

State of the Field: Using Comparative Risk Management Data to Benchmark your Program

This study was a replication and extension of a wilderness risk-management survey that was conducted by the University of Utah and NOLS in 2003. At that time, NOLS wanted to conduct a study that would accomplish two things. It would create a taxonomy for risk management, and it would assess how a variety of organizations manage risk (Paisley, Sibthorp & Szolosi, 2003). The first goal was important because it had become obvious that outdoor expeditionary programs (OEPs; defined as spending two or more nights in the field) had a variety of definitions in language around risk management. It was hard to assess how (dis)similarly they managed field hazards because they assigned different definitions to the same words. The second goal came about in response to the fact that there had been little industry-wide research done on how OEPs employed risk-management strategies to address field hazards. Because there was little empirical research available, organizations could not easily compare themselves to one another.

Given that more than a decade had passed since the first survey, we wanted to repeat it to understand if risk-management strategies had changed. The original survey began with a Delphi panel to name and define both risk-management strategies and categories of field hazards that would apply to a broad range of OEPs. A Delphi process is used to build consensus among a panel of experts around a given topic, and was used in this case to design a survey that would represent a variety of risk-management views (Szolosi, Sibthorp, Paisley & Gookin, 2003). After three rounds, the panel identified 21 risk-management strategies and 15 field hazards. Using these strategies and hazards, a survey was created and sent to OEP organizations. The survey provided a hazard and asked respondents to identify the primary risk-management strategies they used to address the hazard.

The 2003 survey results showed that regardless of OEP size field staff training, policies and procedures, field staff (instructor) judgment, supervision of participations and pre-course communication were the most frequently marked risk-management strategies. Perhaps more significantly, the results showed that larger organizations overall employed more risk-management strategies (Paisley, Sibthorp & Szolosi, 2003). Large organizations were defined as having more field days, more staff and larger budgets. The implication of this finding was that organizations should compare themselves to similar organizations rather than to the largest and most visible OEPs due to differences in available resources. In addition, the results showed that the size of the organization was related to the particular strategies they reported as being most important. As an example, large organizations employed internal and external safety reviews more often than small organizations, which, as an example, depended on pre-course communication more often than large organizations. This finding, again, likely points to resources as being the differentiating factor.

The purpose of the present study was twofold. First, to determine whether and how risk-management strategies have changed for OEPs over the last decade. Second, to identify contemporary concerns and issues.

Methods

The 2016 study began by reviewing the 21 risk-management strategies and 15 field-based hazards identified through a Delphi process in the original 2003 project (Szolosi et al., 2003). Based on expert feedback, minor changes were made to the wording of five field hazards in order to reduce bias: “Participant misbehavior” was changed to “Participant behavior;” “Staff incompetence” was changed to “Staff performance;” “Inappropriate staff to participant interaction/contact” was changed to “Staff to participant interaction/contact;” “Environmental” was changed to “Environment;” “Hygiene” was changed to “Inadequate Hygiene.” Two of the original

hazards were deleted from the survey because they were thought to be adequately captured through other, more encompassing, hazards. For example, “Competition with other institutions” was considered a subset of “Public Interactions.” One risk-management strategy was changed to reflect more common terminology: “Critical Incident Stress Debriefing” was changed to “Psychological Stress Discussion.” See Tables 1 and 2 for definitions of each risk-management strategy and hazard.

Contact was made with four organizations to which OEPs commonly belong: the Association for Experiential Education (AEE), the Association for Outdoor Recreation and Education (AORE), the Wilderness Education Association (WEA), and the Wilderness Risk Management Conference (WRMC). Each of these organizations distributed an invitation letter and link to the online survey to their members. The survey asked participants to rank risk-management strategies for each hazard.

For the primary analysis, the objective was to compare risk-management strategies by empirically generated groups of organizations. The groups were formed using cluster analysis, a statistical technique that groups organizations into like groups based on organizational descriptors such as number of field days, remoteness of operating area, and organizational mission. To determine which strategies are most used by each cluster, we tabulated the overall reliance of each strategy across the content area of the 13 hazards. That is, the specific hazards themselves are not of direct interest in this analysis. They represent context areas for study participants to consider how they manage risks. By collapsing across these areas, it is possible to understand how reliant each organization is on specific risk-management strategies. This organizational reliance is then averaged for each cluster (or group) above. This process gives us a profile of how each cluster, and the organizations as a whole, manage their risks.

In addition, for the secondary analysis, we tabulated concerns for the upcoming field season and risk-management strategies of focus for 2017. Risk-management strategies for each hazard are sorted in tables in Appendix A.

Results

Population

A convenience sample of 262 was used for analysis after removing incomplete surveys. Taking a subset of the descriptives and using cluster analysis, four “clusters” or groups with somewhat distinct profiles were created (see Table 3). Organizations that fit clearly into one cluster or another might find cluster-based comparisons more useful than comparing to the overall average.

Survey respondents reported their programs offer the following disciplines:

- 89% backpacking
- 71% climbing
- 70% paddling
- 59% winter sports
- 45% rafting
- 37% mountaineering
- 16% sailing

Other reported disciplines included cycling, trapping, caving, stand-up paddleboarding (SUP), surfing, high ropes, horse-packing, canyoneering, primitive skills, trail maintenance, dog sledding, scuba, and cultural immersion.

A graph of research strategies by frequency of use by cluster is presented in Figure 1.

In general, the most relied on strategies are:

- Field Staff Training

- Policies and Procedures
- Field Staff (Instructor) Judgment
- Supervision of Participants
- Field Staff Screening

The least relied on strategies are:

- External Safety Reviews (ongoing as part of, for example, accreditation)
- External Incident Reviews (after an incident)
- Psychological Stress Debriefings
- Venue Evaluation or Location Scouting
- Internal Review of Safety Management Protocol

The strategies that vary the most by cluster are:

Cluster 1, Camps and Campus Recreation use:

- Less Participant Screening
- Less Participant Training
- This group uses the fewest number of risk-management strategies overall

Cluster 2, Large OEPs (e.g., NOLS, Outward Bound) use:

- More Course Documentation
- More Course Debriefings
- More Internal Safety Reviews (on-going)
- More Internal Incident Reporting and Review (after an incident)
- More Emergency Action Plans
- This group uses the largest number of risk-management strategies overall

Cluster 3, Guides use:

- Less Field Staff Training
- More Field Staff Screening

Cluster 4, Therapeutic Programs use:

- More Mentoring and Apprenticeship
- Less Emergency Action Planning
- More Field Staff Supervision
- More External Incident Reviews
- More Psychological Stress Debriefings

Survey respondents reported that they are most concerned in the coming season with managing the following hazards:

1. Risk Inherent in the Program
2. Environment
3. Driving/Transportation
4. Lack of Participant Supervision
5. Staff Performance

Survey respondents reported that in the coming (2017) season they will rely most on the following risk-management strategies:

1. Field Staff Training
2. Policies and Procedures
3. Field Staff (Instructor) Judgment
4. Formal Wilderness Medicine Training Requirement of Staff
5. Pre-Course Communication

For more specific information on how each field hazard was most commonly managed, see Appendix A. As an example, OEP organizations relied most commonly on field staff (instructor) judgment to manage the environment whereas driving/transportation was most commonly managed by using policies and procedures but rarely managed by using a psychological stress debriefing. As one might expect, medical issues were most commonly managed by formal wilderness medical training, and poor instruction was managed by field staff training.

Discussion

Perhaps the most significant finding from this study was that OEPs are more alike than different in regards to how they employ risk-management strategies. Regardless of their organizational characteristics, the same top five risk-management strategies were reported in 2003 and 2016. The main differences that do exist between cluster types seem to be related to the organizational mission and/or the size of the organization. While there are some notable and significant differences, we obtained very little information from the survey to interpret why findings varied between clusters. Therefore, the explanations below are speculative.

Camps and campus recreation are more recreationally oriented, have less experienced staff, and use less participant screening. When considering a summer camp or campus recreation program, these findings might be attributed to the fact that the programs they offer are designed to reach a broad audience that is not necessarily skilled in any particular sport. Programs in this cluster can train staff who are hired with less experience, and they are similarly less concerned with screening participants because the programs are designed to be appropriate for the general population, regardless of experience.

Large OEPs use more course documentation, course debriefs, emergency action plans and internal safety reviews as well as internal incident reporting. This may stem from at least two different causes. The first, as previously mentioned, is that they have more resources in terms of finances and staff, and can afford to use these risk-management strategies. The increased documentation helps large OEPs ensure that they have systems in place to support courses in the field, and to be consistent with common practices for conducting adventure activities. Dissecting incidents through the use of these strategies helps OEPs meet their educational objectives, which often involve using risk while maintaining the health and well-being of students and staff. Secondly, for some organizations, the focus on documentation may also stem from a desire to be prepared in the event of a lawsuit. Finally, the data also show that large OEPs operate in more remote conditions than other cluster types. It is possible that they have a greater reliance on emergency action plans because staff cannot depend on being able to reach a base camp or field office, which has led to more developed and complex protocols than other organizational types.

Guiding companies hired more experienced employees and used less staff training. In comparison to other clusters, they operated in more remote sites, and their focus was on recreation. As one might imagine, a guiding company that takes participants backcountry skiing will hire employees who have obtained industry certifications and who have a long resume of experience as backcountry skiers because their staff need not only to be excellent skiers, but they must also be able to manage a group in backcountry terrain. Because their staff must come in with this degree of experience, staff training is more likely to be focused on the company's individual policies whereas a campus recreation program might be training staff on policies and procedures, but also focuses on developing technical proficiency that guiding employees already have.

Finally, therapeutic programs, logically enough, had therapeutic missions, longer staff training, more field days, a higher staff to student ratio, and a more selective enrollment process for participants. Their staff training, while longer in initial duration, also included more mentorship than other types of programs, which might be attributed to the need for staff to develop the ability to manage a variety of either physical or mental health conditions that the participants might have. In general, therapeutic programs screen their participants more closely because they need to ensure that they will be well served by the program, meaning that whatever needs the participants have can be adequately addressed in the field.

Limitations

One limitation of this study is that we know very little about the specific content addressed through the various risk-management strategies. Field staff training remains a top strategy employed by OEPs as do policies and procedures. Their ranking in the top five remains the same between the 2003 and 2016 surveys. However, the study does not explain *how* OEPs use field staff training nor does it capture how their specific policies may have changed. As an example, certain technologies have either become newly available (the iPhone did not exist until 2007) or more readily available (personal locator beacons are now owned by many weekend backpackers). OEPs are almost certainly responding to these changes by teaching instructors how they want such tools to be used, both through staff training and policies and procedures.

Similarly, when an organization looks at how it manages risk today when compared to 2003, it may see that it has dramatically changed, a finding that contrasts one of the main takeaways from this survey (that how OEPs manage risk has remained the same). It is important to realize, however, that the survey captures industry trends rather than change at the level of the individual organization. A particular company may have grown from taking 50 students out each summer a

decade ago to now taking out 1,000 students each summer. Consequently, it will almost certainly have modified its risk-management strategies. Those modifications are likely to have brought the organization more in line with the larger organizations with which it now shares more commonalities. In other words, when looking at the data obtained from the survey, organizations should compare themselves to similar organizations rather than simply assessing whether their risk-management strategies are different today than when the original study was completed.

Conclusion

The finding that the use of risk-management strategies has not dramatically changed over the last decade does not come as a tremendous surprise nor does the finding that regardless of organizational mission, OEPs are more alike than dissimilar in how they manage risk. However, the fact that this is so does not necessarily mean that it should be so. In other words, the results of this survey could be a useful starting place for OEPs to coalesce around the question of whether the ways we manage risk are the best ways to manage risk. How much of what we see being done today stems from it being the way it has always been done? It seems a worthwhile conversation to have even if its conclusion is, “Yes, we have found the best risk-management strategies.” As Dallat, Salmon, and Goode (2015) suggest, risk-management strategies have focused on the meeting point between subjective and objective hazards (the equipment, environment and participant) whereas it might be useful to look at the entire delivery system of an OEP from the permitting authorities on to the specifics of, for example, field staff training.

While beyond the scope of this study, there might also be utility in drilling down into the specifics of each risk-management strategy. What policies and procedures result in better risk-management? How can a staff training be structured so that newly hired employees have the tools they need to manage risk in the field? The details of each risk-management strategy are likely to

have changed between the 2003 and 2016 survey, and it is similarly likely that they vary by cluster type as well. Having access to that type of detailed information could be a way for organizations to better understand how they compare to their peers, and offer them insight into how they could change their risk-management strategies.

Ultimately, this survey offers a snapshot of risk-management, and a starting point for further conversations. Risk is an inherent part of OEPs, and is something many organizations see as central to their programming and the participant experience. How OEPs manage risk will always be a moving target. But, in order to home in on the ideal, the industry should continue to assess how it employs strategies to manage risk and continue to discuss about what changes would lead to improvements.

References

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- Szolosi, A., Sibthorp, J., Paisley, K., and Gookin, J. (2003). University of Utah/NOLS Risk Management Study. Tech. Rep. Retrieved from http://www.health.utah.edu/parks-recreation-tourism/docs/nols/UU_NOLS_RMstudy.pdf.

Tables

Table 1. Risk-Management Strategies and Definitions

Field-based risk-management strategies	Provided Examples & Definitions
1. Field Staff Screening	Verification of employee skills and certifications, medical screening of employees
2. Formal Wilderness Medical Training Requirement of Field Staff	Wilderness First Aid, Wilderness First Responder, or EMT/WEMT
3. Mentoring & Apprenticeship	A formal procedure for staff evaluation and promotion including working with more experienced field staff
4. Field Staff Training	A formal period of training conducted on a regular basis and attended by the majority of field staff for the purpose of developing more effective field staff
5. Field Staff (Instructor) Judgment	The practice of allowing field staff to make decisions based on personal expertise for a given situation
6. Supervision of Field Staff	Proximity of supervisory personnel to assist staff directly responsible for field operations
7. Participant Screening	Medical screening, making sure expectations are consistent with the program goals, and verifying participant skills match program requirements
8. Pre-Course Communication	Disclosure of program risks and participant expectations through marketing materials, pre-course forms and paperwork, and phone or other verbal communication
9. Participant Training	Structured training of the program participants so that they might operate more independently and/or safely in the course environment
10. Supervision of Participants	Proximity and ratios of field staff to participants, access to instructor assistance
11. Ratios of Field Staff to Participants	
12. Emergency Action Plan	A formal plan that includes evacuation, communication, first aid, reporting, and debriefing procedures for field based emergencies
13. Policies and Procedures	A formal document(s) that detail field staff responsibilities, equipment protocols, field outlines and checklists, and standard operating practices
14. Psychological Stress Debriefing	Trained personnel, or access to trained personnel, to handle post emergency debriefing with participants, families, and staff
15. Internal Incident Review Procedure	Formal procedure to review field incidents with input from participants, field staff, and administration
16. External Incident Review Procedure	Formal procedure to review field incidents with input from participants, field staff, administration, and an external party with specialized expertise
17. Internal Review of Safety Management Protocols	Formal and regular process of reviewing field-based safety management procedures
18. External Review of Safety Management Protocols	Formal and regular process of reviewing field-based safety management procedures including an external party with specialized expertise
19. Course Documentation	Formal reports completed at regular intervals with input from participants, field staff, and administration to address existing and potential program issues
20. Course Debriefings	Post course discourse between field staff and a member of the administrative team to evaluate possible hazards and changes for future courses
21. Venue Evaluation or Location Scouting	A systematic process of evaluating course locations, hazards, access, etc

Table 2. Field Based Hazards

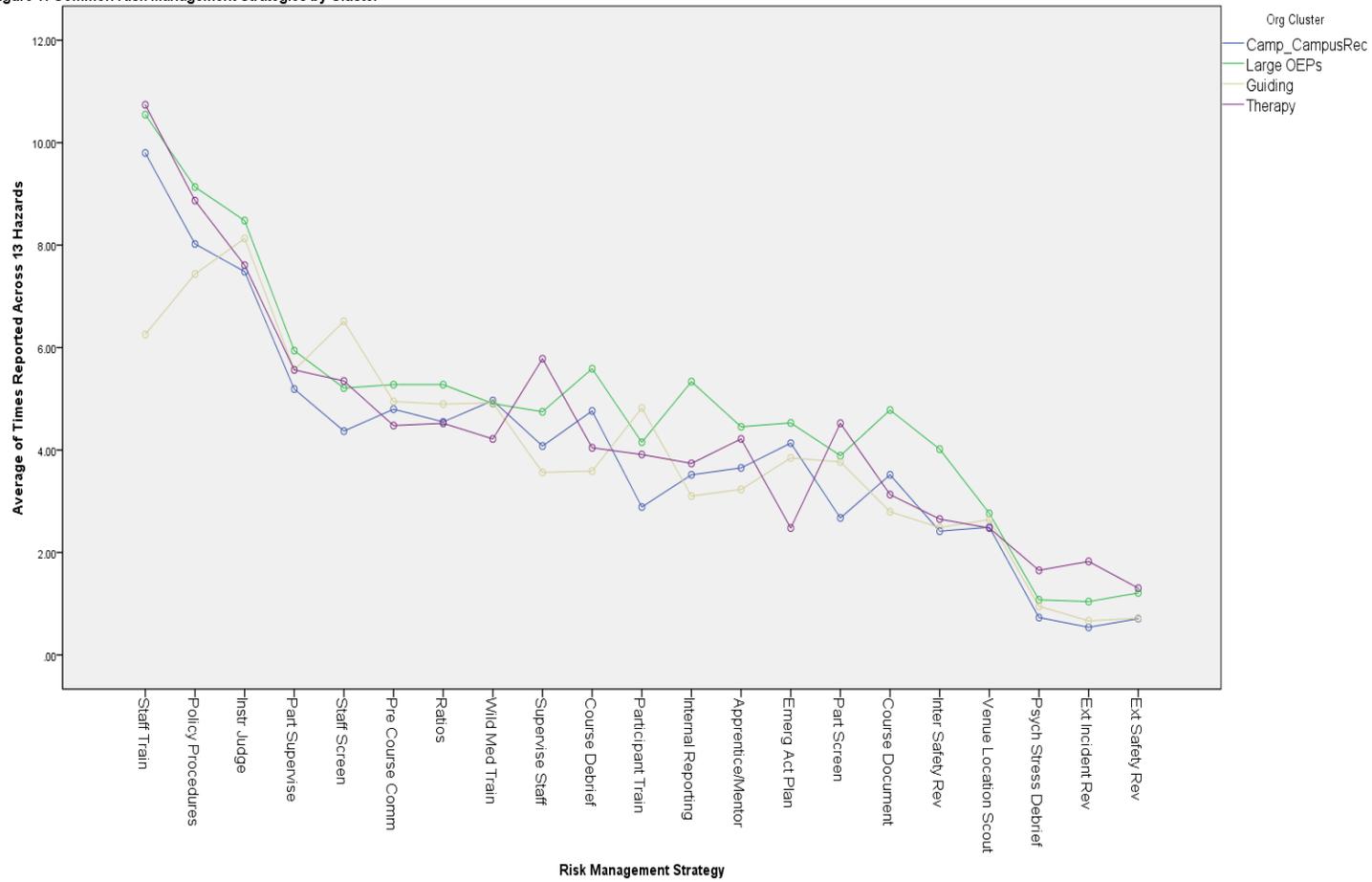
Specific field-based hazards	Provided Examples
1. Risk Inherent in the Program Activity Itself	Climbing, boating, ropes course, etc.
2. Environment	Weather, animals, terrain, facilities
3. Driving/Transportation	
4. Participant Behavior	Participant behavior impacting staff, group, or other participants
5. Staff Performance	Staff skill, experience, maturity, or judgment to effectively lead group
6. Medical Management	Diagnosis, medical response
7. Lack of Participant Supervision	Proportion of “free” or unsupervised time, participant solos, non-activity based incidents or accidents
8. Poor Instruction	
9. Equipment Malfunction	
10. Staff to Participant Interaction/Contact	
11. Public Interactions	Interactions with other institutions, outfitters, law enforcement or land management agencies, or local citizens
12. Poor Nutrition and Dehydration	
13. Inadequate Hygiene	

Table 3. Descriptive characterization of clusters

Cluster 1: Camps and Campus Recreation	Cluster 2: Large OEPs	Cluster 3: Guiding companies	Cluster 4: Therapeutic Programs
<ul style="list-style-type: none"> • 33% of sample • more recreational-oriented missions • less field staff experience • more open participant selection • operating areas are closer to assistance 	<ul style="list-style-type: none"> • 44% of the sample • longer duration staff trainings • greater years of operation, • more experienced field instructors, • operate in more remote terrain, and • report more field days (they are bigger) 	<ul style="list-style-type: none"> • 14.4% of the sample • shorter staff training, • more experienced field staff, • more recreational programming, • more remote field sites, and • more restrictive insurance 	<ul style="list-style-type: none"> • 8.5% of the sample • a more therapeutic-oriented mission • longer staff training • a larger number of field days • a more selective process for enrollment (participant selection) • a lower student to instructor ratio

Figure 1

Figure 1: Common Risk Management Strategies by Cluster



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Appendix A

Risk Inherent in the Activity	
Field Staff Training	83.5%
Policies and Procedures	82.3%
Supervision of Participants	77.5%
Formal Wilderness Medical Training	75.1%
Field Staff (Instructor) Judgment	75.1%
Ratios of Field Staff to Participants	74.5%
Emergency Action Plan	64.9%
Pre-Course Communication	57.7%
Field Staff Screening	56.8%
Course Debriefings	55.6%
Internal Incident Reporting and Review	51.4%
Venue Evaluation or Location Scouting	50.2%
Participant Screening	48.3%
Mentoring & Apprenticeship	43.8%
Course Documentation	42.9%
Participant Training	42.3%
Internal Review of Safety Management Protocol	39.9%
Supervision of Field Staff	37.5%
External Safety Review	14.1%
External Incident Review	12.3%
Psychological Stress Discussion	9.3%

Environment	
Field Staff (Instructor) Judgment	77.5%
Policies and Procedures	71.8%
Field Staff Training	71.2%
Supervision of Participants	62.2%
Formal Wilderness Medical Training	59.5%
Venue Evaluation or Location Scouting	58%
Emergency Action Plan	56.5%
Ratios of Field Staff to Participants	52.3%
Pre-Course Communication	51.4%
Course Debriefings	39.9%
Participant Training	37.8%
Course Documentation	36.3%
Field Staff Screening	35.4%
Internal Incident Reporting and Review	35.4%
Mentoring & Apprenticeship	30.3%
Internal Review of Safety Management Protocol	30%
Supervision of Field Staff	30%
Participant Screening	26.1%
External Safety Review	10.5%
External Incident Review	8.7%
Psychological Stress Discussion	7.2%

Driving Transportation	
Policies and Procedures	80.5%
Field Staff Training	71.5%
Field Staff Screening	57.4%
Field Staff (Instructor) Judgment	46.5%
Emergency Action Plan	39.6%
Internal Incident Reporting and Review	34.2%
Internal Review of Safety Management Protocol	33%
Supervision of Field Staff	25.2%
Pre-Course Communication	20.4%
Ratios of Field Staff to Participants	19.8%
Venue Evaluation or Location Scouting	17.7%
Course Documentation	17.1%
Supervision of Participants	14.1%
Course Debriefings	14.1%
Formal Wilderness Medical Training	13.8%
Mentoring & Apprenticeship	11.7%
External Safety Review	11.7%
External Incident Review	9.6%
Participant Training	6.9%
Participant Screening	5.4%
Psychological Stress Discussion	2.7%

Participant Behavior	
Supervision of Participants	78.4%
Field Staff (Instructor) Judgment	69.1%
Policies and Procedures	68.5%
Field Staff Training	68.2%
Ratios of Field Staff to Participants	68.2%
Participant Screening	64%
Pre-Course Communication	55.9%
Course Debriefings	49.2%
Participant Training	40.5%
Course Documentation	39%
Mentoring & Apprenticeship	35.1%
Internal Incident Reporting and Review	35.1%
Field Staff Screening	27.6%
Supervision of Field Staff	26.4%
Emergency Action Plan	26.4%
Formal Wilderness Medical Training	25.8%
Psychological Stress Discussion	24.9%
Internal Review of Safety Management Protocol	23.1%
Venue Evaluation or Location Scouting	10.5%
External Incident Review	7.2%
External Safety Review	5.4%

Staff Performance	
Field Staff Training	87.4%
Field Staff Screening	78.1%
Supervision of Field Staff	64.6%
Policies and Procedures	63.7%
Field Staff (Instructor) Judgment	62.2%
Mentoring & Apprenticeship	60.4%
Course Debriefings	56.5%
Formal Wilderness Medical Training	53.5%
Internal Incident Reporting and Review	39.9%
Pre-Course Communication	39.6%
Ratios of Field Staff to Participants	38.7%
Course Documentation	36.3%
Internal Review of Safety Management Protocol	25.2%
Emergency Action Plan	23.4%
Venue Evaluation or Location Scouting	14.7%
Psychological Stress Discussion	12.6%
Supervision of Participants	9.9%
External Safety Review	9%
Participant Screening	7.8%
Participant Training	7.8%
External Incident Review	6.6%

Medical Management	
Formal Wilderness Medical Training	90.1%
Field Staff Training	74.5%
Emergency Action Plan	68.8%
Policies and Procedures	64.9%
Field Staff (Instructor) Judgment	58.9%
Participant Screening	48.3%
Internal Incident Reporting and Review	46.8%
Pre-Course Communication	36.6%
Supervision of Participants	36.3%
Internal Review of Safety Management Protocol	35.7%
Field Staff Screening	34.8%
Ratios of Field Staff to Participants	34.8%
Course Documentation	33.9%
Course Debriefings	33.6%
Supervision of Field Staff	26.1%
Mentoring & Apprenticeship	18.6%
Venue Evaluation or Location Scouting	17.4%
Participant Training	16.8%
External Safety Review	12.6%
Psychological Stress Discussion	12%
External Incident Review	8.4%

Lack of Participant Supervision	
Policies and Procedures	64.6%
Field Staff (Instructor) Judgment	62.8%
Field Staff Training	56.8%
Supervision of Participants	48.3%
Ratios of Field Staff to Participants	48%
Participant Training	43.5%
Pre-Course Communication	43.2%
Participant Screening	38.1%
Course Debriefings	28.5%
Emergency Action Plan	27.6%
Internal Incident Reporting and Review	26.4%
Course Documentation	24.6%
Internal Review of Safety Management Protocol	21.9%
Venue Evaluation or Location Scouting	21.9%
Mentoring & Apprenticeship	21.3%
Field Staff Screening	20.7%
Supervision of Field Staff	19.2%
Formal Wilderness Medical Training	16.5%
Psychological Stress Discussion	6.3%
External Safety Review	6%
External Incident Review	4.5%

Poor Instruction	
Field Staff Training	78.4%
Supervision of Field Staff	59.5%
Mentoring & Apprenticeship	54.7%
Course Debriefings	53.8%
Field Staff Screening	53.2%
Policies and Procedures	53.2%
Field Staff (Instructor) Judgment	48.6%
Course Documentation	39.9%
Pre-Course Communication	37.2%
Internal Incident Reporting and Review	36.3%
Ratios of Field Staff to Participants	30.6%
Internal Review of Safety Management Protocol	22.2%
Formal Wilderness Medical Training	21.9%
Emergency Action Plan	16.5%
Supervision of Participants	12.9%
Participant Training	9.6%
Venue Evaluation or Location Scouting	9.3%
Participant Screening	8.7%
External Incident Review	8.4%
External Safety Review	5.4%
Psychological Stress Discussion	4.2%

Equipment Malfunction	
Field Staff Training	64.3%
Policies and Procedures	59.5%
Field Staff (Instructor) Judgment	58.6%
Internal Incident Reporting and Review	39.3%
Course Debriefings	37.5%
Course Documentation	33%
Internal Review of Safety Management Protocol	27.6%
Emergency Action Plan	25.5%
Participant Training	21.9%
Supervision of Field Staff	20.4%
Supervision of Participants	19.5%
Pre-Course Communication	19.5%
Mentoring & Apprenticeship	16.2%
Venue Evaluation or Location Scouting	12.3%
Field Staff Screening	11.7%
Ratios of Field Staff to Participants	10.8%
Formal Wilderness Medical Training	10.5%
External Safety Review	10.5%
External Incident Review	8.7%
Participant Screening	5.7%
Psychological Stress Discussion	2.1%

Staff to Participant Interaction	
Field Staff Training	82%
Policies and Procedures	76.6%
Field Staff Screening	66.1%
Field Staff (Instructor) Judgment	53.8%
Supervision of Field Staff	51.7%
Ratios of Field Staff to Participants	46.8%
Course Debriefings	39.9%
Supervision of Participants	38.7%
Internal Incident Reporting and Review	35.7%
Mentoring & Apprenticeship	35.4%
Pre-Course Communication	30.3%
Course Documentation	25.5%
Participant Screening	24%
Internal Review of Safety Management Protocol	22.8%
Participant Training	17.7%
Emergency Action Plan	13.8%
External Incident Review	9.9%
Psychological Stress Discussion	9.9%
Formal Wilderness Medical Training	8.4%
External Safety Review	7.8%
Venue Evaluation or Location Scouting	4.2%

Public Interactions	
Field Staff Training	71.5%
Field Staff (Instructor) Judgment	67.3%
Policies and Procedures	65.8%
Pre-Course Communication	34.8%
Supervision of Participants	33.6%
Course Debriefings	32.7%
Supervision of Field Staff	31.5%
Course Documentation	30.6%
Emergency Action Plan	27.3%
Internal Incident Reporting and Review	24.6%
Field Staff Screening	24.3%
Participant Training	24.3%
Venue Evaluation or Location Scouting	24%
Mentoring & Apprenticeship	21.9%
Internal Review of Safety Management Protocol	17.7%
Ratios of Field Staff to Participants	17.4%
Participant Screening	12.6%
Formal Wilderness Medical Training	9.6%
External Safety Review	6.6%
External Incident Review	6%
Psychological Stress Discussion	2.7%

Poor Nutrition and Dehydration	
Field Staff Training	78.4%
Supervision of Participants	70.6%
Field Staff (Instructor) Judgment	68.8%
Formal Wilderness Medical Training	58.9%
Participant Training	56.5%
Pre-Course Communication	49.2%
Policies and Procedures	48.3%
Participant Screening	38.1%
Course Debriefings	33%
Ratios of Field Staff to Participants	29.4%
Internal Incident Reporting and Review	27.9%
Supervision of Field Staff	27.3%
Course Documentation	24.3%
Mentoring & Apprenticeship	24.3%
Emergency Action Plan	24.3%
Field Staff Screening	22.2%
Internal Review of Safety Management Protocol	19.8%
Venue Evaluation or Location Scouting	9.6%
Psychological Stress Discussion	7.8%
External Safety Review	5.4%
External Incident Review	4.5%

Inadequate Hygiene	
Field Staff Training	75.4%
Supervision of Participants	64.9%
Participant Training	62.2%
Field Staff (Instructor) Judgment	59.2%
Policies and Procedures	48.3%
Formal Wilderness Medical Training	40.5%
Pre-Course Communication	37.8%
Course Debriefings	26.4%
Mentoring & Apprenticeship	26.4%
Ratios of Field Staff to Participants	24.9%
Supervision of Field Staff	24.9%
Participant Screening	22.5%
Course Documentation	20.7%
Internal Incident Reporting and Review	20.7%
Field Staff Screening	18.3%
Internal Review of Safety Management Protocol	12.9%
Emergency Action Plan	12.6%
Venue Evaluation or Location Scouting	8.7%
Psychological Stress Discussion	5.1%
External Incident Review	3.3%