|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Activity | Population mean (min) | Doer  mean (min)\* | Activity | Population mean (min) | Doer  mean (min)\* |
| Sleeping | 504 | 506 | Child care | 18 | 79 |
| Working | 194 | 424 | Active sports | 16 | 88 |
| Electronic media | 143 | 184 | Outdoor recreation | 11 | 134 |
| Travel | 109 | 118 | Cultural events | 10 | 143 |
| Eating | 89 | 93 | Errands | 8 | 41 |
| Socializing | 56 | 115 | Car repair | 6 | 48 |
| Personal care | 50 | 58 | Hobbies | 5 | 114 |
| Reading/writing | 48 | 104 | Bars/lounges | 4 | 101 |
| Education | 46 | 237 | Animal care | 3 | 33 |
| Cooking | 38 | 73 | Singing/dancing | 3 | 106 |
| House cleaning | 34 | 87 | Other | 2 | 29 |
| Shopping | 25 | 66 | Dry cleaners | 1 | 73 |
| Yard work | 20 | 111 | Services | 1 | 83 |

|  |  |  |  |
| --- | --- | --- | --- |
| Code | Activity | Code | Activity |
| 11 | Agriculture, Forestry, Fishing & Hunting | 53 | Real Estate & Rental & Leasing |
| 21 | Mining | 54 | Professional, Scientific, and Technical Services |
| 22 | Utilities | 55 | Management of Companies and Enterprises |
| 23 | Construction | 56 | Administrative and Support and Waste Management and Remediation Services |
| 31-33 | Manufacturing | 61 | Educational Services |
| 42 | Wholesale Trade | 62 | Health Care and Social Assistance |
| 44-45 | Retail Trade | 71 | Arts, Entertainment, and Recreation |
| 48-49 | Transportation & Warehousing | 72 | Accommodation and Food Services |
| 51 | Information | 81 | Other Services  (except Public Administration) |
| 52 | Finance and Insurance | 92 | Public Administration |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Week 1 | | | | Week 2 and beyond | | | |
| Emer-gency Shelter | Temp-orary Shelter | Temp-orary Housing | Perm-anent Housing | Emer-gency Shelter | Temp-orary Shelter | Temp-orary Housing | Perm-anent Housing |
| Emergency  Shelter | .60 | .40 | .00 | .00 | .50 | .50 | .00 | .00 |
| Temporary  Shelter | .00 | .90 | .10 | .00 | .00 | .90 | .10 | .00 |
| Temporary  Housing | .00 | .00 | .95 | .05 | .00 | .00 | .95 | .05 |
| Permanent  Housing | .03 | .05 | .00 | .92 | .00 | .00 | .00 | 1.00 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Problem Perceived To Be Large | Anglo | Black | Hispanic | Total |
| Dealing with mortgage companies about insurance money | 68 | 49 | 68 | 64\* |
| Dealing with building inspectors | 52 | 38 | 76 | 63\* |
| Living in damaged home | 59 | 63 | 59 | 60 |
| Neighborhood conditions | 55 | 60 | 39 | 47\* |
| Living in temporary quarters | 45 | 61 | 38 | 46\* |
| Dealing with insurance companies | 33 | 26 | 48 | 40\* |
| Dealing with contractors | 38 | 18 | 45 | 37\* |
| Unemployment | 11 | 29 | 30 | 25\* |
| Household finances | 14 | 40 | 20 | 22\* |
| Neighborhood crime | 34 | 23 | 16 | 22\* |
| Transportation | 2 | 28 | 17 | 16\* |
| Job relocation | 7 | 21 | 17 | 15 |
| Dealing with agencies | 11 | 20 | 13 | 15 |
| Behavioral problems with children | 19 | 18 | 10 | 14 |
| Family violence | 17 | 11 | 5 | 9\* |
| Gain of member(s) | 14 | 0 | 4 | 5\* |
| Loss of member(s) | 4 | 0 | 13 | 4 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Businesses Change (%) | | Employees Change (%) | | Sales Volume Change (%) | |
| Industry | Florida City | Homestead | Florida City | Homestead | Florida City | Homestead |
| Agriculture | -71 | +4 | -92 | +74 | -93 | +66 |
| Construction | 0 | -20 | +12 | -20 | +12 | -59 |
| Manufacturing | 0 | -12 | -67 | -19 | -59 | -32 |
| Transportation/  communication | -50 | +9 | -100 | +4 | -26 | +51 |
| Wholesale trade | -60 | -4 | -50 | +6 | -84 | +57 |
| Retail trade | -64 | -2 | -84 | +16 | -84 | -5 |
| Finance/  insurance/real estate | -20 | 0 | -59 | -1 | -32 | -32 |
| Business services | -63 | +6 | -94 | -5 | -65 | -14 |
| Professional services | -45 | -3 | -73 | +16 | -69 | +1 |
| Public administration | -50 | +38 | -69 | +7 | n/a\* | n/a\* |

very programs, see Smith (2004).

**The Role of Hazard Insurance**

As noted in Chapter 7, hazard insurance is a preimpact recovery preparedness action. As such, it has the potential for completely replacing current programs of disaster relief. In addition, hazard insurance decreases government workload and expense after disasters by shifting part of the administrative burden for evaluating damage to insurance companies in the private sector. Finally, hazard insurance defines the terms of coverage in advance, thus reducing opportunities for politicians to increase benefits after disaster. The desire to appear to be generous creates a temptation to vote for “pork barrel” projects. The problem is that generous aid for uninsured victims angers those who had the foresight to purchase insurance in advance and, thus, provides a disincentive to purchase insurance in the future.

Unfortunately, the potential contribution of hazard insurance remains to be fully realized. There are many difficulties in developing and maintaining an actuarially sound hazard insurance program. The National Flood Insurance Program has made significant strides over the past 30 years, but it continues to require operational subsidies. One of the basic problems is that those who are most likely to purchase flood insurance are, in fact, those who are most likely to file claims (Kunreuther, 1998). This problem of *adverse selection* makes it impossible to sustain a market in private flood insurance. The federal government has tried to solve this problem by requiring flood insurance for structures located in the 100 year flood plain that are purchased with federally backed mortgages. Unfortunately, homeowners frequently allow their policies to lapse after the first year and the program has no effect on those who purchase their homes without a mortgage or have paid off their mortgages. Consequently, some homes are rebuilt soon after a disaster because their owners have high quality insurance coverage, whereas other homes take much longer because they are only partially insured. In some cases, the homeowners lack *any* insurance because they cannot afford quality insurance or were denied access to it because of “redlining” (Peacock & Girard, 1997).

In addition to these institutional problems, there are cognitive obstacles to developing a comprehensive hazard insurance program. Building on earlier hazards research (see Burton, et al., 1993, for a summary) and psychological research on judgment and decisionmaking (see Slovic, et al., 1974, for an early statement and Baron, 2000, or Gilovich, Griffin & Kahneman, 2002, for more recent summaries), researchers have identified numerous logical deficiencies in the ways people process information in laboratory studies of risk.

One important issue concerns what economists call moral hazard and psychologists refer to as a felt lack of personal responsibility for protection. The concept of moral hazard/felt responsibility for personal protection has important policy implications because the Interagency Floodplain Management Review Committee (1994) report concluded federal disaster relief policy creates this condition by relieving households of the responsibility for providing their own disaster recovery resources. This might be a significant reason why only 20% of structures affected by the 1993 Mississippi floods were insured. However, there appears to be no data on the extent to which households explicitly consider the availability of disaster relief in making decisions about whether to purchase hazard insurance and adopt other hazard adjustments.

**Non Governmental Organizations and Community Based Organizations**

The role of NGOs such as the American Red Cross, Salvation Army, and Mennonite Disaster Service is widely publicized and the role of CBOs such as local churches and service organizations is increasingly recognized. These organizations provide housing, food, clothing, medicine, and financial assistance to disaster victims. In most cases, the *existing* government social service agencies are supplemented by NGOs that *expand* their membership to perform the tasks they are expected to perform during disaster recovery (Dynes, 1970). By contrast, existing CBOs typically *extend* themselves beyond their normal tasks to perform novel activities. In addition, there are situations in which existing, expanding, and extending organizations cannot successfully meet the recovery needs of disaster victims. In such cases, government agencies, NGOs, and CBOs form an *Unmet Needs Committee,* which is an *emergent* organization that is designed to serve those whose needs are not being addressed by existing programs.

In some cases, the need for such emergent organizations arises from political organization and activism by population segments that believe they are being neglected (Morrow & Peacock, 1997; Phillips, 1993a). Local authorities should anticipate recovery demands, plan for an *Unmet Needs Committee,* and communicate its existence throughout the community. When emergent organizations do arise, they can be incorporated into the ongoing recovery management process in order to learn from their knowledge about the unmet needs and ensure that there is an equitable distribution of disaster recovery resources. For a more detailed discussion of NGO activities in disaster recovery, see Smith (2004).

# Local Government Recovery Functions

After a disaster, local government needs to perform many tasks very quickly, and many of these must be performed simultaneously. It is therefore critical to plan for disaster recovery, as well as for disaster response (Schwab, et al., 1998). The line between emergency response and disaster recovery is not clear because some sectors of the community might be in response mode while others are moving into recovery, and some organizations will be carrying on both types of activity at the same time. This means that there will be little time to plan for disaster recovery once the emergency response has begun. By planning for recovery before disaster strikes, resources can be allocated more effectively and efficiently, increasing the probability of a rapid and full recovery. The following discussion is based on the concept of preimpact planning for disaster recovery because a lack of planning will delay decisions about the allocation of recovery resources and the procedures by which they will be used. A lack of preimpact planning can also increase the probability of conflicts arising due to competition over scarce resources during the recovery period.

The previous sections of this chapter have described the tasks that households and businesses perform during disaster recovery and the resources they use to implement this recovery. When households and businesses lack the knowledge of how to recover or the resources needed to recover, government can provide assistance. Local government must also perform specific tasks during disaster recovery, some of which involve restoring services it performed before the disaster (e.g., providing functioning roads, street lights and signs, and traffic control devices). In addition, local government must rebuild any critical facilities (e.g., police and fire stations) that were damaged or destroyed. Finally, local government has a heightened need to perform its regulatory functions regarding land use and building construction. These two functions require rapid action under conditions of a greatly multiplied workload, so special provisions are required to expedite the procedures for reviewing and approving the (re)development of private property.

In approaching the task of preimpact recovery planning, a community must overcome three major misconceptions about disaster recovery. The first misconception is that the entire recovery effort can be improvised after the emergency response is complete. In fact, a timely and effective disaster recovery requires a significant amount of data collection and planning that will delay the recovery if they are postponed until after the emergency response is over. It is important to recognize that the disaster response phase’s uncertainty and urgency about human safety has been replaced by households’ and businesses’ urgency to return to normal patterns of functioning and government agencies’ uncertainty about how to organize the community to accomplish this.

The second misconception is that there will be ample time to collect data and plan the recovery during the emergency response. It is true that some recovery relevant data must be collected during the emergency response. However, an assessment of “lessons learned” from the disaster impact should be used to guide a recovery process that has been designed before the disaster strikes. Finally, the third misconception is that the objective of disaster recovery should be to restore the community to the conditions that existed before the disaster. As noted earlier, this will simply reproduce the community’s existing disaster vulnerability.

In many ways, the process of preparedness for disaster recovery is quite similar to the process of preparedness for emergency response. Thus, the community should establish a Recovery/Mitigation Committee before disaster strikes that will establish a vision of community disaster recovery and articulate the basic strategies that will be implemented before and after disaster impact. In addition, the committee should assign each recovery function to a specific organization, develop a Recovery Operations Plan (ROP), and acquire any necessary resources to implement it. Finally, the committee should conduct the training and tabletop exercises needed to ensure the ROP can be implemented effectively.

*The Recovery/Mitigation Committee*

The LEMC’s Recovery/Mitigation Committee can be an important part of an effective, rapid disaster recovery process. As noted in Chapter 3, this committee should be established before a disaster during the preimpact recovery planning process. Personnel should be designated to serve on this committee, including a chairperson and a lead agency, usually the local planning department. The jurisdiction’s Chief Administrative Officer, usually the city mayor or the county executive, should publish a planning directive, and the Recovery/Mitigation Committee chairperson should establish a planning schedule. Many government agencies should participate in the Recovery/Mitigation Committee, including the directors of the local planning, building, public works, engineering, parks and recreation, economic development, finance, housing, and social services departments, as well as the jurisdiction’s PIO (Schwab, et al., 1998). In addition, there should be representatives from local utility companies, other local business organizations, religious and charitable organizations, and representatives of neighborhood associations.

The Recovery/Mitigation Committee should examine the findings from the community HVA to identify the locations having the highest levels of hazard exposure, physical vulnerability, and social vulnerability. The committee should begin to work with the rest of the community, and especially with those at greatest risk, to formulate a vision of the disaster recovery it intends to implement.

Next, the committee should develop an ROP that integrates the likely disaster impacts, community goals, and public and private sector capabilities within the community. In addition, the ROP should identify external sources of assistance (federal, state, NGO), recognize their loan/grant requirements, and integrate these into a comprehensive program of disaster assistance. The committee should also develop a financial plan for responding to the disaster. Bolin (1993) reported that city revenues from a heavily damaged central business district were 5% of total revenues before the earthquake, declined sharply in the year after the earthquake, and took about four years to return to previous level. This clearly affects the jurisdiction’s tax revenues.

Moreover, the committee should establish agreements with NGOs and CBOs (especially local churches, neighborhood associations, and other citizens’ groups) for support in disaster recovery because these organizations provide financial and in-kind support, as well as legal and technical assistance. After a disaster strikes, the Recovery/Mitigation Committee should ensure that organizations respond within the scope of their responsibilities to implement the ROP.

*Envisioning a Community Recovery Strategy*

The Recovery/Mitigation Committee needs to work with the community before and after a disaster to articulate a vision of community disaster recovery. The recovery process needs to strike a balance between corporate centered and community based economic development (Bingham, 2000). According to a *corporate centered economic development*, usually advocated by the local business community, government provides resources such as land and money to the private sector to invest without any restrictions. This market based strategy tends to produce results that are good in aggregate but produces an inequitable recovery. By contrast, *community based economic development* involves active participation by government to ensure that the benefits of recovery will also be shared by economically disadvantaged segments of the community.

The short term recovery following a major disaster can generate an economic boom as state and federal money flows into the community to reconstruct damaged buildings and infrastructure. These funds are used to pay for construction materials and the construction workforce and, to the extent that the materials and labor are acquired locally, they generate local revenues. In addition, the building suppliers hire additional workers and these, along with the construction workers, spend their wages on places to live, food to eat, and entertainment. Unless there are undamaged communities within commuting distance that can compete for this money, it will all be spent within the community.

Communities must also consider the long term economic consequences of disaster recovery. What will happen after the reconstruction boom is over? They can attract new businesses if they have a skilled labor pool and good schools—especially colleges whose faculty and students can support knowledge based industries. Other assets include low crime rates, low cost of living, good housing, and environmental amenities such as mountains, rivers, or lakes (Blakely, 2000). A community can also enhance its economic base if it can attract businesses that are compatible with the ones that are already there. Such firms can be identified by asking existing firms to identify their suppliers and distributors. These new firms might be attracted by the newer buildings and enhanced infrastructure that has been produced during disaster reconstruction.

If a disaster stricken community does not already have such assets, they can invest in four fundamental components of economic development—locality development, business development, human resources development, and community development. *Locality development* enhances a community’s existing physical assets by improving roads or establishing parks on river and lakefronts. *Business development* involves efforts to retain existing businesses or attract new ones. Although it is not easy, this can be accomplished working with businesses to identify their critical needs. In some cases, this might involve establishing a business incubator that allows startup companies to obtain low cost space and share meetings rooms. *Human resources development* expands the skilled workforce, possibly through customized worker training. Finally, *community development* utilizes NGOs, CBOs, and local firms that will hire current residents of the community whose household incomes are below the poverty level. For example, a comprehensive program for developing small businesses, affordable housing, community health clinics, and inexpensive child care can help to eliminate some of what new businesses might consider to be one of the risks of relocating to the community.

*Developing a Recovery Operations Plan*

As was the case with emergency response, the demands of disaster recovery imply that specific functions be performed. Table 11-6 identifies four principal disaster recovery functions—disaster assessment, short term recovery, long term reconstruction, and recovery management. The recovery phase’s disaster assessment function should be integrated with the emergency response phase’s emergency assessment function in identifying the physical impacts of the disaster. Short term recovery focuses on the immediate tasks of securing the impact area, housing victims, and establishing conditions under which households and businesses can begin the process of recovery. Long term reconstruction actually implements the reconstruction of the disaster impact area and manages the disaster’s psychological, demographic, economic, and political impacts. Finally, recovery management monitors the performance of the disaster assessment, short term recovery, and long term reconstruction functions. It also ensures they are coordinated and provides the resources needed to accomplish them. The following section describes each of these functions in greater detail.

**Table 11-6**.Disaster Recovery Functions.

|  |  |
| --- | --- |
| *Disaster Assessment* |  |
| Rapid assessment | Victims’ needs assessments |
| Preliminary damage assessment | “Lessons learned” |
| Site assessment |  |
| *Short Term Recovery* |  |
| Impact area security | Emergency demolition |
| Temporary shelter/housing | Repair permitting |
| Infrastructure restoration | Donations management |
| Debris management | Disaster assistance |
| *Long Term Reconstruction* |  |
| Hazard source control and area protection | Infrastructure resilience |
| Land use practices | Historic preservation |
| Building construction practices | Environmental recovery |
| Public health/mental health recovery | Disaster memorialization |
| Economic development |  |
| *Recovery Management* |  |
| Agency notification and mobilization | Public information |
| Mobilization of recovery facilities and equipment | Recovery legal authority and financing |
| Internal direction and control | Administrative and logistical support |
| External coordination | Documentation |

*Disaster Assessment*

Disaster assessment includes both physical and social impact assessment. Physical impact assessment, which is usually called *damage assessment*, must address residential, commercial, and industrial buildings. In addition, there is a need to conduct damage assessment for infrastructure such as water, sewer, electric power, fuel, transportation, and telecommunications systems. Finally, damage assessment also must address critical facilities such as hospitals, police stations, and fire stations. In addition, there is a need for social impact assessment, usually called victims’ needs assessment to assure that the available recovery programs are meeting victims’ needs. Finally, “lessons learned” examines the disaster’s physical and social impacts to identify ways in which the mitigation actions can be taken to reduce the community’s hazard vulnerability.

*Damage assessment*. There are three basic types of damage assessment (FEMA, 1995c). The first type, *rapid assessment*, is usually conducted during the emergency response, preferably within the first 24 hours (Schwab, et al., 1998). The purpose of rapid assessment is to identify the areas affected by the disaster and the approximate magnitude of the disaster’s physical impacts. It is especially important to assess the need for lifesaving activities very quickly, so rapid assessment should be completed within one to three hours after disaster impact. In turn, this allows emergency managers to determine where there are collapsed buildings requiring search and rescue operations and whether there is a potential for secondary impacts such as hazmat releases after an earthquake. Rapid assessment also provides information about the status of infrastructure and critical facilities, as well as whether there is likely to be a need for assistance from other local jurisdictions or other levels of government. A rapid assessment is performed by available police, fire, and public works personnel—both on shift and recalled to duty—to conduct assessments in predetermined geographic sectors of the community. Supplementary data can be provided for a rapid assessment from the private sector organizations that own or operate lifelines and critical facilities.

The second type of assessment is the *preliminary damage assessment*, which is designed to produce counts of destroyed, severely damaged, moderately damaged, and slightly damaged structures. This level of assessment should be completed within a 3-4 days, depending on the size and accessibility of the impact area and the number and prior training of the damage assessment teams. The data from the preliminary damage assessment are used to support requests for state and federal disaster declarations. A preliminary damage assessment is performed by having local government personnel perform *windshield surveys* by driving along all of the streets in the impact area (as the name suggests, they do not get out of their cars). Inspectors tally counts of damaged structures, with residential structures being classified by income levels and structural categories (single family, mobile home, multifamily residential structures). Buildings can then be tagged red, yellow, or green depending on the level of damage and occupant safety, with red tagged buildings being unsuitable for occupancy. A preliminary damage assessment should also include estimates of percentages of households with insurance coverage because this will affect the speed with which affected individuals and communities are able to replace their housing.

Finally, a *site assessment* is meant to produce detailed estimates of the cost to repair or replace each affected structure. This information is used to support requests for federal assistance to the owners of the damaged property. It includes estimates of losses to residential properties in order to understand both the level of need for temporary shelter and temporary housing and for repair assistance. Losses to commercial and industrial structures are assessed in order to understand the level of need for repair assistance and economic injury assistance. Losses to public property must be assessed in order for the community to apply for repair assistance. Site assessments require technically trained personnel such as architects, structural engineers, and building inspectors for multistory structures such as apartment buildings. These personnel can usually be drawn from city staff, but additional personnel might be recruited from other local organizations or obtained from outside the community (e.g., through mutual aid agreements with other jurisdictions or memoranda of agreement with professional societies). Skilled construction professionals can be supplemented by volunteers who can conduct site assessments for most single family residences if they have been trained in the use of well designed checklists. A site assessment might take weeks to complete, depending on the size and accessibility of the impact area as well as the number and training level of the assessment personnel. These methods of damage assessment can be compared to the procedures of cost estimation that are used in routine construction projects, as shown in Table 11-7.

**Table 11-7**. Types of Postdisaster Damage Assessments.

|  |  |
| --- | --- |
| Damage Assessment | Routine Construction Cost Estimation |
| Rapid Damage Assessment |  |
| Preliminary Damage Assessment |  |
| Site Assessment | Preliminary Cost Estimate |
|  | Detailed Cost Estimate |

In preparing for the necessary damage assessments, staff from local government departments should be assigned to Damage Assessment Teams (DATs). Their numbers should be augmented as needed by staff from local private sector organizations and neighboring jurisdictions through memoranda of agreement (MOAs) or other contractual arrangements. All DAT members should be trained in a common assessment procedure in order to speed up the process and generate results that are comparable across all DATs within the jurisdiction.

*Victims’ needs assessment*. The effects of disasters are not confined to physical damage. In addition, affected communities must assess the needs of those individuals and groups who have lost property, been injured, or lost family members. This procedure, called a *victims’ needs assessment*, should begin during the preimpact recovery planning process. The first step is to identify the community’s vulnerable segments, which may be defined as specific locations and neighborhoods, or types of households and businesses. The local jurisdiction should assign staff to Victims’ Needs Assessment Teams (VNATs) and supplement them with staff from other organizations. These supplementary staff should be assigned by contract with NGOs and CBOs and trained together with the government staff in methods of victims’ needs assessment.

The need for public assistance to finance household and business recovery is inversely related to the savings rate. That is, the lower the savings rate, the higher the need for public assistance. Unfortunately, the savings rate in the US has been extremely low for the past decade, so the VNATs should be prepared to find large numbers of households and businesses needing recovery assistance. In addition to housing needs, VNATs should also be prepared to identify households’ needs for employment and other economic assistance (e.g., food, clothing, and other basic needs), as well as their psychological needs. If they are given adequate preimpact training, VNAT team members will be knowledgeable about the availability of local, state, federal, and NGO disaster recovery programs. In turn, this will enable them to accurately diagnose victims’ needs and refer them to the appropriate recovery programs.

*“Lessons learned”*. Unless the Recovery/Mitigation Committee establishes evaluation procedures, few lessons are likely to be learned and applied to improving the community’s resilience. Therefore, it should establish a “Lessons Learned” subcommittee, procedures for studying the event, and a well defined scope for its report. The recovery team should use the damage assessment as an opportunity to determine what are the ways, if any, that the jurisdiction should modify its land use plan, building code, and other community operations in the light of the disaster impact. Other issues to be considered should include infrastructure location and replacement, the capital improvements program, and the provisions of the ROP itself. The delivery date of the report should be set fairly early in the recovery process, perhaps 30 days after the disaster, so its recommendations can be incorporated into the recovery process. This should be an adequate amount of time to collect data, deliberate the implications, and make recommendations for policy revision if the jurisdiction has declared a 30 day moratorium on reconstruction.

*Short Term Recovery*

*Impact area security and reentry.* First, there is a need to maintain security in the impact area to ensure residents do not return before it is safe to do so and also to protect vulnerable property from the