

DISASTER FACTS

International

- In 1999 there were \$100B in losses and 105,000 fatalities. Insurers covered \$28.6B in losses.
- According to the International Federation of Red Cross and Red Crescent Societies, between 1993 and 2002, a total of 531,159 people were killed by natural disasters, including 75,391 in earthquakes and 93,561 in floods.
- In 2000 there were \$38B in losses and 17,000 people killed. Insurers covered \$11B in losses, which included \$7.6 from natural disasters. [Emergency Preparedness News]

Kobe

- 4,555 dead and more than 23,760 injured
- 44,680 buildings destroyed or badly damaged.
- Kobe went from 6 to 17th in world Container Port ranking in 1997.

Nationally

- 85% of natural disasters are weather or climate related, accounting for two-thirds of the damages
- There are more than 10,000 severe thunderstorms and 2,500 floods each year. 1,000 tornadoes impact the USA annually. On average 500 people die each year as a result of severe weather and floods. (NWS 2005)
- The cost of natural disasters is rising. During the past two decades, natural disaster damage costs have exceeded the \$500 billion mark. Only 17 percent of that figure was covered by insurance. (Dennis S. Mileti, Disasters by Design)
- From 1976 to 1998, the U.S. experienced almost 800 declared major disasters (FEMA Statistics). From 1990 to 1997, damage from U.S. flooding alone topped \$33Billion. The Northridge Earthquake cost FEMA more than \$5.5 billion in relief funds alone. In 1998 the U.S. sustained seven disasters, each costing more than \$1Billion. (NOAA)
- Flood damage in the U.S. cost the nation \$5.9 billion annually. Washington's annual losses from flooding average \$54 million.
- The 1999 summer drought and heat wave resulted in more than \$1 billion in agriculture losses. In 1998 the Southern drought and heat wave resulted in almost \$9 billion in agriculture and ranching damage. (NOAA)

- In 2000, 19 Americans were killed in terrorist attacks overseas, all but two in one attack on the USS Cole. From 1990 to 2000, 88 U.S. citizens were killed in terrorist attacks overseas, compared with 585 during the 1980s
- Between 1980 and 1999, there were 327 incidents of suspected terrorism in the United States, and U.S. law enforcement prevented another 130 planned acts of terrorism. (Attorney General John Ashcroft)
- During 2000, 257 threats tracked by the FBI involved a weapon of mass destruction. That was seven times the number the FBI recorded in 1996. (Dale Watson, FBI Counter Terrorism Div.)

Business Losses

- FEMA studies show that if a small business is forced to close its doors for three days or more because of a disaster, 40% of those businesses will never reopen. (FEMA)
- 50% of small businesses in Washington State are financed on a personal credit card.
- Importance of Small Business (From Small Business Survival Committee, a Washington D.C. based advocacy group)
 - Account for 99% of all employers
 - Accounted for 97% of all U.S. exporters in 1998
 - Account for 47% of sales in the nation
 - Generate 51% of all U.S. private-sector output
 - Employ 51 % of private sector workers
 - Create the bulk of new jobs
 - Obtain more patents per sales dollar than large businesses

Insurance Losses

- In 1999 for the USA totaled \$8.2 billion to homeowners and business for losses caused by 27 catastrophic events. This was the third highest loss since 1949. (Insurance Services Office, Inc.)

Earthquakes

- Performance based building design techniques being used more and more (2001 Conference)
 - Collapse Prevention
 - Life Safety
 - Immediate Occupancy
 - Continued Operational Capability

Land Slides

Landslides constitute a major geologic hazard because they are widespread, occurring in all 50 states, and cause \$1-2 billion in damages and more than 25 fatalities on average each year. Landslides pose serious threats to highways and structures that support fisheries, tourism, timber harvesting, mining, and energy production as well as general transportation. Landslides commonly occur with other major natural disasters such as earthquakes and floods that exacerbate relief and reconstruction efforts and expanded development and other land use has increased the incidence of landslide disasters.

Hazardous Materials (HAZMAT)

- Accidents involving these materials—spills, fires & explosions—cost the United States over \$459 million annually.
- GAO reports that trains and trucks carry more than 770,000 shipments of hazardous materials across the United States every day.

Workplace Violence

- There are on average two deaths every day due to workplace violence. There were 787 deaths in 2005. (Presentation by Universal Protection Service, June 2007)
- Homicide is the 2nd leading cause of death in the workplace. (Presentation by Universal Protection Service, June 2007)

Hurricane Katrina

- More than 1.5 million people were evacuated
- Estimated 250,000 homes were damaged or destroyed
- More than 1,200 lives lost
- 600,000 people required sheltering.
- The Coast Guard rescued 33,500 people
- 22,000 people were airlifted from the New Orleans Airport
- Estimated \$200 Billion in damages

Washington State

- Washington State has 6 million population and covers 71,303 square miles (18th largest of the 50 states). Washington also has 2,337 miles of shoreline, including 157 miles that border the Pacific Ocean and 172 significant islands in the San Juan Archipelago.
- Washington has borders with Canada to the north, as well as Oregon and Idaho to the South and east respectively. The state has 39 counties, 231 cities and 29 federally recognized tribes.

- 14 percent of Washington's population speak a language other than English at home. The median age is 36.2 years. 25% of the population is under 18 years and 11% are 65 years and older. Ten percent of the people living in Washington in 2003 are foreign born.
- Washington has 9 military bases and over 100 military installations. It is home to many significant corporations: Microsoft, Boeing Airplane Division, Starbucks, Washington Mutual Bank, Nintendo, Weyerhaeuser, Costco, Nordstrom and Immunex/AMGEN. (Source is State EMD FFY06 Application)
- Washington State has been designated as the second most hazardous area for earthquakes in the nation. (2000 FEMA Study)
- Washington has averaged one Presidential Disaster every year since the 1950s. (State EMD)
- In 1999 \$30M disbursed in our state for repairs of damages in federal disasters declared from 1995-1999. (State EMD)
- 1993 Inauguration Day Windstorm was the most costly in damages to the Puget Sound Energy electrical network with \$30M in damages to their system. The December 2006 Windstorm had even greater damages that have not been totaled yet. (Seattle PI)
- Top eleven disasters in Washington State (source is NWS).
 - #11 statewide flooding in November 1990 that sank the Lake Washington floating bridge, killed two and caused \$250M in damages.
 - #10 the snowstorm of February 1, 1916 that dropped 20 inches of snow on Seattle in 24 hours and 2-4 feet in other parts of Western Washington.
 - #9 flooding in February 1996 that caused \$800 million in damage regionally and killed three in Washington State alone.
 - #8 tornadoes on April 5, 1972 that touched down near Vancouver and Spokane and in Stevens County.
 - #7 March 1, 1910, Stevens Pass avalanche that swept two trains off their tracks into a ravine, killing 96 people.
 - #6 May 18, 1980, Mt. St. Helens eruption and mud flows that killed 57 people.
 - #5 1910 forest fires that burned 3 million acres in Eastern Washington and Northern Idaho from August 20-September 9, creating its own weather and killing 85 people.
 - #4 the January 1950 blizzard that dumped more than 21 inches of snow on Seattle and killed 13.
 - #3 May-June 1948 snowmelt flooding broke lake and river records in Eastern Washington, Northern Idaho and along the Columbia River.

- #2 the 1962 Columbus Day windstorm.
- #1 is Nisqually Earthquake in property damages. There were 407 injuries (207 in King County) and one death (heart attack). Property damages estimated in the hundreds of millions of dollars.

Earthquakes

- Walla Walla had a 6.4 EQ in 1936
- Largest historic quake was in 1872 in NE Cascades estimated at 7.4
- January 25, 1700 last subduction earthquake
- Expect a Deep EQ occur every 25-30 years.
 - Last one, February 28, 2001, Nisqually Earthquake 6.8
 - 1949 Olympia 7.1 EQ, Eight dead
 - 1965 Seattle-Tacoma 6.5 EQ, Seven dead
 - 2001 Nisqually 6.8 EQ, One dead
- Probabilistic projections for EQ return rates (Conference)
 - If the return rate is once every 75 years, than we have a 50% chance of an EQ within 50 years
 - If the return rate is once every 500 years, we have a 2% chance of an EQ within 50 years.

Nisqually Earthquake (State Stats, 2-02)

- 24 Counties declared
- 41,414 Individual Assistance (IA) Claims made, more than all previous WA disasters combined
 - \$52M for temporary housing
 - 6,253 SBA loans, \$83.4M
- Grants and Loans totaling \$113M (\$54M in IA Grants)
- WASDOT Bridge Retrofit—Bridges being done in three phases. 350 bridges done, 979 to go. Phase 1 is tying spans together. Phase 2 is single column bridges and Phase 3 is multiple column bridges. Total cost is estimated at \$275M (remaining) with completion in 2024. Currently \$11M is being spent per biennium, down from \$15M in the post I-695 environment. No major bridges or rail bridges are included in this work effort. (WASHDOT May 2001).
- Since 1991 the state has spent \$65M on strengthening existing highway bridges. An estimated \$275 million of work remains to be done. By June, 2001 350 highway bridges will be retrofitted. Another 979 bridges still will require retrofit. (WASHDOT)

Wildfires

- 1902 Yacolt Fire was in Western Washington. It started in rural Clark County during an east wind event in late summer. It burned 239,000 acres,

spreading west to the Columbia and north into the Willapa Hills. Enough smoke and debris in the air darkened the skies in both Seattle and Portland. (NWS)

- The Chelan Fires of 1994 burned 120,000 acres. (NWS)
- Nearly 50 homes were lost in wildfires in Benton County in 2000. (NWS)

Flooding

- 1996 Floods had (State EMD):
 - 11,998 IA Claims
 - \$27M in IA Grants
- More than 120 Hazard Mitigation Grants totaling more than \$60M, have been given, primarily for flood events. (State EMD) This includes:
 - 410 homes acquired and property turned into open spaces.
 - 167 homes elevated to at least one foot above base flood elevation.
 - Many communities have prepared flood mitigation plans.

Drought

- 1976-77 was worst drought in the last 106 years. (NWS)
- 2000-01 was second worst drought (NWS)

Windstorms

- 1993 January Inauguration Day Windstorm Puget Sound Energy (PSE) had 500,000 electrical customers without power. 450 transmission lines were down. 700K customers without power overall (State EMD)
 - There were 81 patients but no deaths from carbon monoxide poisoning
- 2006 December Windstorm had 700K out of 1M PSE customers without power. (State EMD)
 - There were 293 carbon monoxide poisonings and seven deaths

Landslides

- The Aldercrest-Banyon subdivision in Kelso, Cowlitz County was declared a disaster site in 1998. The slide impacted more than 130 homes. This is the second largest landslide in a residential area in the history of the USA.

King County

-2,200 square miles
-1.8 million population

- King County has had 22 Presidential Disasters in the last 43 years.
- \$61.7M in disaster assistance (Fed, State, Local) provided for both Public and Individual Assistance for the previous seven disasters (preceding the Nisqually EQ). (State EMD 1998)
- **27% of the King County population are persons of color.** That's **461,900 persons** of color in King County, roughly the total population of Cleveland or Kansas City.
- It's hard to compare 1990 and 2000, but roughly 17% (251,000 people) were persons of color in **1990**.
 - More than **18%** of the King County population speak a **language other than English** at home. That's **299,600** people for whom English is a second language. That's almost twice the 154,000 in 1990.
 - Just under half of these, 138,000 reported they "do not speak English well."
 - **15%** of King County's population is **foreign-born**, that's **268,000 people**.
 - That's almost twice the 140,000 foreign-born here in the 1990 Census.

Earthquakes

- Last significant EQ was February 28, 2001. It is projected to have caused \$170M in Public Damages here in King County. 206 Injuries and one death. City of Seattle 50 buildings red tagged and 48 yellow tagged.
 - 16,318 Registrations to FEMA's Hotline (July 01)
 - \$19.9M in Housing Assistance
 - \$41.9M in SBA Loans
 - PA for KC Govt. \$7,957,000 Total with \$2.25M of that in other than buildings
- May 2, 1996 Duvall. Depth of 5 miles, Magnitude 5.3. Caused \$1M in damage to BPA substation.
- Last quake on the Seattle Fault was 1,100 years ago.
- An EQ of 8.4 magnitude could cause \$84.5B in damage in the Puget Sound Region (Insurance Industry Study).
- Earthquake Scenario-.47g on the Seattle Fault(HAZUS, 2000)
 - Casualties
 - 14,089 without hospitalization
 - 2,676 injuries w/hospitalization but not life threatening
 - 372 people hospitalized with life threatening injuries
 - 348 fatalities
 - Damaged buildings
 - Slight is 158,700 residential
 - Moderate is 105,800

- Extensive is 21,100
- Complete is 8,900
- Sheltered households
 - Displaced households 40,260
 - Short term shelter (people) 23,410
- Economic Loss [This projection seems extremely low based on experiences to date]
 - Property damage losses \$146M
 - Economic losses \$7.9M

Bridges (Source KCDOT, 7-13-01)

- King County owns and maintains 193 bridges in the unincorporated area.
- The Road Services Division routinely inspects each of the bridges at least once every 2 years - a certified bridge inspector performs the inspections. 162 bridges were inspected in 2000.
- The Federal government requires (National Bridge Inspection Standards) that public agencies inspect and report on all bridges over 20 feet in length at least once every two years. WSDOT collects the reports from agencies within the State and maintains the information in their database - the State also transmits the compiled information to the Federal Highway Administration annually.
- King County, several years ago, established a Bridge Seismic Retrofit Program funded in Roads CIP.
- As of 12/31/2000 - 67 of the County's bridges have been retrofitted to a Level II Performance Standard. A Level II Performance Standard means that in an earthquake the bridge will not collapse and potentially cause loss of life, and that following an earthquake the structural integrity of the bridge will not have been compromised to the point that the bridge could not reasonably be repaired. This is important because the cost of repairs usually will be significantly less than the cost of having to build a whole new bridge. A repairable bridge can usually be returned to service in a much shorter timeframe than would be required to build a brand new bridge - a matter of months as opposed to 2-3 years.
- King County has spent:
 - \$8.1 million on Bridge Seismic Retrofit from the start of the program through 12/31/2000
 - For 2001 thru 2007 will be spending an additional \$10 million to seismically retrofit County bridges
 - Additionally, bridges that have reached the end of their useful life are being replaced by new bridges that meet today's modern engineering and seismic standards, in addition to those bridges being addressed through the retrofitting program.

Building Codes

- Washington State now uses the International Building Code (IBC). Performance based design techniques. Normal building code is just life safety.
 - Collapse Prevention]
 - Life Safety
 - Immediate Occupancy
 - Operational (Difference between the last two is normally just non-structural measures)

Pandemic Flu

- According to estimates from the CDC over the first six-eight weeks of a pandemic in King County.
 - One Third of the population –600,000—could become clinically ill
 - Up to 470,000 outpatient medical visits may be needed
 - Over 57,000 people may need hospitalization
 - 11,500 residents could die

Flooding

- Most common disaster in King County (14 Presidential Disasters out of 21)
- 139,789 acres of King County that are in danger of flooding (1% chance of occurring in any given year) this is about 10% of the county's total land.
- Record amount of rain for any one day, Seattle, 2.1" in a few hours on December 14th, 2006. Previous record was 1.24".
- Rainfall record for any month is November, 2006, 15.63". Previous record for November was 11.62" 1998, and for any month in Washington was June 1953, 12.92"