|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 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\* |

|  |  |
| --- | --- |
| *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 |

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

*Recovery legal authority and financing*. The Recovery/Mitigation Committee needs to obtain legal authority for a wide range of short term recovery actions including a development moratorium, temporary repair permits, demolition regulations, and zoning for temporary housing (Schwab, et al., 1998). They also need to explore the feasibility of an *adequate public facility ordinance* requiring developers to pay for extending infrastructure to locations where it does not already exist, *increased participation in the National Flood Insurance Program*, and revising *annexation procedures* for incorporating additional land. In addition, the Recovery/Mitigation Committee should examine the adequacy of existing zoning tools including *development density controls* that limit the number of lots per acre of developed land, *overlay districts* that add special restrictions to the customary limitations of type (residential, commercial, and industrial) of construction, and *setback requirements* for minimum distances from hazardous terrain or landscape features. In addition to ensuing adequate legal authority, the Recovery/Mitigation Committee must identify financial tools for achieving mitigation objectives. Financing can be obtained by *directing Community Development Block Grant funds* to mitigation activities, *establishing special assessment districts*, and *charging impact fees* for new development— especially when it is in a hazard prone area.

*Administrative and logistical support*. During the recovery period, the pace of operations decreases so the management of specific emergency response and recovery functions does not need to be focused at incident scenes or centralized in the EOC. Thus, the activities performed by the Planning, Logistics, and Administration Sections within the IMS are gradually dispersed back to the jurisdiction’s normal departments listed in Figure 11-2. Nonetheless, special provisions are required to support the additional staff generated by obtaining mutual aid personnel from other jurisdictions and volunteer personnel such as architects and engineers used as building inspectors. Moreover, records accumulated by the Finance Section must be available to provide a justification for expenditures on disaster recovery and hazard mitigation that are reimbursable by state and federal agencies.

*Documentation*. As is the case in the emergency response, documentation is needed during disaster recovery to provide the basis for organizational learning. Maintaining an event log of who took what actions in response to what conditions will provide the Recovery/ Mitigation Committee with the information it needs to produce the “Lessons Learned” document and, later, to revise the ROP. In addition, detailed documentation provides the jurisdiction’s legal counsel with the information that might be needed to defend against any lawsuits.

**Case Study: Disaster Recovery in Wichita Falls**

An F-4 tornado struck Wichita Falls on April 10, 1979 that killed 46 people and injured another 3245 (Bolin, 1982). The tornado also destroyed 2500 homes, seriously damaged 879, and slightly damaged 1659. In addition, it destroyed 1274 apartment units, 85 mobile homes, and 81 businesses. In the aftermath of the storm, nearly one fifth of the city’s population of 100,000 was homeless. Temporary housing began to be delivered after four days, telephone service was restored after nine days, and debris clearance from private lots had begun within two weeks. Although the EOC was deactivated five days after the storm, the emergency declaration was not lifted for a month. By that time, basic services (water, sewer, electric power, fuel, telecommunications, and transportation) were restored. Debris clearance was delayed by the need to obtain permission from property owners who were, understandably, not readily accessible due to relocation elsewhere. Nearly 50% of all homeless families had temporary housing within 45 days after the storm and almost all had temporary housing within 90 days. Most major commercial businesses had resumed operations within 120 days. Housing reconstruction was delayed by Small Business Administration funding problems, some victims’ lack of insurance and inability to qualify for federal aid, and the scarcity of building contractors and building materials. Nearly 90% of the lost housing had been rebuilt by the end of two years, but there were problems in the interim. First, the influx of construction workers increased pressure on the tight housing market. Second, reconstruction in lower socioeconomic neighborhoods was only 30% at 18 months when reconstruction in higher socioeconomic neighborhoods reached 80%. The community faced a number of foreseeable recovery issues for which it was unprepared. First, the city council reversed itself twice on the issue of siting mobile homes on lots where owners were attempting to rebuild. Second, the council imposed rent and price controls, but these only delayed increases that skyrocketed as soon as they were terminated. Third, the city incurred substantial costs for rebuilding infrastructure at a time when its revenues were down because of the losses in the property tax base.