Visitor Safety:
How Are We Doing?

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Overview of presentation

• Part I: Visitor Safety: How are we doing?
  – Statewide data, 2003-2012
    • Injury rates: residents compared to visitors
      – Fatal and non-fatal injuries

• Part 2: County descriptions
  – Rate comparisons
  – County specific trends, data, and maps
    • Locations, victim residence, and seasonality (October-March vs. April-September)
Annual rates of injury-related hospitalizations and deaths, by residence status, 2008-2012

**Hospitalizations (/10,000)**
- Non-residents: 46%
- Non-residents:
  - Falls: 20.5
  - MVC (total): 4.1
  - Poisoning: 6.8
  - Total: 30.4
- Hawaii residents:
  - Falls: 12.6
  - MVC (total): 4.1
  - Poisoning: 1.6
  - Total: 20.3

**Deaths (/100,000)**
- Non-residents: 49%
- Non-residents:
  - Drowning: 18.1
  - Falls: 3.1
  - MVC (total): 8.1
  - Poisoning: 1.7
  - Total: 37.4
- Hawaii residents:
  - Drowning: 2.5
  - Falls: 8.5
  - MVC (total): 8.5
  - Poisoning: 7.5
  - Total: 50.3
Leading causes of fatal injuries in Hawaii, 2008-2012

- **Suicide**: 852 (27%)
- **Falls**: 541 (17%)
- **Poisoning**: 505 (16%)
- **Drowning**: 170 (5%)

**Hawaii residents**

- **Drowning**: 162 (51%)
- **Suicide**: 36 (11%)
- **Falls**: 28 (9%)
- **MVC-occupant**: 17 (5%)
- **Poisoning**: 15 (5%)

**Non-residents**

- **Drowning**: 276 (9%)
- **Suicide**: 170 (5%)

Most (80%) of drownings occur in the ocean (86% for non-residents)

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“Injury Pyramid” for injuries among non-residents in Hawaii

- **Deaths:** 68/year
- **Hospitalizations:** ~550/year
- **Emergency department visits:** ~7,730/year
Leading causes of hospitalizations for non-fatal injuries among non-residents in Hawaii, 2008-2012

- **females**: 227 (46%)
- **struck by/against**
- **near-drowning**: 46 (9%)
- **mvc-occupant**: 25 (5%)
- **mvc-motorcyclist**: 21 (4%)
- **mvc-bicyclist**: 19 (4%)
- **water transport**: 15 (3%)
- **overexertion**: 14 (3%)
- **suicide**: 12 (3%)
- **assault**: 12 (2%)
Leading causes of spinal cord injuries in Hawaii, 2009-2012

- Ocean activities: 151 (33%)
- Motor vehicle crashes: 104 (23%)
- Falls: 102 (22%)
- Striking: 25 (6%)
- Other sports (non-aquatic): 15 (3%)
- Assault: 10 (2%)
- Water dives, non-ocean: 9 (2%)
- Bicycle crashes (no MVC): 6 (1%)
- Sky dive: 5 (1%)
- Other injuries: 27 (6%)

Most (77%) are non-residents.

Body surfing: 42
Body boarding: 37
“Tossed by wave”: 42

Number (% of total)
Location (beach) of spinal cord injuries from ocean activities in Hawaii, 2009-2012

- Makena: 16
- Brenneke: 14
- Hapuna: 13
- Sandy: 11
- Laaloa: 8
- Kua Bay: 7
- Waimea: 5
- Kaanapali: 5
- Waikiki: 4
- Waimanalo: 3
- Polo Beach: 3
- Hamoa: 3
- Bellows: 3
- 13 beaches: 2
- 21 beaches: 1
- Unknown: 14
Ocean drownings, 2003-2012
Number and ten-year rate of ocean drownings in Hawaii, by residence of victim, 2003-2012

Number of drownings

- Foreign country (14%): 73
- U.S. mainland (39%): 209
- Visitors-total (52%): 282
- Hawaii residents (48%): 256

Rate (/100,000) of drownings

- Foreign country: 179.3
- U.S. mainland: 150.1
- Visitors-total: 156.7
- Hawaii residents: 19.7

Countries and their respective counts:
- Japan: 39
- Canada: 8
- South Korea: 4
- China: 3
Ocean drownings in Hawaii, by residence and activity of victim, 2003-2012

<table>
<thead>
<tr>
<th>Activity</th>
<th>Total (n=538)</th>
<th>HI residents</th>
<th>Non-residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boat accident</td>
<td>6 (1%)</td>
<td>1 (1%)</td>
<td>5 (8%)</td>
</tr>
<tr>
<td>Fell in/swept in</td>
<td>21 (4%)</td>
<td>21 (100%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Fishing shorecasting</td>
<td>18 (3%)</td>
<td>18 (100%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Picking opihi</td>
<td>9 (2%)</td>
<td>9 (100%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Free diving</td>
<td>48 (9%)</td>
<td>3 (100%)</td>
<td>45 (94%)</td>
</tr>
<tr>
<td>Scuba</td>
<td>23 (4%)</td>
<td>8 (100%)</td>
<td>15 (33%)</td>
</tr>
<tr>
<td>Snorkeling</td>
<td>53 (10%)</td>
<td>13 (100%)</td>
<td>40 (76%)</td>
</tr>
<tr>
<td>Swimming</td>
<td>92 (17%)</td>
<td>53 (100%)</td>
<td>39 (76%)</td>
</tr>
<tr>
<td>Surfing/body boarding</td>
<td>26 (5%)</td>
<td>26 (100%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Other activity</td>
<td>22 (4%)</td>
<td>15 (100%)</td>
<td>7 (33%)</td>
</tr>
<tr>
<td>Unknown activity</td>
<td>32 (6%)</td>
<td>23 (100%)</td>
<td>9 (45%)</td>
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</tbody>
</table>

76 (14%) from unintentional immersions
County-specific data
Ten-year rate (/100,000) of ocean drownings in Hawaii, by residence status and county, 2003-2012

- **Hawaii residents (state ave. = 19.7)**
  - Hawaii: 32.2
  - Oahu: 16.9
  - Kauai: 25.0
  - Maui: 20.0

- **non-residents (state ave. = 156.7)**
  - Hawaii: 171.0
  - Oahu: 125.2
  - Kauai: 269.0
  - Maui: 158.7

- **total (state ave. = 36.3)**
  - Hawaii: 50.1
  - Oahu: 26.2
  - Kauai: 83.3
  - Maui: 54.3
Ocean drownings on Kauai, 2003-2012

- **Summary**

  - **70 total, 2 to 10 per year**
  - **Somewhat decreasing trend**
  - **Mostly (77%) non-residents**
  - **Activity: Swimming (36%) and snorkeling (26%)**

**Number of drownings, by activity**

- Unint. immersion: 10
- Swimming: 25
- Snorkeling: 18
- Diving: 3
- Other activity: 7
- Unknown: 7

**Annual trends, by residence of victims**

- **Total (70)**
- **Non-residents (54, 77%)**
- **HI residents (16, 23%)**
Napali Coast: 4 drownings:
- 3 non-residents
- all during Oct-March
- 3 swimmers

Kee-Princeville: 19 drownings:
- 17 non-residents (all US)
- no seasonality
- 5 at Queen's Bath, none since 2008

Poipu area: 15 drownings:
- 13 non-residents (all US)
- no seasonality
- 8 snorkelers, 5 swimmers
Seasonality

North Shore (Polihale-Lighthouse): 29
-20 (69%) from Oct-March

East Shore (Larsens - Lihue): 21
-13 (62%) from April-Sept.

South Shore (Kekaha-Poipu): 22
-13 (59%) from April-Sept.
Ocean drownings on Oahu, 2003-2013

- **Summary**
  - 263 total, 19 to 43 per year
  - No consistent trend
  - Slightly more residents (59%)
  - Activity: wide distribution

### Number of drownings, by activity

<table>
<thead>
<tr>
<th>Activity</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
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<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>Total</th>
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<td>unint. immersion</td>
<td>31</td>
<td>14</td>
<td>14</td>
<td>17</td>
<td>17</td>
<td>12</td>
<td>18</td>
<td>19</td>
<td>11</td>
<td>8</td>
<td>67</td>
</tr>
<tr>
<td>swimming</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>8</td>
<td>16</td>
<td>21</td>
<td>17</td>
<td>50</td>
</tr>
<tr>
<td>snorkeling</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>8</td>
<td>16</td>
<td>21</td>
<td>17</td>
<td>46</td>
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<td>diving</td>
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<td>0</td>
<td>0</td>
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<td>0</td>
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<td>0</td>
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<td>41</td>
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<td>0</td>
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<td>0</td>
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<td>0</td>
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</tr>
</tbody>
</table>

### Annual trends, by residence of victims

- **total (263)**
- **non-residents (108, 41%)**
- **HI residents (155, 59%)**
18

Leeward coast: 42 drownings: 52% residents; not much seasonality

North Shore: 26 drownings:

eastern Oahu (Honolulu-Kailua): 154 drownings (59%)
Point Panic-Ala Wai marina: 25:
-21 residents

Hilton Hawaiian-Kapahulu: 35:
-26 non-residents (10 US, 16 foreigners)

Kahala-Portlock: 23:
-17 residents

Hanauma: 20:
-19 non-residents
-7 US, 12 foreigners

Residence status
- non-resident
- resident
South Shore: 104 drownings: 
-71 (68%) from April-September
Ocean drownings on Maui County, 2003-2013

• **Summary**
  - 105 total, 6 to 19 per year
    - (95 on Maui, 8 Molokai, 2 on Lanai)
  - **Increasing trend**
  - **Mostly (72%) non-residents**
  - **Activity**: Swimming (34%), snorkeling (29%), and unintentional immersions (13%)
Kaanapali: 21 drownings:
- 13 in Black Rock area
- 20 non-residents (18 US)
  - 17 from 2008-2012
  - 14 from October-March

Kamaole-Oneloa (Big Beach) 26:
- 10 at Big (5) or Little (5) Beach
- 24 non-residents (21 US)
  - 16 from 2008-2012
  - little seasonality

Molokini: 6
- 5 from 2011-2012

Residence status
- non-resident
- resident
Ocean drownings on Hawaii County, 2003-2012

- **Summary**
  - 100 total, 4 to 16 per year
  - No consistent trend
  - Slightly more residents (56%)
  - Activity: wide distribution

**Number of drownings, by activity**

- **Unint. immersion**: 21
- **Swimming**: 17
- **Snorkeling**: 17
- **Diving**: 20
- **Other activity**: 13
- **Unknown**: 12

**Annual trends, by residence of victims**

- Total (100)
- Non-residents (44, 44%)
- HI residents (56, 56%)
Waikoloa Beach-Mauna Kea: 13:
-11 non-residents (8 US)
-8 snorkelers

Kailua Bay-Keauhou: 17
-12 from April-September

Kumukahi Lighthouse-Pohoiki: 11:
-10 residents
-10 from 2006-2012
west coast (Mauna Kea-Milolii): -33 of 51 (65%) victims non-residents

south and windward coasts: -35 of 41 (85%) victims non-residents
Summary

• Visitors have low risks (rates) of injury, with the exception of drowning, near-drowning and spinal cord injury
  – Comprise nearly half the drowning victims/patients
    • Mortality rates ~7 times higher, morbidity ~10 times higher
  – Comprise 77% of ocean-related SCI
    • Specific beaches on each island

• County data
  – Hawaii County highest drowning rate among residents
  – Kauai highest rate among non-residents and total
  – Descriptions (victim residence, activity, seasonality, trends) available for each county