Helmet use by skiers and snowboarders in New Zealand

A recent request made under the Official Information Act to the Accident Compensation Corporation revealed that during the period 2008 to 2012, the mean number of new claims per year for head injuries due to skiing and snowboarding accidents was 280 and 277, respectively. However, wearing a helmet while skiing or snowboarding may prevent between 15 and 66% of all snow-sport head injuries.\(^1\)\(^-\)\(^3\)

Helmet use by skiers and snowboarders is often quite low; for example, in the US rates of 12.1%, 19.8% and 40% were reported, in 2001,\(^4\) 2002,\(^4\) and 2006–2007,\(^5\) respectively, while on New Zealand ski-fields, an Otago University thesis estimated a rate of 57% during 2010.\(^6\)

Frequently cited reasons for not wearing helmets include: i) the extra weight may increase the risk of neck and cervical spine injury; ii) they may increase skiers and snowboarders’ propensity to take risks (because they feel protected); and iii) they may reduce peripheral vision and insulate users from environmental cues of danger (e.g., the shouts of an out-of-control snowboarder behind). However, evidence does not support these three possibilities.\(^1\),\(^7\),\(^8\)

The opportunity arose to replicate and extend the unpublished Otago University thesis, and investigate the rate of helmet use of skiers and snowboarders using lifts to access beginner, intermediate, and advanced levels of a North Island ski-field at both the beginning and the end of the 2013 ski season. Specifically, we sought to determine whether helmet use varies by: i) type of snow-field user (skier vs. snowboarder; ii) the level of the mountain being accessed (our measurement was unfortunately somewhat blunt, as those accessing the beginner level may have been en-route to the intermediate or advanced level); and iii) whether it was early or late season (and perhaps complacency and/or warmer weather led to a lower rate of helmet use).

On four weekdays when all areas of the ski-field were open (two close to the beginning of the ski season and two close to the end of the season), between 11am and 12pm we observed the riders of 100 chairs on lifts serving the three levels of the ski-field and recorded whether skiers and snowboarders were wearing helmets. On all days the weather was fine and the visibility unlimited.

Of 4057 people observed, 2633 (64.9%) wore helmets while 1424 (35.1%) did not. The odds ratio for helmet use (skier vs. snowboarder) was 1.21 (95%CI, lower=1.055, upper=1.384); 68.2% of skiers and 62% of snowboarders wore helmets, respectively. Binary logistic regression to predict helmet use (yes/no), with categorical covariates Type (ski vs. snowboard), level (low, mid, high) and season (early vs. late), revealed that only Type significantly predicted helmet use (\(\beta=0.194, p=0.006\)).

The rate of helmet wear compares favourably with those reported in other studies.\(^1\),\(^4\),\(^7\),\(^8\) Nevertheless, if the non-users also wore helmets, it may help to reduce the number of traumatic head injury claims made to ACC each year. Indeed, when cycle helmets became mandatory in New Zealand, their rate of use rose immediately to more than 90% (for adults) from just 39% 2 years earlier.\(^9\)
One limitation of this brief observational study is that, due to resourcing constraints, it was conducted at just one of approximately 30 ski-fields in New Zealand; caution must therefore be shown if making generalisations.

As the advantages of wearing helmets\(^1\) likely outweigh any disadvantages, e.g.,\(^1,7,8\) the majority of ski-field users already wear them, and their cost is relatively cheap, making helmet use mandatory may help reduce the number of head injuries attributable to winter sports at little cost or discomfort to the user.

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References:
6. Vipond R. What is the evidence to support legislation for compulsory use of helmets while skiing or snowboarding in New Zealand? 2012. Downloaded from [http://www.otago.ac.nz/christchurch/research/publichealth/theses/otago033470.html](http://www.otago.ac.nz/christchurch/research/publichealth/theses/otago033470.html)