

# Do More People Die of Extreme Heat or Excessive Cold?

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## Synopsis:

The question of “Do More People Die of Extreme Heat or Excessive Cold?” is addressed using data from the National Oceanic and Atmospheric Administration (NOAA) “Storm Data” database.

## Data Processing

Load the NOAA “Storm Data” data file into the R statistical system.

```
filename <- "~/GitHub/RepData_PeerAssessment2/data/repdata%2Fdata%2FStormData.csv.bz2"
NOAA <- read.csv(filename,
                  stringsAsFactors = FALSE )

#### Select Columns of interest:
####      Primary key:      REFNUM
####      Date and Time:    BGN_DATE, BGN_TIME,
####      Location:         STATE, COUNTY, COUNTY_END, LATITUDE, LONGITUDE,
####      Type of Storm:    EVTYPE,
####      Damage:           PROPDMG, PROPDMGEXP, CROPDMG, CROPDMGEXP,
####      Casualties:       FATALITIES, INJURIES

# storms <- subset(NOAA, select())
columnsubset <- c("REFNUM", "BGN_DATE", "BGN_TIME", "TIME_ZONE",
                  "STATE", "COUNTY", "COUNTY_END", "LATITUDE", "LONGITUDE",
                  "EVTYPE", "PROPDMG", "PROPDMGEXP", "CROPDMG", "CROPDMGEXP",
                  "FATALITIES", "INJURIES")

#### Select Rows of interest (exclude freakish events without impact):
#### Select only observations with at least one injury (or fatality)
####      or non-zero property damage (or crop damage).
# rowsubset <- "NOAA$INJURIES > 0 || NOAA$FATALITIES > 0 || NOAA$PROPDMG > 0 || NOAA$CROPDMG > 0"

storms <- NOAA[, columnsubset]
str(storms)

## 'data.frame':    902297 obs. of  16 variables:
##  $ REFNUM      : num  1 2 3 4 5 6 7 8 9 10 ...
##  $ BGN_DATE     : chr   "4/18/1950 0:00:00" "4/18/1950 0:00:00" "2/20/1951 0:00:00" "6/8/1951 0:00:00" .
##  $ BGN_TIME     : chr   "0130" "0145" "1600" "0900" ...
##  $ TIME_ZONE    : chr   "CST" "CST" "CST" "CST" ...
##  $ STATE        : chr   "AL" "AL" "AL" "AL" ...
##  $ COUNTY       : num  97 3 57 89 43 77 9 123 125 57 ...
##  $ COUNTY_END   : num  0 0 0 0 0 0 0 0 0 0 ...
##  $ LATITUDE     : num  3040 3042 3340 3458 3412 ...
##  $ LONGITUDE    : num  8812 8755 8742 8626 8642 ...
```

```
## $ EVTYPE      : chr  "TORNADO" "TORNADO" "TORNADO" "TORNADO" ...
## $ PROPDMG     : num  25 2.5 25 2.5 2.5 2.5 2.5 2.5 25 25 ...
## $ PROPDMGEXP  : chr  "K" "K" "K" "K" ...
## $ CROPDMG     : num  0 0 0 0 0 0 0 0 0 0 ...
## $ CROPDMGEXP  : chr  "" "" "" "" ...
## $ FATALITIES  : num  0 0 0 0 0 0 0 0 1 0 ...
## $ INJURIES    : num  15 0 2 2 2 6 1 0 14 0 ...

#### Select years of interest (Since 2001 "21st Century Storms" or last 25 years)

#### Step 1: Create a year variable from date
# datetime = as.POSIXct(storms$BGN_DATE, "%m/%d/%Y %H:%M:%S", tz = storms$TIME_ZONE)
datetime = as.POSIXct(storms$BGN_DATE, "%m/%d/%Y %H:%M:%S", tz = "EST")
storms$year <- format(datetime, "%Y")

#### Step 2: Filter by year
storms <- storms[as.numeric(storms$year) >= 2001, ]

#### Remove the original NOAA database
rm(NOAA)

#### Scale Property Damage and Crop Damage by thousands and millions
storms$PropertyDamage <- storms$PROPDMG
storms$CropDamage <- storms$CROPDMG

with(storms,
{
  PropertyDamage <- ifelse(PROPDMGEXP == "K", PROPDMG * 1000, PROPDMG)
  PropertyDamage <- ifelse(PROPDMGEXP == "M", PROPDMG * 1000 * 1000, PROPDMG)

  CropDamage <- ifelse(CROPDMGEXP == "K", CROPDMG * 1000, CROPDMG)
  CropDamage <- ifelse(CROPDMGEXP == "M", CROPDMG * 1000 * 1000, CROPDMG)
}
)

#### Rename and put variables in logical order.
```

## Results

```
# Tabulate Fatalities and Damage by Storm Type
# R commands include table(), xtabs() and ftable() -- or "aggregate()"
#### Severe Storm Events -- type and frequency
#### Jared Lander's "R for Everyone" page 123
stormtab <- aggregate(cbind(FATALITIES, INJURIES, PropertyDamage)
~ EVTYPE + year, storms, sum)
stormtab
```

## Tabulate Fatalities and Damage by Storm Type

```
## EVTYPE year FATALITIES INJURIES PropertyDamage
```

## 1	HIGH SURF ADVISORY 2001	0	0	200.00
## 2	WATERSPOUT 2001	0	0	0.00
## 3	ABNORMALLY DRY 2001	0	0	0.00
## 4	ACCUMULATED SNOWFALL 2001	0	0	0.00
## 5	AVALANCHE 2001	18	6	44.00
## 6	BEACH EROSION 2001	0	0	0.00
## 7	BLACK ICE 2001	0	0	0.00
## 8	BLIZZARD 2001	4	5	1052.10
## 9	BLOWING DUST 2001	0	0	20.00
## 10	BRUSH FIRE 2001	0	2	0.00
## 11	COASTAL FLOODING 2001	1	0	359.65
## 12	COLD 2001	0	0	0.00
## 13	CSTL FLOODING/EROSION 2001	0	0	0.00
## 14	DENSE FOG 2001	0	0	0.00
## 15	DROUGHT 2001	0	0	0.00
## 16	DRY 2001	0	0	0.00
## 17	DRY CONDITIONS 2001	0	0	0.00
## 18	DRY MICROBURST 2001	1	0	169.50
## 19	DRY SPELL 2001	0	0	0.00
## 20	DUST DEVEL 2001	0	0	0.00
## 21	DUST DEVIL 2001	0	1	3.00
## 22	DUST STORM 2001	0	5	160.00
## 23	EXCESSIVE HEAT 2001	165	445	0.00
## 24	EXCESSIVE HEAT/DROUGHT 2001	0	0	0.00
## 25	EXTREME COLD 2001	4	0	0.00
## 26	EXTREME WINDCHILL 2001	0	0	0.00
## 27	EXTREME WINDCHILL TEMPERATURES 2001	0	0	0.00
## 28	EXTREMELY WET 2001	0	0	0.00
## 29	FALLING SNOW/ICE 2001	1	1	0.00
## 30	FLASH FLOOD 2001	34	263	57098.33
## 31	FLOOD 2001	13	8	33602.72
## 32	FOG 2001	7	67	1283.00
## 33	FREEZE 2001	0	0	0.00
## 34	FREEZING RAIN 2001	0	0	0.00
## 35	FROST 2001	0	0	0.00
## 36	FUNNEL CLOUD 2001	0	0	0.00
## 37	FUNNEL CLOUDS 2001	0	0	0.00
## 38	GRADIENT WIND 2001	0	0	0.00
## 39	GUSTY LAKE WIND 2001	0	0	0.00
## 40	GUSTY THUNDERSTORM WINDS 2001	0	0	0.00
## 41	GUSTY WIND 2001	0	0	5.00
## 42	GUSTY WINDS 2001	0	0	35.00
## 43	HAIL 2001	0	31	30581.54
## 44	HEAT 2001	1	0	0.00
## 45	HEAVY RAIN 2001	3	1	752.50
## 46	HEAVY RAIN EFFECTS 2001	0	0	0.00
## 47	HEAVY SNOW 2001	1	16	7247.93
## 48	HEAVY SURF 2001	1	17	420.50
## 49	HIGH SEAS 2001	1	0	0.00
## 50	HIGH SURF 2001	2	3	2.00
## 51	HIGH SURF ADVISORY 2001	0	0	0.00
## 52	HIGH WATER 2001	2	0	0.00
## 53	HIGH WIND 2001	13	71	17295.41
## 54	HURRICANE 2001	1	0	650.00

## 55	ICE STORM 2001	5	7	341.70
## 56	LAKE EFFECT SNOW 2001	0	0	2.00
## 57	LANDSLIDE 2001	0	0	0.00
## 58	LATE SEASON SNOW 2001	0	0	180.00
## 59	LIGHT FREEZING RAIN 2001	0	0	65.00
## 60	LIGHT SNOW 2001	0	0	383.00
## 61	LIGHTNING 2001	44	372	31864.55
## 62	MARINE TSTM WIND 2001	0	0	0.00
## 63	MIXED PRECIPITATION 2001	0	0	343.00
## 64	MODERATE SNOWFALL 2001	0	0	0.00
## 65	MONTHLY PRECIPITATION 2001	0	0	0.00
## 66	MUD SLIDE 2001	0	0	100.00
## 67	MUDSLIDE 2001	0	0	226.00
## 68	NON-TSTM WIND 2001	0	0	40.00
## 69	NON TSTM WIND 2001	0	1	0.00
## 70	NORTHERN LIGHTS 2001	0	0	0.00
## 71	OTHER 2001	0	4	0.00
## 72	PATCHY ICE 2001	0	0	0.00
## 73	PROLONG COLD 2001	0	0	0.00
## 74	PROLONG WARMTH 2001	0	0	0.00
## 75	RAIN 2001	0	0	0.00
## 76	RECORD COLD 2001	0	0	0.00
## 77	RECORD HEAT 2001	0	0	0.00
## 78	RECORD LOW RAINFALL 2001	0	0	0.00
## 79	RECORD WARMTH 2001	0	0	0.00
## 80	RED FLAG CRITERIA 2001	0	0	0.00
## 81	RIP CURRENTS 2001	49	76	60.00
## 82	ROGUE WAVE 2001	0	2	0.00
## 83	ROUGH SEAS 2001	2	0	0.00
## 84	SEVERE THUNDERSTORMS 2001	0	0	0.00
## 85	SMALL HAIL 2001	0	1	0.00
## 86	SMOKE 2001	0	0	0.00
## 87	SNOW 2001	1	3	89.00
## 88	SNOW ADVISORY 2001	0	0	0.00
## 89	SNOW DROUGHT 2001	0	0	0.00
## 90	SNOW SHOWERS 2001	0	0	0.00
## 91	SNOW/BLOWING SNOW 2001	0	0	0.00
## 92	SNOW/FREEZING RAIN 2001	0	0	0.00
## 93	SNOW/SLEET 2001	0	0	0.00
## 94	SNOWMELT FLOODING 2001	0	0	0.00
## 95	STORM SURGE 2001	0	1	1460.00
## 96	STRONG WIND 2001	0	8	217.00
## 97	STRONG WINDS 2001	1	0	105.00
## 98	THUNDERSTORM 2001	1	0	0.00
## 99	THUNDERSTORMS 2001	0	0	0.00
## 100	TORNADO 2001	40	743	66361.19
## 101	TROPICAL STORM 2001	23	6	2248.85
## 102	TSTM WIND 2001	15	332	110943.75
## 103	TSTM WIND/HAIL 2001	1	10	551.35
## 104	UNSEASONABLY COLD 2001	0	0	0.00
## 105	UNSEASONABLY COOL 2001	0	0	0.00
## 106	UNSEASONABLY DRY 2001	0	0	0.00
## 107	UNSEASONABLY HOT 2001	0	0	0.00
## 108	UNSEASONABLY WARM 2001	0	0	0.00

## 109	UNUSUALLY LATE SNOW 2001	0	0	0.00
## 110	URBAN/SML STREAM FLD 2001	2	6	1587.00
## 111	VERY DRY 2001	0	0	0.00
## 112	VOLCANIC ASH 2001	0	0	500.00
## 113	WATERSPOUT 2001	0	0	0.00
## 114	WILD/FOREST FIRE 2001	5	46	6651.36
## 115	WIND 2001	0	19	275.04
## 116	WIND ADVISORY 2001	0	0	0.00
## 117	WIND DAMAGE 2001	0	0	0.00
## 118	WINTER STORM 2001	7	77	8019.80
## 119	WINTER WEATHER 2001	0	0	0.00
## 120	WINTER WEATHER MIX 2001	0	65	0.00
## 121	WINTRY MIX 2001	0	0	0.00
## 122	WND 2001	0	0	0.00
## 123	ABNORMALLY WET 2002	0	0	0.00
## 124	ASTRONOMICAL HIGH TIDE 2002	0	0	0.00
## 125	AVALANCHE 2002	18	11	31.50
## 126	BLACK ICE 2002	0	0	0.00
## 127	BLIZZARD 2002	4	7	185.00
## 128	COASTAL FLOOD 2002	0	0	0.00
## 129	COASTAL FLOODING 2002	0	0	100.00
## 130	COLD 2002	0	0	0.00
## 131	COLD WEATHER 2002	2	0	0.00
## 132	DENSE FOG 2002	0	0	0.00
## 133	DROUGHT 2002	0	0	0.00
## 134	DROWNING 2002	1	0	0.00
## 135	DRY 2002	0	0	0.00
## 136	DRY MICROBURST 2002	1	6	83.00
## 137	DUST DEVIL 2002	0	1	13.30
## 138	DUST STORM 2002	2	45	427.00
## 139	EARLY SNOWFALL 2002	0	0	0.00
## 140	EXCESSIVE HEAT 2002	167	378	0.00
## 141	EXTREME COLD 2002	8	0	303.00
## 142	EXTREME COLD/WIND CHILL 2002	1	0	0.00
## 143	EXTREME WINDCHILL 2002	0	0	0.00
## 144	FIRST SNOW 2002	0	0	0.00
## 145	FLASH FLOOD 2002	32	71	51974.98
## 146	FLOOD 2002	10	5	18276.54
## 147	FOG 2002	22	146	2576.40
## 148	FREEZE 2002	0	0	0.00
## 149	FREEZING DRIZZLE 2002	0	0	0.00
## 150	FREEZING RAIN 2002	0	0	0.00
## 151	FROST 2002	0	0	0.00
## 152	FROST/FREEZE 2002	0	0	0.00
## 153	FUNNEL CLOUD 2002	0	0	0.00
## 154	GUSTY THUNDERSTORM WIND 2002	0	0	0.00
## 155	GUSTY WIND 2002	0	0	0.00
## 156	GUSTY WINDS 2002	0	0	5.00
## 157	HAIL 2002	0	125	34659.74
## 158	HARD FREEZE 2002	0	0	0.00
## 159	HAZARDOUS SURF 2002	0	1	0.00
## 160	HEAVY RAIN 2002	1	1	829.00
## 161	HEAVY SNOW 2002	2	39	6806.60
## 162	HEAVY SURF 2002	1	3	42.00

## 163	HIGH SEAS 2002	2	1	0.00
## 164	HIGH SURF 2002	4	3	0.00
## 165	HIGH SURF ADVISORIES 2002	0	0	0.00
## 166	HIGH SURF ADVISORY 2002	0	0	0.00
## 167	HIGH WIND 2002	19	105	20408.08
## 168	HURRICANE 2002	1	3	1243.59
## 169	HURRICANE/TYPHOON 2002	1	316	175.00
## 170	ICE ON ROAD 2002	1	0	0.00
## 171	ICE STORM 2002	4	45	4347.21
## 172	ICE/SNOW 2002	0	0	0.00
## 173	ICY ROADS 2002	0	0	0.00
## 174	LIGHT SNOW 2002	0	0	210.00
## 175	LIGHTNING 2002	51	256	30350.80
## 176	MARINE HAIL 2002	0	0	0.00
## 177	MARINE TSTM WIND 2002	0	0	158.00
## 178	MIXED PRECIPITATION 2002	0	0	120.00
## 179	MODERATE SNOWFALL 2002	0	0	0.00
## 180	MONTHLY PRECIPITATION 2002	0	0	0.00
## 181	MUDSLIDE 2002	0	0	0.00
## 182	RECORD WARMTH 2002	0	0	0.00
## 183	RIP CURRENT 2002	0	3	0.00
## 184	RIP CURRENTS 2002	43	57	100.00
## 185	ROUGH SEAS 2002	4	0	0.00
## 186	SEICHE 2002	0	0	35.00
## 187	SMALL HAIL 2002	0	0	0.00
## 188	SMOKE 2002	0	0	0.00
## 189	SNOW 2002	0	0	110.00
## 190	SNOW DROUGHT 2002	0	0	0.00
## 191	SNOW SHOWERS 2002	0	0	0.00
## 192	SNOW SQUALLS 2002	0	0	15.00
## 193	STORM SURGE 2002	0	0	1417.15
## 194	STRONG WIND 2002	1	1	161.50
## 195	STRONG WINDS 2002	1	2	10.50
## 196	THUNDERSTORM 2002	0	0	0.00
## 197	TORNADO 2002	55	968	52653.55
## 198	TORNADO DEBRIS 2002	0	0	0.00
## 199	TROPICAL STORM 2002	1	4	1559.93
## 200	TSTM WIND 2002	16	262	110877.25
## 201	TSTM WIND/HAIL 2002	1	19	677.95
## 202	UNSEASONABLY COLD 2002	0	0	0.00
## 203	UNSEASONABLY COOL 2002	0	0	0.00
## 204	UNSEASONABLY DRY 2002	0	0	0.00
## 205	UNSEASONABLY WARM 2002	0	0	0.00
## 206	UNUSUALLY COLD 2002	0	0	0.00
## 207	URBAN/SML STREAM FLD 2002	4	9	2617.20
## 208	VERY WARM 2002	0	0	0.00
## 209	VOLCANIC ASH 2002	0	0	0.00
## 210	WATERSPOUT 2002	0	1	0.00
## 211	WHIRLWIND 2002	0	0	7.00
## 212	WILD/FOREST FIRE 2002	1	138	7168.83
## 213	WILDFIRE 2002	0	0	22.00
## 214	WIND 2002	7	21	305.00
## 215	WIND ADVISORY 2002	0	0	0.00
## 216	WIND CHILL 2002	0	0	0.00

## 217	WINTER STORM 2002	9	99	4617.74
## 218	WINTER WEATHER 2002	0	0	0.00
## 219	WINTER WEATHER MIX 2002	0	3	60.00
## 220	WINTER WEATHER/MIX 2002	0	0	0.00
## 221	WINTRY MIX 2002	0	0	0.00
## 222	ABNORMALLY DRY 2003	0	0	0.00
## 223	ASTRONOMICAL HIGH TIDE 2003	0	0	96.00
## 224	AVALANCHE 2003	10	7	15.00
## 225	BLIZZARD 2003	0	4	197.00
## 226	COASTAL FLOODING 2003	0	0	0.00
## 227	COLD WIND CHILL TEMPERATURES 2003	0	0	0.00
## 228	DENSE FOG 2003	5	43	1675.00
## 229	DROUGHT 2003	0	0	645.15
## 230	DUST DEVIL 2003	1	3	130.00
## 231	DUST STORM 2003	2	91	284.00
## 232	EXCESSIVE HEAT 2003	36	174	0.00
## 233	EXTREME COLD 2003	5	0	0.00
## 234	EXTREME COLD/WIND CHILL 2003	14	14	860.00
## 235	EXTREME WINDCHILL 2003	1	0	0.00
## 236	FLASH FLOOD 2003	69	61	96386.18
## 237	FLOOD 2003	18	5	23534.44
## 238	FOG 2003	0	0	0.00
## 239	FREEZING RAIN 2003	0	0	0.00
## 240	FROST/FREEZE 2003	0	0	0.00
## 241	FUNNEL CLOUD 2003	0	0	0.00
## 242	HAIL 2003	0	121	43465.42
## 243	HEAVY RAIN 2003	5	34	7375.00
## 244	HEAVY SNOW 2003	2	13	6266.33
## 245	HEAVY SURF/HIGH SURF 2003	13	8	687.50
## 246	HIGH WIND 2003	15	127	17390.88
## 247	HURRICANE/TYPHOON 2003	6	2	987.77
## 248	ICE STORM 2003	6	31	1324.56
## 249	LANDSLIDE 2003	15	16	596.00
## 250	LIGHTNING 2003	44	238	22232.25
## 251	MARINE HAIL 2003	0	0	0.00
## 252	MARINE TSTM WIND 2003	2	2	218.00
## 253	PROLONG COLD 2003	0	0	0.00
## 254	RIP CURRENT 2003	40	22	0.00
## 255	RIP CURRENTS 2003	1	25	0.00
## 256	SLEET STORM 2003	0	0	0.00
## 257	SNOW 2003	0	0	0.00
## 258	STORM SURGE 2003	0	1	757.10
## 259	STRONG WIND 2003	9	29	6845.91
## 260	TORNADO 2003	54	1087	59887.74
## 261	TROPICAL DEPRESSION 2003	0	0	50.00
## 262	TROPICAL STORM 2003	8	230	3152.77
## 263	TSTM WIND 2003	17	224	126016.42
## 264	TSTM WIND/HAIL 2003	0	0	0.00
## 265	UNSEASONABLY COLD 2003	0	0	0.00
## 266	URBAN/SML STREAM FLD 2003	1	4	510.00
## 267	VOLCANIC ASH 2003	0	0	0.00
## 268	WATERSPOUT 2003	0	0	0.00
## 269	WILD/FOREST FIRE 2003	0	2	75.00
## 270	WILDFIRE 2003	24	249	10750.44

## 271	WINTER STORM 2003	16	52	4812.00
## 272	WINTER WEATHER/MIX 2003	4	12	531.00
## 273	ASTRONOMICAL HIGH TIDE 2004	0	0	2.50
## 274	AVALANCHE 2004	12	6	90.00
## 275	BLIZZARD 2004	1	4	242.00
## 276	DENSE FOG 2004	1	45	141.45
## 277	DROUGHT 2004	0	0	0.00
## 278	DUST DEVIL 2004	0	5	8.80
## 279	DUST STORM 2004	0	11	80.00
## 280	EXCESSIVE HEAT 2004	6	74	0.00
## 281	EXTREME COLD/WIND CHILL 2004	27	2	650.00
## 282	FLASH FLOOD 2004	58	29	90429.25
## 283	FLOOD 2004	24	99	36134.61
## 284	FROST/FREEZE 2004	0	0	0.00
## 285	FUNNEL CLOUD 2004	0	0	0.00
## 286	HAIL 2004	0	4	29653.18
## 287	HEAVY RAIN 2004	4	9	2620.00
## 288	HEAVY SNOW 2004	3	139	7530.50
## 289	HEAVY SURF/HIGH SURF 2004	24	29	305.00
## 290	HIGH WIND 2004	13	49	20053.75
## 291	HURRICANE/TYPHOON 2004	23	839	2277.53
## 292	ICE STORM 2004	0	10	2515.75
## 293	LANDSLIDE 2004	4	11	1310.01
## 294	LIGHTNING 2004	33	279	21760.25
## 295	MARINE HAIL 2004	0	0	0.00
## 296	MARINE TSTM WIND 2004	6	0	243.00
## 297	RIP CURRENT 2004	32	23	0.00
## 298	SEICHE 2004	0	0	0.00
## 299	SLEET STORM 2004	0	0	0.00
## 300	STORM SURGE 2004	0	0	352.92
## 301	STRONG WIND 2004	13	19	6724.54
## 302	TORNADO 2004	35	396	73341.16
## 303	TROPICAL DEPRESSION 2004	0	0	335.00
## 304	TROPICAL STORM 2004	11	1	1918.18
## 305	TSTM WIND 2004	16	243	106313.80
## 306	VOLCANIC ASH 2004	0	0	0.00
## 307	WATERSPOUT 2004	0	0	2.00
## 308	WILDFIRE 2004	0	63	2746.90
## 309	WINTER STORM 2004	9	16	4549.01
## 310	WINTER WEATHER/MIX 2004	15	21	506.50
## 311	ASTRONOMICAL HIGH TIDE 2005	0	0	835.00
## 312	AVALANCHE 2005	11	16	200.00
## 313	BLIZZARD 2005	1	2	1114.74
## 314	COASTAL FLOOD 2005	0	1	450.00
## 315	COLD/WIND CHILL 2005	0	0	0.00
## 316	DENSE FOG 2005	0	12	642.00
## 317	DROUGHT 2005	0	0	491.00
## 318	DUST DEVIL 2005	0	0	30.80
## 319	DUST STORM 2005	0	32	70.00
## 320	EXCESSIVE HEAT 2005	158	298	3.00
## 321	EXTREME COLD/WIND CHILL 2005	24	1	100.00
## 322	FLASH FLOOD 2005	28	22	69711.90
## 323	FLOOD 2005	15	16	45423.35
## 324	FREEZING FOG 2005	0	0	0.00



## 325	FROST/FREEZE 2005	0	0	0.00
## 326	FUNNEL CLOUD 2005	0	0	15.00
## 327	HAIL 2005	1	8	34126.02
## 328	HEAVY RAIN 2005	8	39	5456.50
## 329	HEAVY SNOW 2005	7	11	6190.90
## 330	HEAVY SURF/HIGH SURF 2005	5	11	386.00
## 331	HIGH SURF 2005	0	0	15.00
## 332	HIGH WIND 2005	2	14	17378.40
## 333	HURRICANE/TYPHOON 2005	34	118	2399.07
## 334	ICE STORM 2005	2	4	6289.40
## 335	LAKE-EFFECT SNOW 2005	0	0	80.00
## 336	LANDSLIDE 2005	11	11	2204.40
## 337	LIGHTNING 2005	38	309	38577.97
## 338	MARINE HAIL 2005	0	0	0.00
## 339	MARINE HIGH WIND 2005	0	0	21.00
## 340	MARINE TSTM WIND 2005	1	0	305.00
## 341	RIP CURRENT 2005	35	9	0.00
## 342	SEICHE 2005	0	0	25.00
## 343	SLEET STORM 2005	0	0	0.00
## 344	STORM SURGE 2005	0	1	3942.72
## 345	STORM SURGE/TIDE 2005	0	0	0.00
## 346	STRONG WIND 2005	5	29	5566.35
## 347	TORNADO 2005	38	537	59885.81
## 348	TROPICAL DEPRESSION 2005	0	0	50.00
## 349	TROPICAL STORM 2005	0	11	7849.49
## 350	TSTM WIND 2005	15	185	99653.47
## 351	VOLCANIC ASH 2005	0	0	0.00
## 352	WATERSPOUT 2005	0	0	0.00
## 353	WILDFIRE 2005	6	82	6438.75
## 354	WINTER STORM 2005	15	19	9104.07
## 355	WINTER WEATHER 2005	0	0	85.00
## 356	WINTER WEATHER/MIX 2005	9	36	3192.00
## 357	AVALANCHE 2006	13	6	0.00
## 358	BLIZZARD 2006	1	0	689.00
## 359	COASTAL FLOOD 2006	0	0	2593.28
## 360	COLD/WIND CHILL 2006	2	0	0.00
## 361	DENSE FOG 2006	3	40	650.00
## 362	DENSE SMOKE 2006	0	0	0.00
## 363	DROUGHT 2006	0	4	926.50
## 364	DUST DEVIL 2006	0	1	37.00
## 365	DUST STORM 2006	2	22	690.00
## 366	EXCESSIVE HEAT 2006	205	993	170.00
## 367	EXTREME COLD/WIND CHILL 2006	8	5	0.00
## 368	FLASH FLOOD 2006	59	18	60523.28
## 369	FLOOD 2006	19	5	29059.09
## 370	FREEZING FOG 2006	0	0	0.00
## 371	FROST/FREEZE 2006	0	0	0.00
## 372	FUNNEL CLOUD 2006	0	0	0.00
## 373	HAIL 2006	0	18	50441.38
## 374	HEAT 2006	47	520	10.00
## 375	HEAVY RAIN 2006	1	4	7028.41
## 376	HEAVY SNOW 2006	0	2	2642.25
## 377	HEAVY SURF/HIGH SURF 2006	0	0	0.00
## 378	HIGH SURF 2006	13	9	360.00

## 379	HIGH WIND 2006	19	57	24023.32
## 380	ICE STORM 2006	6	0	1732.29
## 381	LAKE-EFFECT SNOW 2006	0	0	1350.00
## 382	LAKESHORE FLOOD 2006	0	0	10.00
## 383	LANDSLIDE 2006	3	2	448.00
## 384	LIGHTNING 2006	45	245	35986.08
## 385	MARINE HAIL 2006	0	0	0.00
## 386	MARINE HIGH WIND 2006	0	0	136.00
## 387	MARINE STRONG WIND 2006	2	0	16.00
## 388	MARINE THUNDERSTORM WIND 2006	1	0	1.00
## 389	MARINE TSTM WIND 2006	0	6	1500.00
## 390	RIP CURRENT 2006	26	24	0.00
## 391	SEICHE 2006	0	0	10.00
## 392	SLEET 2006	0	0	0.00
## 393	STORM SURGE 2006	0	0	160.00
## 394	STORM SURGE/TIDE 2006	0	0	545.00
## 395	STRONG WIND 2006	17	25	9956.25
## 396	THUNDERSTORM WIND 2006	0	9	6198.75
## 397	TORNADO 2006	67	992	66879.08
## 398	TROPICAL STORM 2006	0	1	496.36
## 399	TSTM WIND 2006	13	232	124294.64
## 400	TSUNAMI 2006	0	0	12.20
## 401	VOLCANIC ASH 2006	0	0	0.00
## 402	WATERSPOUT 2006	0	0	25.00
## 403	WILDFIRE 2006	15	92	10435.84
## 404	WINTER STORM 2006	9	14	7320.15
## 405	WINTER WEATHER 2006	3	19	1583.50
## 406	WINTER WEATHER/MIX 2006	0	3	644.00
## 407	ASTRONOMICAL LOW TIDE 2007	0	0	120.00
## 408	AVALANCHE 2007	18	12	2.00
## 409	BLIZZARD 2007	0	0	279.00
## 410	COASTAL FLOOD 2007	0	0	1246.36
## 411	COLD/WIND CHILL 2007	4	10	91.00
## 412	DENSE FOG 2007	0	3	440.00
## 413	DENSE SMOKE 2007	0	0	100.00
## 414	DROUGHT 2007	0	0	825.00
## 415	DUST DEVIL 2007	0	0	0.00
## 416	DUST STORM 2007	0	4	280.50
## 417	EXCESSIVE HEAT 2007	22	536	0.00
## 418	EXTREME COLD/WIND CHILL 2007	23	1	3.00
## 419	FLASH FLOOD 2007	70	51	97196.40
## 420	FLOOD 2007	17	8	55708.57
## 421	FREEZING FOG 2007	0	0	0.00
## 422	FROST/FREEZE 2007	0	0	640.00
## 423	FUNNEL CLOUD 2007	0	0	0.00
## 424	HAIL 2007	0	25	20581.75
## 425	HEAT 2007	22	30	0.00
## 426	HEAVY RAIN 2007	2	8	1647.03
## 427	HEAVY SNOW 2007	0	0	1168.00
## 428	HIGH SURF 2007	10	0	362.00
## 429	HIGH WIND 2007	3	28	15278.10
## 430	HURRICANE 2007	1	12	237.50
## 431	ICE STORM 2007	2	8	9435.20
## 432	LAKE-EFFECT SNOW 2007	0	0	1874.00

## 433	LAKESHORE FLOOD 2007	0	0	30.00
## 434	LANDSLIDE 2007	3	3	1502.00
## 435	LIGHTNING 2007	45	139	42386.45
## 436	MARINE HAIL 2007	0	0	0.00
## 437	MARINE HIGH WIND 2007	0	0	0.00
## 438	MARINE STRONG WIND 2007	3	15	3.00
## 439	MARINE THUNDERSTORM WIND 2007	2	2	102.00
## 440	RIP CURRENT 2007	46	14	0.00
## 441	SLEET 2007	0	0	0.00
## 442	STORM SURGE/TIDE 2007	0	5	4.00
## 443	STRONG WIND 2007	7	21	3538.82
## 444	THUNDERSTORM WIND 2007	16	254	109823.80
## 445	TORNADO 2007	81	659	60048.70
## 446	TROPICAL DEPRESSION 2007	0	0	0.00
## 447	TROPICAL STORM 2007	0	0	345.00
## 448	VOLCANIC ASHFALL 2007	0	0	0.00
## 449	WATERSPOUT 2007	0	0	70.00
## 450	WILDFIRE 2007	17	185	5194.00
## 451	WINTER STORM 2007	3	2	6129.90
## 452	WINTER WEATHER 2007	4	156	1477.20
## 453	ASTRONOMICAL LOW TIDE 2008	0	0	200.00
## 454	AVALANCHE 2008	25	14	27.10
## 455	BLIZZARD 2008	2	0	521.00
## 456	COASTAL FLOOD 2008	2	0	978.00
## 457	COLD/WIND CHILL 2008	31	0	0.00
## 458	DENSE FOG 2008	0	0	430.00
## 459	DENSE SMOKE 2008	0	0	0.00
## 460	DROUGHT 2008	0	0	100.00
## 461	DUST DEVIL 2008	1	14	60.53
## 462	DUST STORM 2008	0	0	0.00
## 463	EXCESSIVE HEAT 2008	15	131	0.00
## 464	EXTREME COLD/WIND CHILL 2008	8	0	0.00
## 465	FLASH FLOOD 2008	55	30	114156.07
## 466	FLOOD 2008	22	16	105659.42
## 467	FREEZING FOG 2008	0	0	0.00
## 468	FROST/FREEZE 2008	0	0	40.00
## 469	FUNNEL CLOUD 2008	0	0	25.00
## 470	HAIL 2008	2	12	44065.45
## 471	HEAT 2008	27	8	0.00
## 472	HEAVY RAIN 2008	2	16	4206.20
## 473	HEAVY SNOW 2008	4	18	5538.00
## 474	HIGH SURF 2008	6	58	333.50
## 475	HIGH WIND 2008	11	56	33139.81
## 476	HURRICANE 2008	1	0	2169.63
## 477	ICE STORM 2008	0	0	1624.93
## 478	LAKE-EFFECT SNOW 2008	0	0	2911.00
## 479	LANDSLIDE 2008	0	0	83.34
## 480	LIGHTNING 2008	25	207	33748.81
## 481	MARINE HAIL 2008	0	0	4.00
## 482	MARINE HIGH WIND 2008	1	1	110.00
## 483	MARINE STRONG WIND 2008	4	0	26.10
## 484	MARINE THUNDERSTORM WIND 2008	2	6	162.00
## 485	RIP CURRENT 2008	44	21	0.00
## 486	SEICHE 2008	0	0	75.00

## 487	SLEET 2008	0	0	0.00
## 488	STORM SURGE/TIDE 2008	11	0	4580.05
## 489	STRONG WIND 2008	17	26	7714.54
## 490	THUNDERSTORM WIND 2008	25	253	186007.68
## 491	TORNADO 2008	129	1690	106413.26
## 492	TROPICAL DEPRESSION 2008	0	0	301.00
## 493	TROPICAL STORM 2008	2	13	12476.94
## 494	VOLCANIC ASHFALL 2008	0	0	0.00
## 495	WATERSPOUT 2008	0	0	10.20
## 496	WILDFIRE 2008	3	32	4433.80
## 497	WINTER STORM 2008	0	4	15387.10
## 498	WINTER WEATHER 2008	11	77	2526.65
## 499	ASTRONOMICAL LOW TIDE 2009	0	0	0.00
## 500	AVALANCHE 2009	7	3	2.00
## 501	BLIZZARD 2009	3	1	5779.30
## 502	COASTAL FLOOD 2009	0	0	1421.30
## 503	COLD/WIND CHILL 2009	11	0	0.00
## 504	DENSE FOG 2009	0	0	755.00
## 505	DENSE SMOKE 2009	0	0	0.00
## 506	DROUGHT 2009	0	0	50.00
## 507	DUST DEVIL 2009	0	3	226.50
## 508	DUST STORM 2009	3	0	660.00
## 509	EXCESSIVE HEAT 2009	7	12	0.00
## 510	EXTREME COLD/WIND CHILL 2009	17	0	0.00
## 511	FLASH FLOOD 2009	33	17	95187.62
## 512	FLOOD 2009	23	10	66484.50
## 513	FREEZING FOG 2009	0	0	2.00
## 514	FROST/FREEZE 2009	0	0	85.00
## 515	FUNNEL CLOUD 2009	0	0	0.00
## 516	HAIL 2009	0	70	43828.12
## 517	HEAT 2009	26	14	11.50
## 518	HEAVY RAIN 2009	6	9	1655.00
## 519	HEAVY SNOW 2009	2	0	3767.20
## 520	HIGH SURF 2009	15	29	271.20
## 521	HIGH WIND 2009	4	22	31142.15
## 522	HURRICANE 2009	0	1	20.00
## 523	ICE STORM 2009	3	3	3156.20
## 524	LAKE-EFFECT SNOW 2009	0	0	1657.00
## 525	LANDSLIDE 2009	0	9	6422.50
## 526	LIGHTNING 2009	34	201	34067.15
## 527	MARINE HAIL 2009	0	0	0.00
## 528	MARINE HIGH WIND 2009	0	0	0.00
## 529	MARINE STRONG WIND 2009	1	2	20.00
## 530	MARINE THUNDERSTORM WIND 2009	2	2	51.50
## 531	RIP CURRENT 2009	39	20	1.00
## 532	SEICHE 2009	0	0	15.00
## 533	SLEET 2009	0	0	0.00
## 534	STORM SURGE/TIDE 2009	0	0	118.00
## 535	STRONG WIND 2009	10	24	5970.00
## 536	THUNDERSTORM WIND 2009	20	188	162214.24
## 537	TORNADO 2009	21	397	71409.00
## 538	TROPICAL DEPRESSION 2009	0	0	2.00
## 539	TROPICAL STORM 2009	1	0	221.00
## 540	TSUNAMI 2009	32	129	81.00

## 541	WATERSPOUT 2009	0	0	10.00
## 542	WILDFIRE 2009	2	68	5861.60
## 543	WINTER STORM 2009	1	34	8874.00
## 544	WINTER WEATHER 2009	10	86	1933.00
## 545	ASTRONOMICAL LOW TIDE 2010	0	0	0.00
## 546	AVALANCHE 2010	22	20	201.80
## 547	BLIZZARD 2010	0	0	1138.00
## 548	COASTAL FLOOD 2010	0	0	460.20
## 549	COLD/WIND CHILL 2010	26	1	1829.00
## 550	DENSE FOG 2010	0	0	975.00
## 551	DENSE SMOKE 2010	0	0	0.00
## 552	DROUGHT 2010	0	0	0.00
## 553	DUST DEVIL 2010	0	0	61.10
## 554	DUST STORM 2010	0	0	140.00
## 555	EXCESSIVE HEAT 2010	39	63	90.00
## 556	EXTREME COLD/WIND CHILL 2010	1	0	0.00
## 557	FLASH FLOOD 2010	67	188	118701.96
## 558	FLOOD 2010	41	127	97018.55
## 559	FREEZING FOG 2010	0	0	182.00
## 560	FROST/FREEZE 2010	0	0	158.02
## 561	FUNNEL CLOUD 2010	0	0	0.00
## 562	HAIL 2010	0	42	27889.55
## 563	HEAT 2010	44	39	0.00
## 564	HEAVY RAIN 2010	0	7	3609.00
## 565	HEAVY SNOW 2010	2	18	4037.80
## 566	HIGH SURF 2010	17	20	240.42
## 567	HIGH WIND 2010	7	17	16970.62
## 568	HURRICANE 2010	0	0	0.00
## 569	ICE STORM 2010	0	1	842.30
## 570	LAKE-EFFECT SNOW 2010	0	0	5416.00
## 571	LAKESHORE FLOOD 2010	0	0	0.00
## 572	LANDSLIDE 2010	0	0	416.00
## 573	LIGHTNING 2010	29	182	43326.55
## 574	MARINE HAIL 2010	0	0	0.00
## 575	MARINE HIGH WIND 2010	0	0	20.01
## 576	MARINE STRONG WIND 2010	2	0	1.63
## 577	MARINE THUNDERSTORM WIND 2010	0	2	11.10
## 578	RIP CURRENT 2010	49	45	0.00
## 579	SEICHE 2010	0	0	0.00
## 580	SLEET 2010	0	0	0.00
## 581	STORM SURGE/TIDE 2010	0	0	795.00
## 582	STRONG WIND 2010	8	28	9960.57
## 583	THUNDERSTORM WIND 2010	15	323	154912.55
## 584	TORNADO 2010	45	699	88280.14
## 585	TROPICAL STORM 2010	0	0	721.40
## 586	TSUNAMI 2010	0	0	305.00
## 587	WATERSPOUT 2010	0	0	1.00
## 588	WILDFIRE 2010	2	24	4029.77
## 589	WINTER STORM 2010	6	4	9400.60
## 590	WINTER WEATHER 2010	3	5	2705.30
## 591	ASTRONOMICAL LOW TIDE 2011	0	0	0.00
## 592	AVALANCHE 2011	9	8	55.00
## 593	BLIZZARD 2011	2	0	2742.00
## 594	COASTAL FLOOD 2011	1	1	2299.00

## 595	COLD/WIND CHILL 2011	21	1	70.00
## 596	DENSE FOG 2011	0	0	162.00
## 597	DENSE SMOKE 2011	0	0	0.00
## 598	DROUGHT 2011	0	0	114.00
## 599	DUST DEVIL 2011	0	8	33.00
## 600	DUST STORM 2011	0	4	848.00
## 601	EXCESSIVE HEAT 2011	36	138	1143.20
## 602	EXTREME COLD/WIND CHILL 2011	2	1	1041.00
## 603	FLASH FLOOD 2011	68	30	82067.98
## 604	FLOOD 2011	58	10	133748.97
## 605	FREEZING FOG 2011	0	0	0.00
## 606	FROST/FREEZE 2011	0	0	45.50
## 607	FUNNEL CLOUD 2011	0	0	40.10
## 608	HAIL 2011	0	31	57214.06
## 609	HEAT 2011	63	611	0.00
## 610	HEAVY RAIN 2011	1	1	2000.80
## 611	HEAVY SNOW 2011	0	0	5136.30
## 612	HIGH SURF 2011	11	11	222.00
## 613	HIGH WIND 2011	4	11	14728.25
## 614	HURRICANE 2011	0	0	510.00
## 615	ICE STORM 2011	0	0	6339.00
## 616	LAKE-EFFECT SNOW 2011	0	0	853.00
## 617	LAKESHORE FLOOD 2011	0	0	7.50
## 618	LANDSLIDE 2011	1	0	5461.69
## 619	LIGHTNING 2011	26	194	34491.42
## 620	MARINE HAIL 2011	0	0	0.00
## 621	MARINE HIGH WIND 2011	0	0	11.00
## 622	MARINE STRONG WIND 2011	2	5	351.60
## 623	MARINE THUNDERSTORM WIND 2011	3	14	108.80
## 624	RIP CURRENT 2011	29	27	0.00
## 625	SEICHE 2011	0	0	0.00
## 626	SLEET 2011	0	0	0.00
## 627	STORM SURGE/TIDE 2011	0	0	735.00
## 628	STRONG WIND 2011	10	33	5356.33
## 629	THUNDERSTORM WIND 2011	54	373	243100.34
## 630	TORNADO 2011	587	6163	155464.51
## 631	TROPICAL STORM 2011	4	1	11769.30
## 632	TSUNAMI 2011	1	0	507.10
## 633	WATERSPOUT 2011	0	0	5110.00
## 634	WILDFIRE 2011	6	116	33094.24
## 635	WINTER STORM 2011	1	0	11663.50
## 636	WINTER WEATHER 2011	2	0	1645.25

# **Health Impact** Event Descriptions indicating Hot or Cold Weather

“” COLD

COLD/WIND CHILL

COLD WIND CHILL TEMPERATURES

EXCESSIVE HEAT

EXTREME COLD

EXTREME COLD/WIND CHILL

EXTREME WINDCHILL

FREEZE

FREEZING DRIZZLE

FREEZING RAIN  
FROST/FREEZE  
HARD FREEZE  
HEAT  
RECORD WARMTH  
UNSEASONABLY COLD  
UNSEASONABLY COOL  
UNSEASONABLY WARM  
UNUSUALLY COLD  
WINTER STORM  
WINTER WEATHER  
WINTER WEATHER/MIX  
“”

**END**