



## Economic Development by the Numbers

A source for data and statistical information to assist in promoting your community, county and state  
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### Feature: Economic Multipliers

This issue of *Economic Development by the Numbers* is the first of a two-part series that will look into economic multipliers. Economic multipliers are powerful tools that are used to help predict changes in the economic activity of specific regions. A multiplier is a number estimated from inter-industry relationships that, when multiplied by an initial change, can predict secondary changes in the economy.

### Analyzing Economic Impact with Multipliers

Quite simply, multipliers are used to estimate the impact a specific change in a region will have in the future. For example, if a company is planning to hire 100 new employees, a multiplier can be used to estimate what that change will mean in terms of secondary jobs. These jobs are expected to result from an increase in demand to suppliers as well as an increase in general services for the new people living in the area. Jobs that are created through more business to the company that supplies or services the new jobs is called **indirect impact**, while jobs created by the spending of the new hires within the community is called **induced impact**. The direct impact in this example is the initial addition of 100 jobs in the manufacturing company.

When considering this impact, there are important aspects of the region's economy to keep in mind. For example, if a new movie theater opens in an area, the first question we have to ask is, "How much will the economy actually grow if the revenue is generated from local residents and isn't drawing money from outside the area?". The second question is, "How much of their revenue will be drawn from other entertainment venues where residents were previously spending their money?" And finally, "How far are people willing to drive to visit the movie theatre and, therefore, how large of an area should we include in our economic impact analysis?" These are important questions to keep in mind when we start to calculate a multiplier and also when we interpret what the multiplier means for us as economic developers.

Industry sectors that produce goods to be sold outside of the region are termed "basic sector" while sectors that produce

goods consumed locally are termed "non-basic". This difference is important because basic-sector businesses will bring new wealth to the area while non-basic sector businesses will just circulate wealth within the community. The multipliers for non-basic industries will not be larger than one. This terminology largely corresponds with the ND Department of Commerce's description of primary-sector businesses.

It is also important that the multiplier is applied to the net change in economic activity rather than the initial change. This means that instead of applying the multiplier to revenue created by a new movie theater (initial revenue), we apply it to the difference between the initial revenue gain and revenues lost from entertainment businesses where residents might have spent money before the theater moved to town.

***"...the multiplier is applied to the net change in economic activity rather than the initial change."***

Lastly (but definitely not least!), we need to carefully choose the region where we are going to analyze the economic impact. Let's say that people are typically willing to drive up to 30 minutes to see a movie. Based on the geographic span of the region we choose (community, MSA, county, etc.), the new movie theater could be considered basic or non-basic. The economic impact and the multiplier will be greater when the region we analyze is smaller. We will see more economic gains in our model if we look at an area small enough to exclude people within 30 minutes driving time that will spend money at the theater. However, just because it shows better results doesn't mean that it is necessarily the more accurate way to analyze the situation (you'll have to use your own insight!).

**Understanding Multipliers**

In the next issue, we will discuss how to apply multipliers to specific projects. But first, we need to understand how multipliers are calculated so we can fully understand them.

A multiplier is simply the total change divided by the initial change. For example, if a manufacturing company moves to the area and hires 100 people (the initial change), and we assume 20 more jobs are created in companies that supply the manufacturing company, and 40 jobs are created through worker spending in the region (i.e. groceries, shopping, housing, entertainment), the total change would be 160. Therefore, the multiplier in this case would be 160 divided by 100 or 1.6. Figure 1 is a table of this example.

As discussed earlier, we need to make sure that we are thinking about the net change in jobs and how the project will actually affect the area's economy. Continuing with the example (Figure 2), let's say that 25 of the total new jobs were filled by local residents that already had jobs and 15 were filled by unemployed local residents. Because there will be 40 less people moving into the area, the multiplier that estimates net change will be 1.2 ( (160-40)/100 ) instead of the original 1.6.

These numbers are difficult to estimate so some multiplier models allow you to look at predicted changes in net migration and unemployment to estimate this impact. When these types of estimates aren't available, it is still important to understand that these factors may influence the actual impact of your project.

Figure 1: Multiplier Example		Jobs Created
 <b>Direct Impact</b>	Business Moves to Area	100
 <b>Indirect Impact</b>	Businesses in the area expand to service and supply the new business	20
 <b>Induced Impact</b>	New people in the area spend money and require local services	40
<b>Total Jobs Required</b>		<b>160</b>
<b>Multiplier</b>		160/100= <b>1.6</b>

Figure 2: Net Change Effect			
Impact	Jobs	Local Breakdown	Jobs
Openings in the Area	160	Filled by Employed Residents	25
Filled by Migrants	120	Filled by Unemployed	15
<b>Locally Filled</b>	<b>40</b>	<b>Locally Filled</b>	<b>40</b>

**Multiplier Models**

Application of multipliers varies with different economic impact analysis models. We have already covered the basics of the input-output multipliers that most models use as a starting point for their analysis. From there, models vary widely in additional areas of analyses, complexity, and cost. Four popular models include:

**RIMS II**

Regional Input-Output Modeling System produced by the Bureau of Economic Analysis  
 \$272 per region for all industries or \$75 per industry  
<https://www.bea.gov/regional/rims/index.cfm>

**IMPLAN**

Impact Analysis for PLANing produced by MIG, Inc. out of Minnesota  
 \$350 County, \$730 County Plus (county level with ZIP breakdowns), \$640 (ND) State level, \$2,925 (ND) State Package (state and all counties), \$7,345 (ND) State Plus Package (state, county and ZIP)  
[www.implan.com/](http://www.implan.com/)

**EMSI Analyst**

Economic Modeling Specialist Intl  
 Data available for any geographic area (county, MSA, ZIP, state, or custom region)  
 Subscription-based model  
<http://www.economicmodeling.com/analyst/>

**REMI PI+**

Regional Economic Models, Inc. Policy Insight+  
 Secondary subscriptions range around \$7,000 and primary subscriptions are more expensive  
<http://www.remi.com/>

**Keep an eye out for the next issue!**

The next issue of Economic Development by the Numbers will go into detail on RIMS II from the BEA. We'll take a closer look at its benefits, how to order multiplier tables, and how to apply the input-output multipliers.

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