Fatalities in Skiing and Snowboarding – From Avalanche to Objects Collision

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Outline

• Overall Fatalities in Skiing and Snowboarding
• Avalanches Related Injury
• In-bounds vs Backcountry Fatalities
• Skiing and Snowboarding vs Other Snow Sports
• Do Helmets Help?
What is the risk of dying while skiing or snowboarding?

- The traumatic death rate for skiing is 0.7 deaths per million skier visits.
- For snowboarding, the figure is 35% lower at 0.5 deaths per million snowboarder visits.
- These rates exclude deaths from medical causes.
What is the risk of dying while skiing or snowboarding?

• Skiers are more likely than snowboarders to die as the result of an impact injury whereas snowboarders are more likely to die from jumping or a tree well accident
• On average, about 35-40 skiers and snowboarders die every year in the USA as a result of a traumatic accident
• Excess speed and/or jump heights are usually involved in most traumatic deaths on the slopes
NSAA Skier/Snowboarder Catastrophic Injuries from the 2014-15 Season

• Catastrophic injuries include forms of paralysis, significant cervical, thoracic or lumbar fractures, and life-altering severe head injuries
• NSAA has defined a skier/snowboarder visit as one person visiting a ski area for all or any part of a day or night
• 42 catastrophic injuries occurred at U.S. ski areas during the 2014-15 season
• Decline compared to the past two ski seasons: 52 catastrophic injuries reported in 2013-14 and 76 in 2012-13
NSAA Skier/Snowboarder Catastrophic Injuries from the 2014-15 Season

• The 42 catastrophic injuries that occurred last season are well below the ski industry’s 10-year average of 50 catastrophic injuries per ski season
• Of those catastrophically injured last season, 33 were male and 9 female
• 34 of the catastrophically injured were skiers, while 8 were snowboarders
NSAA Skier/Snowboarder Catastrophic Injuries from the 2014-15 Season

- Most of those catastrophically injured were wearing helmets.
- The NSAA data found that 27 of the catastrophically injured were wearing helmets, while 15 were not helmeted.
- Overall, 78% of all skiers and snowboarders wore helmets during the 2014-15 season.
NSAA Skier/Snowboarder Catastrophic Injuries

<table>
<thead>
<tr>
<th>SEASON</th>
<th>CATASTROPHIC INJURIES</th>
<th>SKIER DAYS (in millions)</th>
<th>RATE (per one million skier visits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-15</td>
<td>42</td>
<td>53.6</td>
<td>0.78</td>
</tr>
<tr>
<td>2013-14</td>
<td>52</td>
<td>56.5</td>
<td>0.92</td>
</tr>
<tr>
<td>2012-13</td>
<td>76</td>
<td>56.9</td>
<td>1.34</td>
</tr>
<tr>
<td>2011-12</td>
<td>49</td>
<td>51.0</td>
<td>0.96</td>
</tr>
<tr>
<td>2010-11</td>
<td>60</td>
<td>60.5</td>
<td>0.99</td>
</tr>
<tr>
<td>2009-10</td>
<td>40</td>
<td>59.7</td>
<td>0.65</td>
</tr>
<tr>
<td>2008-09</td>
<td>44</td>
<td>57.5</td>
<td>0.77</td>
</tr>
<tr>
<td>2007-08</td>
<td>41</td>
<td>60.5</td>
<td>0.68</td>
</tr>
<tr>
<td>2006-07</td>
<td>40</td>
<td>55.1</td>
<td>0.73</td>
</tr>
<tr>
<td>2005-06</td>
<td>57</td>
<td>58.9</td>
<td>0.97</td>
</tr>
</tbody>
</table>
NSAA Avalanche Safety Data

• Majority of avalanche incidents occur in the backcountry, but avalanches can occur within the boundaries of ski areas, despite the best efforts of highly trained ski area professionals.
NSAA Avalanche Safety Data

- During the 2014-15 ski season, there were 11 fatalities from avalanches in the United States—all of them occurring in the backcountry, and there were zero avalanche fatalities occurring within ski area.
NSAA Avalanche Safety Data

• Since 2000, there have been 422 avalanche fatalities in the U.S.—the overwhelming number occurring in the backcountry—with an average of 28 avalanche fatalities per season.

### Avalanche Fatalities in the United States, by Decade

<table>
<thead>
<tr>
<th>SEASON</th>
<th>Total U.S. Avalanche Fatalities*</th>
<th>Total In-Bound Ski Area Guest Fatalities*</th>
<th>Skier Days** (in millions)</th>
<th>Fatality Rate (per million) In-bounds Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980-1990</td>
<td>143</td>
<td>4</td>
<td>502.2 (1980/81 - 1989/90)</td>
<td>0.008</td>
</tr>
<tr>
<td>1990-2000</td>
<td>234</td>
<td>1</td>
<td>523.8 (1990/91 - 1999/00)</td>
<td>0.002</td>
</tr>
<tr>
<td>2000-2010</td>
<td>293</td>
<td>8</td>
<td>574.9 (2000/01 - 2009/10)</td>
<td>0.014</td>
</tr>
<tr>
<td>2010-2015</td>
<td>129</td>
<td>3</td>
<td>278.5 (2010/11 - 2014/15)</td>
<td>0.011</td>
</tr>
</tbody>
</table>

* Statistics compiled from the Colorado Avalanche Information Center data.
** Data according to the 2014/15 NSAA Kottke End of Season Survey.
NSAA Avalanche Safety Data

- More fatalities have occurred to individuals who are snowmobiling, climbing, hiking, or showshoeing than to those who are skiing or snowboarding since 2006.
- Since the 2006-07 season:
  - 123 (50%) fatalities for snowmobilers, hikers, climbers, and snowshoers
  - 112 (42%) fatalities for skiers and snowboarders
NSAA Skier/Snowboarder Helmet Use

Ski Helmet Usage Rates, By Season

- 38% (05/06)
- 40% (06/07)
- 43% (07/08)
- 48% (08/09)
- 56% (09/10)
- 61% (10/11)
- 67% (11/12)
- 70% (12/13)
- 73% (13/14)
- 78% (14/15)
NSAA Skier/Snowboarder Helmet Use

Helmet Usage Rates: Ages 17 and Under

<table>
<thead>
<tr>
<th>Year</th>
<th>Usage Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/06</td>
<td>49%</td>
</tr>
<tr>
<td>06/07</td>
<td>49%</td>
</tr>
<tr>
<td>07/08</td>
<td>54%</td>
</tr>
<tr>
<td>08/09</td>
<td>59%</td>
</tr>
<tr>
<td>09/10</td>
<td>70%</td>
</tr>
<tr>
<td>10/11</td>
<td>74%</td>
</tr>
<tr>
<td>11/12</td>
<td>77%</td>
</tr>
<tr>
<td>12/13</td>
<td>80%</td>
</tr>
<tr>
<td>13/14</td>
<td>79%</td>
</tr>
<tr>
<td>14/15</td>
<td>85%</td>
</tr>
</tbody>
</table>
NSAA Skier/Snowboarder Helmet Use

• Helmet use among minors has also seen sizeable gains:
  – 32% of skiers and riders 17 and under wore helmets in the 2002-03 season
  – 85% of skiers and riders in this age group wore helmets in the 2014-15 season

• Both the Northeast region (CT, MA, ME, NH, NY, RI, and VT) and the Rocky Mountain region (CO, ID, MT, NM, UT, and WY) lead the country in terms of total helmet usage, with 83% of skiers and riders in those regions wearing helmets last season
NSAA Skier/Snowboarder Helmet Use

• In 2011, New Jersey became the first and only state that requires those under the age of 18 to wear a helmet while skiing or snowboarding.
• 97% of children ages 9 and under wore helmets in the 2014-15 season.
• The age group least likely to wear helmets includes skiers and riders between 18-24 years old, 70% of them wearing helmets last season which is up from 18% in 2002-03 season.
Role of Helmets in Mitigation of Head Injuries
Dr. Jasper Shealy, Dr. Robert Johnson, Carl Ettlinger, Dr. Irving Scher
Skiing Trauma and Safety 2015

- Increased helmet usage has proven to reduce all head injuries, especially potentially serious head injuries (PSHI)
- 17 seasons of ski helmet usage data from 1995 through 2012
- Helmet usage increased and potentially serious head injuries dropped from 4.2% of all ski injuries to 3.0% of all injuries over the course of the study
Should you wear a helmet?

• Current evidence strongly suggests that helmets may prevent or reduce the severity of many head injuries
• Even the best currently available helmet cannot protect you against all potential impacts
• If you are unlucky enough to hit a tree or other static object when travelling at the speed of an average intermediate skier or snowboarder, the forces will likely exceed the protective capabilities of any helmet
Summary of Data

- In bounds:
  - Average death in CO is a 37 year old experienced male skier wearing a helmet and loses control on an intermediate, groomed run and hits a tree
  - 54% of deaths on blue groomed runs, 31% on expert trails
Summary of Data

- Helmets protect at lower speeds (<12 mph) and skiers or snowboarders are typically hitting trees at 25-40 mph
- More than 80% of CO ski deaths are male
Questions?

• Thank you!