

INJURY - A MAJOR PUBLIC HEALTH PROBLEM IN HAWAII

Injuries are responsible for more deaths of children and young adults in Hawaii from age one through age 40 years than all other causes combined, including heart disease, stroke and cancer. Among residents of all ages, injury is the third leading cause of death, behind only heart disease and cancer, but ahead of cerebrovascular disease, influenza and pneumonia, and diabetes. Although the greatest impact of injury is in human suffering, the financial cost is staggering - medical treatment for injuries generates nearly \$390 million in hospital charges each year in Hawaii.

Mortality statistics do not convey the full extent of the injury problem, however. Fatal injuries represent less than 1% of all injuries requiring medical attention. Although fatal injuries are the most severe, the vast majority of injuries are non-fatal, and in some respects, have much greater public health implications. On an average week in Hawaii 13 residents die from an injury, another 109 are hospitalized and nearly 1,600 others are treated in emergency departments.

Injuries, however, are not accidents. They are neither random nor uncontrollable. Injuries are understandable, predictable and preventable. The first step in understanding and preventing injuries is to collect and analyze data. Answers to questions like “How serious is the problem?”, “Who has the problem?” and “What are the circumstances under which it occurs?” help determine the answers to questions such as “What causes it?” and “What can we do about it?”

Ten leading causes of death among Hawaii residents, by age group, 2010-2014

	<1	1-14y	15-24y	25-34y	35-44y	45-54y	55-64y	65+y	all ages
1	Perinatal conditions 290	Unintentional injuries 50	Unintentional injuries 186	Unintentional injuries 216	Unintentional injuries 274	Malignant neoplasm 870	Malignant neoplasm 2,214	Heart disease 9,291	Heart disease 11,718
2	Congenital anomalies 65	Malignant neoplasm 24	Suicide 145	Suicide 157	Malignant neoplasm 225	Heart disease 742	Heart disease 1,370	Malignant neoplasm 7,951	Malignant neoplasm 11,413
3	Sudden infant death synd. 23	Congenital anomalies 11	Malignant neoplasm 39	Malignant neoplasm 88	Heart disease 197	Unintentional injuries 361	Unintentional injuries 291	CVD 2,606	CVD 3,077
4	Unintentional injuries 17	Influenza and pneumonia 9	Heart disease 20	Heart disease 86	Suicide 148	Suicide 163	CVD 259	Influenza and pneumonia 1,666	Unintentional injuries 2,227
5	Other resp. diseases 8	Homicide 8	Homicide 11	Injuries of unk. intent 22	CVD 46	CVD 144	Diabetes mellitus 211	Chronic lower resp. diseases 1,272	Influenza and pneumonia 1,871
6	Acute bronchitis 6	Suicide 7	Injuries of unk. intent 10	Homicide 20	Liver disease and cirrhosis 35	Liver disease and cirrhosis 120	Liver disease and cirrhosis 200	Alzheimer's disease 1,199	Chronic lower resp. diseases 1,493
7	Septicemia 5	Heart disease 7	Congenital anomalies 8	CVD 15	Diabetes mellitus 33	Diabetes mellitus 102	Suicide 157	Diabetes mellitus 982	Diabetes mellitus 1,338
8	Injuries of unk. intent 4	Other resp. diseases 4	CVD 5	Liver disease and cirrhosis 9	Homicide 31	Injuries of unk. intent 61	Chronic lower resp. diseases 157	Nephritis, nephrotic synd. 879	Alzheimer's disease 1,209
9	Influenza and pneumonia 4	Other infectious diseases 3	Influenza and pneumonia 3	Diabetes mellitus 7	Injuries of unk. intent 31	Influenza and pneumonia 48	Influenza and pneumonia 126	Unintentional injuries 832	Nephritis, nephrotic synd. 1,024
10	Homicide/other 3	Perinatal conditions 3	Septicemia/other 3	Chronic low. resp. diseases 7	Other circ. diseases 18	Chronic low. resp. diseases 45	Nephritis, nephrotic synd 93	Other resp. diseases 645	Suicide 908

Deaths grouped as recommended by National Center for Health Statistics (http://www.cdc.gov/nchs/data/nvsr/nvsr53/nvsr53_15.pdf).

Leading Causes of Injury Mortality and Morbidity among Hawaii residents¹, 2010-2014

	Death Certificates (fatal)			Hospital Admission Records (non-fatal)			Emergency Department Records (non-fatal)		
	Cause ²	# ³	%	Cause	# ⁴	%	Cause	# ⁵	%
1	Suicide	182	26%	Falls	2,716	53%	Falls	22,887	30%
2	Falls	121	17%	Car occupant	342	7%	Striking ⁶	12,666	17%
3	Poisoning	110	16%	Suicide attempt/ self-inflicted	337	7%	Cut/pierce	7,531	10%
4	Car occupant	49	7%	Assault	280	5%	Overexertion ⁷	7,009	9%
5	Drowning	35	5%	Motorcyclist	270	5%	Natural/ environmental ⁸	3,886	5%
6	Pedestrian	31	4%	Poisoning	205	4%	Assault	3,833	5%
7	Motorcyclist	29	4%	Striking ⁶	174	3%	Car occupant	3,751	5%
8	Assault	24	3%	Pedestrian	128	2%	Bicyclist	1,274	2%
9	Suffocation	24	3%	Bicyclist	106	2%	Motorcyclist	1,074	1%
10	Fire/burn	5	1%	Overexertion ⁷	65	1%	Fire/burn	1,031	1%
	<i>all other</i>	85	12%	<i>all other</i>	548	11%	<i>all other</i>	11,064	15%
	Annual total	695		Annual total	5,653		Annual total	81,697	

¹ Non-residents comprised 10% of the victims killed by injuries in the state, 9% of those hospitalized, and 9% of those treated in emergency departments.

² All injury causes are unintentional or “accidental” in intent, except for suicide and assault.

³ Average annual number of deaths, from 2010-2014 death certificates. For underlying cause of death in the ICD-10 code series: V01-Y36, Y85-Y87, Y89, and U01-U03.

⁴ Average annual number of injury-related hospitalizations, from 2010-2014 records. For principle diagnosis in ICD-9CM code series: 800-909.2, 909.4, 909.9, 910-994.9, 995.5-995.59, 995.80-995.85. Annual total includes 9% of records that did not have external cause of injury codes.

⁵ Average annual number of injury-related emergency department visits, from 2010-2014 records. For principle diagnosis in ICD-9CM code series: 800-909.2, 909.4, 909.9, 910-994.9, 995.5-995.59, 995.80-995.85. Annual total includes 7% of records that did not have external cause of injury codes.

⁶ Most (91%) of these patients were “struck accidentally by objects or persons”; the rest (9%) were “struck accidentally by falling object”. Of the former, the most commonly specified causes were “striking...in sports” (20%), and “striking against... furniture” (3%), or “running water” (2%).

⁷ Most (71%) of these injuries were related to “Overexertion...from sudden strenuous movements”, and trauma from repetitive motion or movements (27%).

⁸ Most (98%) of these visits were related to the bites or venom of animals, most specifically dog bites (38%), centipedes (11%), bee and wasp stings (9%), and venomous marine animals (6%).

HAWAII COUNTY

Leading Causes of Injury Mortality and Morbidity among Hawaii County residents¹, 2010-2014

	Death Certificates (fatal)			Hospital Admission Records (non-fatal)			Emergency Department Records (non-fatal)		
	Cause ²	# ³	%	Cause	# ⁴	%	Cause	# ⁵	%
1	Suicide	36	32%	Falls	373	48%	Falls	4,037	30%
2	Car occupant	17	15%	Car occupant	84	11%	Striking	1,972	15%
3	Poisoning	9	8%	Suicide	62	8%	Cut/pierce	1,357	10%
4	Falls	8	7%	Poisoning	41	5%	Overexertion ⁷	1,280	10%
5	Drowning	7	6%	Motorcyclist	38	5%	Car occupant	920	7%
6	Motorcyclist	6	5%	Assault	25	3%	Natural/ environmental ⁸	729	5%
7	Assault	4	4%	Striking ⁶	22	3%	Assault	689	5%
8	Pedestrian	4	3%	Bicyclist	15	2%	Bicyclist	196	1%
9	Fire/burn	2	1%	Fire/burn	12	2%	Fire/burn	188	1%
10	Suffocation	1	1%	Pedestrian	11	1%	Motorcyclist	168	1%
	<i>all other</i>	20	18%	<i>all other</i>	88	11%	<i>all other</i>	1,911	14%
	Annual total	114		Annual total	813		Annual total	13,990	

¹ Non-residents comprised 9% of the victims killed by injuries in the County, 11% of those hospitalized, and 11% of those treated in emergency departments.

² All injury causes are unintentional or "accidental" in intent, except for suicide and assault.

³ Average annual number of deaths, from 2010-2014 death certificates. For underlying cause of death in the ICD-10 code series: V01-Y36, Y85-Y87, Y89, and U01-U03.

⁴ Average annual number of injury-related hospitalizations, from 2010-2014 records. For principle diagnosis in ICD-9CM code series: 800-909.2, 909.4, 909.9, 910-994.9, 995.5-995.59, 995.80-995.85. Annual total includes 6% of records that did not have external cause of injury codes.

⁵ Average annual number of injury-related emergency department visits, from 2010-2014 records. For principle diagnosis in ICD-9CM code series: 800-909.2, 909.4, 909.9, 910-994.9, 995.5-995.59, 995.80-995.85. Annual total includes 4% of records that did not have external cause of injury codes.

⁶ Most (74%) of these patients were "struck accidentally by objects or persons"; the rest (26%) were "struck accidentally by falling object". Of the former, the most commonly specified causes were "striking...in sports" (24%), and "striking against... furniture" (3%), or "running water" (2%).

⁷ Most (82%) of these injuries were related to "Overexertion...from sudden strenuous movements", and trauma from repetitive motion or movements (18%).

⁸ Most (96%) of these visits were related to the bites or venom of animals, most specifically dog bites (34%), bee and wasp stings (13%), centipedes (9%), and venomous marine animals (4%).

KAUAI COUNTY

Leading Causes of Injury Mortality and Morbidity among Kauai County residents¹, 2010-2014

	Death Certificates (fatal)			Hospital Admission Records (non-fatal)			Emergency Department Records (non-fatal)		
	Cause ²	# ³	%	Cause	# ⁴	%	Cause	# ⁵	%
1	Suicide	11	31%	Falls	125	49%	Falls	1,652	27%
2	Car occupant	5	14%	Car occupant	22	9%	Striking	1,146	19%
3	Falls	5	13%	Suicide	15	6%	Cut/pierce	752	12%
4	Poisoning	3	10%	Motorcyclist	15	6%	Overexertion ⁷	621	10%
5	Drowning	2	5%	Poisoning	10	4%	Natural/ environmental ⁸	404	7%
6	Motorcyclist	2	5%	Striking ⁶	10	4%	Car occupant	252	4%
7	Assault	1	4%	Assault	8	3%	Assault	202	3%
8	Pedestrian	1	3%	Bicyclist	8	3%	Bicyclist	117	2%
9	Natural/ environmental	<1	1%	Fire/burn	5	2%	Fire/burn	99	2%
10	Suffocation	<1	1%	Overexertion	5	2%	Motorcyclist	92	1%
	<i>all other</i>	5	13%	<i>all other</i>	30	12%	<i>all other</i>	819	13%
	Annual total	35		Annual total	265		Annual total	6,518	

¹ Non-residents comprised 21% of the victims killed by injuries in the County, 21% of those hospitalized, and 19% of those treated in emergency departments.

² All injury causes are unintentional or "accidental" in intent, except for suicide and assault.

³ Average annual number of deaths, from 2010-2014 death certificates. For underlying cause of death in the ICD-10 code series: V01-Y36, Y85-Y87, Y89, and U01-U03.

⁴ Average annual number of injury-related hospitalizations, from 2010-2014 records. For principle diagnosis in ICD-9CM code series: 800-909.2, 909.4, 909.9, 910-994.9, 995.5-995.59, 995.80-995.85. Annual total includes 5% of records that did not have external cause of injury codes.

⁵ Average annual number of injury-related emergency department visits, from 2010-2014 records. For principle diagnosis in ICD-9CM code series: 800-909.2, 909.4, 909.9, 910-994.9, 995.5-995.59, 995.80-995.85. Annual total includes 6% of records that did not have external cause of injury codes.

⁶ Most (94%) of these patients were "struck accidentally by objects or persons"; the rest (6%) were "struck accidentally by falling object". Of the former, the most commonly specified causes were "striking...in sports" (18%), and "striking against or by...running water" (20%), or furniture (6%).

⁷ Most (70%) of these injuries were related to "Overexertion...from sudden strenuous movements", and trauma from repetitive motion or movements (29%).

⁸ Most (98%) of these visits were related to the bites or venom of animals, most specifically dog bites (27%), bee and wasp stings (18%), centipedes (15%), and venomous marine animals (6%).

MAUI COUNTY

Leading Causes of Injury Mortality and Morbidity among Maui County residents¹, 2010-2014

	Death Certificates (fatal)			Hospital Admission Records (non-fatal)			Emergency Department Records (non-fatal)		
	Cause ²	# ³	%	Cause	# ⁴	%	Cause	# ⁵	%
1	Suicide	27	27%	Falls	312	49%	Falls	2,272	28%
2	Poisoning	16	16%	Car occupant	49	8%	Striking	1,294	16%
3	Falls	10	10%	Motorcyclist	49	8%	Overexertion ⁷	775	10%
4	Car occupant	8	9%	Assault	41	6%	Cut/pierce	751	9%
5	Motorcyclist	6	6%	Suicide	37	6%	Natural/ environmental ⁸	505	6%
6	Drowning	5	5%	Striking ⁶	26	4%	Assault	426	5%
7	Pedestrian	4	4%	Poisoning	15	2%	Car occupant	418	5%
8	Suffocation	3	3%	Bicyclist	12	2%	Motorcyclist	191	2%
9	Assault	2	2%	Pedestrian	10	2%	Bicyclist	143	2%
10	Machinery	1	1%	Overexertion	9	1%	Fire/burn	97	1%
	<i>all other</i>	18	18%	<i>all other</i>	74	12%	<i>all other</i>	1,133	14%
	Annual total	99		Annual total	680		Annual total	8,555	

¹ Non-residents comprised 18% of the victims killed by injuries in the County, 21% of those hospitalized, and 18% of those treated in emergency departments.

² All injury causes are unintentional or “accidental” in intent, except for suicide and assault.

³ Average annual number of deaths, from 2010-2014 death certificates. For underlying cause of death in the ICD-10 code series: V01-Y36, Y85-Y87, Y89, and U01-U03.

⁴ Average annual number of injury-related hospitalizations, from 2010-2014 records. For principle diagnosis in ICD-9CM code series: 800-909.2, 909.4, 909.9, 910-994.9, 995.5-995.59, 995.80-995.85. Annual total includes 7% of records that did not have external cause of injury codes.

⁵ Average annual number of injury-related emergency department visits, from 2010-2014 records. For principle diagnosis in ICD-9CM code series: 800-909.2, 909.4, 909.9, 910-994.9, 995.5-995.59, 995.80-995.85. Annual total includes 6% of records that did not have external cause of injury codes.

⁶ Most (98%) of these patients were “struck accidentally by objects or persons”; the rest (2%) were “struck accidentally by falling object”. Of the former, the most commonly specified causes were “striking...in sports” (12%), and “striking against... furniture” (3%).

⁷ Most (58%) of these injuries were related to “Overexertion...from sudden strenuous movements”, and trauma from repetitive motion or movements (41%).

⁸ Most (98%) of these visits were related to the bites or venom of animals, most specifically dog bites (34%), centipedes (15%), bee and wasp stings (14%), and venomous marine animals (5%).

HONOLULU COUNTY

Leading Causes of Injury Mortality and Morbidity among Honolulu County residents¹, 2010-2014

	Death Certificates (fatal)			Hospital Admission Records (non-fatal)			Emergency Department Records (non-fatal)		
	Cause ²	# ³	%	Cause	# ⁴	%	Cause	# ⁵	%
1	Suicide	108	24%	Falls	1,901	54%	Falls	14,854	31%
2	Falls	99	22%	Suicide	222	6%	Striking	8,200	17%
3	Poisoning	82	18%	Assault	205	6%	Cut/pierce	4,654	10%
4	Pedestrian	22	5%	Car occupant	186	5%	Overexertion ⁷	4,312	9%
5	Drowning	21	5%	Motorcyclist	169	5%	Assault	2,505	5%
6	Suffocation	19	4%	Poisoning	139	4%	Natural/ environmental ⁸	2,227	5%
7	Car occupant	19	4%	Striking ⁶	115	3%	Car occupant	2,149	4%
8	Assault	17	4%	Pedestrian	103	3%	Bicyclist	813	2%
9	Motorcyclist	15	3%	Bicyclist	70	2%	Fire/burn	645	1%
10	Fire/burn	3	1%	Overexertion	45	1%	Motorcyclist	619	1%
	<i>all other</i>	41	9%	<i>all other</i>	345	10%	<i>all other</i>	7,159	15%
	Annual total	447		Annual total	3,896		Annual total	52,634	

¹ Non-residents comprised 7% of the victims killed by injuries in the County, 7% of those hospitalized, and 6% of those treated in emergency departments.

² All injury causes are unintentional or "accidental" in intent, except for suicide and assault.

³ Average annual number of deaths, from 2010-2014 death certificates. For underlying cause of death in the ICD-10 code series: V01-Y36, Y85-Y87, Y89, and U01-U03.

⁴ Average annual number of injury-related hospitalizations, from 2010-2014 records. For principle diagnosis in ICD-9CM code series: 800-909.2, 909.4, 909.9, 910-994.9, 995.5-995.59, 995.80-995.85. Annual total includes 10% of records that did not have external cause of injury codes.

⁵ Average annual number of injury-related emergency department visits, from 2010-2014 records. For principle diagnosis in ICD-9CM code series: 800-909.2, 909.4, 909.9, 910-994.9, 995.5-995.59, 995.80-995.85. Annual total includes 9% of records that did not have external cause of injury codes.

⁶ Most (88%) of these patients were "struck accidentally by objects or persons"; the rest (12%) were "struck accidentally by falling object". Of the former, the most commonly specified causes were "striking...in sports" (24%), and "striking against... furniture" (5%), or "running water" (4%).

⁷ Most (70%) of these injuries were related to "Overexertion...from sudden strenuous movements", and trauma from repetitive motion or movements (29%).

⁸ Most (98%) of these visits were related to the bites or venom of animals, most specifically dog bites (42%), centipedes (11%), bee and wasp stings (6%), and venomous marine animals (6%).