Chapter VI: Assessing the Economic Impacts of a Major Disaster

Conventional disaster damage reporting focuses on the human and environmental costs of a catastrophe, such as the number of lives lost, the damage to public infrastructure, or the impact on natural resources.

Economic impact studies conducted following a major disaster provide significantly more details on the immediate and long term repercussions of a disaster in terms of jobs, industry and business impacts and other economic indicators. This type of study enables the community to better understand the value of what has been damaged or destroyed in terms of the local economy and to learn about the communities' vulnerabilities. It provides a solid and basic understanding of how to improve the situation and helps engage the community in problem solving efforts. This provides a broader understanding of the most appropriate responses and recovery efforts to pursue as well how the community might want to consider mitigation efforts for future events. The economic damage of a disaster goes beyond accounting for physical damages or insured loss to such measures as the indirect costs of business interruption caused by power failure or market loss. This kind of understanding can help to shape initiatives to restore the local economy and prevent further catastrophes.

This chapter provides insight into the components of a post-disaster economic impact study, how to develop and fund the study and other useful advice when implementing the assessment process.

Defining a Post-Disaster Economic Impact Study

A post-disaster economic impact study is a damage assessment that documents the financial costs of a disaster using economic indicators such as physical property, business and industrial activity, tax revenues, the loss of business income, and other damages to the local economy. Studies may vary in scope, depending on the type of disaster, time considerations, and the amount of resources available to conduct them. All of them attach measurable figures to the damages incurred to a given area after a disaster.

By documenting changes in a range of indicators—from property damage and losses in tax and sales revenue to changes in wages and employment in specific industries—these studies provide an outlook on how local economies can expect to fare after catastrophe strikes. They can also reveal the extent of a community's needs for external resources for response and recovery assistance.

Post-disaster impact studies can take anywhere from several weeks to several months to complete, depending on the scope of the analysis. In cases of immediate need, localities have been able to retrieve basic information in a matter of a few days when the local government needs to provide a cost figure for the purposes of securing aid. This initial assessment should be compared against a "gut check" analysis to make sure that the community isn't grossly underestimating or overestimating the damages. Yet, it should be noted that there are clear obstacles in constructing an accurate figure, particularly immediately following an event when the supporting data is absent and/or sparse.

This initial assessment should be followed up by a more thorough economic impact study approximately six months to a year after the event. The additional study would allow for a more realistic analysis of damages, particularly since federal data and figures would take three to six months to be updated following a crisis. The challenge will be for small and medium-sized communities to afford to conduct a thorough study that would take between two and six months. There are cost factors and capacity issues for communities of all sizes to consider when conducting such an extensive study of economic impact.

Distinguishing a Post-Disaster Study from a "Traditional" Economic Impact Assessment

A traditional economic impact analysis examines a proposed policy or economic development project to determine how it will impact the local economy in terms of changes in the level of economic activity. This typically involves measuring growth opportunities such as increased output, business or industry revenue, employment, wages, and tax revenues. These studies are typically used to gather public support for the proposed project by determining if the community is more prosperous. The study highlights the net

benefits to the community in terms of jobs and wages as it expands its industrial, office retail, and housing acreage. Depending on the study's methodology, there is an evaluation of the direct, indirect, and induced impacts of the proposed economic development project or policy.

These studies are often narrow in scope as they may be evaluating a proposed real estate development project or a new city policy such as suggesting zoning or land use changes for a neighbourhood. Still, the traditional impact study outlines how the local economy is boosted by a project or policy as opposed to the economic damage that a post-disaster economic impact analysis will attempt to measure.

Post-disaster economic impact studies, in comparison, measure how the community has been adversely affected by a major incident. This can include the closure of a port, the shutdown of a major bridge or road, or a natural disaster that disrupts the entire community or region. Determining the cost of the disaster can vary greatly due to several factors such as: 1) the magnitude of the disaster and the ability to measure all of its impacts, 2) challenges with limited data, 3) organizational capacity within the community to gather needed impact information, and 4) the varying methodologies that can measure the disaster's economic impact on business and the local economy. Economic impacts of disasters are more difficult to assess because so many things have happened at the same time that affect the larger economy after a disaster.

A major storm can inflict wide-scale damage to supply chains and infrastructure, unlike a local development project such as the attraction of a new firm or the construction of a shopping centre. "Traditional" impact studies rely on a simpler model due to the more narrow scope, while post-disaster economic impact studies rely on a more sophisticated economic model to assess damage.

The Purpose of Post-Disaster Economic Impact Studies

A post-disaster economic impact study provides insight to public officials, business leadership, and local industry in how the community has been damaged and helps inform their future decision making in terms of response, recovery, and mitigation. The study serves various functions for different stakeholders.

Public Officials are assisted by:

- Developing a clear picture of how industry and business has been impacted by the disaster;
- Receiving information on economic impact to share with provincial and federal officials in order to secure external recovery resources if necessary;
- Being informed in a way that influences decision-making in a time of crisis and taking critical actions for short- and long-term recovery;
- Having a study to document the extent of damage to public infrastructure to further support provincial and federal assistance;
- Understanding how current and future tax revenues have been negatively impacted by the event and how public services might be affected;
- Understanding how to hold accountable organizations responsible for man-made disaster (e.g. Montreal, Maine & Atlantic Railway after Lac-Mégantic's trail derailment); or
- Making the case for economic need to gain access to federal aid so requests are considered credible.

Economic Development Organizations are assisted by:

- Developing an outlook of how the local economy has been impacted by the event;
- Understanding how employment, wages, and tax revenues have been adversely affected;
- Providing support for identifying strategies, programs and projects for short- and long-term recovery;
- Educating community stakeholders on the current situation to provide insight and build consensus on how the community should move forward.

Local Businesses are assisted by:

- Knowing the current market situation for business planning purposes;
- Understanding how labour markets and supply chains have been impacted;
- Understanding how various sectors have been impacted.

Challenges in Conducting a Study

It is important to be aware of the possible obstacles that may arise when conducting a study in a post-disaster environment so that your organization or community can know what to expect. The following are issues that other disaster-impacted communities have faced:

- The quality and availability of data may be limited
- Collecting data and information from businesses is likely to be difficult due to disrupted communication channels
- The local EDO may not have the organizational resources to manage this large project
- Impacted businesses may be reluctant to share damage information for multiple reasons
- Topics to cover in the study and how to fund it may appear daunting to local organizations.

Data Availability and Reliability

The final result of the economic impact study depends on the quality of information and data that is input into the model. Typically, there is a delay between the time that data can be collected in a post-disaster environment and when it is made publicly available. Federal sources of data may take six months to be updated – depending on the magnitude of the disaster. Relying on outdated census information or other federal sources is likely to be insufficient in order to get an accurate picture of population or jobs in the aftermath of an event. In the case of information gaps or unreliable figures, realistic assumptions should be employed at first. When the data becomes available, the model should be updated to reflect the more realistic numbers.

Communicating with Stakeholders

After disasters strike, certain modes of telecommunications such as phone lines, the Internet, e-mail, and postal services may be shut down for a significant period of time. When this happens, collecting primary data and other types of basic information becomes increasingly difficult to achieve without devoting additional resources to the process. In many cases, businesses are not likely to respond to an electronic survey if modes of communication are shut down or business owners have temporary relocated out of the area.

HAZUS

A software program available for download online, HAZUS is FEMA's methodology for estimating losses from earthquakes, floods, and hurricanes. The program combines scientific and engineering expertise with geographic information systems technology to help users visualize the impacts it models, and can be used for both pre-disaster risk assessment and post-disaster economic impact. Among the indicators it measures are physical damage, economic loss, and social impacts.

HAZUS is not related to Preliminary Disaster Assessments, but instead is a tool to be used by local practitioners. The software is nationally standardized and available free of charge at http://www.fema.gov/hazus.

Potential solutions to communication issues include:

- Employing a texting campaign if your organization has collected the cell phone numbers of local business owners or executives
- Advertising in print, radio and television sources
- Arrange for public meetings with businesses in partnership with other EDOs and organizations that have a network of local business contacts
- Conduct a grassroots communications campaign to connect with businesses through personal visits or hand delivering a paper copy of a survey
- Arrange for the collection of information at the local business recovery centre
- Look to triage problems with communication systems

Communicating with stakeholders in the event of a major disaster is a vital component in the community's ability to be resilient and recover from an event. It is recommended that EDOs develop a communications plan before a disaster to be implemented in the case of a disaster. For more information, see Chapter VII in this toolkit.

Funding a Study

The ability to fund the study can also be a concern when funds are extremely limited following a disaster. Local governments, non-profits, and educational institutions can seek funding from external sources such as provincial or federal grants.

If there are little to no funds available, an organization can reach out to the local university to donate resources or provide services at a discounted price. While there is no harm in asking for pro-bono services in dire circumstances, communities should also seek to have a "rainy day" fund to help pay for these important studies in special circumstances.

Additionally, if an organization can demonstrate that there is a gap in the data framework needed for its assessment and primary research is required in order to fill the void, then it can look for funding/assistance from foundations. For instance, one practitioner cited in an interview an experience with a critical data problem and as a result was able to secure external funds to find an answer to his question.

Expanding Organizational Capacity

Staffing is a major issue for localities seeking an impact study. Response efforts to a major disaster can be taxing on available resources as it is, and the coordinating authority behind the study may not have the staff or capabilities required to carry out a study. Manpower plays a large role in how broad an outreach effort can be orchestrated, particularly when conducting surveys. When possible, seek the assistance of volunteers and non-profit groups such as the Red Cross or community foundations to help in these efforts.

Another approach is to build information collection into existing recovery efforts. For example, EDOs could disseminate an outreach survey at a business recovery centre for local business owners to complete to gather intelligence on how the local businesses have been impacted economically by the disaster, and determine what programs or information they need in the short and the long term. After the flooding in Alberta in 2013, ERDP partners and volunteers conducted a local business impact assessment survey in ten communities to better understand impact using such a study. This can be found in *Resource Appendix 5.*

Stakeholders and Their Roles

Lead Coordinators

In a disaster's aftermath, it is important to know the chain of command and identify the lead organization in recovery efforts. Typically, the EDO perceived as the strongest entity in the community takes the lead role in coordinating a disaster impact study for the affected area. The coordinating entity may vary depending on the reason for, and goals of the study. For the purpose of this chapter, we will focus on community-wide studies, not those conducted for individual industries or more narrow purposes.

There are a few groups that may take the lead in conducting an impact study. It is common for the provincial government, often through the Premier's office, to create a disaster recovery office responsible for commissioning a study, amongst other responsibilities. In other cases, the task may fall on local groups such as regional EDOs. While higher-level authorities at times are the organizers of these efforts, locally based groups should be prepared to take the lead if necessary. This is especially important in cases where a separate independent analysis is being pursued, which can happen out of choice or out of necessity, given that not all disasters will be declared by the province or acknowledged by the federal government as eligible for federal relief.

Partners

No single group should undertake the effort of conducting an impact study on its own unless it has capacity to do so. Instead, engage various partners to help provide resources to assist in the process as well as offer differing viewpoints to inform the study. EDOs and chambers have a vast network with local businesses and should be engaged in this type of study. In instances where they do not serve as the lead coordinator, they can at least help with collecting information from local firms. Other groups that can help build capacity and procure information include community volunteers and charitable organizations like the Red Cross[13]. Insurance companies will conduct their own assessments on losses and report claims to provincial-level insurance departments, but they are unlikely to release this information in aggregate form to local organizations due to privacy concerns.

[13] When primary data is being collected, these groups may be the best-equipped due to local trust factors that are often at play, which can favor groups with which businesses are familiar over groups perceived as outsiders.

Analysts

Regional economic development organizations and provincial level economic development agencies often have resources to conduct these types of studies. They are typically better equipped with the resources needed to carry them out. In some cases, the coordinating authority may also be the chief analyst. When the leading authority is smaller in size, or when local government offices lack the capacity and expertise to conduct a study, rely upon outside sources, such as private consulting firms and universities, to conduct the impact analysis.

Timing the Analysis Process

As mentioned previously, certain communication channels can be severely hampered in the immediate aftermath of a disaster. Additionally, professionals often acknowledge that there is a "Timing-Accuracy Continuum," where the sense of urgency behind completing a study must be balanced with the fact that as time passes, the more accurate and complete certain data will be.

Collecting Data

When telecommunications are impacted for a significant period of time, the response rates for business surveys are likely to be affected. As a result, impact studies conducted directly after a disaster might provide business impact estimates that will need to be adjusted. Among the reasons are: it may remain unclear whether certain business owners have left; they are still evaluating their prospects in the wake of the disaster; negotiating with insurance companies, or simply could not be contacted. Conducting business surveys can be time consuming, and the process of realistically collecting data should be contemplated in light of communication obstacles.

There is a lag between the collection and reporting of data, such as employment and tax information. It is difficult to separate short-term from long-term impacts without allowing some time to pass. Some studies may over-estimate or under-estimate economic impact when they are compiled too hastily and as a result may not be acceptable to publish. Additionally, some long-term figures are useful to know, such as population trends, but might not be available for some period of time. Groups requesting and/or conducting impact studies should consider either allowing for a delay before beginning a study, or conducting an initial report with a series of updates as more information becomes available.

Some experts recommend letting at least one to two months to pass before commissioning a study. However many disasters call for an immediate response when communities are seeking government aid. While it is a general rule that the longer the waiting period the more accurate the data will be, leaders must balance the availability of good data with the exigency of the particular situations they face.

Conducting Post-disaster Economic Impact Studies

There are several steps to carrying out a post-disaster economic impact study. It must be determined who will coordinate the study, what roles other groups will play in the process, and how the study will be funded. From there, the geographic scope must be identified, and the questions that the study ought to answer must be determined (including the inputs going into the study). The analytical model should be customized based on local characteristics. In addition, the results should be reviewed and scrutinized to ensure that final results are accurate. The following section will assist in ensuring this process is well thought-out.

Step 1: Defining the Geographic Area

The geographic scope can vary greatly for an economic impact study, and it is typical for the party requesting the study to be the one that specifies the boundaries of the economic area to be analyzed. As such, it is important for individuals requesting a study to know what they want from the study. Part of what will determine the area of analysis is the type of disaster and the kind of group for which the study will be conducted. For instance, a study on the impact of the Gulf Oil Spill requested by the Louisiana shrimp industry would likely have a different scope than a study on the economic impact of the Alberta flood conducted by the provincial department responsible for economic recovery.

In the event no specific geographic area is indicated, analysts will determine the boundaries based on the areas experiencing direct damage from a disaster. The party conducting the study should gather as much data available regarding impacted industries, then cross reference with geographic information to determine an appropriate area for study. This may result in the

investigation of a specific region within a province, or developing a tailor-made analysis area that may cross regional or provincial borders. In interviewing a number of experts on conducting these post-disaster impact studies, IEDC gathered the following factors to consider in determining the economic area:

- **Cross boundaries.** The area impacted may not be focused in and around a single metro area but between several metro areas with economic interconnections.
- **Consider impacts.** The epicenter of destruction is not always the centre of regional commercial activity.
- **Interdependence is inevitable.** It is often advisable to broaden the scope to an area beyond the borders of direct physical damage, because of the regional economic interdependence. A broader area of scope also helps differentiate between resident and job transfers within a region, from those outside the region.
- **Different types of disasters call for different geographic scopes.** In the case of a hurricane, one may observe rings around the immediate area along the coast; around the area that is a few kilometres inland; and around the area further inland where evacuees may relocate. Such an approach may not be appropriate for other types of disasters.
- **Non-declared disaster does not mean non-impacted.** Federal funds will be limited to eligible counties that are declared disaster areas, even though the damage may cover a broader geographic region than just eligible counties.

Step 2: Selecting Indicators to Measure

There are three levels of analysis a study should consider: direct impact, indirect impact, and induced impact. The level of analysis, as well as the number of industries, must be determined in order to select accurate indicators for a study. This may vary depending on the nature of the disaster. A hurricane, for instance, is a large-scale event that will likely impact both property and a broad range of industries. An oil spill, on the other hand, will induce limited inland property damage and is likely to be tied to the energy, fishing, and tourism industries more than other sectors.

Among the common indicators included in impact studies are[14]:

- Tax revenue loss (e.g., sales, property, employment etc.)
- Change in employment by industry
- Loss of wages
- Business interruption (e.g. change in gross product, output shifts)
- Loss of revenue for key industries within the impacted area
- Business relocation and business closures
- Damage to infrastructure (e.g., sewers, transportation networks, intermodal facilities etc.)
- Damage to property (e.g., commercial, industrial, and residential land, structures and equipment)
- Damage to the environment and natural resources (e.g., damaged water supply, crops, beaches)
- Insured vs. uninsured losses

Additional indicators might also be included in more in-depth studies, such as:

- Capacity losses in nursing homes, hospitals, and intermediate care facilities
- Capacity losses in logistics centres (e.g. tonnage capacity in ports)
- Declining enrollment in schools and child care facilities
- Tourism decline and loss of hotel revenue
- Tax delinquency (e.g. on damaged property, property taxes, sales tax and royalties)
- Trends in the number of building/housing permits issued before and after the disaster
- Shifts in insurance rates

Step 3: Collecting Data

Government agencies dedicated to collecting data are generally viewed as reliable sources. Professionals often look to federal data first, as the reliability of data generally increases as the level of data becomes broader[15].

[14] Interviews (General Consensus)

[15] Rookard, M. (2012, July). Personal Interview by Carrie Mulcaire and Patrick Terranova.

Generally speaking, the smaller the region observed, the more difficult it tends to be to retrieve accurate figures. Economic impact studies commonly include employment data from Statistics Canada, or other provincial data. Tax revenue data can be gathered from provincial and/or local governments' revenue departments and taxing agencies[16].

Consultants, chambers of commerce, business councils, and other economic development organizations may be able to provide data they have collected. It is also possible to contract some data collection out to universities, particularly those with economic research centres.

Primary data collection can help offset gaps in information not easily retrieved from other sources. Studies often include business surveys to gauge which firms have remained in the area post-disaster, how the disaster impacted their employment levels and revenues, whether they implemented furlough days, what businesses are paying their workers, whether any property was damaged, and the cost of repairs or replacement for damages incurred.

In instances where tourism may be impacted, the assessing entity will likely reach out to hotel owners or hotel associations to assess room vacancies and resulting revenue losses. It may be best for an organization with local ties to be in charge of collecting most primary data, due to the trust factor that comes with familiarity with local residents and businesses. In this regard, organizations such as a local chamber of commerce may be relied upon for primary data collection, and can provide a degree of legitimacy to the figures produced[17].

Below are some things to keep in mind when undergoing this step in the process[18]:

- Extrapolate from realistic assumptions. When gaps of information exist or data is not legitimate, make realistic assumptions rather than use unreliable figures.
- Utilize local connections. There are advantages to having ties to the local area - a trust factor exists in terms of businesses' willingness to answer questions. Also, local EDOs and chambers typically know who within the business is likely to be available to provide data and information. The CEO or business owner is not always the appropriate source to collect needed information.
- Diversify your communication. While e-mail or text messages can be an effective tool, consider employing other communication methods to reach local business owners.
- Seek partners. Chambers of commerce and trade associations are generally a good resource for business outreach and can be critical advocates when the area is in disaster mode.
- Tie the disaster impact study to the real world. Study should be approached not merely as an analysis conducted in a software program, but as a case study too.

Step 4: Analyzing Data

The most universally used technique for quantifying post-disaster economic impact is input-output analysis. Input-output is a common method of explaining the dynamics at play in a local economy that illustrates how different industry sectors affect each other within a given geographic area. Set up as a matrix, input-output data reports the dollars that each industry puts into, and receives from, other industries. Using this information, impact studies project changes in economic output based on how disasters affect the corresponding inputs.

Among professionals, REMI, IMPLAN, and RIMS II are the most common tools used; however, some university researchers, economic development agencies, and consultants have developed their own models in addition to the models listed above. Their models have been adjusted to account for the unique factors that arise based on the local and regional economy in which they frequently operate.

It is worth noting that when running the models, the user can extract tax revenue impact data from the overall impact analysis, which some consider to be the most valuable information to come out of the study. Doing so provides the public with information they can relate to and provides a common variable that can be compared to other impact studies. It is also important to note that models will need some adjustments to account for local variations.

[16] Interviews (General Consensus)
[17] Ibid
[18] Ibid

Below are some things to keep in mind when undergoing this step in the process:

- **Account for false variables.** It can be difficult to differentiate recession characteristics from disaster impacts. If long-time series data is available, observe patterns from previous recessions and trends in order to separate the two within a reasonable margin of error. Another method to account for this is using a dummy variable in a multiple regression model. Otherwise, it may be better to wait until full effects are known and information on when recession subsides is available for certain measures.
- **Consider workforce size**. Ensure there is a "sanity check" on data relative to the workforce; make sure plans are underway to ensure the workforce size assumed in the study is accurate.
- **Share a draft of findings with industry experts and community partners**. Have your analysis peer-reviewed and vetted by the larger business community, community leaders, and other advisers before going public. This will help to make sure your data links with other data being reported by community partners and ensures requests for aid are comparable and based on similar findings. It also helps to not embarrass publicly politicians that are operating on limited data and information.
- **Build seasonal assumptions into the model**. Productivity loss and business interruption can be captured by revenue losses, but make sure to adjust figures seasonally with reasonable assumptions and regard for anticipated information, as well as taking into account seasonal or macro trends indicating a time of recession or growth.

Step 5: Reporting Data

While disaster impact studies can be a useful tool for understanding repercussions and seeking funding, they can also be misinterpreted by media or the public. The EDO leading a disaster impact study has the responsibility to control and frame the information within it, and support the methods used to create it. Since the study is a projection of one or more possible scenarios, EDOs or chambers must use caution and judgment in sharing their findings.

- Be careful that studies aren't quoted and taken as fact. While the media will want numbers before the disaster is over, be aware that information changes over time.
- Be prepared to back up methodology and figures to government officials.
- Use information honestly, with credibility. You will find receptive allies; arm them with an ability to convince skeptics or answer questions. Point out positives of advocated positions, and be straightforward and upfront.

Case Study: The Economic Impact of the Deepwater Horizon Oil Spill

On April 20, 2010 the Deepwater Horizon oil well burst, leading to a catastrophic oil spill that spread throughout the Gulf Coast. Greater New Orleans (GNO), Inc., a regional economic development organization representing 10 parishes in Louisiana, is among several groups that made efforts to measure the economic impact of the spill. GNO, Inc. conducted a three-part series throughout the year following the disaster that included both quantitative and qualitative analysis revolving around regional economic impact in three areas: fisheries, drilling moratoria, and brand damage.

To project the impact of damage to fisheries, GNO, Inc. used RIMS II multipliers from the Bureau of Economic Analysis. GNO, Inc. created three-year estimates for lost revenues, the number of negatively impacted full-time employees, and loss of output and earnings across the regional economy due to the damage to fisheries. In observing the effects of the drilling moratorium on local businesses, the organization categorized impacted firms into three categories: direct (e.g. oil companies), indirect (e.g. drilling equipment suppliers), and induced (e.g. stores with customer bases that include those from direct and indirect categories). The organization observed the level of wages, tax revenues, and royalties associated in these categories. GNO also looked at indicators without tangible dollar measures, such as the number of new drilling permits granted.

A conversation with a project lead at GNO revealed some useful insight. He emphasized the importance of isolating fiscal impact so that tax revenue can be specifically singled out. Given the variance between different studies, tax revenue can be considered a common variable that stakeholders can relate to.

Below is a chart of some tools that are available to quantify economic impact:

REMI ***(Regional Economic Models, Inc.)***	Description: A software program that incorporates not only input-output modeling, but also general equilibrium, econometric, and economic geography models. Benefits: Provides a comprehensive tool that can project 60-year outlooks. Includes demographic effects, and dynamic effects that occur over a multi-year period. The model is more robust than straight input-output models, and accounts for how the rest of the nation reacts to regional events. The software has a greater level of nuance that can be helpful for complex events like disasters, and comes with unlimited training and technical support. Cost: Varies; Rental purchases of data and software cost upwards of $13,000 for a county/series of counties; Permanent purchases cost upwards of $30,000 for an entire state plus an annual renewal fee of 15%. (2012 Figures)
Alberta Economic Multipliers	The Government of Alberta has developed an I/O model for the Alberta economy based on the structure of Statistics Canada's inter-provincial model. Although the Alberta model accounts for the interaction of imports and exports on the Alberta economy (both inter-provincial and international), the Alberta model provides impacts for Alberta only. The model has the capacity to run impact analysis on industry expenditures, output and changes in final demand. To locate the economic multipliers archive, refer to http://www.finance.alberta.ca/aboutalberta/archive-economic-multipliers.html.
British Columbia Input-Output Model	The B.C. Input-Output (I-O) Model is used to generate regional Economic Dependency figures, as well as employment and revenue multipliers. It can also be used to assess the regional impact of various projects and economic events. For more information see www.bcstats.gov.bc.ca/StatisticsBySubject/Economy/BCInputOutputModel.aspx
IMPLAN	Description: A software program produced by MIG, Inc., with economic data organized as broadly as the national level to as narrowly as the ZIP Code level that calculates economic impact. IMPLAN uses Social Accounting Matrices (SAMs) to calculate the dollar amounts of business transactions in a region as its measure of economic flow, which are based off regional transaction data that comes directly from businesses and government agencies. Measures direct, indirect, and induced impact. Benefits: Allows the user to break down data to the ZIP Code level. Incorporates "non-market" transactions such as taxes and unemployment benefits in addition to trade flows of roughly 500 commodities. Registered users have access to online technical support. Cost: Software is free after data purchase; $350 for a single county file, $730 for county file delineated by ZIP Code, $640 for a U.S. or state totals file. Various congressional district, state-level, and national-level data packages are available (prices vary by state). (2012 Figures)
RIMS II ***(Regional Input-Output Modeling System)***	Description: Economic multiplier tables produced by the Bureau of Economic Analysis that document the interaction among industries. Utilizing national input-output data that can be regionally adjusted, the multipliers calculate the combined impact of industry output, earnings, employment, and value added caused by changes in demand. Benefits: An affordable option. Users can select multipliers organized by region or by industry. Regional multipliers allow the user to define the geographic region. Users have the option of annual series covering 62 aggregated industries or benchmark series covering 62 aggregated industries and 406 detailed industries. Cost: $275 for regional data, $75 for single-industry data. (2012 figures)

Advice on Hiring the Right Consultant

This section has been developed to provide advice when a community is considering outsourcing a disaster impact study.

First, the scope and goals of a project should be determined and be made clear to the consultant. This includes what the scope of geography should be as well as what type of analysis should be conducted. Second, the consultant should seek to work with multiple stakeholders to complete the project.

Cost is often the main concern in determining the selected consultant, but it is important to remember "you get what you pay for." A less expensive study can often translate into a lack of experience in performing this type of analysis or less scope coverage. There is a high probability that an EDO or chamber will outsource this type of study so consider the following factors explained below.

Evaluating Your Options

There are several kinds of entities that perform economic impact studies. Given that many local governments or chambers of commerce do not have the capacity or expertise to conduct the necessary analyses, it is a common practice to seek the services of a consulting firm or services from a local university department or centre. When funds are available but internal expertise is not, a consultant may be the most appropriate option.

University research centres are an option when a group is seeking an affordable economic impact study. Such sources typically conduct studies purely by request in exchange for payment. Universities with economic research arms often conduct impact studies, and you can find many universities capable of such work by looking up the Association for University Business and Economic Research (AUBER) network. It is important to keep in mind and discuss with the university research centre whether they can deliver the product by the expected project deadline.

For provinces, regions, or metropolitan areas, resources may be more abundant, facilitating the ability to carry out internal studies. On this level, groups that have this capacity include regional economic development councils, regional planning commissions, and provincial economic development agencies.

The needs for a final product should be balanced with respect to timing, available funding, and the reputation of the potential analyst/consultant. It is important to seek consultants who are non-partisan while having experience in conducting these types of post-disaster economic-impact studies. If they are a controversial figure, local, provincial and federal officials may not accept the final results of the study.

The Costs of Conducting a Study

Depending on the scope, an economic impact study can cost anywhere from $10,000 to $100,000 and up to several hundreds of thousands of dollars for an extensive study. While basic studies can be done for relatively low costs, communities should plan to spend between $40,000 and $75,000 for a relatively robust study. Much of the cost is associated with data collection.

University studies tend to be less expensive than those conducted by private consultants due to the non-profit nature of the institution and the availability of student labour. Studies are also less expensive if input data is pre-collected and less primary data collection is involved. In the case of regional planning councils, it is useful to have a relationship with an organization responsible for negotiating software contracts, as it may be able to influence costs[19].

Summary

Post-disaster economic impact studies are helpful in determining economic losses and demonstrating the need for outside aid and resources. This type of study serves a critical function in securing the resources necessary to recover from the event. However, these types of studies should not seek to replace a long-term recovery plan, but should serve to complement one. When pursuing this type of study, it is important to consider the constraints of time and resources raised above. Yet, the intelligence that is gathered from such an exercise will pay off dividends in helping local communities to know how the local economy has been impacted and to chart a course of recovery so the community can move on.

[19] O'Neil, P. (2012, July). Personal interview by Carrie Mulcaire and Patrick Terranova.

The AUBER Network

AUBER stands for Association for University Business and Economic Research. Since 1947, this group has served as the professional association of businesses and economic research organizations in public and private universities. They work to improve the quality, effectiveness, and application of research in business, economics, and public policy.

According to their website, www.auber.org, their members engage in a diverse array of applied economic research, with many AUBER member organizations providing their communities with public presentations, forums, economic outlooks, and workshops in areas of interest to the business community. Many of their members maintain State Data Centres and facilitate public access to a wide variety of federal, state, and local data and statistics.

Their website provides a location service to find local AUBER units which can provide research such as economic studies and impact analyses.

Resources

Examples of Post-Disaster Impact Studies

- A Study of the Economic Impact of the Deepwater Horizon Oil Spill (Conducted by GNO, Inc.) http://gnoinc.org/wp-content/uploads/GNO_Inc_EIS_FINAL_FINAL_Publication.pdf
- Preliminary Estimates of Impact of Hurricanes Ike and Gustav on Louisiana (Conducted by the state's office of economic development- Louisiana Economic Development) http://www.doa.louisiana.gov/cdbg/dr/PDF/GustavIkeEconomicImpact.pdf
- Additional website links for tools:
  - **BEA RIMS** (https://www.bea.gov/regional/rims/rimsii/)
  - **REMI** (http://www.remi.com/)
  - **IMPLAN** (https://implan.com/)

Miscellaneous Reading

- "Assessing Community Impacts of Natural Disasters." Lindell, Michael and Carla Prater. http://www.tc.umn.edu/~blume013/Lindell_Prater2003.pdf
- "Economics of Natural Disasters: A Critical Review. Okuyama, Yasuhide. http://www.ibcperu.org/doc/isis/14698.pdf
- "The Role of Business in Disaster Response." US Chamber of Commerce. http://bclc.uschamber.com/sites/default/files/documents/files/Role%20of%20Business%20in%20Disaster%20Response.pdf
- FEMA National Disaster Recovery Framework- http://www.fema.gov/pdf/recoveryframework/ndrf.pdf
- "Natural Hazards, Unnatural Disasters- The Economics of Effective Prevention." World Bank and United Nations. http://issuu.com/world.bank.publications/docs/9780821380505?mode=embed&layout=http://skin.issuu.com/v/light/layout.xml&showFlipBtn=true