

# *Statewide Economic Impacts of Disaster-Related Payments to Support Household and Private and Public Sector Recovery in Iowa*

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*January, 2010*

## **Introduction and Disaster Impact Discussion**

There have been a multitude of programs providing assistance to the state of Iowa in the past 18 months. Springtime 2008 disasters resulted in tornado damage and widespread flood damage to large fractions of the state. In consequence, there was a very large flow of federal and state resources dedicated to assisting community and statewide recovery efforts. The nation was in recession as well and continued to be in recession through much of 2009. A sizeable amount of assistance found its way to Iowa under the American Recovery and Reinvestment Act of 2009 in the forms of infrastructure stimulus spending, income supports and other safety net spending for households, and stabilization assistance for essential public services like education. On top of that, the state of Iowa authorized the I Jobs program as an additional infrastructure development program, and as a jobs stimulus program. The total amount of spending for all types of programs, disaster or economic recovery related, is perhaps as high as \$7.5 billion over the next few years.

It is sometimes assumed that government payments yield very strong economic impacts in that, for example, disaster recovery funding will ultimately offset all or significant portions of the economic losses that occurred because of the disaster. Those assumptions are fallacious. Comparisons of aggregate wellbeing of citizens prior to and after recovery rarely yield declarations of regions or communities being better off in the long run. The major consequences of natural disasters are that they destroy personal, social, and income producing assets. Those losses therefore must be absorbed by society, and governments and insurers never make disaster victims or society whole again in the aggregate.

To understand the financial outcomes of disasters it useful to look at the physical, economic, and social responses to disasters. The primary consequences of disasters fall into three important categories, only two of which lend themselves to an economic determination:

*Damages* are the compilations of all direct and indirect disaster related consequences. They describe the physical outcomes of the events: houses destroyed, roads damaged, bridges washed out, crop land erosion, households affected, and businesses disrupted, as examples. Economic impacts are difficult to determine because it is hard to assess, as measured on a year over year basis, exactly how much a regional or state economy changed as a consequence of just the damages that occurred. Many damages cannot be monetized are clearly parsed within a much larger and diverse economic structure.

*Losses* are estimates of the financial value of the damages, to the extent that they can be determined. These are mainly *direct losses*, for example a destroyed home and personal belongings or, perhaps, the destruction of business machinery or inventory. Direct losses, however, are only known to the extent that individuals, businesses, or governments itemize those losses when seeking assistance. Many losses go undocumented.

*Indirect losses* are also discussed at length when losses are compiled. These might include incomes derived from a business that was affected, lost wages to displaced workers, or even the increased costs to households, commuters, or firms because their life or business circumstances change. These indirect consequences are extremely difficult to measure, and often lend themselves to exaggeration as the evaluators are likely to mistake, for example, the value of lost sales as lost personal income.

*Costs* are the payments by insurers, to the extent that flood losses were insured, and by the public to directly repair or compensate persons or public entities that had losses. In fact, significant portions of losses are socialized across all taxpayers in the form of federal, primarily, aid and assistance. Not all losses are compensated, however, so there ultimately is a gap between the declared value of the losses and the value of the payments to households, businesses, and industries.

So how do we measure the overall economic value of disasters? We cannot use the damages description because it is primarily physical in nature, and much of the damage, most especially environmental harms, cannot be valued in the marketplace. We begin by carefully accounting the direct losses, like our personal or business properties as well as the value of public goods and infrastructure that were destroyed to the extent that they can be known. For the most part these losses must be translated into reductions in asset values or net worth. And reductions in assets or net worth only indirectly influence regional economies. They have a large impact on individual businesses or households, but the aggregate economy may not change much.

Many will argue the determination of losses must also include the indirect consequences of lost wages, diminished business activity, and even the cost and consequences of flood related psychological distress. Obviously, some of these values can be better estimated than others, and this is an extremely imprecise practice. The federal guidelines limit loss determinations to direct losses when seeking aid, however, making the accumulation of indirect losses somewhat of a moot issue.

Because a large part of disaster recovery requires the active involvement of local, state, and federal government officials, we primarily rely on their determinations of the financial outcomes associated with disasters. The Federal Emergency Management Agency (FEMA) along with the U.S. Small Business Administration (SBA) and to a lesser extent the USDA all provide the technical and administrative expertise that victims of disasters require to recover. These agencies also provide or authorize the distribution of the bulk of recovery grants, loans, and other payments to assist victims.

As a consequence, agencies, households, and political leaders now focus on the amount of disaster-related assistance they have been able to secure from the state or, more likely, from the federal government as an expression of the magnitude of damage, and the overall economic value or economic impact of the 2008 floods becomes more of a rhetorical question.

While promises of disaster assistance are important, however, economic impacts cannot happen unless money is actually spent. According to the most recent Recovery Iowa Office (RIO) charts:

- ▶ Total multi-year disaster-related allocations for Iowa from state and federal sources are \$3.613 billion.
- ▶ Of that money, however, \$2.86 billion, about 79 percent, has been approved for use.
- ▶ Finally, the state reports that \$1.038 billion of all disaster related assistance in all forms has been spent, just under 29 percent of total allocations.

Portions of the disaster related aid can be used to determine the job and income benefitting economic impacts that accrued in Iowa as a result. Assistance that helps to reimburse households for losses, lost wages, unemployment, or otherwise underwrites services to households can be converted into enhancements to household income and, ultimately, in-state consumption. Assistance to the private or the public sector that aids in the reconstruction and recovery of public buildings, infrastructure, land stabilization, and private sector construction and rehabilitation can also be modeled very easily.

Other kinds of assistance do not lend themselves to economic impact summaries. For example, grants and loans to businesses may be used for a variety of legitimate business expenses. Without detailed knowledge of how the money is used, however, there is no way to model the effects of that aid. In addition, loans are paid back to the government, so the amount of net aid received by the firms is mostly the difference between the cost of borrowing public money versus the use of private funding sources, not the value of the loan amount. When the aid is reported, it is reported as the total amount of funds made available for loan so those categories cannot be easily estimated.

This report focuses on payments that clearly accumulate to individuals and those that were very highly likely to result in construction activity for either the public or the private sectors.

## **Actual Spending Impacts**

The nature of disasters and disaster recovery involves making direct relief payments in support of households or payments to underwrite private and public sector recovery, which usually involves payments for demolition and site clean-up followed by infrastructure, structure, and other physical repairs.

We can estimate the job and income supporting value of payments that are made to households and payments that support private and government disaster-related construction activity. This will tell us the job and income sustaining value of those payments for the period in which they were made. When those payments are completely exhausted by households, however they were used, or by firms providing construction activity that economic activity ends. These are treated as one-time only payments in the modeling process that are consumed within a one year period for this assessment.

Table 1 itemizes the major state and federal sources of payments to individuals as of December 2009. Using this taxonomy, \$157.43 million was spent supporting household needs, and \$507.77 million found its way into construction activity. Assistance to households can be treated as boosts (or replacements) to household incomes. Construction related uses can be treated as purchases of private sector construction activity. Both of these activities can be modeled in an input-output econometric assessment system.

Table 1

Source / Authority	Primary Uses:	
	Direct Assistance to Individuals	Public and Private Sector Construction
FEMA		299,124,770
US Army Corp of Engineers		58,899,436
IA Disaster Bill		46,154,575
CDBG		40,653,951
Jump Start Funding		34,927,700
USDOT		16,982,507
State FEMA match		5,883,478
USDA		3,829,890
I Jobs -- Disaster		1,308,921
FEMA	135,509,682	
National Emergency Jobs Grant	19,526,660	
Crisis Counseling	2,394,579	
Subtotals	157,430,921	507,765,228

### Economic Impact Terminology

There are three key variables that we report from our impact modeling systems along with three economic impact dimensions. *Industrial output* is the sales value of all commodities produced during a calendar year as a result of what we are measuring. *Labor income* is composed of wages and salaries and returns to proprietors. Last reported are *jobs*. There are more jobs in the economy than employed persons as many people have more than one job. Jobs are not to be confused as representing full-time employment. However, the job values that are declared in an impact model consider those job amounts on an annualized basis.

The three reporting dimensions are the direct values, the indirect values, and the induced values. The *direct values* are those that relate specifically to the industrial activities that we are studying. The *indirect values* represent the industrial activity that is stimulated in the region when the direct firms buy all manner of production inputs from regional suppliers. *Induced values* accumulate when workers and

business owners convert their labor incomes into household spending. When we add all of these dimensions together, we get the estimated total economic value of the direct industrial activity to the total.

Impact summaries refer only to the actual year in which activity is taking place. In this case we are assuming that nearly all, if not all of the activity occurred in a calendar year. It is a serious mistake in impact analysis to sum multi-year activities. Were that logic tenable, my 27 year employment with the state of Iowa would count for 27 jobs. To reiterate, impact analysis only refers to the actual year in which the activity that is measured takes place. For the same activity to occur in subsequent years would require, as in this example, the same amount of payments to households or the construction sectors to continue.

**Economic Impacts**

**Construction-Related Activity**

Table 2 provides the impact values for the construction activity. As well as could be determined from the spending descriptions on the Rebuild Iowa Office web site for the data used in this analysis, the construction spending was allocated to infrastructure like roads, bridges, and fresh and waste water systems, public and private building repair and maintenance, and private and public building construction. Construction related spending totaling \$507.8 million required an estimated 4,182 jobs making \$183.7 million in labor incomes. The Iowa construction and repair firms needed or stimulated \$154.2 million in Iowa supplied inputs, which in turn supported 1,222 jobs making \$53.92 million. When the workers in the construction firms and in the supplying firms converted their incomes into household spending, they induced another \$171.7 million in industrial output, which needed 1,629 jobs making \$51.3 million in labor incomes. In total, for the period in which the construction spending took place, \$833.6 million in industrial output, \$288.9 million in labor incomes and 7,033 jobs were supported in Iowa. Additionally, the original \$507.8 million in combined construction related spending ultimately produced \$288.9 million in labor incomes for Iowa workers.

**Table 2**

Construction Related Economic Impacts			
	Output	Labor Income	Jobs
Direct	507,765,228	183,687,312	4,182
Indirect	154,192,592	53,916,812	1,222
Induced	171,667,808	51,284,996	1,629
Total	833,625,628	288,889,120	7,033
Total Multiplier	1.64	1.57	1.68

The table also lists total multipliers. A multiplier is the ratio of the total value to the direct value. A multiplier of 1.64 for output means that for every dollar’s worth of output in the construction industry,

there was \$.64 in indirect and induced output supported in the remainder of the economy. The 1.57 multiplier for labor income means that for every \$1 in labor income paid in construction, \$.57 in labor income is supported in the rest of the economy. The jobs multiplier of 1.68 means that for every job in the construction sectors another 68/100<sup>th</sup> of a job is supported in the rest of the economy.

**Household-Related Activity**

For this modeling exercise, all assistance to households is treated as if it were increments to household income. The main levels of support that households received involved outright grants for losses as well as income maintenance assistance and unemployment payments. It is impossible to know how those resources were actually consumed, so it is reasonable to conclude that the vast majority will be spent in the manners in which households regularly spend their incomes.

Table 3 demonstrates the value of that spending for Iowa. The modeling results indicated \$157.43 million in aid directed to households would result in \$106.6 million in direct demand for goods and services by households from Iowa businesses. That level of demand would require 1,025 jobs making \$30.77 million. All of those firms require inputs. Accordingly, indirect impacts are \$29.2 million, which needed 218 jobs making \$8.81 million labor income to deliver. When indirect and direct workers convert their earnings into household consumption, they induce \$28.21 million in statewide output, which required 267 jobs making \$8.44 million in labor incomes to deliver. In all, \$163.97 million in total Iowa industrial output, \$48.02 million in labor incomes, and 1,510 jobs or job equivalents were sustained by this aid.

**Table 3**

Household Assistance Related Economic Impacts			
	Output	Labor Income	Jobs
Direct	106,598,311	30,773,896	1,025
Indirect	29,158,976	8,806,145	218
Induced	28,210,474	8,435,100	267
Total	163,967,759	48,015,144	1,510
Total Multiplier	1.54	1.56	1.47

Multipliers for household spending are generally lower than in other industrial activities. This is most evident in the jobs multiplier of 1.47 as compared to construction’s jobs multiplier of 1.68. The reason the jobs multiplier is lower is because the types of jobs created by ordinary household demand tend to pay much less than jobs stimulated by construction or other higher-wage industries. Accordingly, those jobs do not in turn drive as much induced activity as higher earnings would.

## Combined Impacts of Construction and Household Payments

It is reasonable to combine these two tables to declare the total job and labor income value of this portion of disaster related assistance to Iowa. Table 4 contains the summary of those payments. It is not necessary to describe the step by step impacts as above in the previous examples. In total, over \$665.2 million in construction and household payments ultimately produced \$997.6 million in total industrial output in Iowa, \$336.9 million in labor incomes, and the equivalent of 8,543 jobs.

Table 4

	Combined Economic Impacts		
	Output	Labor Income	Jobs
Direct	614,363,527	214,461,208	5,207
Indirect	183,351,568	62,722,957	1,441
Induced	199,878,282	59,720,096	1,896
Total	997,593,359	336,904,264	8,543

## Conclusions

There have been many assessments of the potential economic impacts of many aspects of disaster and recession recover support received in Iowa. Many of those estimates are projections based on expected receipts from governments at some future date. This analysis, however, is based on spent resources. These are not future economic impact values, they are values that either already occurred or are occurring currently in the economy.

For these numbers to continue into the future, however, there would have to be subsequent rounds of spending. There are, for example, large fractions of FEMA Public Assistance, CDBG, USDA, and US DOT allocations that are yet to be spent in Iowa. As most of those funds will be spent for construction, the multiplier values contained in Table 2 can be used to estimate the value of that activity for the whole state for the years in which the spending eventually does occur.

Finally, to reiterate, the impacts only last as long as the funding stream exists. When federal construction support on a project is finished, so too are the jobs. It is not appropriate to sum multiple year impacts to arrive at a total jobs impact value. All economic impacts, like calendars, are only good for the year in which they were intended.