

Risk from ski cutting (2019-04-17)

Welcome to this survey of avalanche practitioners on the risk from ski cutting during avalanche work

Public perceptions and subjective estimates of the risk from ski cutting (also called test skiing) vary widely. Is the average risk of injury is 1 in 10 ski cuts or 1 in 10 million? This survey will gather data so the average risk of ski cutting by avalanche practitioners can be quantified. In this survey, ski cutting includes slope cutting by snowboards or splitboards but not slope cutting by snowmobiles.

Definition: A ski cut is an attempt to trigger an avalanche by skiing across all or part of an avalanche start zone to a location with lower risk. For this survey, we do not distinguish between test skiing (to determine if there is unstable snow) and trying to trigger (and remove) unstable snow. Both are considered ski cutting in this survey. Ski cuts in which you did not expect and/or did not trigger an avalanche are specifically included.

The survey is voluntary, anonymous and only for avalanche practitioners in North America. Individual responses will not be used. Only aggregates of responses, e.g. average values from respondents, will be used in publications and presentations.

Read the instructions carefully before answering any question. The survey is expected to take 20 to 30 minutes.

The survey is divided into career phases, suggests possible scenarios (situations) to help you estimate events from each phase of your career, and asks about injuries during each phase of your career. Only enter career phases and winters in which you did about 20 or more ski cuts per winter.

The structure of the survey is:

Career Phase 1

- Identify type of work, number of winters, avalanche situations
- Avalanche Situation 1 - questions on ski cutting
- Avalanche Situation 2 - "
- Avalanche Situation 3 - "
- Questions on ski cutting larger avalanches and injuries during Career Phase 1

Career Phase 2

Same as for Career Phase 1

When you are ready to move to the next question during this survey, click Ok and/or Next.

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Career Phase 1

- * 1. For the first career phase in which you ski cut many slopes, select the type of avalanche work from the dropdown list.

- * 2. Enter the first winter in this career phase in which you ski cut numerous slopes, e.g. enter 2014 for the winter 2013-14.

- * 3. How many winters during this career phase did you ski cut many slopes, say 20+ slopes per winter? Minimum 1 winter. (If there are no such winters in your career, thank you for your interest in the survey.)

Avalanche situations with many ski cuts per day in Career Phase 1

To help you estimate both the number of days (per winter) with multiple ski cuts, and the number of ski cuts per day, it may be helpful to consider different “avalanche situations”. Our study won’t analyze these situations; we only provide suggestions to help you organize your thoughts and make the survey easier. Possible avalanche situations to break down your days with multiple ski cuts include:

- a. Situation 1 (S1): HST 10 to 20 cm (4 to 8"). S2: HST > 20 cm (8+"). S3: no recent HST.
- b. I can estimate the average number of days (per winter) with multiple ski cuts without breaking it down into two or three avalanche situations. Only one situation.
- c. S1: shallow instability. S2: mid-pack instability. S3: no dominant instability.
- d. A specific dominant avalanche problem type, e.g. dry storm snow (loose or slab), wet storm snow (loose or slab), persistent slab.
- e. It could be the days in which you ski cut along specific control routes (maximum of three).
- f. I ski cut every avalanche slope before I ski it for the first time each day, and can estimate the average number of days with multiple ski cuts. Only one situation.

You should have received a Word file with these suggested situations. You change the text so it specifies the situations that work for you. You can then print this file, or keep it handy on your desktop for reference.

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Career Phase 1 and Avalanche Situation 1

* 4. Describe your Avalanche Situation 1 in a few words, e.g. HST 10 to 20 cm (4 to 8"). (Your answer is for your use only and will not be analyzed.)

* 5. The following questions refer to **Career Phase 1 and Avalanche Situation 1** for avalanches up to size D1.5. Questions about larger avalanches come later. You must answer Questions A through E for your answers to be used. *You may have limited confidence in your estimated averages. This is one reason why only the aggregate responses of many practitioners will be used.*

A. Average number of days with multiple ski cuts for Avalanche Situation 1 **in each of these winters. (Ok to round your estimate to the nearest 5 or 10.)**

B. Average number of **ski cuts per day** for Avalanche Situation 1

C. Multiply A times B to get your **average number of ski cuts per winter** for Avalanche Situation 1. The following questions in red text refer to the average number of avalanches triggered during ski cutting **per winter.**

D. Average number of **size D1 or D1.5** avalanches you **triggered** during ski cutting **per winter for Avalanche Situation 1.** Must be less than C. (Ok to round your estimate to the nearest 5 or 10.)

E. Average number of times you were **caught** (carried 5 or more meters (15+ feet)) in size D1 or D1.5 avalanches during ski cutting with Avalanche Situation 1 **per winter.** Should be less than or equal to D. (Ok to round your estimate.)

6. If you have an Avalanche Situation 2, click on Yes. If you click on No, you will skip ahead to Questions about larger ski cut avalanches in Career Phase 1.

Yes

No

Career Phase 1 and Avalanche Situation 2

* 7. Describe Avalanche Situation 2 in a few words, e.g. HST > 20 cm or 8". (Your answer is only for your use and will not be analyzed.)

* 8. Estimate the average number of ski cuts and ski cut avalanches for **Career Phase 1 and Avalanche Situation 2** for avalanches up to size D1.5. Questions about larger avalanches come later. You must answer parts A through E for your responses to be used. Questions about larger avalanches come later. *You may have limited confidence in your estimated averages. This is one reason why only the aggregate responses of many practitioners will be used.*

A. Average number of days with multiple ski cuts for Avalanche Situation 2 **in each of these winters. (Ok to round your estimate to the nearest 5 or 10.)**

B. Average number of ski cuts **on each of those days** with Avalanche Situation 2. **(Ok to round your estimate to the nearest 5 or 10.)**

C. Multiply A time B to get your **average number of ski cuts per winter** for Avalanche Situation 2. The following questions in red text pertain to **averages per winter.**

D. Average number of **size D1 or D1.5** avalanches you **triggered** during ski cutting **per winter for Avalanche Situation 2.** Must be less than C. (Ok to round your estimate to the nearest 5 or 10.)

E. Average number of times you were **caught** (carried 5 or more meters) in **size D1 or D1.5** avalanches during ski cutting with Avalanche Situation 2 per winter. Should be less than or equal to D. (Ok to round your estimate.)

9. If you have an Avalanche Situation 3, click on Yes. If you click on No, you will skip ahead to Questions about larger ski cut avalanches in Career Phase 1.

Yes

No

Career Phase 1 and Avalanche Situation 3

10. Describe Avalanche Situation 3 in a few words.

* 11. Estimate your average number of ski cuts and ski cut avalanches for **Career Phase 1 and Avalanche Situation 3** for avalanches up to size D1.5. Questions about larger avalanches come later. You must answer parts A through E for your responses to be used. Questions about larger avalanches come later. (You may have limited confidence in your estimated averages. This is one reason why only the aggregate responses of many practitioners will be used.)

A. Average number of days with multiple ski cuts for Avalanche Situation 3 **in each of these winters. (Ok to round your estimate to the nearest 5 or 10)**

B. Average number of ski cuts **on each of those days** with Avalanche Situation 3. **(Ok to round your estimate.)**

C. Multiply A time B to get your **average number of ski cuts per winter** for Avalanche Situation 3. The following questions in red text refers to **averages per winter.**

D. Average number of **size D1 or D1.5** avalanches you **triggered** during ski cutting **per winter** for Avalanche Situation 3. Must be less than C. (Ok to round your estimate.)

E. Average number of times you were **caught** (carried 5 or more meters) in **size D1 or D1.5** avalanches during ski cutting with Avalanche Situation 3 per winter. Should be less than or equal to D. (Ok to round your estimate.)

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Questions about ski cut avalanches, D2 and larger, for Career Phase 1

* 12. The four parts of this question pertain to the number of ski cut D2 and larger avalanches during **Career Phase 1 (all avalanche situations, all winters)**. You must answer parts F through I for your responses to be used. (You may have limited confidence in your estimated averages. This is one reason why only the aggregate responses of many practitioners will be used.)

F. Estimated number of size D2 or D2.5 avalanches you triggered while ski cutting during Career Phase 1. (Ok to round your estimate.)

G. Estimated number of times you were **caught** (carried 5 or more meters) in **size D2 or D2.5** avalanches while ski cutting during Career Phase 1. Should be less than or equal to F. (Ok to round your estimate.)

H. Estimated number of size **D3 or larger** avalanches you **triggered** while ski cutting during career Phase 1. (Ok to round your estimate.)

I. Estimated number of times you were **caught** (carried 5 or more meters) in size **D3 or larger** avalanches while ski cutting during Career Phase 1. Should be less than or equal to H. (Ok to round your estimate.)

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Injuries from ski cutting during Career Phase 1

All winters, all avalanche situations, including situations not specified.

* 13. Number of times **you** were injured or experienced traumatic stress from ski cutting [all avalanche situations (including situations not specified), all causes, e.g. avalanches, hitting a rock] **during this career phase** with the following consequences:

Near Miss (A Near Miss is an unplanned event that did not result in injury, illness, or damage – but had the potential to do so.)

One or more days of **light duty** then career phase resumed.

Unable to work for one or more days then career phase resumed.

End of career phase.
Enter 0 or 1.

14. If you have a second career phase with multiple ski cuts per day, click on Yes. If you don't, click on No, which will take you to the end of the survey.

Yes

No

Career Phase 2

15. For the second career phase in which you ski cut many slopes, select the type of avalanche work from the dropdown list.

16. Enter the first winter in this career phase in which you ski cut numerous slopes. E.g. enter 2014 for the winter 2013-14.

* 17. How many winters during this career phase did you ski cut many slopes, say 20+ slopes per winter? Minimum 1 winter. (If there are no such winters in your career, thank you for your interest in the survey.)

Avalanche situations with many ski cuts per day in Career Phase 2

To help you estimate both the number of days (per winter) with multiple ski cuts, and the number of ski cuts per day, it may be helpful to consider different “avalanche situations”. Our study won’t analyze these situations; we only provide suggestions to help you organize your thoughts and make the survey easier. Possible avalanche situations to break down your days with multiple ski cuts include:

- a. Situation 1 (S1): HST 10 to 20 cm (4 to 8"). S2: HST > 20 cm (8+"). S3: no recent HST.
- b. I can estimate the average number of days (per winter) with multiple ski cuts without breaking it down into two or three avalanche situations. Only one situation.
- c. S1: shallow instability. S2: mid-pack instability. S3: no dominant instability.
- d. A specific dominant avalanche problem type, e.g. dry storm snow (loose or slab), wet storm snow (loose or slab), persistent slab.
- e. It could be the days in which you ski cut along specific control routes (maximum of three).
- f. I ski cut every avalanche slope before I ski it for the first time each day, and can estimate the average number of days with multiple ski cuts. Only one situation.

You should have received a Word file with these suggested situations. You change the text so it specifies the situations that work for you. You can then print this file, or keep it handy on your desktop for reference.

Career Phase 2 and Avalanche Situation 1

* 18. Describe your Avalanche Situation 1 in a few words, e.g. HST 10 to 20 cm (4 to 8"). (Your answer is only for your use and will not be analyzed.)

* 19. The following questions refer to **Career Phase 2 and Avalanche Situation 1** for avalanches up to size D1.5. Questions about larger avalanches come later. You must answer Questions A through E for your answers to be used. *You may have limited confidence in your estimated averages. This is one reason why only the aggregate responses of many practitioners will be used.*

A. Average number of days with multiple ski cuts for Avalanche Situation 1 **in each of these winters. (Ok to round your estimate to the nearest 5 or 10.)**

B. Average number of **ski cuts per day** for Avalanche Situation 1

C. Multiply A times B to get your **average number of ski cuts per winter** for Avalanche Situation 1. The following questions in red text refer to the average number of avalanches triggered during ski cutting **per winter.**

D. Average number of **size D1 or D1.5** avalanches you **triggered** during ski cutting **per winter for Avalanche Situation 1.** Must be less than C. (Ok to round your estimate to the nearest 5 or 10.)

E. Average number of times you were **caught** (carried 5 or more meters (15+ feet)) in size D1 or D1.5 avalanches during ski cutting with Avalanche Situation 1 **per winter.** Should be less than or equal to D. (Ok to round your estimate.)

20. If you have an Avalanche Situation 2, click on Yes. If you click on No, you will skip ahead to questions about D2 and larger ski cut avalanches in Career Phase 2.

Yes

No

Career Phase 2 and Avalanche Situation 2

* 21. Describe Avalanche Situation 2 in a few words, e.g. > 20 cm or 8"

* 22. Estimate your average number of ski cuts and ski cut avalanches for **Career Phase 2 and Avalanche Situation 2** for avalanches up to size D1.5. Questions about larger avalanches come later. You must answer parts A through E for your responses to be used. Questions about larger avalanches come later. *You may have limited confidence in your estimated averages. This is one reason why only the aggregate responses of many practitioners will be used.*

A. Average number of days with multiple ski cuts for Avalanche Situation 2 **in each of these winters. (Ok to round your estimate to the nearest 5 or 10.)**

B. Average number of ski cuts **on each of those days** with Avalanche Situation 2. **(Ok to round your estimate to the nearest 5 or 10.)**

C. Multiply A time B to get your **average number of ski cuts per winter** for Avalanche Situation 2. The following questions in red text pertain to **averages per winter.**

D. Average number of **size D1 or D1.5** avalanches you **triggered** during ski cutting **per winter for Avalanche Situation 2.** Must be less than C. (Ok to round your estimate to the nearest 5 or 10.)

E. Average number of times you were **caught** (carried 5 or more meters) in **size D1 or D1.5** avalanches during ski cutting with Avalanche Situation 2 per winter. Should be less than or equal to D. (Ok to round your estimate.)

23. If you have an Avalanche Situation 3, click on Yes. If you click on No, you will skip ahead to questions about D2 and larger ski cut avalanches in Career Phase 2.

Yes

No

Career Phase 2 and Avalanche Situation 3

* 24. Describe Avalanche Situation 3 in a few words.

* 25. Estimate your average number of ski cuts and ski cut avalanches for **Career Phase 2 and Avalanche Situation 3** for avalanches up to size D1.5. Questions about larger avalanches come later. You must answer parts A through E for your responses to be used. Questions about larger avalanches come later. (You may have limited confidence in your estimated averages. This is one reason why only the aggregate responses of many practitioners will be used.)

A. Average number of days with multiple ski cuts for Avalanche Situation 3 **in each of these winters. (Ok to round your estimate to the nearest 5 or 10)**

B. Average number of ski cuts **on each of those days** with Avalanche Situation 3. **(Ok to round your estimate.)**

C. Multiply A time B to get your **average number of ski cuts per winter** for Avalanche Situation 3. The following questions in red text refers to **averages per winter.**

D. Average number of **size D1 or D1.5** avalanches you **triggered** during ski cutting **per winter** for Avalanche Situation 3. Must be less than C. (Ok to round your estimate.)

E. Average number of times you were **caught** (carried 5 or more meters) in **size D1 or D1.5** avalanches during ski cutting with Avalanche Situation 3 per winter. Should be less than or equal to D. (Ok to round your estimate.)

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Questions about ski cut avalanches, D2 and larger, for Career Phase 2

* 26. The four parts of this question pertain to the number of ski cut D2 and larger avalanches during **Career Phase 2 (all avalanche situations, all winters)**. You must answer parts F through I for your responses to be used. (You may have limited confidence in your estimated averages. This is one reason why only the aggregate responses of many practitioners will be used.)

F. Estimated number of size D2 or D2.5 avalanches you triggered while ski cutting during Career Phase 2. (Ok to round your estimate.)

G. Estimated number of times you were **caught** (carried 5 or more meters) in **size D2 or D2.5** avalanches while ski cutting during Career Phase 2. Should be less than or equal to F. (Ok to round your estimate.)

H. Estimated number of size **D3 or larger** avalanches you **triggered** while ski cutting during career Phase 2. (Ok to round your estimate.)

I. Estimated number of times you were **caught** (carried 5 or more meters) in size **D3 or larger** avalanches while ski cutting during Career Phase 2. Should be less than or equal to H. (Ok to round your estimate.)

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Injuries from ski cutting during Career Phase 2

All winters, all avalanche situations, including situations not specified.

* 27. Number of times **you** were injured or experienced traumatic stress from ski cutting [all avalanche situations (including situations not specified), all causes, e.g. avalanches, hitting a rock] **during this career phase** with the following consequences:

Near Miss (A Near Miss is an unplanned event that did not result in injury, illness, or damage – but had the potential to do so.)

One or more days of **light duty** then career phase resumed.

Unable to work for one or more days then career phase resumed.

End of career phase.
Enter 0 or 1.

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Wrap up

Here is an option to subsequently delete your answers or revise your answers.

28. In the days after completing the survey, you may question your answers or want to delete them. If you enter a nickname, like Backcountry Bob, then you'll be able to email bruce.jamieson@snowline.ca and ask that the answers with your nickname be deleted from the records ... so long as the survey is open. You can then re-take the survey, or not. Since we are committed to your confidentiality, you can enter your email address instead of a nickname. Of course, you can leave this blank.

Thank you! We hope to present and publish results of the survey in fall 2019.