects), monopoly, information asymmetry, etc. It is helpful to have some cause-and-effect hypotheses to select actions and evaluate progress toward ED goals.
5. **Transportation facilities can provide valuable services but they also can exhibit negative neighborhood effects (i.e., a blighting influence) that inhibit ED.** If the facility is worthwhile as a transportation investment, then care should be taken to ensure that adjacent locations are not made undesirable by virtue of noise, dust and emissions, and an out-of-scale or otherwise unattractive appearance.
6. **A large share of the impacts of transportation investment is the redistribution of activities in space rather than new activity.** The net benefits of a project are those that add to the total of economic activity. Often, investment attracts activities that would have occurred somewhere even in the absence of the facility rather than new activities. For instance, housing built in response to higher access created by faster transportation might have been built in another location, perhaps in a more spread-out form, which might be an improvement if the new housing is more compact. To the extent possible, ED should create new activity, rather than relocate activity from another location. To achieve this, planners should consider whether potential relocations are aligned with the region's comprehensive plan and assess the impact on the whole region.
7. **The average indirect economic impact that is estimated to occur from transportation investment is not what occurs in any specific instance.** No project will result in exactly the same impacts as are estimated through models. Moreover, spending on other activities – such as public education or private housing – may have impacts that are indistinguishable from and intertwined with transportation investment, so it may be impossible to say one project is better than another with respect to its indirect impacts. The U.S. Department of Housing and Urban Development, U.S. DOT, and U.S. Environmental Protection Agency have joined together to help

[4] The diagram and text elaboration occur below at the beginning of Chapter 5, p. 23.

communities make neighborhoods more prosperous and efficient. SMARTe, is a web-based tool developed through the Sustainable Communities interagency partnership between HUD, DOT, and EPA, that supports the evaluation of redeveloping land.

8. **ED incentives (e.g., education) should ideally have the effect of increasing economic productivity as a business attraction.** Common practice is to offer tax abatements and other subsidies to firms that are considering their location for expansion or relocation. These kinds of subsidies do not make the firms more productive and are more likely to distort the market away from efficiency rather toward it, thus hindering sustainable ED. Productivity-enhancing investments include infrastructure, human capital enhancement (education, retraining, health), streamlined and focused regulation, and improved public services, etc.
9. **Long term growth is the objective rather than short-term stimulus, although the latter can be supported with investments that have long term benefits.** A proper benefit-cost analysis (BCA) identifies the types and amounts of benefits that will justify making the investment over the long term, whereas an Economic Impact Assessment (EIA) identifies short term stimulus that results from public spending. When a recession makes government-funded stimulus a potentially useful policy, transportation and other infrastructure may provide projects that are both good long-term investments and can be implemented quickly to generate immediate stimulus.
10. **Serendipitous opportunities may occur that remove obstacles to development and offer ways to accomplish sound development that were not previously possible.** A decision to relocate Interstate 195 in Providence, RI created an opportunity for a major planning and development effort in the heart of the city. The expressway itself took up a lot of land, but it also created a development environment in which large parcels were vacant, used for parking or storage. Planners can be on the lookout for events that may open long-term ED opportunities during times of change.
11. **There are no guarantees that ED will occur, no matter how well planned and studied**. Generally speaking, projects that generate benefits that exceed their costs help support ED. Even good projects (e.g., refurbishing historic areas, improving roads), however, will not necessarily cause ED. No strategy always works or works everywhere. States may cite ED as the primary or major reason for investment in highway infrastructure, but the basis for the claim does not derive from the quality of the project. Planners can use the concepts and methods in this primer to separate the sound ED actions from the superficial.

Chapter 3. Economic Concepts and Principles

Economics plays a crucial role in the transportation planning process by allowing practitioners to understand the full impact of transportation investments and to make high quality decisions regarding how to allocate resources. For example, economic analysis can be used to determine appropriate project alignment and/or alternative selection; identifying who benefits from the project and assessing the financial sustainability of funding sources, such as sales and fuel taxes; using cost analysis to determine whether to invest in maintenance or a new asset; assessing the return on investment from congestion relief and ITS policies; determining economic costs associated with truck restrictions; documenting how investment decisions were made and tradeoffs assessed; projecting the development impacts associated with a candidate transportation investment.[5]

Because of transportation's role in facilitating ED, it is important for planners to understand fundamental economic principles so they can successfully assess how transportation investment will affect ED.[6] There is no single or simple solution for making ED happen, but understanding and applying economic concepts can greatly improve the odds of success and make planners more aware of the opportunities and obstacles they may face.[7] All of the theories and methods listed in this section have limitations in their applicability to particular situations. The intent of this chapter is to provide planners with an awareness of the foundational principles of ED (both economic and transportation related).

3.1 Economic Markets

ED takes place in economic markets, which is to say that most of the choices are made via voluntary transactions. These markets are constrained by regulations and influenced by public investment in infrastructure and other policies.

There are fundamentally two dimensions of economic policy: efficiency and equity. Efficiency concerns whether we are getting the most from the resource we have, and equity concerns how resources and benefits are distributed across the population. The markets we are primarily concerned with for ED are markets for transportation, and overall markets for ED. Each of these markets types may have defects, referred to as market failure.

3.1.1 Efficiency

Efficiency refers to an economic state in which all available resources in an economy are being used at an optimal level. The goal of every public investment is to bring the economy to a closer state of efficiency, where the supply (marginal social cost) is equal to the demand (marginal social benefit) in each market. In a state of perfect efficiency, the revenue from selling goods over the costs of producing

[5] Horst, Toni, and Sara Carini, *Understanding How to Develop and Apply Economic Analyses: Guidance for Transportation Planners*: National Cooperative Highway Research Program, Transportation Research Board (November, 2011).
[6] 23 USC 101 states that "transportation should play a significant role in promoting economic growth, improving the environment, and sustaining quality of life."
[7] Blair, John P., and Michael C. Carroll, Local Economic Development: Analysis, Practices, and Globalization, Second ed., Los Angeles, CA: Sage (2009).

them is at a maximum. At this point society as a whole reaps the maximum amount of net benefits from the market. Economists use the concept of efficiency to measure how much good an investment will bring to society and to see how efficiently an economy is functioning. Efficiency is the primary goal of transportation design and operation.

Efficient markets are self-regulating, by adjusting price so as to equilibrate supply and demand in competitive markets without externalities. No market is perfectly efficient, however, and there are many obstacles to achieving efficiency. Transportation capacity is fixed in the short run (e.g., a year) while demand varies frequently (e.g., hourly). As the owner of many transportation facilities, government agencies set prices to users and determine the amounts of investment in facilities. These decisions are not necessarily responsive to market signals or most efficient use of resources, in that the decisions also respond to political pressures and other goals. These pressures as well as other inherent obstacles to market efficiency can be referred to as market failure. Examples of market failure include monopoly, external costs (congestion, emissions), and inefficient pricing.

In an attempt to inform decisionmakers with respect to investment choices, the public sector applies benefit-cost analysis (BCA) as a surrogate for what an ideal market would choose. For transportation project evaluation, BCA is a workable and valuable tool; for ED the choices are many (location quotients, multiplier models, econometric models, etc.) and the outcomes less predictable. Because transportation is an input to a large share of all goods and services, distortions in transportation pricing and investment have wide repercussions. ED such as real estate investment amount and location, in contrast, is undertaken primarily by private firms in a market context, with some participation by public agencies, and subject to public regulation.

3.1.2 Equity

Equity, in terms of ED, is concerned with who captures the benefits of economic growth. Ideally the ED benefits of transportation investments should benefit all populations equitably; however in actuality, this does not always happen. There are two types of equity:

1. **Horizontal Equity** – This refers to the fair allocation of economic impacts between individuals and groups of comparable ability and need.
2. **Vertical Equity with Regard to Income** – This suggests that transport is most equitable when it provides the greatest benefits and least costs to lower-income groups (i.e., it does not burden lower-income communities, or it is more favorable to the disadvantaged groups).

Environmental justice is intended to address concerns that arise when low income and/or minority neighborhoods are disportionately burdened with the negative impacts associated with a project. An example of this might include the location of a highway in a manner that exclusively divides a minority or low-income community. Planners should consider each of these types of equity when prioritizing transportation investments, as the investment will reap the most benefits when the distribution of resources is allocated equitably. For example, extending a transit line into a disadvantaged neighborhood gives people in that community access to more jobs and services. This group of people will be able to better access health care and education and have higher incomes, and business will have a larger pool of workers to choose from.

3.1.3 External Costs

Externalities are the positive and negative consequences of an action that affect an unrelated third party (i.e., those who were not intended to be directly affected). For example, a negative externality of expanding the number of lanes on a highway to increase capacity for cars may be increased air pollution due to more drivers using the highway, creating a negative externality for everybody in the neighborhood. A single person's actions, firms' actions, and government programs can all create externalities. Through policy, governments attempt to correct negative externalities of these actions to make society better off. The goal in transportation is for projects to avoid and mitigate costs of these externalities themselves, a concept known as internalization of external costs.[8] Planners should consider the externalities of transportation investment when designing and prioritizing projects. Examples of common negative externalities caused by transportation facilities include environmental degradation, noise, and barrier effects.[9] ED can seek to remove or control negative externalities in general or from transportation in particular, and also avoid introducing additional ones.[10]

3.1.4 Factor Substitution

Factor substitution suggests that one factor of production (e.g., labor, materials) can be substituted for another factor to produce the same output. Transportation can be viewed as an input factor to the production of most goods and services, whether the transport is supplied by the producer or the consumer. In the general theory of production (or consumption), a change in the price of inputs leads to a change in the quantities used in production. If the change is a reduction in the price of transportation, then more transportation will be used to substitute for other inputs in production process. In terms of transportation, this suggests that if the price of transportation decreases and transportation is cheaper to the producer (business), then some share of transport savings go into their profit. Therefore, cheaper transportation will make a location more attractive to a business. If there is competition, then at least some and perhaps all of the savings will be passed on to consumers (or purchasers). They, in turn, will pass them on to others.

If a local economy is using obsolete technology, or the mix of inputs has not changed in response to changes in input prices, there may be an opportunity to improve efficiency – and hence growth – by modernizing the production of goods and services. Centrally located land, for example, should be used more intensively (e.g., higher floor area ratio) as it becomes more valuable; in practice historically unchanged land uses may be holding back development (a market failure).

[8] Profillidis, Vassilios A., George N. Botzoris, and Athanasios T. Galanis, "Environmental Effects and Externalities from the Transport Sector and Sustainable Transportation Planning - A Review," International Journal of Energy Economics and Policy, 4: 4 (2014), pp. 647-661.
[9] Litman, Todd, *Transportation Cost and Benefit Analysis: Techniques, Estimates and Implications* Victoria Transport Policy Institute (August 18, 2009). http://www.vtpi.org/econ_dev.pdf.
[10] Cities including San Francisco, Boston, Providence, and Syracuse have removed urban expressways or are considering it because of the blighting effect of elevated structures.

3.2 Location Concepts

Because transportation serves to overcome the difficulties of economic transactions over physical distance, location is a key factor when considering either ED strategies or transportation investment, or both.

3.2.1 Agglomeration

Agglomeration is the location of activities (e.g., retail, education, business) in close enough spatial proximity so as to allow them to interact or serve customers more productively than they would if they were located farther apart. The traditional view of transportation and agglomeration is that a reduction in the cost of transportation reduces the cost of distance, allowing activities to spread out and bringing more land into productive use. Since the amount of land at a given location is fixed, transportation increases competition in the land supply and reduces its monopoly hold.

A more recent idea is that improved transportation allows firms to be more footloose, enabling activities to collocate to the extent they benefit from agglomeration spillovers. [11] The need to be close to raw materials, markets, and labor supply becomes secondary to the need to be close to other firms. Innovation clusters depend more upon local interactions than on other location factors. In both concentrated and spreading models, the attractive forces of agglomeration are inherent in the activities themselves, and not always affected by transportation. The difference is in how land is valued as a factor input: very highly in the traditional view, less so in the recent idea.

Agglomeration benefits occur through activities that are located in close proximity (e.g., within cities and industrial clusters) so that the employees of different firms can interact easily and in informal ways as well as commercial ones, and the knowledge of the area is enhanced by the presence of different specialties. Additionally, transportation infrastructure may increase access to skilled labor, thus increasing the returns to firms in a given location.[12] On the other hand, agglomeration may lead to traffic congestion, pollution and other negative externalities by the physical clustering of firms.

The benefits of agglomeration are measured through local wages, real estate prices, and growth in the number of people within an area. There are three categories of benefits derived from agglomeration economies:

1. **Urbanization Economies:** The larger the local economy (i.e., the bigger the city), the greater the production cost savings and other benefits to the firm. These can derive from access to larger markets, to more specialized services, or to the transfer of knowledge and technologies between one industry sector and another in the larger economy.
2. **Industrialization Economies:** Benefits derived from the agglomeration of industrial activities, which arise from the proximity of suppliers to customers.

[11] Glaeser, Edward (ed.) *Agglomeration Economics*, National Bureau of Economic Research ed., Chicago, IL: University of Chicago Press (2010).http://www.nber.org/chapters/c7977.pdf

[12] Lee W. Munnich, Jr., *Transportation Planning to Support Economic Development: An Exploratory Study of Competitive Industry Clusters and Transportation in Minnesota*: Minnesota Department of Transportation Office of Transportation System Management (January, 2015).

3. **Localization Economies:** Firms benefit from locating near other firms because they may use the same type of labor or inputs, or there is better access to information about competitors, suppliers, etc. For example, shopping malls provide a wide range of goods that can be purchased with a single trip (as does a supermarket), and also facilitates some degree of comparison shopping by having several suppliers of the same or competitive goods.

Agglomeration forces are centripetal (inducing clustering together in space), and improvements to transportation tend to be centrifugal (moving activities to disperse). Thus it is somewhat counterintuitive that highway investment should generate external benefits in the form of agglomeration. Regardless, transportation remains a vital component of facilitating agglomeration and there is a body of academic literature discussing this paradox.

The Economic Development Administration (EDA) has invested in two distinct tools designed to help practitioners better identify their cluster assets. The first identifies the industry and occupational clusters and related assets present in a user-defined geography. The second identifies clusters driving the national economy.

- Purdue University and the Indiana Business Research Center tool to identify the industry and occupational clusters and related assets present in a user-defined geography.
- Harvard University Institute for Strategy and Competitiveness' tool to identify the clusters driving the national economy.

3.2.2 Location Theories

Location theories explain how firms choose their locations which, in turn, helps explain how local economies grow. Specifically, location theories suggest that firms locate where they can maximize profits (by reducing the cost of production or increasing revenues). Transportation can affect these decisions about relocating as it reduces the travel time between a firm's inputs and the market it is trying to reach. Firms will look for a balance of nearness to materials needed for production against nearness to its market to determine what the ideal location, cost-wise, will be. For example, if a technology company wanted to be close to qualified labor, they may choose to locate in a region where there is access to a technology university rather than a region with few qualified candidates.

If a planner seeks to attract businesses to a particular location, it is helpful to look at the choice of location from the business' perspective. The features that influence a firm's location include:

- **Production Costs** are costs that businesses incur when producing a service or good (e.g., labor, materials, transportation). It is an important factor that businesses consider when choosing where to locate in that businesses tend to choose locations that will reduce production costs and increase their profits. Transportation is a production cost for virtually all businesses, and lower transportation costs can help attract businesses to a region. Literature shows that the importance of traditional factors (markets, labor, materials, transportation) remain strong but others (education, unionization, personal reasons, business climate, taxes, energy, government

incentives, familiarity with local conditions) have increased relative to the traditional ones.[13] This suggests that labor quality and institutions become more important in production process.

- **Location Factors** include attributes of the physical location (e.g., amenities, accessibility, socioeconomic environment) that may attract businesses to an area. Examples of location factors include natural resources, access to transportation, and proximity to skilled labor and potential customers. Transportation is a major location factor in that it expands businesses' access to resources and customers.
- **Business Retention and Expansion** is concerned with focusing on retaining and expanding existing businesses in an area as opposed to attracting new ones from other locations.

3.2.3 Market Areas

A market area is the spatial extent over which a good is offered from a specific selling location. The size of the market area depends on the frequency with which the good or service is purchased or its specialized qualities. To simplify the abstraction, buyers are assumed to be spread over space (e.g., residential neighborhoods) and sellers located at concentrated points.

3.2.3.1 Spatial Monopoly

Because buyers of common commodities tend to go to the nearest seller, sellers closer to their customers have an advantage over those even slightly farther away. This means that perfect competition is not possible in this situation because distance has at least some deterrent effect, so spatial monopoly might better be called imperfect competition.[14]

3.2.3.2 Market Size and Extent

Sellers cannot be everywhere, so they must select a location from which to do business and try to serve an area around them. If the cost of transporting the good to the customers is high, or the good is readily available from other sellers, the market extent will be small. Alternatively, if the good is highly specialized, easy to transport, and there are few sellers, the market extent may be (spatially) large. The market extent of a business may not be readily apparent, but an innocuous location in a small town may be having a large economic impact.

3.2.3.3 Spatial Competition

Sellers with small market areas can be relatively close to each other without overlapping or interfering. With enough buyers, however, these markets inevitably compete; sellers will locate so as to cut off some customers from other suppliers. This results in a pattern of market areas that abut each other and fill the geography of buyers with at least one seller serving every buyer.[15]

[13] Blair and Carroll, *Local Economic Development* (2009).
[14] In economic theory, monopoly means that the seller has some control over price (in perfect competition the market determines the price), which is reflected in a downward sloping demand curve for the monopolistic seller.
[15] One theory (central place theory) has the circular market areas compressed into hexagons, because they leave no interstices unserved.

3.2.3.4 Retail Gravitation

In the retail gravitation analogy, a location has diminishing influence as distance increases, but increasing influence relative to its size in number of buyers and sellers. For example, a large shopping mall with well-known anchors and multiple smaller retailers exerts a more widespread influence than a neighborhood convenience store.

3.2.3.5 Hierarchy of Market Areas

With these inherent differences in market size and intensity (frequency of purchase), a set of spatial patterns emerges of networks of market areas that overlap in space but whose sellers are located at different points. With various influences of physical geography, buyer density, and tastes, the sellers tend to cluster together to take advantage of agglomeration or localization economies. These adjustments result in a hierarchy of locations, with essential commodities supplied at frequent locations and more specialized goods and services being provided at fewer locations.[16]

For example, an elementary school serves a neighborhood, while a high school may serve a town. The corner grocery serves a walking-distance market area, while a supermarket serves a larger auto-access market area. Employment locations are located in similar ways, while drawing their labor from a broad area. Stores can compete on the basis of the range of goods, their quality, and the prices charged, to make themselves more attractive to a large group of customers. Retailers take pains to know what their customers are or might be interested in, and anticipate their desires, to offset their lack of "mass."

3.2.3.6 Internet Distribution

The internet detaches the place of production from the locations of customers. Thus the production and distribution can take place were the producer wants to live, unencumbered by constraints of market areas (but perhaps still constrained by locations of physical inputs). If production can be managed remotely, then production is less constrained by the physical properties of inputs such as natural resources and transportation. Producers can choose to work among urban amenities or bucolic surroundings and still have access to resources they need. Transportation is less important in location decisions because electronic communication substitutes for physical movement.

3.2.4 Production Location

Although the concepts of market areas have been described primarily in terms of retail activity in this primer, they can also be applied to labor markets and office employment. A different orientation toward spatial distance is reflected in analysis of manufacturing location. Again, these ideas are not limited to physical production, but they are best illustrated in that context.

The traditional concept of production location was to consider the locations of raw materials and markets and calculate an optimal compromise. The best locations for production were those close to materials if the production process resulted in large reductions in weight and bulk, and close to markets

[16] An example of the hierarchy of retail functions and their classification into central place levels is found in Shaffer et al, *Community Economics* (2004).

if costs of distributing the product were high. Warehousing can be approached similarly, by considering the costs of inventory versus the need to have stock available where it is sold.

3.2.4.1 Input-Oriented Industrial Location

Heavy manufacturing location depends on the costs of shipping inputs and outputs at various stages of production. Basic steel production has been located closer to sources of cheap fuel (coal) and iron ore than its markets because it was much cheaper to ship the iron and steel products than the raw materials. Ore from Minnesota and coals from Pennsylvania made production along the Great Lakes a natural location, even though the customer base expanded across the entire country. The lakes served as a transportation mode that brought the raw materials together and provided a means for shipping the products to markets.

Steel fabrication, on the other hand, became located much closer to the markets because its inputs were the outputs of basic steel combined with readily available fuels (electricity and gas) having a greater range of temperatures and more precisely controlled. Such manufacturing plants were located closer to large cities, but not directly in them. Automobile manufacturing went from being tied to basic steel locations to being more footloose, seeking out locations of cheap labor, from which vehicles could be shipped nationally.

Electronics can be produced anywhere and shipped anywhere, and the most successful electronics firms depend on economies of scale in assembly and continuous improvement. In this case, different functions of the firm could be located in different places that capitalize on the benefits of different locations. For example, the research branch of an electronics firm could be separated from the assembly branch, with the latter located in a lower-cost labor location.

3.2.4.2 Market-Oriented Industrial Location

In contrast to firms that require transportation of heavy or bulky materials, things like repair and service industries need to be located as close as possible to the customers, including the heart of urban areas. Customization has become automated, so automobiles can vary in much more than color and still be centrally produced and shipped to distant customers. Where physical contact or face-to-face transactions are necessary, close proximity is required. Such industries tend to be services and do not involve much manufacturing.

3.2.4.3 Footloose Industries

If an industry does not depend heavily on access to raw materials or to markets, firms can choose locations on other grounds, such as where the workers want to live (e.g., San Francisco, CA), where the managers want to live (e.g., Aspen, CO), or due to historical happenstance (e.g., Hershey, PA).

Chapter 4. Economic Development in the Transportation Planning Process

The aim of economic development (ED) planning is to identify the factors that contribute to the likelihood of sustained economic activity in a given location. This chapter discusses how ED can be applied in the transportation planning process and offers examples of how the ideas in Chapter 3 and Chapter 5 can be applied in different contexts that will lead to ED.

There are three basic questions that planners should address when planning for ED in conjunction with transportation:

1. How can transportation operations and investment aid and stimulate ED?
2. How should transportation facilities respond to ED?
3. How can non-ED transportation goals be balanced against ED goals?[17]

A common conundrum in the transportation planning field is whether transportation facilities lead to land use development or whether transportation services simply support development that is taking place for other reasons. In reality, it is an economic equilibrium between the two. Transportation can shape development, but it cannot create development where there is no demand. Where growth pressures are already strong, the location and type of transportation provided can improve the efficiency and quality of the outcome; where growth pressures are weak or absent, transportation can sometimes provide a synergistic stimulus.

Inevitably there will be tradeoffs between serving transportation purposes and stimulating ED. The objective is to treat them synergistically, such that the better a project is for transportation, the better it will be for ED. Normally this should be the case, but certainly there will be situations in which ED is enhanced with less transportation investment and more of something else (perhaps affordable housing). Specifically, if a transportation project creates benefits that are concentrated in a narrow demographic, ED may be strengthened by ensuring that the transportation benefits are more broadly distributed. These may be hypothetical situations, but their possibility should be acknowledged and addressed as needed in the transportation planning process.

4.1 Transportation Planning Process

Transportation planning is a collaborative process that encourages participation by all users of the transport system to identify transportation investments that will benefit their communities. ED is one input area that is considered in the process, along with other factors such as safety, data, and environmental issues. ED considerations should take place in all phases of the transportation planning process; however the way and extent to which ED is considered in each phase will vary. The regional vision-setting and project selection, which are important phases for ED planning, primarily take place during development of the Long Range Transportation Plan (LRTP), the Transportation Improvement

[17] Horst, Toni, and Sara Carini, *Understanding How to Develop and Apply Economic Analyses: Guidance for Transportation Planners*, National Cooperative Highway Research Program, Transportation Research Board (November, 2011).

Programs (TIPs), and individual project development. Figure 2 shows how ED is considered in the planning process.

Figure 2. Schematic of the US DOT Transportation Planning Process.

Source: Transportation Planning Capacity Building Program, FHWA/FTA, *The Transportation Planning Process: Key Issues*, (September 2007).

At least three Federal agencies – the Federal Highway Administration (FHWA), Federal Transit Administration (FTA) and the Economic Development Administration (EDA) – publish planning requirements as a condition of receiving their grants.[18] The joint FHWA and FTA planning regulations, 23 C.F.R. 450, define the requirements for State multimodal transportation planning processes, including the development of a LRTP and State transportation improvement program (STIP). The regulations mandate that States carry out transportation plans that emphasize safety and efficiency, encourage mobility, and foster economic growth and development, while minimizing negative externalities. There are several requirements related to ED. First, States must ensure that their transportation planning process considers projects that will promote the balance between transportation improvements and planned growth and ED. They emphasize that ED considerations should be balanced between transportation systems development, land use, employment, the environment, and housing and community development. Second, the regulations require States to coordinate their transportation planning with statewide and multistate ED planning efforts. The EDA planning requirements are discussed in 4.2.1 below.

[18] 23 C.F.R. 450.208, (2015).

4.1.1 Long Range Transportation Plans

Practitioners may begin considering the economic impacts of transportation projects during development of the LRTP. LRTPs outline the long-term transportation vision for a region by projecting a region's transportation needs and goals for at least a 20-year horizon. The LRTP assists communities in achieving these goals by providing a framework for them to identify strategies to achieve the goals and make decisions throughout the planning process. The FHWA planning regulations state that ED should be one goal considered in this vision. States should include any objectives they have on the issue of ED that is relevant to the development of the plan. Other goals might include community land use, energy, health, social needs, and safety, tourism, among others.[19]

The considerations for ED during LRTP development primarily relate to setting the vision for ED in a region. Before creating a vision, planners first need to understand the region's existing conditions in terms of population, employment, environmental justice, industry sectors, and other factors and then determine how ED will fit into that picture. Certain measures of ED that can help planners understand their region's economic profile and set specific ED goals include: [20]

- Employment
- Business activity (e.g., number of businesses attracted to an area)
- Productivity (measured by GDP and GRP)
- Property values
- Tax revenue base
- Land use development
- Capital investment
- Quality of life (e.g., health, environmental quality, visual aspects, community cohesion)

4.1.2 State and Regional Transportation Improvement Programs

After developing an LRTP, state and local transportation agencies are responsible for creating a Transportation Improvement Program (S/TIP) that focuses on the specific projects or programs that a region will implement. The STIPs and TIPs program projects over a much shorter time horizon of several years. At this stage, planners must justify how the implementation, operations, and maintenance of specific projects will help the region meet its goals as outlined in the LRTP. Thus, this is when planners will need to identify whether a project is likely to promote ED. The FHWA planning regulations say that state and local transportation agencies should ensure that their metropolitan transportation planning process addresses several factors including the balance between transportation improvements and planned ED. It also mandates that state and local agencies base their consideration of transportation plans on the scale of many issues, including ED.[21]

[19] 23 C.F.R. 450.208, 450.214 (2013)
[20] Federal Highway Administration, "Economic Development". http://www.fhwa.dot.gov/planning/economic_development/ (Last Accessed: June 24, 2015).
[21] 23 C.F.R. 450.208, 450.208 (2013).

4.1.3 Evidence of Economic Development Potential

The Planning process should considerprojects that support the economic vitality of the region. There is no single way to do this and it can be a challenging question to answer. Many tools exist, however, to help planners provide the analysis they need. Chapter 5 describes these tools and how to use them in more detail. It is not enough justification to just say that a set of projects will assist with local ED efforts and support more than *X* jobs just because transportation infrastructure is the centerpiece of a strong economy. Although the selected projects may be identified as supporting ED, the statement is not complete because project attributes that would especially support ED are not mentioned. There are many other factors that could promote ED in a region, and in many cases transportation is not the main factor. Therefore, when developing a transportation project to promote ED, it is important to document exactly how the investment will make ED occur.

4.2 Coordination With Other Agencies

The transportation planning process requires coordination between all stakeholders of a transport system. Several types of state and regional organizations may play a role in facilitating ED, and it is important that planners coordinate with these groups, in addition to transportation agencies, to make sure that regional ED-related projects and programs are aligned. Several of these organizations are listed below.[22]

- State Centers for Commerce
- EDA Regional Offices
- Economic Development Districts
- Universities
- Governors' Offices for Economic Development
- Trade Adjustment Assistance Centers
- Regional Non-profits focused on ED
- State ED agencies
- Freight agencies

This section discusses three types of organizations that are most important for state and regional transportation agencies to be coordinating their ED efforts with.

4.2.1 Economic Development Administration

The EDA is responsible for managing national-level ED programs as well as supporting State, regional and local ED. The primary mechanism through which they support agencies is by investing in efforts that foster job creation and attract private investment, especially in economically distressed regions. EDA places a strong emphasis on innovation and regional collaboration as pillars that promote ED. EDA also supports regions by providing tailored technical assistance, post-disaster recovery assistance, trade adjustment support to offset the impact of imports, strategic planning and research and evaluation

[22] Economic Development Administration, "CEDS Content Guidelines." (July 23, 2015).

support.[23] Their research has resulted in numerous reports, guidance, templates and tools that aid ED planners.

4.2.1.1 Comprehensive Economic Development Strategies

If a transportation project falls within the jurisdiction of an EDA grantee, then the project must be part of a Comprehensive Economic Development Strategy (CEDS). A CEDS is a plan required by recipients of EDA funding that brings together multiple stakeholders in order to strengthen and diversify a regional economy. The EDA defines CEDS as a framework for "establishing regional economic goals and objectives, developing and implementing a regional plan of action, and identifying investment priorities and funding sources." CEDS address many issues related to a region's economy including transportation, housing, workforce development, and the environment. According to a survey conducted by National Association of Development Organizations (NADO), 10 percent of the Economic Development Districts (EDDs) surveyed ranked transportation access as the "most important" issue for the region's economic future, and 18 percent ranked it as the second most important issue.[24]

All CEDS are required to have seven components:

1. Background (description of economy, demographics, transportation, environment, etc.);
2. Analysis of ED opportunities (e.g., economic cluster analysis);
3. CEDS goals and objectives covering five-year timeframe;
4. Community and private sector participation (description of relationship that various groups will have in development and implementation of CEDS);
5. Strategic projects, programs and activities;
6. CEDS plan of action; and
7. Performance measures.

EDA encourages CEDS development and implementation to be an ongoing planning process that involves multiple public and private stakeholders, such as state DOTs, ED directors, local elected officials, private employers, institutions of higher education, minority and labor groups, and Chamber of Commerce representatives. A survey conducted by NADO in 2009 noted that while only about 15 percent of state DOTs and other transportation industry representatives are directly involved in the CEDS development, many support the CEDS developers with regional transportation planning indirectly through contracts. One formal method of bringing together stakeholders is through the Comprehensive Economic Development Strategy Committee (Strategy Committee), a key component of a CEDS.[25]

Although CEDS are not required to be formally coordinated with transportation plans, many States and local agencies choose to do so in order to enhance their ED and transportation planning efforts, especially in regions where transportation is lacking. One way to do this is to align the goals of CEDS and a region's state and local transportation plans. Shared goals for transportation projects in the CEDS

[23] For more information on EDA, visit http://www.eda.gov/about/investment-programs.htm.
[24] Walzer, Norman, and Melissa Henriksen, *Role of Transportation in the Comprehensive Economic Development Strategy Process: A Nationwide Scan*, prepared for National Association of Development Organizations (NADO) under Federal Highway Administration, DeKalb, IL: Center for Governmental Studies, Northern Illinois University (April, 2009).
[25] Economic Development Administration. "CEDS Content Guidelines" [cited 2015 July 23]. Available from: http://www.eda.gov/ceds/.

might include increasing jobs, retaining or recruiting businesses, and increasing freight mobility. Other ways that regions can better coordinate transportation and CEDS planning are:[26]

- Including a policy section in the CEDS background section describing the region's transportation assets;
- Ranking transportation projects separate from other types of priority projects to ensure they at least some transportation projects are included;
- Expanding the eligibility parameters for transportation projects in the CEDS process to allow for funding of more diverse transportation projects;
- Attaching the state or regional transportation plan to the CEDS document to highlight linkages between the two;
- Overlapping leadership between EDD and rural or metropolitan transportation planning organizations (e.g., have members from each group on EDD or transportation planning boards or committees, having the same committee for ED and transportation planning in rural areas, hold joint meetings between the groups); and
- Expanding distribution of CEDS to the state DOT and local transportation agencies.

Many regions have successfully integrated CEDS and transportation planning. For example, the Southeast Michigan Council of Governments (SEMCOG) effectively addressed transportation in their CEDS by coordinating with the State DOT to develop the document, including a chapter describing the region's transportation assets and connection to the regional economy, identifying "enhancing transportation connections" as a goal, and also including several transportation projects in the action plan such as improving regional freight flows through the U.S./Canada border and supporting a regional rapid transit system.[27] Another example is the Alabama CEDS which includes Alabama DOT as a member of their advisory committee, coordination with transportation planning programs (e.g. MPOs, regional councils) in rural and urban areas to plan for needed transportation improvements, transportation related goals (e.g., increase in transportation options), and several transportation projects in their action plan.[28]

4.2.1.2 Economic Development Districts

According to 13 CFR 304.1, EDA may designate an EDD within a region if such region meets certain criteria. EDDs are often comprised of a combination of public and private sector members including county governments, local ED authorities, and cities. The primary responsibility of EDDs is to prepare the CEDS, which includes preparing the document, forming a CEDS committee, soliciting public review and submitting the document to EDA.

For more information on EDDs in a particular state, visit the following link and select the state: http://www.eda.gov/resources/economic-development-directory.

[26] Walzer, Norman, and Melissa Henriksen, *Role of Transportation in the Comprehensive Economic Development Strategy Process: A Nationwide Scan*, prepared for National Association of Development Organizations (NADO) under Federal Highway Administration, DeKalb, IL: Center for Governmental Studies, Northern Illinois University (April, 2009).
[27] SEMCOG (Southeast Michigan Council of Governments), "Economic Development". http://www.semcog.org/Plans-for-the-Region/Economic-Development (Last Accessed: August, 2015).
[28] Alabama Association of Regional Councils, "Alabama CEDS". http://ceds.alabama.gov/ (Last Accessed: August, 2015).

4.2.1.3 Economic Development Administration Analysis Tools

EDA offers several tools on ED concepts that practitioners and policymakers can use to enhance their decisionmaking process. Six of EDA's tools most relevant to planners are:

1. **Industry Cluster Analysis:** Clusters are groups of businesses that are linked in the production process and may have similar needs for infrastructure, technology, support services, and labor skills. EDA offers two tools that help practitioners identify their cluster assets.
2. **Regional Innovation Index:** The index offers a multidimensional measure of the region's capacity to innovate.
3. **Occupational Cluster Analysis:** Tabulations of occupations grouped by similar knowledge and skill requirements provide the link between regional industries and workforce requirements.
4. **Guidelines for Regional Organization and Investment Analysis:** The Regional Strategy and Investment Framework integrates the analyses from the other tools and helps leaders develop a process for a regional vision and supporting actions.
5. **Measuring Distress:** A tool that calculates whether a certain location may meet grant thresholds for unemployment and income. Users can choose any location using an interactive map.
6. **Calculating the Triple Bottom Line:** Calculates the impact of an ED investment on economic vitality, natural resource stewardship, and community well-being.

4.2.2 State and Local Economic Development Agencies

Many states and local jurisdictions have a separate ED agency.[29] These agencies include organizations such as state Commerce Centers, state Offices of Economic Development, EDA Regional Offices, and Regional Planning Commissions. Although the role of these agencies vary, some common functions include helping businesses expand their presence in an area, support on trade development, providing training on business strategies, and providing data on regional industries. It is important for transportation agencies to coordinate with relevant State and local ED agencies on setting goals and selecting projects.

EDA offers a directory of all regional ED agencies in each state on their website. To view a list of the agencies in a given state, visit: http://www.eda.gov/resources.

4.2.3 Freight Planning for Economic Development

Industry plays a huge role in supporting ED in a region, and firms rely on freight transportation to supply their inputs/resources and export their products. Freight planning should address the transportation issues faced by firms in the region, especially in competitive clusters. Freight planners can use information about industry clusters and their importance to the state economy to frame their freight

[29] Economic Development Administration. *Economic Development Directory* [cited 2015 July 23]. Available from: http://www.eda.gov/resources/economic-development-directory/states/fl.htm.

plans. The impacts of freight transportation infrastructure investment can be reduced road congestion, more reliable shipments and travel times, higher land values and local economic development.[30]

One study suggested that statewide freight planning should address the types of freight issues encountered by firms in competitive clusters around the State.[31] Information about which industry clusters are most important to the State economy and specific information about how transportation costs influence cluster competitiveness could help frame freight plans. The information can deepen the analysis that goes into developing the freight plans and provide a more specific set of priorities based on ensuring that transportation investments support future cluster competitiveness.

4.2.4 Private Sector Investment

Private sector firms -- in addition to public agencies and non-profit organizations -- should be given the opportunity to contribute to discussions of ED goals and strategies, as part of the public involvement process. As discussed in the section on CEDS, private firms prominent in a region are often involved in the CEDS development process. Among other things, private firms can provide useful information on transportation factors that affect business location, labor attraction, and shipment of products. Private sector agencies are also often willing to contribute financial and in-kind resources to ED planning efforts.

ED Coordination with Private Sector in Cincinnati, Ohio

The Over-the-Rhine neighborhood in Cincinnati, Ohio has experienced dramatic growth over the last decade due to a large amount of investment into the area. The investment came from a combination of public sources (e.g., tax increment financing districts using property tax dollars) and private sources (the city's major corporations helped fund the Cincinnati Center City Development Corp.). As part of this investment, Cincinnati is adding a streetcar to Over-the-Rhine to connect the area with the central business district, which will help further facilitate ED.[31]

[30] National Economic Council, President's Council of Economic Advisers, An Economic Analysis of Transportation Infrastructure Investment, Washington D.C.: The White House (July, 2014). http://www.whitehouse.gov/sites/default/files/docs/economic_analysis_of_transportation_investments.pdf.

[31] Lee W. Munnich J. *Transportation Planning to Support Economic Development: An Exploratory Study of Competitive Industry Clusters and Transportation in Minnesota.*(January 2015).

Chapter 5. Economic Development Theory and Analysis

Successful efforts to stimulate ED need to be guided by principles (such as those outlined in Chapter 3) that then need to be interpreted and applied in the particular context. There are many ways to accomplish ED and many ways in which the effort may fail. Success is never guaranteed; it relies on developing insights about the strengths, weaknesses, and opportunities of a local economy, and taking appropriate, context-specific actions. There is, however, accumulated knowledge about general techniques that can be helpful in understanding local economies and stimulating economic activity in different types of situations.

Many economic tools and analysis methods, such as benefit-cost analysis (BCA) and economic impact analysis (EIA), are used to measure how, and to what extent, transportation investments will lead to desirable outcomes. These tools do not, however, provide much information about how to achieve economic development (ED). Sometimes ED can happen just by removing obstacles, while in other situations strenuous public sector effort (in the form of grants, technical assistance, subsidies) is required, whether in conjunction with transportation investment or not.

5.1 Concepts, Assumptions, and Measurement

The likelihood of ED taking place in a community or region depends upon exogenous factors (conditions outside the control of local leaders/agents) and endogenous factors (actions that can be taken by local decisionmakers and entrepreneurs to create an environment for ED to happen). This can be thought of as a spectrum as represented in Figure 3.

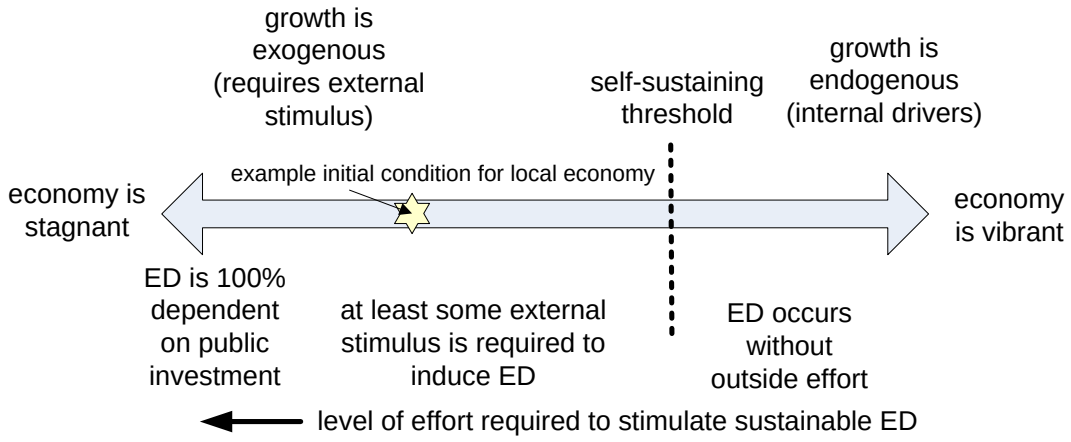

Figure 3. Spectrum of potential for ED

Each community's economy is initially located somewhere along the spectrum displayed in Figure 3. The challenge of ED is to move the economy to the right, ideally to some position past the self-sustaining threshold, which is the point at which government does not need to invest any additional resources to sustain ED. Cambridge, MA, for example, is a location that has sufficient demand for development within its borders that no subsidy or tax abatement incentives are required to attract development. Many rural counties , in contrast, have seen population and economic decline over a long period, which

put them on the left side of Figure 3. [32] Because ED is dependent in large part on consumer spending, the horizontal dimension is likely to be correlated with the absolute and per capita income of the community, with poorer regions toward the left and higher income communities able to sustain development without external stimulus. For the sustainable growth communities, the challenge becomes that of channeling growth pressures into high quality development with positive impacts that will retain its value over the long term.

A first step for the community seeking ED is to determine where it lies on this spectrum.[33] Indicators of population growth/decline, employment growth, household income, and other measures are widely available in comparable forms. For some local economies decline may be inevitable, at least for some period of time, and planning should be aimed at moving to the left (less activity) with the least amount of waste.

5.1.1 Circular Flow Model

The local economy can be represented in the abstract by a circular flow of resources and counterflows of quantities and payments, as shown in Figure 4.[34] Entities are aggregated into three types:

- households,
- firms, and
- governments.

They interact in two types of markets,

- commodities, or goods and services (outputs of economic activities), and
- resource or factor markets (inputs to productive activity, such as labor, capital, and materials).

Households supply labor, capital, and savings, and receive income while *firms* take capital and labor and produce commodities and services, for which they earn revenues. *Households* consume goods and pay revenues to firms. *Governments* impose regulations on the markets and command resources.

These three sectors also deal directly with the rest of the world (ROW) in the form of exports and imports, represented by the double-headed arrows. These are all potential sources of growth and also leakages, depending on the direction of flow.

[32] New York State Upstate Revitalization Initiative: New York State; [cited 2015 July 23]. https://www.ny.gov/programs/upstate-revitalization-initiative. The state administration has been promoting a multi-year Upstate Revitalization Initiative since the recession, making available a wide range of ED resources and programs.
[33] Schramm, Carl, "The real story of New York's economic gap," New York Post, (September 29, 2013) http://nypost.com/2013/09/29/the-real-story-of-new-yorks-economic-gap/.
[34] This or similar diagram are frequently found in economics textbooks. This one is adapted from Blair and Carroll (2009) and Shaffer, Deller, and Marcoullier (2004).

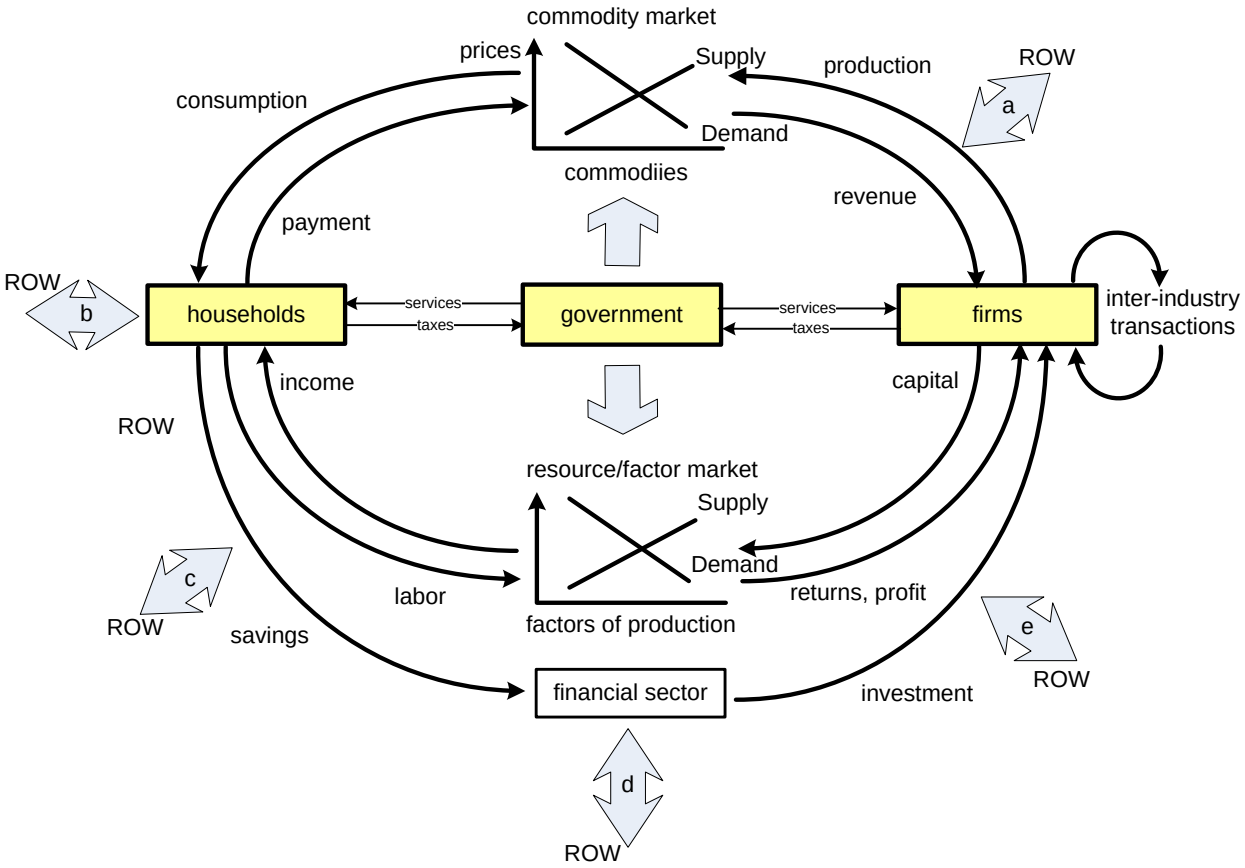

Figure 4. Circular flow model of a local economy

The main point of the diagram is to illustrate that an economy consists of transactions among many entities, no one of which controls the outcome. There are no fixed points that anchor the whole. Any change in any component may affect everything else, or it may have no effect at all. Streamlining regulation may reduce the costs of housing and increase safety hazards. Improved education may result in higher taxes.

Even this highly abstract representation is fairly complicated. These generalized flows are the transactions that are used to measure the national transactions making up GDP, national income, savings, investment, and foreign trade. Disaggregated counterparts make up the economic data that are available for estimating regional product and its components.

5.1.2 Standard Economic Development Metrics

The absolute level of an economy is generally measured in terms of income and product accounts, such as regional product, income, employment, trade, and investment. These are transactions that have dollar values that can be quantified in common units, and have been defined at the national level in the National Income and Product Accounts (NIPA). Most of these quantities are based on sample data and estimated, but they are at least conceptually standardized. Historical trends can also be observed and extrapolated, under potential alternative scenarios.

Demographic measures, such as households, labor force, education, and age, supplement the economic indicators. This information helps to understand the unique characteristics of the local economy, for developing alternative strategies.

- **Gross Regional Product (GRP)** (i.e., measured by dollar transaction of activity, including investment in business and development)
- **Employment** (i.e., total employment, growth in employment, unemployment, jobs offered, average wage, growth in the labor force or labor force participation, job creation)
- **Business Activity** (i.e., business income, businesses created)
- **Well-Being** (i.e. quality of life measures, innovation/technology development, environmental quality)

Many analysis methods and tools are available to help practitioners estimate the ED effects of local or regional investments or other stimulus efforts. The EDA is initiating research on innovative measures, metrics, indicators, and methodologies for helping agencies assess the impact of their ED efforts.[35]

5.1.3 Net Jobs versus Redistribution: Problems with "Jobs" as a Metric

A given lump of spending consumes resources and stimulates economic transactions, among which is employment of labor. One impact of an infrastructure construction project is the hiring of construction workers. To say this "creates" jobs, however, is both tautological and misleading.

The tautological part is that some share of almost any spending is ultimately spent on labor. Even if we know the dollar amount and the number of "jobs" (or FTE equivalent), the conversion of spending into jobs does not imply "creation." The reason is implicit in the circular flow model: if the government contracts with firms to produce infrastructure, the government must take the money from somewhere, either through taxes or from less spending on some other project or purpose. Any of those sources result in less spending on something, whether private consumption or public investment. That alternative spending would have created jobs if it had taken place. The job-related question, then, is whether the jobs resulting from the new infrastructure spending results in more jobs than those lost by forgoing the alternative spending.

This determination of which is greater – new jobs versus jobs lost – is obviously complicated, as suggested by the circular flow diagram. The most accurate and rigorous method for doing this is the comparison of social benefits to social cost in BCA, applied in the project evaluation. If the project generates positive net benefits, then some net benefit has been created that can be deployed into labor and other factors of production. The specific social benefits and associated jobs are still difficult to observe, but at least we know that the investment creates net benefits, reflected in part in jobs.

When politicians and advocacy organizations speak of jobs, in most cases they loosely mean spending. More spending creates more jobs. Perhaps the claimed numbers include multiplier effects, or are simply

[35] Economic Development Administration, Innovative Metrics for Economic Development: Grants.gov; 2015 [cited 2015 July 23]. Available from: http://www.grants.gov/web/grants/view-opportunity.html?oppId=277694.

inflated. These numbers have little or no economic content, and they do not distinguish between one project or strategy and another, just the amount of spending.

5.1.4 Defining the Analysis Region

The definition of the region being measured for economic impacts is called the study area. Planners should give careful consideration to the definition of the study area and clearly articulate this in the analysis methodology, as the ED effects may be different depending on the scale of the region (e.g., neighborhood, city, State). The agencies are typically responsible for defining the study area, and the default approach is just basing it off of an agency's jurisdiction. For ED purposes the region might be narrowed or expanded to include a metropolitan region or state. The FHWA planning regulations state that metropolitan area boundaries may be established to coincide with regional ED and growth forecasting areas.[36]

The geographic scope of the study area (represented in Figure 5) determines which impacts are internal (hence netted out in summary statistics) versus impacts that occur in the rest of the world. The larger the study area, the relatively smaller the direct impacts will seem, but the larger the share of indirect effects that will be captured; a smaller study area will allow indirect impacts to "leak out" more quickly.

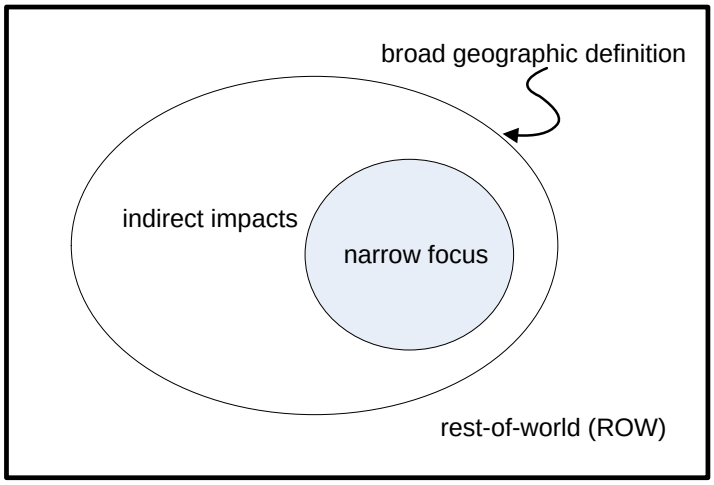

Figure 5. Effects of geographic scope of study area.

If the area is too small, then important impacts – positive or negative – become spillovers that do not get counted. If the area is too large, then the impacts of interest may get lost in the noise of other impacts. Obviously the geographic units for which data can be generated will force some compromises.

5.1.5 Defining the Analysis Period

The effects of a transportation investment may appear in several different time phases (i.e., short-term construction period, near-term after project completion, and 20 years or more long-term effects). It is important to assess all potential effects of a project, and planners may need to consider the effects during these time periods separately in order to get the most accurate estimate. Typically, the first year

[36] 23 C.F.R. 450.208, 450.312 (2013)

of the analysis period equates to the first year of construction (when the investment incurs costs), and the end of the analysis period is typically far enough in the future to capture the majority of project benefits (usually between 20 and 50 years). Depending on the project, the time periods being measured may vary. For example, the useful life of buses is 7-12 years, bridges is 50-75 years, and roads is 20-50 years. It is also important that all projects being compared be evaluated on equal terms (e.g., discounted to the same year).

For ED programs, the appropriate time frames are similar, in that enough time should be allowed for both public and private investments to mature, and stability to be achieved in terms of economic growth and personal incomes. FHWA has a selection of case studies for primarily rural areas to show the impact of highway projects on an area.[37]

5.2 Roles Among Major Economic Analysis Frameworks

There are many different methods for estimating the economic impacts of proposed projects, each of which has a distinct use in transportation and ED planning. Three common methodologies – benefit-cost analysis (BCA), economic impact analysis (EIA), and ED analysis -- are compared in this section:

- BCA addresses the question of what does society gain from committing investment resources in the current timeframe to construct assets that will reduce future transport costs?
- EIA addresses the question of how does the spending affect the economy as a whole and the locations and amounts of employment, production, and consumption?
- ED analysis addresses the question of what will stimulate the local or regional economy to positive or higher economic and physical growth?

Neither BCA nor EIA directly measure ED impacts. Rather, BCA and EIA are complementary tools that can be used to explain ED implications from different perspectives. Each type of analysis has an underlying methodology and data requirements that support the purpose the analysis is designed to accomplish. Table 1 describes the orientation of each methodology.

[37] http://www.fhwa.dot.gov/planning/economic_development/studies/

Table 1. Comparison of BCA, EIA, and ED Characteristics

Methodology	Purpose	Base Case	Entities/Units	Metrics	Results
BCA	Selecting worthwhile projects	Transportation conditions without the investment	Initial capital cost, future time and cost savings	Quantities of benefits and costs in dollar values	Net gains to society
EIA	Understand indirect impacts	Economic activity without the additional spending	Economic transactions among sectors	Economic activity measured in GDP, employment, production etc.	Estimated changes in economic activity by sector
ED Analysis	Improve the likelihood of growth in income and activity	Economic activity without special effort to stimulate ED	Growth in the local or regional economy	Future economic activity and land use development	How to achieve goal of growth in economic well-being

These studies can be technically demanding and may be conducted at widely differing levels of detail. While they are all potentially relevant to ED, BCA and EIA are entirely different conceptual frameworks to address different issues, both from each other and from ED. Each type of analysis can be valuable for decision purposes, but only if they are focused on what they are designed for. If ED is the goal, BCAs and EIAs can add to the information but cannot substitute for a proper ED assessment and plan.

While these techniques can yield valuable insights, they can also be misused. Benefits in BCA can be overestimated in magnitude, or double-counted, and costs can be underestimated. EIA can claim that jobs are created without recognizing that the money has to come from somewhere and the subtracted resources will take away jobs.[38] ED can portray a rosy scenario that is not warranted by the actual conditions. Both BCA and ED Analysis are subject to the bias of overly optimistic demand forecasts. Planners should be aware of the motives of those performing the analyses and be appropriately skeptical.[39] Evaluations should be provided by competent and independent parties, whether by in-house staff or contractors, and the analyses should be transparent and reproducible to the average reader.

5.2.1 Economic Impact Analysis

Economic Impact Analysis (EIA) assesses the impact of a project on a region's economy. The mechanism through which transportation investment causes economic impacts is by changing the price of goods and services in the economy, changing household behavior, and changing business behavior which leads

[38] Mills, Edwin S., "The Misuse of Regional Economic Models," *Cato Journal*, 13: 1 (Spring/Summer, 1993), pp. 29-39.
[39] Skinner and Sweeney. *Pipe Dreams? Jobs Gained, Jobs Lost by the Construction of Keystone XL.* (January 2012) An analysis questioned the claims by TransCanada Corp regarding spending and job creation resulting from its KXL pipeline, and also the American Petroleum Institute's claims for jobs created by the oil industry if public lands were opened to drilling. Neither claims nor critiques may be correct, but planners and citizens should be able to assess the persuasiveness of competing arguments.

to enhanced business activity (e.g., investment, expansion, retention).[40] These impacts can be measured by business sales, jobs, value added, income, or tax revenue. EIA models the economy of a designated study area (usually within an administrative border) as a set of interacting economic sectors, and traces the impacts of consumer, government, and business spending on revenues and employment in various sectors.

5.2.1.1 EIA Multiplier Models

Multiplier models in their simplest form relate a narrow economic flow (e.g., export employment) to a larger flow (Gross Regional Product) through a ratio; the ratio is called the multiplier, and the application is to estimate the larger flow from a forecast of the smaller.

The more complicated models are derived from input-output and other macroeconomic models that are driven by public expenditures. They do not inherently represent transportation benefits (which must be modeled separately). What the spending does to shift behavior, change production inputs, or improve productivity is not endogenous to the model, and must be added in some way if they are of interest.

The benefits of multiplier models are they can provide specifics of the linkages between economic sectors and sectoral breakdowns. For example, spending for a given purpose (highway construction) can be translated into employment in relevant sectors (portland cement, capital construction, petroleum products). Multiplier models can also provide estimates of the leakages that occur in each round (of spending) from the local economy. With some additional effort, this might be helpful in judging the extent to which existing residents (of economically distressed areas) may gain from ED.[41]

The limitations of multiplier models in general is that they do not estimate the benefits of individual projects (the measures only include market economic activity and the scale of the impacts is too small to detect individual projects) and the impacts are only those transmitted between economic sectors as represented by linear production functions (a linear relationship between input and outputs). Breakdowns between direct impacts, indirect impacts, and induced impacts can be quantified, but these do not relate to benefits, only to costs. Macroeconomic models only deal with entities measured in the NIPA (National Income and Product Accounts).

[40] Transportation Benefit-Cost Analysis: Transportationeconomics.org, [cited 2015 August]. Available from: http://bca.transportationeconomics.org/home. This website describes BCA and EIA in basic conceptual terms that provide principles, logical structure, and examples.

[41] Anderson, William P., and Arthur C. Jacoby, "Measuring Economic Impacts of Federal-Aid Highway Projects," *Public Roads*, 64:2: FHWA (September/October, 2000).

5.3 Methods for Economic Development Analysis

There is no single method for conducting ED analysis; rather practitioners can use a variety of tools for estimating potential ED impacts. Because ED deals with aggregate measures of economic activity, the models can be described as macroeconomic models applied at the regional level. This section provides a summary of ED models and explains their basic concepts, summarized in Table 2. Three levels of analytic tools or methods are described:

1. **Basic methods rates and ratios** that allow the analyst to make comparisons between the study area and other places, such as the state and the nation. Consistent and relevant data are readily available at the local level, and the methods are simple enough that agency staff can easily calculate the indicators. The concepts should be understood by anyone interested in ED.
2. **More in-depth frameworks** that derive from the basic concepts but provide a more disaggregated picture. Economic Base multipliers are easily calculated and provide a perspective that more complicated multiplier models can elaborate. If the local context is broad and complex enough, these kinds of techniques can be undertaken locally, perhaps in conjunction with contractors that specialize in running the software and interpreting the results. The analyst should understand the concepts and their interpretation, even if someone else does the calculations.
3. **Complex models** that may integrate several types of models. These advanced models depend upon specialists and the analysis is rarely needed for accomplishing local or regional economic development. For such efforts, political and institutional coordination among the relevant jurisdictions is more important than a detailed technical understanding of the possible scenarios.

Table 2. Comparison of Methods for Conducting Economic Development Analysis

Method	Purpose	Uses
TRENDS AND SPECIALIZATIONS	• Identify characteristics of local economy that distinguish it from others	
Time Series	economic and demographic indicators comparably measured for a sequence of years	trends of growth, stability and decline
Cross section	comparable economic indicators across several geographic entities at the same point in time	comparative levels of activity
Location Quotients	technique that can be used to identify industry concentrations in a region	cluster analysis
Shift-Share Analysis	a method for determining what portions of regional economic change can be attributed to various factors.	cluster, importance-strength
MULTIPLIER MODELS	• Indirect or follow-on effects of increasing activity in one or more sectors	
Jobs-Spending Rate	a quasi-multiplier analysis that converts spending into employment	offers a popular metric but adds little content
Economic Base Analysis	Identifies the prominent industries in a local economy.	focus attention on export sectors that drive the local economy
Input-Output Models	tool that enables planners to examine linkages among industry sectors and compare their transactions in a region	Models the economy as a set of basic, intermediate, and final demand sectors interrelated in the form of a transactions matrix
Computable General Equilibrium Models	macroeconomic models that converge to a supply-demand equilibrium	allow for long term impacts of spending profiles, funding sources, borrowing, etc.
INTEGRATED MODELS	• Land use and transportation	
Integrated Models	IMPLAN land use and economic growth model REMI economic impacts model LIFT expanded input-output model RIMS II econometric model LEAP land use and transportation	Long range transportation planning (i.e., understanding the existing regional profile in order to set a vision for the future) S/TIP planning (e.g., using knowledge of the strengths and weaknesses of a region to justify ED projects)

5.3.1 Demand for Economic Development

The ultimate problem for ED and the largest unknown is how much demand is there for growth in economic activity. The various data and methods described in this chapter have been aimed at guessing the magnitude of potential ED. Past trends and current income and activity levels are good indicators, but if growth is already occurring it probably will continue, and if the history is flat and incomes are low, the prospects are not bright. The question remains as to what actions can be taken that will turn the region around and move the local economy to the right in the spectrum shown in Figure 3.

Most large cities in most countries are growing, but some smaller urban areas are declining in population and economic activity. If the conditions that created the settlement originally are no longer applicable, and there is no prospect for alternative economic drivers, then managed decline may be the most realistic strategy. Detroit is finding some unexpected life in particular demographic and economic sectors, but overall it is unlikely to replace the level of activity once generated by the automobile industry.[42] In addition, responses to climate change have impacted the realistic approach to highway investments is climate change. FHWA has worked on "Adaptation" to changing environmental conditions as a means of responsible risk management.[43]

A possible source for developing ED impact estimates is EconWorks and Assess My Project which contain a searchable database of past transportation projects and their observed impacts on ED, as well as a predictive tool that estimates the range of likely impacts of proposed new projects based on results from already-built projects.

Rural regions need to avoid stagnation but at the same time be cautious about short-term booms, stimulated by such activities as resource extraction or gaming.

[42] "How to Shrink a City," Dessau-Rosslau. Rus in Urbe Redux. *The Economist*. (May 30, 2015).
[43] http://www.fhwa.dot.gov/environment/climate_change/adaptation/

Chapter 6. Strategies for Achieving Economic Development

There is no single strategy that will achieve ED in all regions. The success of various strategies depends on a variety of factors such as the geographic size of the region, the existing level of urban development, evident demand for future development, and the local resources upon which to build an ED program.[44] The strategies reviewed here can be combined and adapted in many ways for selecting specific projects and programs (e.g., targeted anti-poverty, tourist promotion) that may support ED. The specific projects (e.g., bike lanes, bridge enhancement, etc.) and programs that can be implemented to facilitate ED will depend on the region's existing infrastructure and potential. Studies have shown that providing enhanced bike and pedestrian facilities increases the number of shoppers at existing establishments. Planners can use these strategies to help design efforts that will be most likely to be successful.

The concepts, data, analysis techniques, and frameworks have been described in previous chapters; this chapter attempts to illustrate how this knowledge can be integrated and focused on specific goals.

6.1 Regional Perspective

Regional development requires a broader awareness of the interests of multiple agencies and jurisdictions that are subject to common problems and opportunities. More emphasis is placed on macroeconomic tools and data than for more localized analysis, although both microeconomics as well as macroeconomics are necessary. The use of social measures of economic activity (National Income and Product Accounts, or NIPA) is important at any level, but interactions among multiple industry sectors are likely to be especially relevant at a regional level.

A region is commonly multi-county and sometimes multi-State. Effort to stimulate ED one firm at a time or even for a single community is unproductive: individual communities need to consider the interests of other communities in the region. Successful development requires a long-range plan constructed via a coordinated regional strategy.

6.1.1 Regional Competition and Cooperation

The Economic Development Administration (EDA) argues that globalization has changed the scale of ED from local to regional, in order to compete globally. The agency also claims that the traditional approaches of industrial recruitment and cutting business costs are insufficient for success; innovation and knowledge-based skills are required for sustained ED. The EDA-sponsored research tools are aimed at informing regional ED leaders of the options and the need to collaborate on practical solutions.[45]

Reduction in the cost of physical movement of goods and the increasing speed of global communications have reduced the spatial monopolies of industrial land, invested capital, and local labor. The future basis for competitive advantage is knowledge and the capacity to innovate. Regional development strategies must be aimed at enhancing these attributes.

[44] Laube, Melissa, *A Multi-Modal Approach to Economic Development in the Metropolitan Area Transportation Planning Process*, prepared for FHWA, (January, 2014).
[45] Purdue Center for Regional Development, et al., *Crossing the Next Regional Frontier*, (October, 2009).

Individual States (or their decision makers) may actively seek to attract employers to locate in their States. The actions states take to accomplish this can be characterized broadly in two ways: actions that make the state a better place for doing business, such as education and amenities, and actions that amount to subsidies to firms willing to locate in the subsidizing jurisdiction. The difference is important because the former strategy is a form of improvement (betterment) that enhances productivity in a legitimately competitive way, whereas the latter is an attempt to induce a firm to locate in a less efficient way. The first is productive (efficiency enhancing), the other is distortionary (destructive, or inefficient). The ideal is to let the market reward those who do the best job of creating a productive economy, rather than try to redirect the market by trying to "buy" employment.

6.1.2 Economic Development Administration Tools

Local agencies can apply for Federal funding from the EDA. The U.S. Department of Commerce's Economic Development Administration (EDA) is the only Federal agency focused exclusively on ED, and it plays a critical role in fostering regional ED efforts. EDA has been working for several decades to describe ways that economic development can be stimulated in lagging regions. EDA-sponsored research has produced some tools to aid ED planners. Four of their tools are: [46]

- Industry Cluster Analysis

  Clusters are groups of businesses that are linked in the production process and may have similar needs for infrastructure, technology, support services, and labor skills.

- Regional Innovation Index

  The index offers a multidimensional measure of the region's capacity to innovate.

- Occupational Cluster Analysis

  Tabulations of occupations grouped by similar knowledge and skill requirements provide the link between regional industries and workforce requirements.

- Guidelines for Regional Organization and Investment Analysis

  The Regional Strategy and Investment Framework integrates the analyses from the other tools and helps leaders develop a process for a regional vision and supporting actions.

Data for operating these analyses are widely available NIPA and other public statistics.

6.2 Cluster Analysis

Clusters are economic activities agglomerated in spatial proximity that interact intensively with each other. Most of the benefits of clustering are the result of agglomeration in the form of localization economies, i.e., synergies among firms working within the same sector. Clusters can also exhibit

[46] Purdue Center for Regional Development, Indiana Business Research Center, Missouri Center for Regional Competitiveness, Inc. Strategic Development Group, and Inc. Economic Modeling Specialists, *A Practitioner's Guide: To Economic Development Tools for Regional Competitiveness in a Knowledge-Based Economy*, prepared for EDA, West Lafayette, IN: US Economic Development Organization (undated). http://www.clustermapping.us/resource/practitioners-guide-economic-development-tools-regional-competitiveness-knowledge-based.

urbanization economies, the other type of agglomeration effect.[47] Clusters are important because activities located in close proximity can operate more efficiently by sharing common technologies, infrastructure, pools of knowledge, and demand, which can lead to enhanced innovation and competitiveness in the region.[48]

The idea of clusters is that they can improve productivity and expand by attracting firms and workers with appropriate skills to increase the scale of the synergies. Michael Porter's definition is

> *Geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (for example, universities, standards agencies, and trade associations) in particular fields that compete but also co-operate.*[49]

The size, geographic scale, and levels of interactions are ambiguous, subject to the insights of the analyst.

Policy prescriptions are not automatic.[50] The general idea is to identify external benefits (i.e., synergies, spillovers) that expanding existing firms and attracting new ones would enhance or exploit. Some of this is marketing, or development outreach, once one determines the relevant economic factors (e.g., firms, labor).

Cluster analysis is the application of Export Base Analysis (i.e., comparing regioal employment in existing industries to national employment in those industries), and urbanization and localization concepts, to the spatial arrangement of industries and occupations.[51] Actions intended to improve cluster productivity will benefit all firms in the cluster, as opposed to subsidies to particular industries or firms. The "Advanced Industries" paradigm is a strategy to locate clusters of firms working at the outer edges of current technology, and find ways to facilitate the interactions and thus stimulate growth.[52]

Planners can use a cluster approach to address the following:

- Find where competitive clusters currently exist.[53]
- Identify specific bottlenecks or operational issues common to firms within industries that form the economic base of a particular region.

[47] Porter, Michael E., On Competition, 16, Cambridge, MA: Harvard Business School Press (1998). "A cluster is a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities."
[48] Harvard Business School, and Economic Development Administration, "US Cluster Mapping Tool". http://clustermapping.us/ (Last Accessed: July 23, 2015).
[49] Porter, Michael E., Clusters and Economic Policy: Aligning Public Policy with the New Economics of Competition, Cambridge, MA: Harvard Business School (October, 2009).
[50] Martin R, Sunley P. Deconstructing Clusters. Journal of Economic Geography. 2003;3:5-35.
[51] Porter, Michael E., "Clusters and Economic Policy: Aligning Public Policy with the New Economics of Competition," ICS White Paper, Harvard Business School, Cambridge, MA (October, 2009).
[52] Muro, Mark, Jonathan Rothwell, Scott Andes, Kenan Fikri, and Siddharth Kulkarni, *America's Advanced Industries: What They Are, Where They Are, and Why They Matter*, Washington, DC: The Brookings Institution (February, 2015). http://www.brookings.edu/~/media/Research/Files/Reports/2015/02/03-advanced-industries/final/AdvancedIndustry_FinalFeb2lores.pdf?la=en.
[53] Lee W. Munnich Jr. *Transportation Planning to Support Economic Development: An Exploratory Study of Competitive Industry Clusters and Transportation in Minnesota*, Minnesota Department of Transportation Office of Transportation System Management, (January, 2015).

EDA has invested in two tools designed to help practitioners better identify their cluster assets. The first identifies the industry and occupational clusters and related assets present in a user-defined geography, while the second identifies clusters driving the national economy.

- Purdue University and the Indiana Business Research Center tool to identify the industry and occupational clusters and related assets present in a user-defined geography.
- Harvard University Institute for Strategy and Competitiveness' tool to identify the clusters driving the national economy.

Cluster analysis can be conducted using a combination of quantitative and qualitative techniques: [54]

- **Quantitative techniques** include using location quotients to identify the strong industries in a region, and input-output models to estimate the production of commodities in a region.[55]

  Harvard Business School in coordination with EDA developed a tool to help practitioners compare clusters across regions and understand the competitive industries in their region.[56]

- **Qualitative techniques** include interviews, surveys, and focus groups with key industry stakeholders (i.e., customers, suppliers, leaders) to understand the relationships between regional industries and to identify industry needs.

6.2.1 Comparative Advantage

In addition to looking for clustering strategies, a parallel perspective is to seek comparative advantage. The key feature of comparative advantage is that a region can compete and export successfully without necessarily being the "best" at anything; a local specialization can contribute to an export base if the region is at least relatively productive in that activity.

The challenge of ED is in assessing which local attributes can be leveraged to attract investment and migration, in comparison to other locations. Some of the applicable concepts are shown in Table 3.

[54] Introduction to Economic Development. Pittsburgh, PA: Carnegie Mellon University Center for Economic Development.
[55] Introduction to Economic Development. Pittsburgh, PA: Carnegie Mellon University Center for Economic Development.
[56] To access the cluster mapping tool, visit: http://www.clustermapping.us/.

Table 3. Potential Attributes of Comparative Advantage

Comparative Advantage	This trade theory argument says that in order to compete a region only needs to be relatively better at something, not necessarily absolutely better. Analyzing the industry mix of a region can lead to insights for how the attributes of the region can be exploited to support ED.
Migration	Immigration and outmigration are generally motivated by workers of households seeking better lives or quality of life. ED may seek to utilize in-migrants or stem out-migration of skilled workers.
Gravity Models	The gravity analogy says access is the aggregate nearness of a location to other locations of interest, such as people and employment, weighted by size and distance.
Capital Mobility	As with people, capital can move in or move away. If existing capital is not being replaced, the region will inevitably decline in economic activity.
People versus Place	Infrastructure is necessarily rooted in place, whereas people may move, making people-based ED more challenging. Nonetheless, human capital and income supplements can be effective tools.[57]

6.3 Coordination with Other Programs and Agencies

A compelling argument can be made in favor of putting "transportation squarely in the service of the US economy," meaning that mobility decisions should be clearly linked to proven economic strategies (e.g., boosting exports, reducing carbon emissions, encouraging new technology, connecting employees with jobs), avoiding self-defeating competition among communities, and allowing public-private collaboration to flourish.[58]

Transportation investment programs can be combined with other government programs to improve the chances that a particular ED effort will succeed.[59] For example, the Federal program of Rehabilitation Tax Credits has been applied with substantial success in revitalizing historic buildings in older cities. Although limited in scope, creative application of the program can be an effective tool for urban redevelopment.[60] Other government programs that can be combined with transportation investment include Department of Housing and Urban Development programs (e.g., empowerment zones, Brownfields Economic Development Initiative). Most states have a panoply of targeted and broad ED assistance programs.

[57] The "Promise Zone" federal program is aimed more at human development than tax subsidies for business; the program is one of many that have targeted low income neighborhoods for economic development. See Wogan, "Obama Tries to End the Cycle of Broken Poverty Promises," (July 2015).
[58] Puentes, Robert, "Move It! How the U.S. gets transportation policy wrong—and how to get it right," *The Wall Street Journal*, (2011).
[59] Anthony Foxx, "DOT Helping Cities Build a Step Up the Ladder of Opportunity," Washington DC: The White House (2015). Describes a US DOT pilot program "Ladders of Opportunity" to provide technical assistance and other help to seven cities in an effort to better use transit projects to spur economic development and regeneration in depressed areas.
[60] Ryberg-Webster, Stephanie, "Preserving Downtown America: Federal Rehabilitation Tax Credits and the Transformation of U.S. Cities," Journal of the American Planning Association, 79: 4 (April 18, 2014), pp. 266-279.This article explores the effect of federal rehabilitation tax credits (RTC) in driving preservation's role in downtown redevelopment (some argue that it is one of the nation's most effective programs to promote historic preservation and community revitalization).

Coordination and collaboration are not limited to government agencies. Non-profit organizations have provided major leadership in many communities, and public-private partnerships can facilitate private funding and finance where there is a revenue source that can be captured (such as tolls).[61]

Kentucky Example: Kentucky and Indiana teamed together to finance the Ohio River Bridges project using private equity. An Indiana economic-impact study estimated that the project alone will generate an average of 15,500 jobs annually through 2042. While these are not net new jobs, the bridge may generate enough net benefit in travel time and cost savings to result in additional employment in the nearby area.

6.4 Community Betterment Improvements

This is a broad and general ED strategy is to improve infrastructure and services that support productivity growth in all industries and sectors.[62]

6.4.1 Unique Local Attributes

The way that cities and regions market themselves can help attract residents, businesses and tourists which can then lead to increased economic activity. Cities need to identify the attributes that are distinctive about the place rather than trying to imitate the descriptions of places that are already successful. This vision should be considered in the development of an LRTP and, thus, should be done at a regional level. Local municipalities can work together to market themselves regionally as well.

Nashville Example: Example of a city that successfully embraced its unique culture (i.e. country music) and set itself apart from other cities.[63] Transportation can play a role in setting cities apart by using innovative or unique transportation systems. For example, Morgantown, West Virginia has America's only personal rapid transit system. This innovative transportation system resulted in the student enrollment of West Virginia University increasing from 10,000 in the late 1960s to nearly 30,000 today.[64]

6.4.2 Community Betterment as a Business Attractor

Firms aren attracted relative to the inputs they use to generate their output. A broad strategy is to improve the productive efficiency of a region by enhancing the factors of production that make locating there potentially profitable to firms. Some important factors are human and social capital, and institutions such as regulation. Other factors include:

- Labor force worker skills (training)
- Education
- Minimum Regulation to internalize costs

[61] Bert Bras, Nancy Green Leigh, Jiawen Yang, *Effects of Private Transportation Improvements on Economic Development,* Georgia Transportation Institute/University Transportation Center (September 13, 2012). Based on a case study in the Atlanta area (the redevelopment of the site of a former Ford assembly plant into an area for airport-oriented businesses), this report studied the potential economic benefits – particularly for job creation and industrial activity – of small aspects of the redevelopment (i.e. the use of electric shuttles vs. CNG-powered shuttles).
[62] Cheshire PC, Nathan M, Overman HG. *Urban Economics and Urban Policy*. Cheltenham, UK: Edward Elgar; 2014.
[63] Renn, Aaron M., "If Cities Want to Succeed, They Need to Focus on What Makes Them Distinct: Many municipalities struggle to identify their uniqueness and instead try to market themselves for having things that you can find anywhere.," *Governing*, (September, 2014).
[64] Newcombe T." America's One and Only Personal Rapid Transit System," *Governing*. July 2011.

- Minimum Taxes With Good Services
- Access to Labor, Materials, and Markets
- Low congestion
- Fluency with technology
- Affordable housing
- Equality
- Transportation
- Green Infrastructure[65]
- Freight

Such strategies may be more effective and self-sustaining in the long run than government subsidies and incentives given directly to potential locating firms. Although planners may not have control over all of these factors when developing transportation plans (e.g., education, worker skills), it is still important to understand how these factors interact and how transportation could help support them. This is another reason why coordination with other regional ED plans is so important. Planners should be aware of other efforts to attract businesses and make sure that transportation plans support those efforts.

Cleveland Example: The City of Cleveland received a $400,000 TIGER grant to plan the Opportunity Corridor. The corridor will connect many of Cleveland's distressed neighborhoods on the west side to employment and education centers on the east. Reshaping land use will foster economic opportunity and neighborhood revitalization along the corridor.[66]

6.4.3 Integrating Economic Development With Other Goals

Land developers may argue that achieving significant ED means compromising other goals such as compact development and environmental sustainability. Although this tradeoff may occur in some instances, it should be possible to retain social goals while stimulating economic growth. [67]

An example is the intersection between ED projects and the National Environmental Policy Act of 1969 (NEPA). NEPA is designed to ensure that a project's engineering and transportation needs appropriately consider and balance the potential social, economic, and environmental impacts associated with the project's implementation.[68] Economic Development projects can be supporting elements to a transportation projects purpose and need statement, however the transportation project would still go through the NEPA process and prove that its environmental impacts are minimal.

A typical misconception is that accomplishing ED requires giving up other public objectives, for example:

- ED requires accepting sprawl. When a developer wants to add to sprawl development, agencies are loath to interfere for fear that the developer will go away if any restrictions are placed on the development. By working with the developer, it is generally more profitable as well as more efficient to apply smart growth principles and require appropriate redesign.

[65] https://www.epa.gov/green-infrastructure
[66] Grant. "North-south tie-in to Opportunity Corridor gets prized TIGER grant, other projects nixed." Cleveland.com. (September 12. 2014).
[67] "WRI's Bianco says U.S. can simultaneously achieve emissions reductions and economic growth," Video, Environment & Energy Publishing: (October 16, 2014), p 7:28. This video discusses whether the US can achieve emissions reduction and economic growth.
[68] Forkenbrock and Weisbrod, *Assessing the Social and Economic Effects of Transportation Projects*. NCHRP Report 456, Washington, DC: Transportation Research Board (2001).

- ED is not compatible with historic preservation. Adaptive reuse of historic assets generally adds to the attractiveness of new development, and there are State and Federal programs that provide grants.
- ED necessarily causes some environmental damage. Methods for maintaining environmental quality in conjunction with development have evolved over decades with no need for compromising the environment. In fact, compact development is easier to make environmentally positive.
- ED inevitably increases income inequality. While it requires care and thought to ensure that lower income households enjoy the benefits of development, the processes are not mysterious once planners incorporate the perspective in their planning. Environmental Justice is intended to identify and address disproportionately high and adverse effects of proposed decisions on low-income and minority populations. This means not putting noxious activities exclusively in minority or in poor neighborhoods.[69]

Not only is it not necessary to sacrifice other policy goals to economic development, ED can help solve problems of pollution, energy consumption, livability, environmental justice, and quality of life issues.

6.5 Lagging Regions and Revitalization

ED directed at regeneration may be able to use the Community Reinvestment Act (CRA) as a financing tool.[70] Experience from the UK is probably applicable, as they have been working on the regeneration problem with substantial effort over a period of time.[71]

6.5.1 Legacy Cities

Transportation investment and other investment can promote ED through improving spatial equity and regeneration. An extensive regional cooperation is an essential ingredient for regeneration.

"Legacy Cities" have been defined in one study as having a 2010 population of at least 50,000 and a population loss of at least 20% from peak levels. [72] Of the 50 cities flagged, 18 were selected for further analysis of socioeconomic trends. Up into the 1990s the cities followed the same patterns of decline and stagnation, but subsequently diverged on such indicators as population growth and unemployment.

[69] https://www.fhwa.dot.gov/environment/environmental_justice/resources/guidebook/

[70] Walters, Jonathan, "Pushing the Community Reinvestment Act into Uncharted Territory," Governing, (2014). The CRA may be used for projects other than housing and small business support, including public transportation projects.

[71] Adamson, "The Impact of Devolution: Area Based Regeneration Policies in the UK,"(January, 2010). This report is the author's assessment of how well national programs have worked since administrative devolution that occurred in the UK in 1997. The lessons learned are primarily institutional, including overcoming neighborhood resistance to larger community improvement. Four case studies are presented, with successes and failure. The report is something between an academic study and a personal travelogue of the impoverished areas of Great Britain. Focused on the effect of the devolution policies of the Blair government, the document nevertheless comes up with some concepts applicable to the US, including the 'lived experience of poverty.' Central to escaping generational poverty, the author argues, is an expansion of individual and community horizons, which includes the provision of transportation services to connect poor and marginalized communities to opportunities in the wider world.

[72] Alan Mallach, Lavea Brachman, *Regenerating America's Legacy Cities: Policy Focus Report*, prepared for the Lincoln Land Institute (May, 2013).is a report looking at 'legacy' cities, – e.g. the once-great industrial cities of America – their decline and their patchy renewal. The report is particularly focused on why some legacy cities seem to be rebounding while others seem to be slipping further into dysfunction and disrepair. The study focuses on the need for greater economic and governmental regionalism in order to stem the tide of divisive 'winner take-all' competition (new public transportation is referenced as the type of benefit that regional taxation and governance can bring), for cities to find 'a new economic purpose' that will draw money from outside, and for economic and redevelopment policies that explicitly include poor urban residents.

While it was easier to track the trends than to detect the causes of success or lack of it, the study offered some summary prescriptions:

- Rebuild the central core.
- Sustain viable neighborhoods through targeted investments.
- Repurpose vacant land for new activities.
- Use assets to build competitive advantages.
- Re-establish the central economic role of the city.
- Use economic growth to increase community and resident well-being.
- Build stronger local governance capacity and partnerships.
- Increase the ties between legacy cities and their regions.
- Rethink State and Federal policy toward legacy cities.

Leadership, governance institutions, and cooperation were among the frequently mentioned necessary ingredients, and the report provides many large- and small-scale examples of what cities have done to try and overcome prior handicaps. The scale ranges from neighborhood to regional, transportation is one of many considerations.

6.5.2 Gentrification and Economic Development

Many people assume that urban revitalization requires the displacement of low income households and minorities from the site of the revitalization.[73] The reality is much more complicated.[74] Gentrification has greatly accelerated in several cities, with nearly 20 percent of lower income neighborhoods experiencing gentrification, but gentrification still remains rare nationally.[75] Nonetheless, if ED is stimulated – for any reason, transportation-related or not – success may result in gentrification and displacement.[76]

When an area moves along the ED status dimension (see Figure 3 in Chapter 5) from lagging to self-sustaining, the demand for housing typically jumps ahead of supply.[77] This results in higher housing prices, with displacement of lower income tenants. Some economists emphasize the effect of relaxing land development regulations that prevent the supply of housing from increasing.[78]

Perhaps not immediately obvious, small neighborhood businesses also get displaced by rising rents. As the neighborhood becomes popular, commercial rents inflate along with housing. Even if the businesses happen to own their real estate, it becomes uneconomic to operate a “mom and pop” retail business.[79]

[73] Nyden, Philip, Emily Edlynn, and Julie Davis, *The Differential Impacts of Gentrification on Communities in Chicago*, Chicago, IL: Center for Urban Research and Learning, Loyola University Chicago, (January, 2006).
[74] Tobar, “Viva Gentrification!,” New York Times (March 21, 2015).
[75] Maciag, Mike, “Gentrification in America Report,” *Governing* (February 4, 2015).
[76] Ehrenhalt, “What, Exactly, Is Gentrification?” (February 2015) points out that much gentrification has taken place in US cities in areas that contained few residents at the time of gentrification.
[77] Harvard Kennedy School, "Gentrification, urban displacement and affordable housing: Overview and research roundup," *Journalist's Resource*, (August, 2014) surveys several studies and includes a brief annotated list of recent references.
[78] Ed Glaeser says unrestricted building height limits would allow sufficient new construction that existing housing would not be taken over by new residents. An example given is Miami (Beyer, “How Miami Fought Gentrification and Won (for Now),” (July 2015).
[79] Ehrenhalt, “Hypergentrification and the Disappearance of Local Businesses,” (2015)

6.5.3 Environmental Justice

Environmental Justice means identifying and addressing disproportionately high and adverse effects of an agency's programs, policies, and activities on minority and low-income populations to achieve and equitable distribution of benefits and burdens. Given this, when evaluating long-term ED effects, planners should consider both the employability prospects of the local low-income or lower skilled populations with the particular businesses being attracted to an area, and the multiplier effects of those businesses on the study area.[80]

Sacramento Example. The city of West Sacramento received a $1,500,000 TIGER grant for planning a new Broadway Bridge crossing the Sacramento River and connecting the City of West Sacramento to the state's capital, Sacramento. The new bridge will aim to bring significant ED and revitalization to the area around the river, which includes several economically distressed neighborhoods.[81]

Birmingham Example. Another example is the city of Birmingham received a $125,000 TIGER grant to examine an elevated interstate that bisects neighborhoods in downtown Birmingham, cutting lower income neighborhoods off from economic opportunities. The area has been identified as a major barrier to economic development in the immediate area, which has high vacancy rates and lower property values. This example illustrates how transportation can be both a barrier to ED and used to knit communities together to facilitate ED.

Protecting vulnerable and low income populations from loss during ED requires focused attention, but there is no single forumula that always works. The planner needs to pay attention to many factors to ensure that benefits are distributed favorably.[82] There is no assurance that new jobs in the community will be captured by local residents, depending upon what types of jobs are created and whether retraining is necessary.

6.5.4 Land Use Development

Understanding how land is valued and how the development process works are helpful for effectively guiding ED. The important concepts are defined in a section of the Glossary.

Allowing flexibility on parking provisions can make or break a redevelopment project. The original purpose of parking requirements was to prevent spillovers from developers taking advantage of other sites' parking spaces. The current result, however, is to require excessive amounts of space.[83]

Policies that encourage sprawl make an area less livable and more costly to serve, and increase emissions.[84] Redevelopment to higher densities can sometimes be accomplished in conjunction with

[80] Forkenbrock and Weisbrod, NCHRP 456 (2001).
[81] http://www.cityofwestsacramento.org/city/depts/pw/major_projects/bbfs.asp
[82] Leigh and Blakely (2013) provide a planners' perspective with consideration of equity impacts. The emphasis throughout is on improving income and wealth through ED, with the constraint that it benefit lower income households at least as much as higher incomes. With greater intent to enhance welfare by improving distributional equity, the book devotes more attention to institutional factors than analytic technique. Explanations and examples are provided for the basic tools such as export base analysis, location quotients, multiplier concepts, with appropriate caveats. Implementation is given ample space, and many examples are offered of organizational mechanisms for ensuring that the results are consistent with the goals.
[83] Canepa and Resnick, "Releasing the Parking Brake on Economic Development," *Planning* (May, 2015).
[84] Verchot, "Urban sprawl costs US Billions Annually," *EENews* (2015)

light rail lines extended into suburban areas.[85] According to the U.S. Government Accountability Office, Bus Rapid Transit lines can also stimulate associated economic development.[86]

Both efficiency and equity are relevant goals, but equity especially often hinges on increasing the supply of affordable housing. [87] Some relevant concepts of housing are listed in the Glossary.

6.5.5 Good Jobs and Good Industries

ED has long been concerned with "good" jobs, the desirable ones from several perspectives.

- Jobs in sectors that offer positive neighborhood effects, such as office parks, versus sectors that produce soot and grime, such as steel works.
- Jobs in sectors that utilize educated professionals as opposed to low-skill jobs in dead-end sectors with limited or no possibility for advancement.
- Jobs in sectors that are expanding, pushing the frontiers of technology, and attracting people with vibrant work and lifestyles.[88]

Many ideas for concept and job generation, such as investing in sports stadiums and offering tax abatements, are believed to be effective but are not supported by research.[89] Gaming resort casinos are subject to boom and bust cycles, while convention centers seem to be perpetually dated and underutilized.[90]

6.6 Financing, Subsidies, and Inducements

Although planners likely do not have direct control over the local regulations, it is still important to understand how regulations affect a region and its potential for ED. This section discusses several strategies that local government officials can be aware of when considering ED. Planners can use an awareness of these strategies to identify where market failures in their region may exist in order to better identify how transportation can address those inefficiencies.

6.6.1 Financing Development

Finance is borrowing. ED relies mainly on private finance, while transportation traditionally relies on public finance. Thus ED efforts are more subject to market assessments of risk. If ED is subsidized or

[85] Delaughter, Gail, "Metro Looks At Development Along New Light Rail Lines," *Houston Public Media* (August 18, 2014) http://www.houstonpublicmedia.org/news/metro-looks-at-development-along-new-light-rail-lines/.
[86] U.S. Government Accountability Office, *Projects Improve Transit Service and Can Contribute to Economic Development*, Washington, DC: GAO (July, 2012).
[87] One study from the Urban Institute says neighborhood inequality is increasing. See Pendall, "Worlds Apart: Inequality between America's Most and Least Affluent Neighborhoods," (June 2015).
[88] Muro, Mark, et al., *America's Advanced Industries*, Washington, DC: Brookings (February, 2015). http://www.brookings.edu/~/media/Research/Files/Reports/2015/02/03-advanced-industries/final/AdvancedIndustry_FinalFeb2lores.pdf?la=en. is a recent effort to identify and quantify the magnitudes, prospects, and location of industries that important drivers of national economic competitiveness. Not surprisingly, jobs in science, technology, engineering, and math (STEM) are a key feature.
[89] "There are policies, such as…building of sports stadiums as economic development projects, that have been largely and empirically discredited yet still are embraced by legislators and policymakers across the country…At the top of any list of political myths is the idea that tax burdens and incentives are serious factors affecting business-relocation decisions. The literature is clear: Tax breaks to encourage economic relocation are economically inefficient and wasteful. Hundreds of studies reach this conclusion. The same is true about enterprise zones." Schultz, David, "The Myth of State Policy Innovation: All too often, policies are simply replicated from state to state with little attention to research showing that they don't work," *Governing*, (May 28, 2015).
[90] Newcombe "The Great Convention Center Bailout" (2012).

supported by public investment, it is less subject to the market test, and correspondingly more risky without that scrutiny. This is one reason why ED planners should look at market failure to justify public investment.

There is an enormous array of possible instruments for financing ED.[91] "Bedrock" tools include both taxable and tax-exempt bonds, bond banks, redevelopment and enterprise zone bonds, and energy conservation bonds. Targeted tools include tax increment financing (TIF), special purpose districts, and brownfield loans.[92] More indirect tools include tax credits (historic preservation, low income housing) and seed funds. Many of these programs, such as TIFIA (Transportation Infrastructure Finance and Innovation Act) loans and TIGER (Transportation Investment Generating Economic Recovery) grants, are federally-sponsored programs, while others are state or private. Government programs are commonly administered by private banks and financial firms.

6.6.2 Tax Abatement Incentives

States and localities frequently offer subsidies, tax abatements, and in-kind gifts to attract or retain important employers. From an economic perspective, these incentives may interfere with the normal workings of markets that lead economic activities to their best locations. The incentives may also be ineffective, leading to disappointment and wasted resources. From an equity perspective, subsidies may disproportionately affect lower-income taxpayers.[93]

If there are regions within a State competing for highway improvement funds, or States competing to attract ED, the supporting instruments can include tax abatement and direct subsidies to firms. Evaluation of these efforts to encourage companies to locate in a jurisdiction is difficult, but there is a high likelihood of negative financial return.[94] Although popular, subsidy schemes may be less productive than broader betterment strategies described earlier in this section (see "Community Betterment Improvements" on p. 40). Many of the mechanisms used to fund or finance ED are defined in the Glossary.

6.6.3 Transparency in Business Subsidies

Proposed revisions for GASB (Government Accounting Standards Board) rules would make the subsidies provided by states and localities to induce firms to locate easier to see.[95] These subsidies are not always in the taxpayers' interest, but there are many ways to keep them from public scrutiny. As concluded in a recent study,

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[91] Rittner, Toby, *Practitioner's Guide to Economic Development Finance: Building and Utilizing the Development Finance ToolBox*: Council of Development Finance Agencies (2009). http://www.cdfa.net/cdfa/cdfaweb.nsf/pages/nationalsponsors.html. The Guide explains relevant concepts, describes a large number of types and sources of financing instruments, and provides ten case study examples.

[92] Beyer, "The Neighborhood Has Gentrified, But Where's the Grocery Store?" (February 2015) points out that TIF and other special assessments can impose taxes on existing local retailers that provide improvements that in turn attract competitors from national chains.

[93] Maciag, Mike, "How Local Governments Are (or Aren't) Examining Economic Development Dollars," *Governing*, (2014) provides an overview of the trends among states and municipalities to evaluate the effects of the economic incentives (i.e. tax breaks) they offer. The article cites work done by the Pew Trust, referenced here: http://www.pewtrusts.org/en/research-and-analysis/fact-sheets/2014/02/07/evaluating-state-tax-incentives-how-to-measure-economic-impact.

[94] Philips,"The U.S. South Rises as a Manufacturing Hub," *Businessweek* (September 4, 2014) describes the waxing and waning of offshoring and the competition between states. He quotes Harry Moser of the Reshoring Initiative in referring to the giveaway culture that is emerging saying "In some cases, it's not doing the country any good."

[95] Farmer, Liz, "Debate Rages Around Proposed Tax Incentive Rule," *Governing*, (March 26, 2015).

> "In sum, while policies such as the [Philadelphia] KOZ Program are popular and prevalent within most of the states of the union, their effect on economic development and growth on the whole has been very limited at best. Even the most robust analyses, using sophisticated econometrics and modeling, can find only tenuous correlations between tax incentives and economic development."[96]

Making the amounts and recipients of incentives public may impose some discipline toward ensuring that the deals are reasonable investments from the community's interests and that the commitments are honored.

All States currently publish information on State expenditures on "transparency" websites. The Massachusetts Public Interest Research Group (MASSPIRG) has published ratings of all 50 states on the quality of their websites, judging attributes such as "checkbook-level detail," "projected", and "actual public benefits" of ED subsidies.[97]

6.6.4 Low Taxes

An increasingly relevant factor in firm location is to seek low tax rates. The lowest taxes may indicate a lack of services, but local jurisdictions should try to ensure that the taxes they levy lead to advantages (e.g., well-educated workforce, stable crime-free community) that businesses value. Reforms that improve incentives, reduce existing subsidies, avoid windfall gains, and avoid deficit financing will have better effects on the long-term growth of the economy, but may also create trade-offs between equity and efficiency.[98] Economic development subsidies is a major category of expenditures.[99]

Other policies affect economic growth such as the Transportation Equity Act (TEA-21), which contains a provision requiring consideration of economic growth,[100] and NEPA, which directs all Federal agencies to make project decisions using a systematic interdisciplinary approach that balances engineering and transportation needs with social, economic, and natural environmental factors.

A related consideration is the effect that businesses likely to be attracted by the proposed transportation project would have on the community's tax base. Depending on the tax concessions granted by the community, level of capital investment, and amount of payroll, businesses may or may not help strengthen the community's fiscal position.[101]

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[96] City of Philadelphia Office of the Controller, *An Analysis of the Keystone Opportunity Zone Program, 1999-2012: The Costs and Benefits to Philadelphia*, Philadelphia, PA: (March 19, , 2014).

[97] MASSPIRG, 2014 Annual Report (2015). http://www.mass.gov/informedma/spending/economic-development-tax-incentives/.See also http://www.masspirg.org/page/map/about.

[98] Gale, William, and Andrew Samwick, "Effects of Income Tax Changes on Economic Growth," *Economic Studies at Brookings*, (September, 2014).

[99] Taxes have equity impacts as well, as in shifting from income taxes to sales taxes. See Maciag, "States' Shifting Reliance on Income vs. Sales Taxes," (2015).

[100] U.S. Congress, *Transportation Equity Act for the 21st Century: National Corridor Planning and Development Program*, PL 105-178, Section 1118, Washington, DC: FHWA (July 21, 1998). https://www.fhwa.dot.gov/tea21/h2400.htm.

[101] Schumpeter, "Boomtown, USA" in *The Economist* (July 18, 2015) describes the strategies followed by Texas that resulted in current rapid economic growth. Schumpeter says middle-class families are thriving in the egalitarian nature of Texas' growth, fostered by small government and pro-business employer-friendly attitudes with weak unions and light regulation, supported by targeted public spending and toll-funded highways.

Chapter 7. Case Studies and Extended Examples

This section provides several hypothetical cases that planners may encounter. Each case ends with questions that planners should ask if in that situation.

7.1 Persistent Rural Poverty – People vs. Place

A rural county in a rural State has been mired in sustained poverty for decades, since the decline of the mineral extraction industry on which it relied for its primary source of employment. The county is beautiful but isolated from any major cities or transportation hubs, and consistently scores near the bottom of national rankings on income, educational attainment, lifespan, childhood health, and political engagement. The county has been the subject of numerous Federal and State anti-poverty efforts, has received billions of dollars in both direct and indirect government assistance, and has been highlighted by several Presidents as an example of the importance of domestic spending to improve the lives of Americans. However, the county and its residents have experienced no measurable improvement from the years of investment, with most social and economic metrics remaining stubbornly unchanged. A long-time Senator re-proposes an old idea: the construction of a multi-lane highway connecting the county to the regional transportation network, with the hope that this will prompt the resurgence of the regional extraction industry. This proposal has been studied in the past and always found to be too environmentally damaging, but the Senator continues to promote it on the grounds of economic development. A respected economist at a State university suggests a radically different idea: that the federal government fund any resident of the county who is willing to move to a high-growth part of the US. These two ideas compete in the press and public discussion for primacy.

Key Question: How to use economic tools to evaluate which is more beneficial?

7.2 Tourist Destination

A once-popular tourist destination has lost its luster, taking with it much of the economic vitality of its surrounding area and stranding residents and workers with limited employment opportunities. The local, regional, and state governments have made various efforts over the years to jumpstart the local economy, but none have proven successful. With the population dwindling, drug and crime problems rising, incomes sinking, and the local government without answers, an out-of-town developer proposes the construction of a casino resort. The proposal includes many promises for the local community, but also requires a hefty price: tax rebates, the creation of a Tax Increment Finance district to support improvements in the immediate vicinity of the casino and freeze the long-term tax rates of the casino operator, and the construction of an expensive access road from the regional highway system. Without these concessions, the casino operator will not build. To a strapped municipality with little bargaining power, the deal seems attractive. But the state will have to pay to construct the access road, which will likely face opposition from residents of surrounding communities (which have remained prosperous) and will require costly environmental mitigation.

Key Question: How do the state and the city together evaluate the economic claims of the casino developer and decide whether the investment in the access improvements is worth it?

7.3 Freight Improvements

A state on the U.S./Canada border is coming under increasing pressure from freight shippers to widen a major highway, upgrade a series of interchanges, and modernize toll-collection facilities. The expanded capacity could increase through-put and reduce delays for both shippers and regular vehicular traffic, which is frequently caught in bad congestion related to excess freight traffic. It may also improve safety conditions, particularly at the interchanges which have seen roll-overs and other problems related to antiquated roadway geometry. Powerful shipping companies have hired lobbyists and are urging state elected officials to allocate funding for the project, which they claim would have enormous and wide-spread economic benefits. The shippers threaten to relocate their business to other states if the roadway cannot be improved, and have sponsored a series of television and newspaper commercials aimed at influencing public opinion in favor of the project. But the project is complex and expensive, and will require the acquisition of large amounts of private property in order to expand the highway and upgrade the interchanges.

Key Questions: How does the state evaluate the claims of the shippers to determine whether the project is worthwhile, and whether the economic benefits will accrue to the general public or only to the private interests?

7.4 Rural Isolation

A rural town sits 25 miles from the closest Interstate highway. The town is a small gem, with interesting architecture, a Civil War-era cemetery, and a beautiful shoreline. But the town is slowly dying, as young people move away for college and opt not to return. Economic opportunities are very limited, and the small manufacturing company that was once sufficient to support the population has moved away. Municipal leaders decide that their only asset is open land on the outskirts of the city, and that they should market themselves to 'big box' companies that could build regional super stores with large amounts parking. The town, which has only a handful of municipal employees and none with experience in economic development, hires a consultant to prepare an economic impact analysis of such a proposal. The analysis comes back promising substantial regional economic benefits from the construction of a large shopping mall, but the plan will only work with better highway access to the Interstate system. The analysis also raises some concerns about the impact of such a shopping mall on local retailers in the historic downtowns of the region, but the town leaders do not focus on this point. An opposition group then forms within the town, arguing that a shopping mall would destroy the character of the area and that the town should instead invest in and advocate for 'livability' improvements like better sidewalks and streetscape upgrades and a regional bike path network that will connect all of the small towns of the area and attract new residents and visitors to support existing businesses.

Key Questions: How does the town decide which approach to take, and for which set of improvements to advocate at the state level?

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Appendix 1. Data Sources

Department of Labor

- Link: http://www.dol.gov/dol/topic/statistics/employment.htm
- Available data: national, state, and local employment data as well as unemployment data. Includes average hourly earnings, average weekly hours, and industry sectors.
- Uses: Economic Base Analysis (need employment by industry and total local employment to find coefficient of specialization and location quotient)[102]

Bureau of Labor Statistics (BLS)

- Link: http://www.bls.gov/data/
- Available data: employment, unemployment, pay and benefits, spending, productivity, regional resources
- Uses: REMI,

Bureau of Economic Analysis (BEA) - The BEA within the U.S. Department of Commerce publishes information on personal income and employment by industry. Regional "input-output multipliers" that show how industries within a region are inter-related.

- Link: http://www.bea.gov/itable/index.cfm
- Available data: GDP & personal income, gdp-by-industry, input-output, international data, regional gdp & personal income
- Uses: REMI,

Census

- Link: http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml
- Available data: Core business patterns, income, industry sectors, population.
- Uses: REMI

IMPLAN

- Link: http://implan.com/index.php?option=com_content&view=article&id=780&Itemid=1702
- Available data: National, state and local level economic data (e.g., employment, value-added, government purchases, household purchases)
- Uses: TREDIS, other ED analysis tools?

US Department of Transportation Budget Highlights

- Link: http://www.dot.gov/tags/budget-highlights
- Available data: national transportation spending by program
- Uses: Input-Output

[102] http://www.texasindustryprofiles.com/apps/locquot/LQ_Docs/Updated%20Economic%20Base%20Analysis%202005.doc

Appendix 2. Miscellaneous Information

Accessibility

Access provides the opportunity to engage in passenger travel and to move freight. Moving people and goods to markets requires transportation facilities and services.

Access is the aggregate nearness of locations of interest from a given location. The locations of interest may be employment, population, retail outlets, and entertainment. Some dispersed locations such as scenic vistas or recreation destinations may create demand for service activities on their own, but the concept of access tends to be generated by multiple desirable destinations.

A common measure of access is provided by the gravity model.

$$Access_i = \sum_j \frac{attractions_j}{distance_{i,j}}$$

In this model, Access is at a given location *I,* and attractions are at many locations *j*. Attractions can be jobs or sales or other measure, and distance is measured over the transportation network. Thus transportation improvements improve access by reducing the distance or impedance factor.

Connectivity

Connectivity is a measure of the completeness of a network, especially between nodes and among transportation modes. Traditionally, settlements have arisen at transportation hubs and “break-bulk” points along transportation routes where freight is off-loaded from one form of transportation and broken into smaller or reconfigured units for further shipment. Locations where connectivity between modes is needed could be locations for ED.