

ADVENTURE SPORTS ACCIDENTOLOGY



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INTRODUCTION

Outdoor sports such as mountain climbing, trekking, rafting, and paragliding have grown in popularity in India in recent years. These activities provide a fascinating opportunity to discover the country's natural splendor, but they also carry inherent hazards. Accidents may happen to even the most seasoned adventurers, and they can be expensive in terms of human lives and economic effects.

For the last five years, the Ascent Descent Adventures Team has gathered and evaluated data on accidents in mountain climbing, hiking, rafting, and paragliding to address these hazards. The team reviewed the data and produced potential accident prevention measures by combining quantitative and qualitative approaches.

Overall, the data collected and evaluated by the Ascent Descent Adventures Team emphasizes the need of maintaining a focus on safety and disaster avoidance in outdoor activities. The team's results and recommendations, which combine quantitative and qualitative approaches, can assist to guarantee that adventurers can enjoy these activities while limiting the chances of accidents and incidents.

A. MOUNTAIN CLIMBING, TREKKING, RAFTING & PARAGLIDING – INDIA (2018 –2022)





Developing Potential
Accident Prevention
Strategies by
Integrating Quantitative
and Qualitative
Approaches

AN APPROACH



SOURCE OF DATA

A combination of quantitative and qualitative data was used for the research on adventure accidents in India. Integrating quantitative and qualitative data gives a thorough picture of the hazards and obstacles related to adventure activities in India. While quantitative data gives significant insights into broad trends and patterns, qualitative data provides a better knowledge of the human elements involved in accidents and incidents.

Quantitative Data

01

The quantitative data came from the Times of India publishing house, India's largest news newspaper. The statistics provide a statistical analysis of incidents and accidents that occurred in India while participating in adventure activities such as mountain climbing, trekking, rafting, and paragliding. The data includes the number of deaths, injuries, and rescues broken down by activity, state, and month.

Qualitative Data

02

In addition to quantitative data, the research incorporates qualitative data acquired from interviews with mountain rescuers in Himachal Pradesh, India. This qualitative data provides insights into the challenges and hazards associated with rescue operations, as well as the importance of preparation and safety protocols in preventing accidents and lowering risks associated with these acts.

4



ABOUT DATA

- We documented 148 adventure accident cases and studied 807 affected individuals in accidents.
- The database includes consistent data dating back to 2015, allowing for a comparison of accident patterns in each adventure sport over time.
- This analysis, which has a more detailed form in the thesis, is presently the most advanced study undertaken on the basis of Data, which had hitherto been largely unexplored from a statistical standpoint.



-
- The database is not comprehensive.
 - Accidents that are minor are not counted.
 - The data content is varied, non-standardized, and unsystematic, limiting the possibility for generalization.
 - The personal information database is based on the viewpoints and experiences of those who provide testimonials.

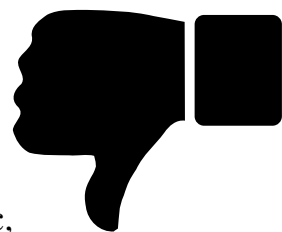




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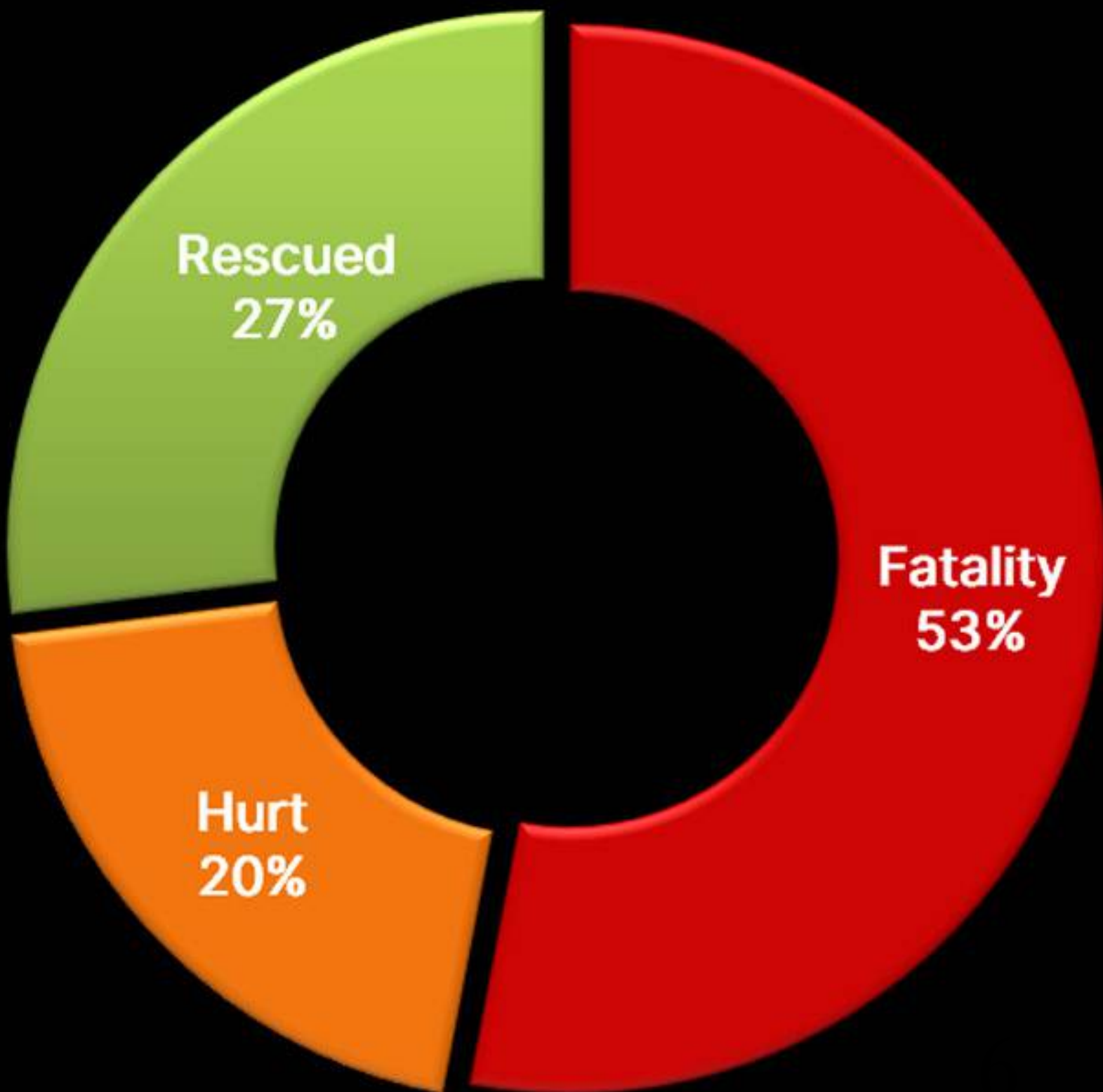
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A. MOUNTAIN CLIMBING, TREKKING, RAFTING & PARAGLIDING INDIA (2018 -2022)



A. MOUNTAIN CLIMBING, TREKKING, RAFTING & PARAGLIDING INDIA (2018 -2022)

Rescued	Injured	Fatality
27%	20%	53%

THE FOLLOWING ARE THE INTERPRETATIONS OF THE COMBINED DATA:

- Based on the data, the three activities - mountain climbing + trekking, rafting, and paragliding - appear to be linked with significant levels of risk, with deaths accounting for 53% of all outcomes.
- A considerable number of persons are wounded during these activities, accounting for 20% of all outcomes.
- Rescue efforts result in a lower number of persons being saved, with rescues accounting for 27% of all outcomes.

It should be noted that this data does not give a breakdown of the causes of deaths or injuries, nor does it provide any further context or details regarding the occurrences. As a result, drawing solid conclusions or making suggestions based only on this data is challenging.

I. MOUNTAIN CLIMBING & TREKKING – INCIDENTS INDIA (2018 –2022)

Rescued	Injured	Fatality
16%	23%	61%

DATA INTERPRETATION:

- In India, the majority of persons involved in mountain climbing and trekking accidents die, with fatalities accounting for 61% of all outcomes.
- Several persons are hurt in such occurrences, with injuries accounting for 23% of all outcomes.
- Fewer persons are saved, with rescues accounting for 16% of all outcomes.

It should be noted that this data does not give a breakdown of the causes of deaths or injuries, nor does it provide any further context or details regarding the occurrences. As a result, drawing solid conclusions or making suggestions based only on this data is challenging.

II. RAFTING – INCIDENTS INDIA (2018 –2022)

Rescued	Injured	Fatality
67%	9%	24%

DATA INTERPRETATION:

- Rafting accidents in India are usually less lethal than mountain climbing and trekking incidents, with deaths accounting for 24% of all outcomes.
- Injuries occur in a lower proportion of rafting occurrences than in mountain climbing and hiking incidents, accounting for 9% of all outcomes.
- The majority of those engaged in rafting events are saved, with 67% of all outcomes being rescues.

It should be noted that this data does not give a breakdown of the causes of deaths or injuries, nor does it provide any further context or details regarding the occurrences. As a result, drawing solid conclusions or making suggestions based only on this data is challenging.

III. PARAGLIDING-INCIDENTS INDIA (2018 -2022)

Rescued	Injured	Fatality
22%	20%	58%

DATA INTERPRETATION:

- In India, paragliding accidents are the most lethal of the three sports covered thus far, accounting for 58% of all outcomes.
- During paragliding mishaps, a large number of persons are hurt, with injuries accounting for 20% of all outcomes.
- In paragliding accidents, a lesser number of persons are saved, accounting for 22% of all outcomes.

It should be noted that this data does not give a breakdown of the causes of deaths or injuries, nor does it provide any further context or details regarding the occurrences. As a result, drawing solid conclusions or making suggestions based only on this data is challenging.

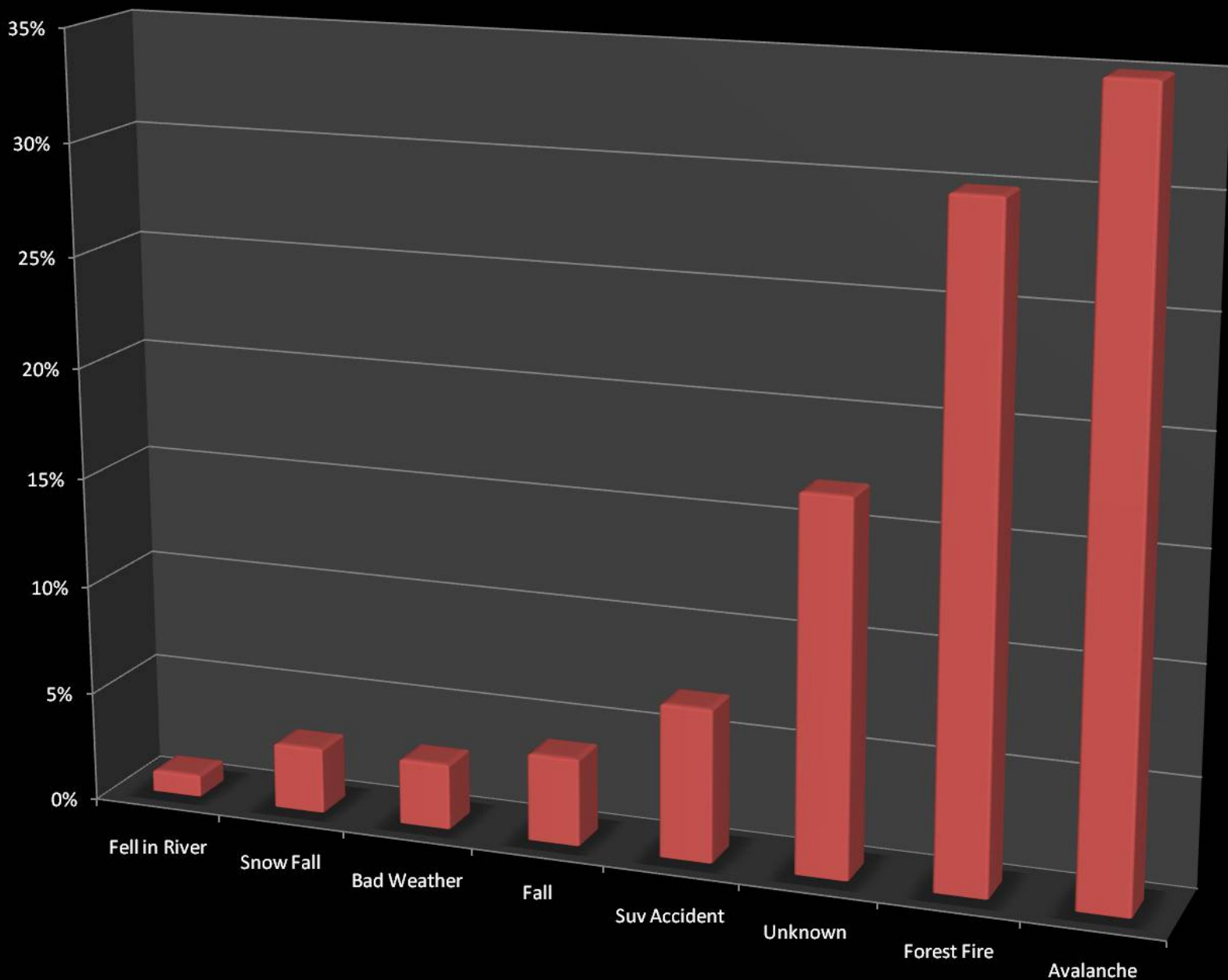
MOUNTAIN CLIMBING & TREKKING ACCIDENT DATA (2018 -2022)



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I. TYPES OF EVENTS OR ACCIDENTS (2018 -2022)

Fatal Incidents – Mountain Climbing/Trekking in India



I. TYPES OF EVENTS OR ACCIDENTS (2018 -2022)

What are the most common types of events or accidents that occur when mountain climbing and trekking?

Fell in River	Snow Fall	Bad Weather	Fall	Suv Accident	Unknown Events	Forest Fire	Avalanche
1%	3%	3%	4%	7%	17%	30%	35%

DATA INTERPRETATION:

It seems to be a list of different causes of accidents that occurred during mountain climbing and trekking in India, along with the percentage of deaths associated with each cause.

It appears to be a list of several causes of accidents that happened when mountain climbing and hiking in India, as well as the proportion of mortality related to each cause.

- Avalanche is the most common cause of fatality when mountain climbing and hiking in India, accounting for 35% of all fatalities.
- Forest fires are the second most common cause of mortality, accounting for 30% of all fatalities.
- Falls and severe weather are other major causes of mortality, accounting for 4% and 3% of all fatalities, respectively.
- Other causes, such as Vehicle accidents and unidentified accidents, account for the remaining fatalities.

It should be noted that the data supplied is restricted and lacks context and specifics regarding the instances. As a result, drawing clear conclusions or making decisions is challenging.

(2018 - 2022)

Mountain Climbing/ Trekking Incidents India



148 adventure accidents
807 individuals



61%
Fatalities

Locations

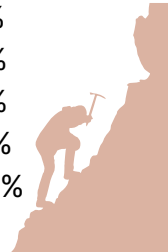
Uttarakhand 43%
Tamil Nadu 29%
Maharashtra 19%
Himachal Pradesh 8%
Rajasthan 1%

Type of Accidents

Avalanche 35%
Forest Fire 30%
Unknown Events 17%
SUVs Accident 7%
Fall 4%
Bad Weather 3%
Snowfall 3%
Fell in River 1%

Seasons

Dec to Jan 9%
Feb to Mar 2%
Apr to Jun 11%
Jul to Sep 26%
Oct to Nov 52%



23%
Hurt

Circumstance

Disoriented
AMS
Bad Weather
Falling

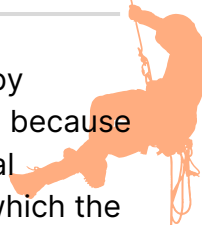
Reasons

Physical
Environmental
Technical



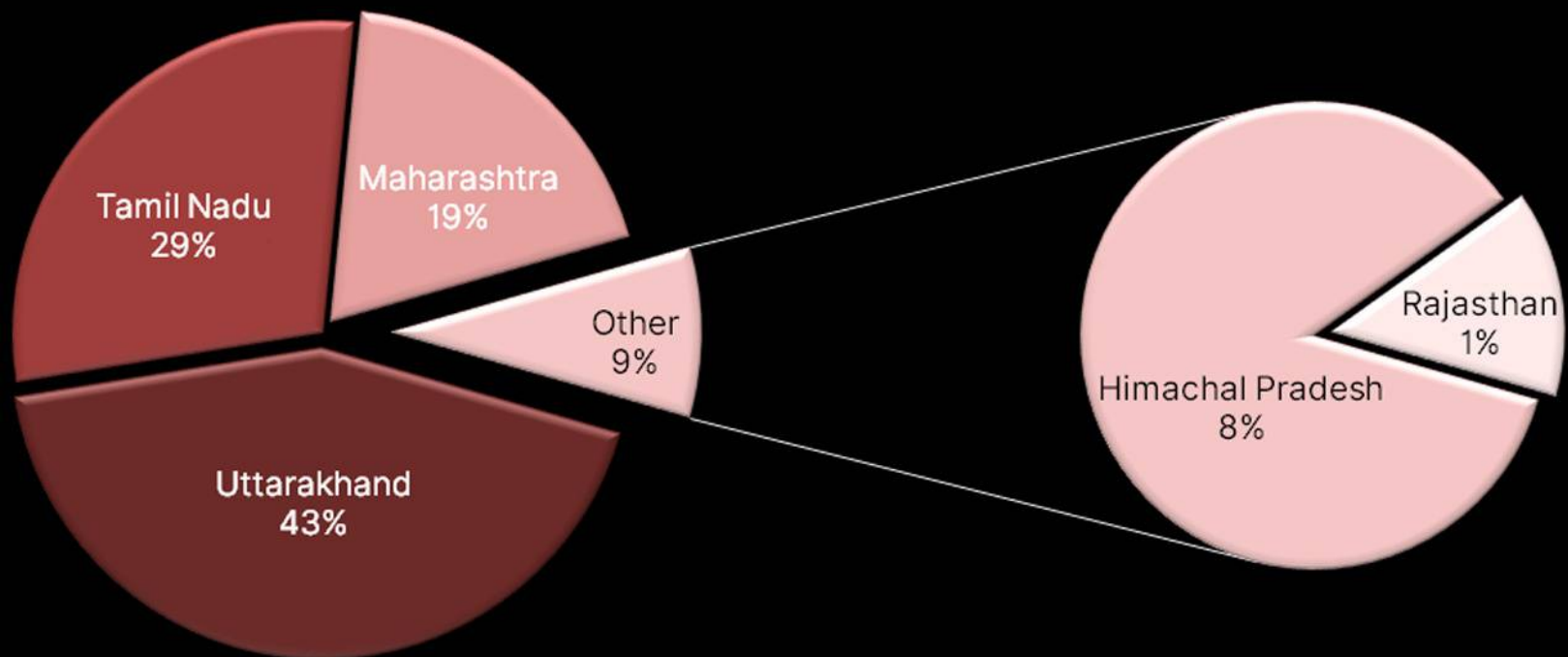
People who have been rescued by experts after becoming stranded because of medical, physical, or situational factors: crisis circumstances in which the trekker or climber was unable to finish their adventure without help, those caused by bad weather, AMS, falling, or being disoriented.

16%
Rescued



II. BROKEN DOWN BY STATE (2018 -2022)

Fatal Incident - Mountain Climbing & Trekking by Indian States



II. BROKEN DOWN BY STATE (2018 –2022)

Indian State wise accident data of person killed during mountain climbing and trekking accidents

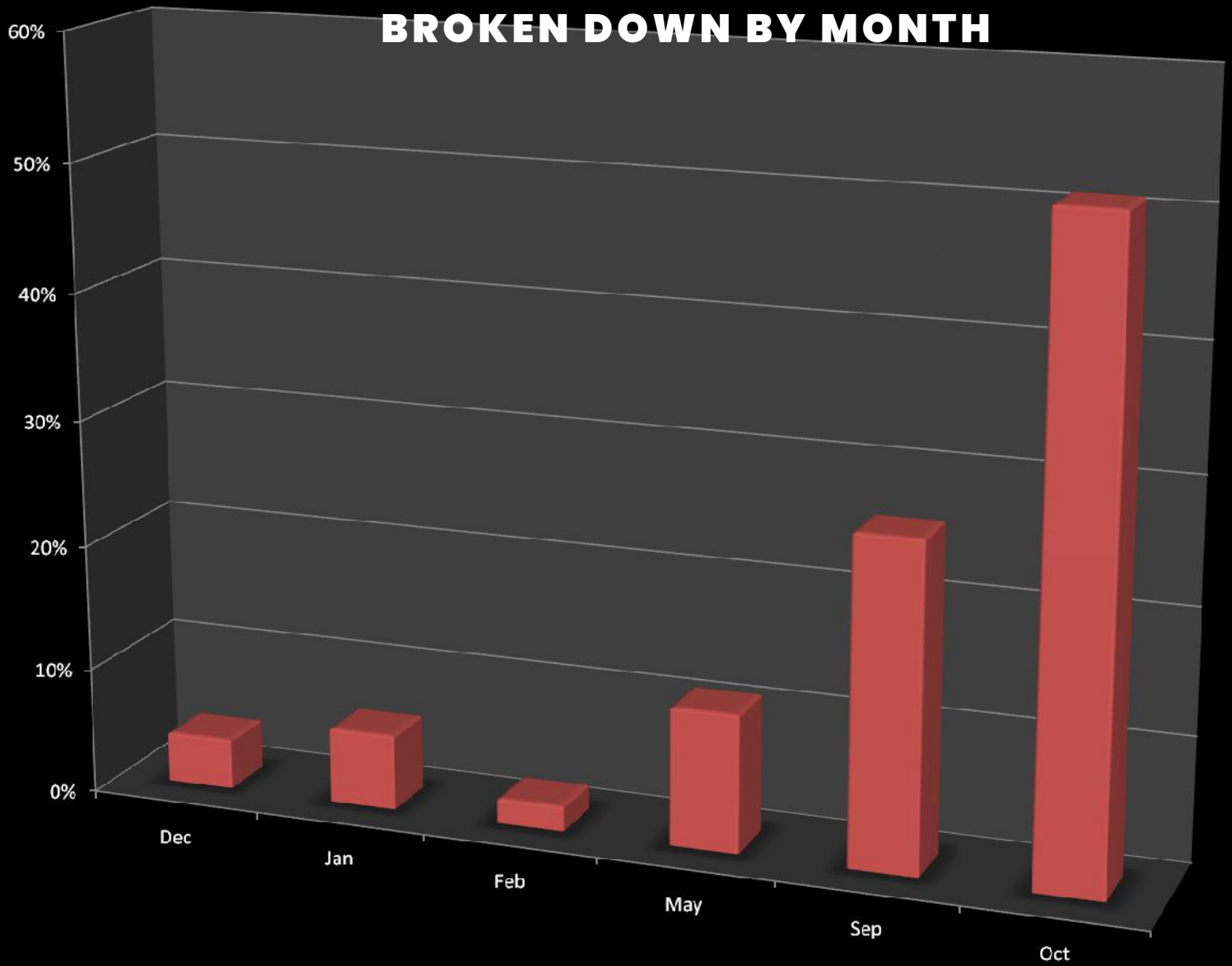
Rajasthan	Himachal Pradesh	Maharashtra	Tamil Nadu	Uttarakhand
1%	8%	19%	29%	43%

DATA INTERPRETATION:

- Uttarakhand has the greatest proportion of mountain climbing and trekking mortality in India, accounting for 43% of all fatalities.
- Tamil Nadu is the second-most-deadly state, accounting for 29% of all deaths.
- Maharashtra has the third-highest death rate, accounting for 19% of all fatalities.
- In comparison to other states, Himachal Pradesh has a low number of fatalities, accounting for only 8% of total deaths.
- Rajasthan has the lowest proportion of mountain climbing and trekking mortality in India, accounting for approximately 1% of total fatalities.

It should be noted that these numbers only indicate the proportion of deaths in each state and do not take into consideration other factors such as the number of persons who participate in mountain climbing and trekking activities in each state. As a result, drawing inferences or making suggestions based only on this data is challenging.

III. BROKEN DOWN BY MONTH



III. BROKEN DOWN BY MONTH

Indian month-wise accident data of persons killed during mountain climbing and trekking accidents

Dec	Jan	Feb	May	Sep	Oct
4%	6%	2%	11%	26%	51%

DATA INTERPRETATION:

- October accounts for 51% of all deaths in mountain climbing and hiking occurrences in India.
- September has the second-highest death rate, accounting for 26% of all fatalities.
- May has the third highest death rate, accounting for 11% of all deaths.
- In addition, January and December have a comparatively high rate of deaths, accounting for 6% and 4% of all deaths, respectively.
- 2% of all fatalities occur in February.

It should be noted that these figures only indicate the proportion of deaths in each month and do not take into consideration other factors such as weather patterns, the number of individuals who participate in mountain climbing and trekking activities in each month, and other environmental conditions. As a result, drawing solid conclusions or making suggestions based on this data alone is challenging.

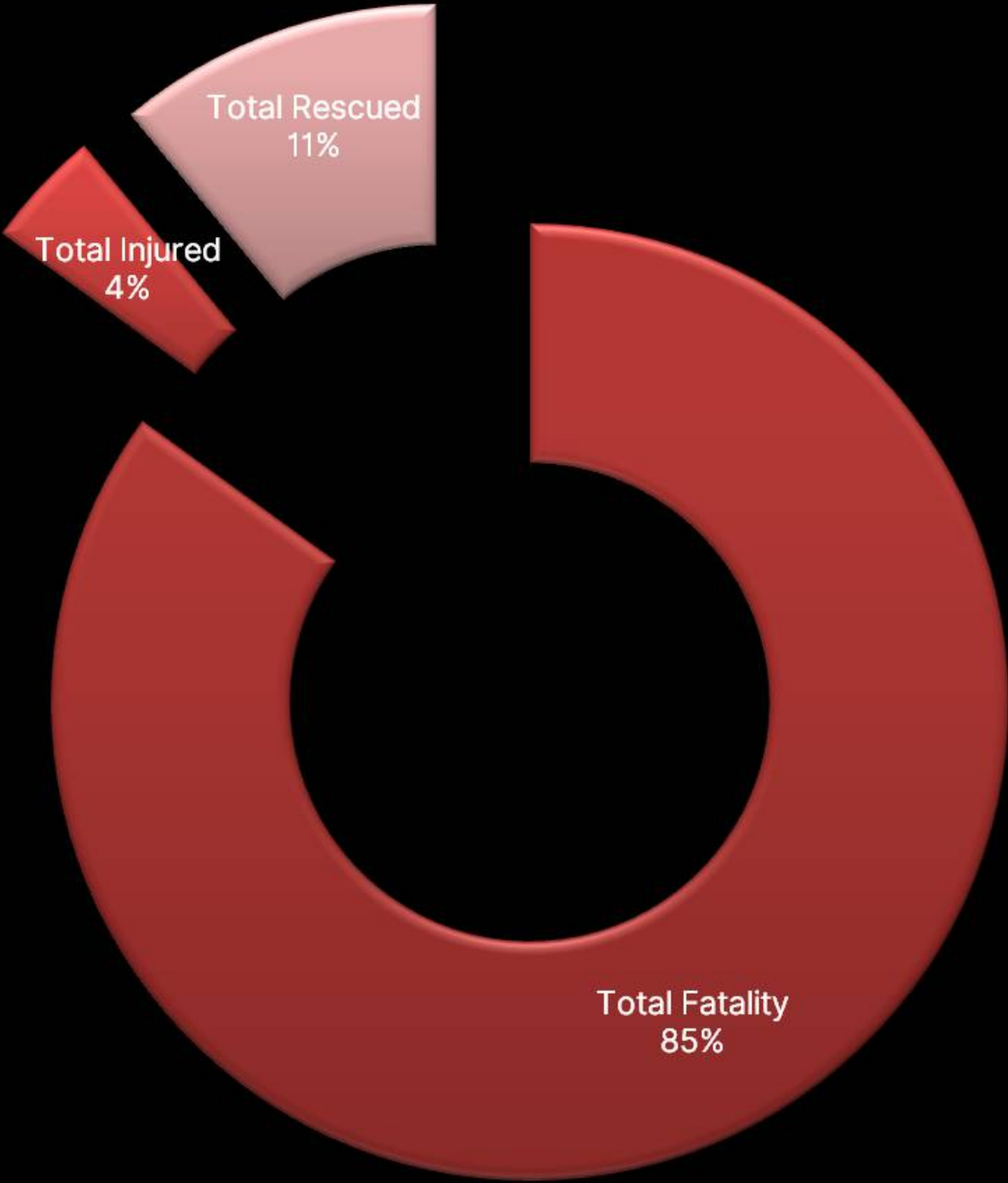
An aerial photograph of a vast, snow-covered mountain range. The terrain is rugged with numerous ridges and valleys. A prominent valley runs through the center of the image, showing a winding path or road. The snow is bright white, contrasting with the darker shadows of the mountain's crevices and the blueish-grey tones of the sky and distant peaks.

AVALANCHE INCIDENTS IN INDIA (2018 -2022)

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C. MOUNTAIN CLIMBING & TREKKING
AVALANCHE INCIDENTS IN INDIA (2018 -2022)

AVALANCHE ACCIDENTS



C. MOUNTAIN CLIMBING & TREKKING AVALANCHE INCIDENTS IN INDIA (2018 -2022)

Rescued	Injured	Fatality
11%	4%	85%

DATA INTERPRETATION:

- Avalanche incidents involving mountain climbing and trekking in India are extremely lethal, with deaths accounting for the great majority (85%) of all results.
- In such occurrences, a relatively tiny fraction of persons are hurt, with injuries accounting for only 4% of all outcomes.
- Rescues save a small percentage of lives, accounting for 11% of all outcomes.

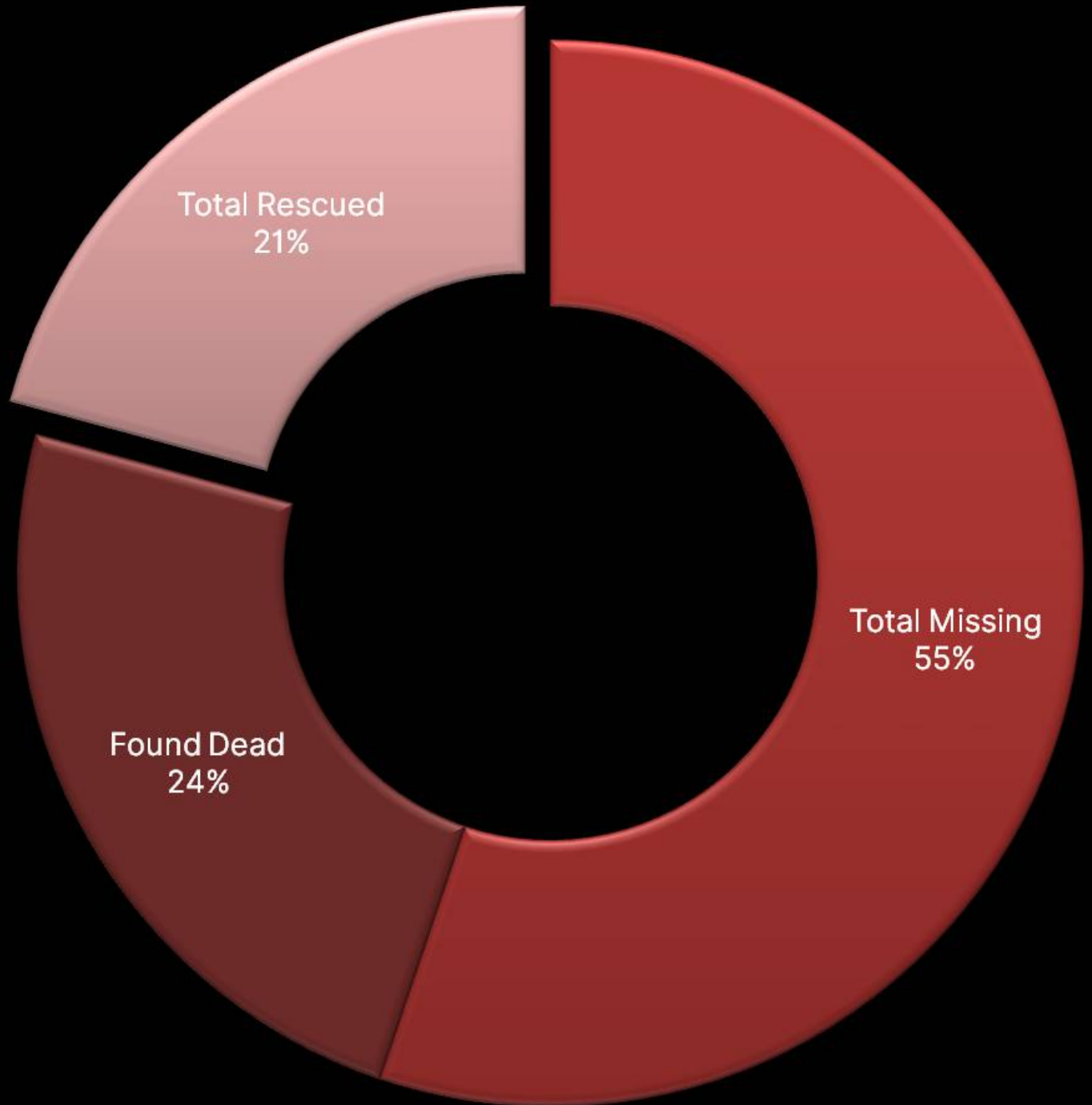
Avalanches may be extremely unexpected and fatal, thus mountain climbers and trekkers who participate in such activities should be highly experienced, fully prepared, and knowledgeable about the local terrain and weather conditions. This data emphasizes the importance of exercising caution and being prepared while engaging in such activities.

MISSING & FOUND INCIDENTS IN INDIA (2018 - 2022)



D. MOUNTAIN CLIMBING & TREKKING
MISSING INCIDENTS IN INDIA (2018 -2022)

MISSING INCIDENTS



D. MOUNTAIN CLIMBING & TREKKING MISSING INCIDENTS IN INDIA (2018 -2022)

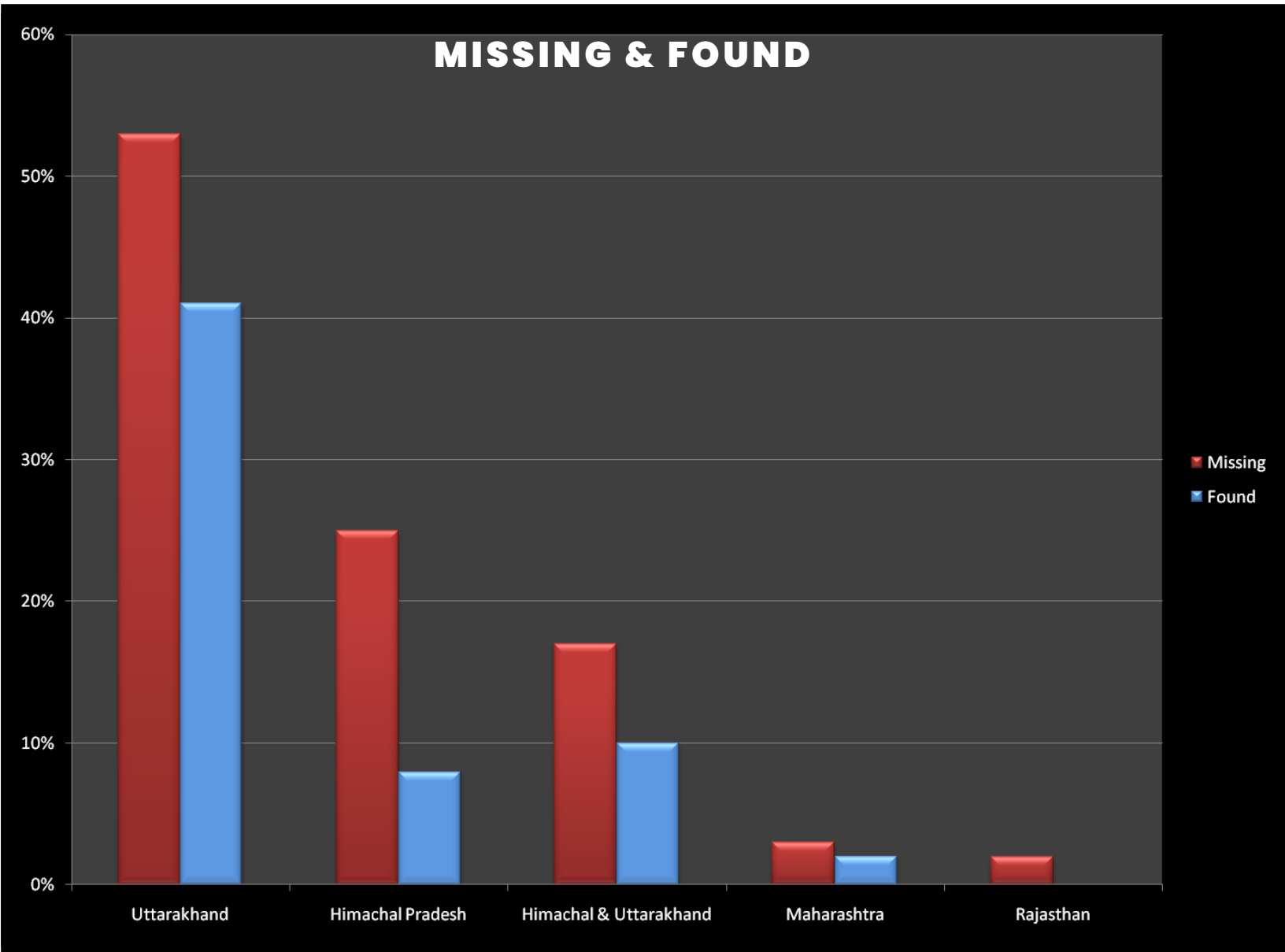
Missing	Found Dead	Rescued
55%	24%	21%

DATA INTERPRETATION:

- According to the data, a substantial number of individuals go missing in mountain climbing and trekking occurrences in India, with 55% of cases ending in persons going missing.
- Regrettably, a considerable number of missing persons are discovered deceased, with dead corpses recovered in 24% of cases.
- It is worth mentioning, however, that a large number of missing persons are retrieved, with 21% of instances resulting in the rescue of missing people.

It is crucial to note that this data does not give a breakdown of the incidents' causes or any more context or specifics regarding the occurrences. As a result, drawing solid conclusions or making suggestions based only on this data is challenging.

I. MOUNTAIN CLIMBING & TREKKING MISSING INCIDENTS IN INDIA (2018 -2022)



I. MOUNTAIN CLIMBING & TREKKING MISSING INCIDENTS STATE WISE

	Uttarakhand	Himachal Pradesh	Himachal & Uttarakhand Border	Maharashtra	Rajasthan
Missing	53%	25%	17%	3%	2%
Found	41%	8%	10%	2%	0%

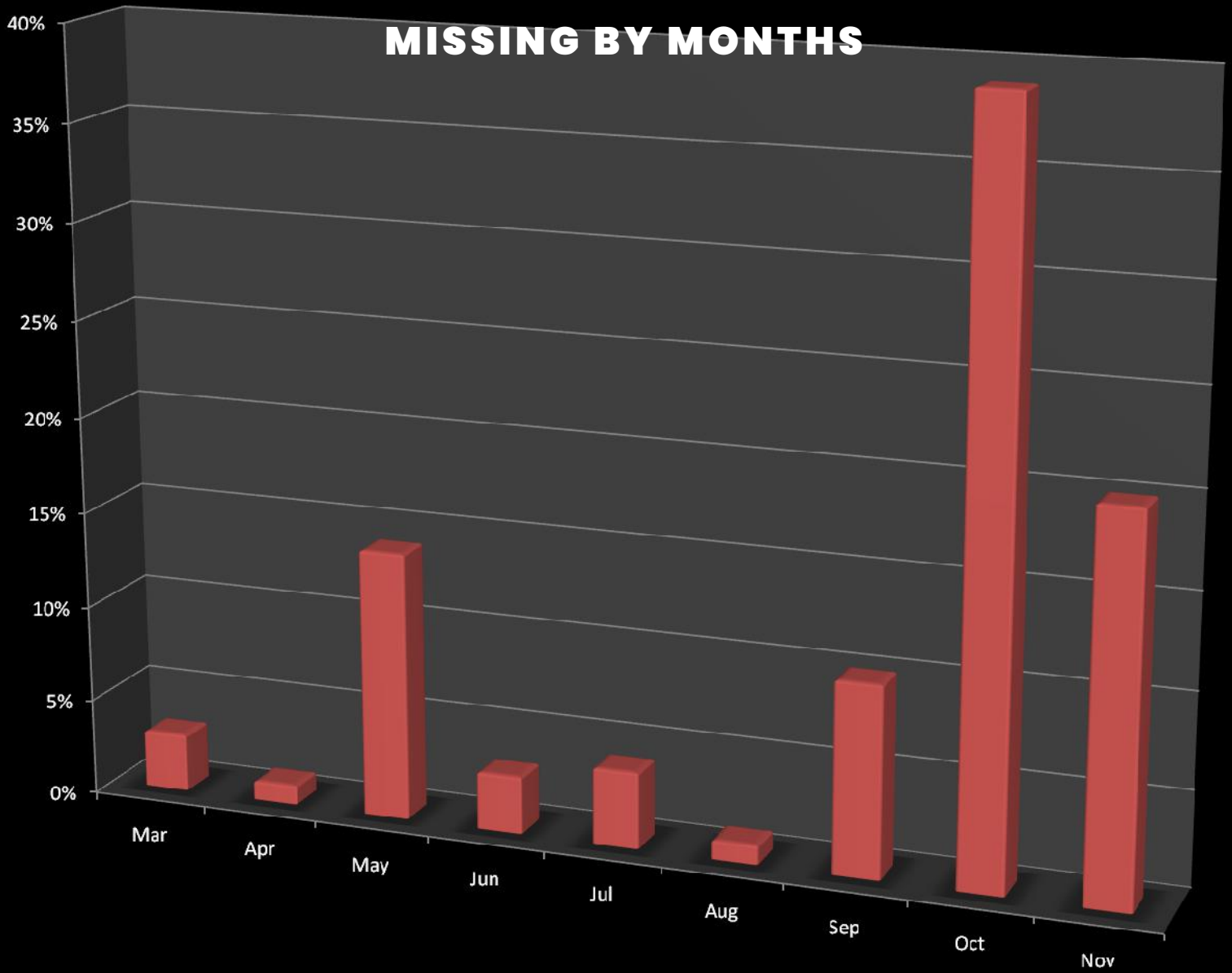
DATA INTERPRETATION:

The data suggests that there are a significant number of people who go missing during mountain climbing and trekking incidents in India.

- Uttarakhand had the most number of reported missing and found instances, followed by Himachal Pradesh, Maharashtra, and Rajasthan.
- Nonetheless, a large proportion of missing individuals are found, with Uttarakhand reporting the greatest number of people found.
- The combined statistics for the Himachal Pradesh-Uttarakhand border show that the number of missing individuals is fewer in Himachal Pradesh than in Uttarakhand alone, and a larger proportion of missing people are found.

It should be noted that this data does not give a breakdown of the reasons for the occurrences, nor does it provide any more context or specifics regarding the incidents. As a result, drawing solid conclusions or making suggestions based only on this data is challenging.

II. MOUNTAIN CLIMBING & TREKKING MISSING INCIDENTS IN INDIA (2018 -2022)



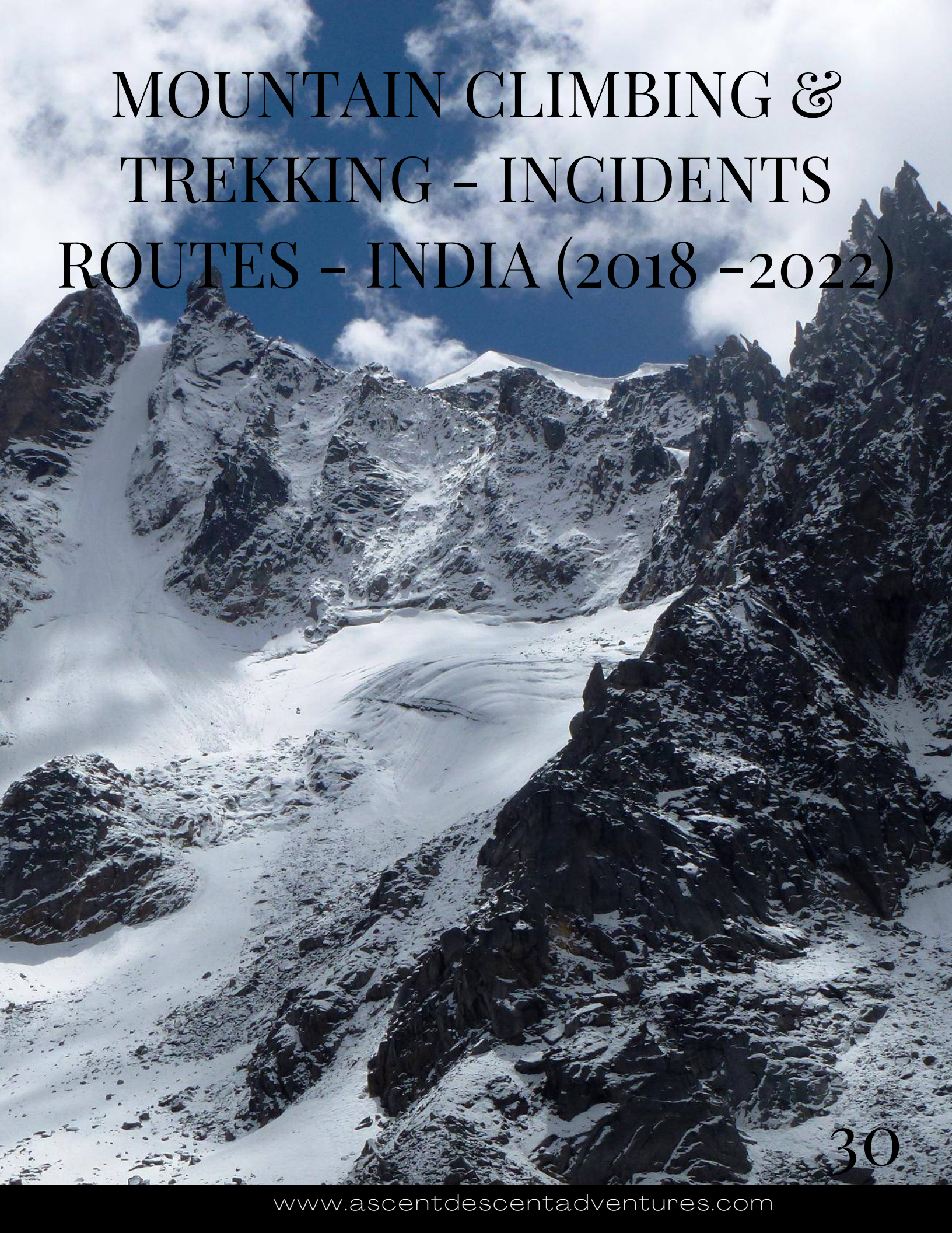
II. MISSING MONTH WISE

DATA INTERPRETATION:

Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
3%	1%	14%	3%	4%	1%	10%	42%	20%

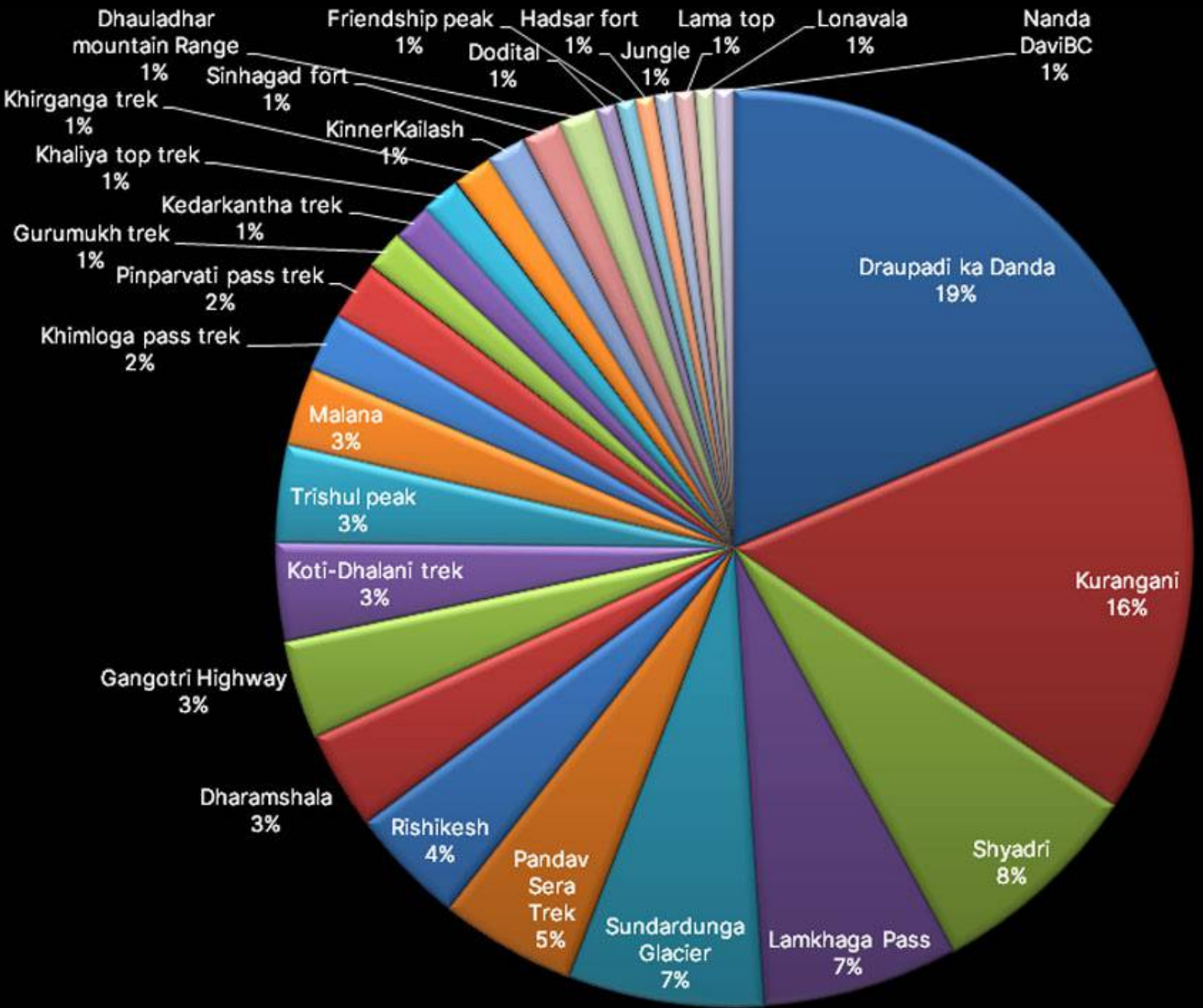
- The data suggest that October has the largest number of missing persons in mountain climbing and trekking occurrences in India, accounting for 42% of all missing instances.
- November has the greatest percentage of missing persons (20%), followed by May (15%).
- The other months have a smaller percentage of missing people, with August having the lowest at 1%.

It is crucial to note that this data does not give a breakdown of the incidents' causes or any more context or specifics regarding the occurrences. As a result, drawing solid conclusions or making suggestions based only on this data is challenging.



MOUNTAIN CLIMBING & TREKKING - INCIDENTS ROUTES - INDIA (2018 -2022)

E. MOUNTAIN CLIMBING & TREKKING – INCIDENTS ROUTES – INDIA (2018 –2022)



E. INCIDENTS ROUTES – INDIA (2018 –2022)

DATA INTERPRETATION:

Based on the data, the percentage of people who died in accidents on each route is as follows:

- Draupadi ka Danda 19%
- Kurangani 16%
- Shyadri 8%
- Lamkhaga Pass 7%
- Sundardunga Glacier 7%
- Pandav Sera Trek 5%
- Rishikesh 4%
- Dharamshala 3%
- Gangotri Highway 3%
- Koti-Dhalani trek 3%
- Trishul peak 3%
- Malana 3%
- Khimloga pass trek 2%
- Pin Parvati pass trek 2%
- Gurumukh trek 2%
- Kedarkantha trek 1%
- Khaliya top trek 1%
- Khirganga trek 1%
- Kinner Kailash 1%
- Sinhagad fort 1%
- Dhauladhar mountain Range 1%

E. INCIDENTS ROUTES – INDIA (2018 –2022)

DATA INTERPRETATION:

- Dodital 1%
- Friendship peak 1%
- Hadsar fort 1%
- Jungle 1%
- Lama top 1%
- Lonavala 1%
- Nanda Devi BC 1%

It is important to note that the data is specific to the routes mentioned and may not represent the overall risk associated with mountain climbing and trekking in India. Nonetheless, this information can be used by climbers and trekkers to make informed decisions and take necessary precautions while planning their trips. It can also be used by authorities and adventure companies to identify the routes with the highest risk and take steps to minimize the chances of accidents.

F. MOUNTAIN CLIMBING, TREKKING, RAFTING & PARAGLIDING INDIA (2018 -2022)



F. MOUNTAIN CLIMBING, TREKKING, RAFTING & PARAGLIDING INDIA (2018 -2022)

MAJOR ACCIDENT FACTORS:

The data suggest that mountain climbing and trekking have the highest percentage of deaths at 43%, followed closely by paragliding at 40%, and then rafting at 17%.

- The majority of paragliding accidents are due to crash landings, which could be caused by a variety of factors such as misjudging landing distances, wind conditions, or loss of control during flight. Additionally, equipment failure is another common cause of paragliding accidents.
- In contrast, mountain climbing and trekking deaths were attributed to various factors such as environmental factors (such as avalanches, landslides, and extreme weather conditions), human factors (such as lack of proper training, poor judgment, and decision-making), physical factors (such as altitude sickness and fatigue), and communication breakdown (such as not following proper communication protocols and lack of adequate communication equipment).
- Rafting deaths, on the other hand, were usually caused by capsized rafts, which can happen due to variables including strong currents, rapids, or river impediments.



TRIGGERING VARIABLES

1

ENVIRONMENTAL FACTORS:

Such as

- weather conditions
- avalanches
- rockfalls
- landslides



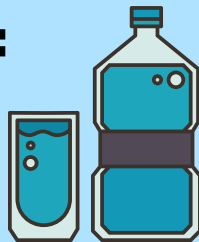
can trigger accidents during mountain climbing and trekking.

3

PHYSICAL FACTORS:

Such as

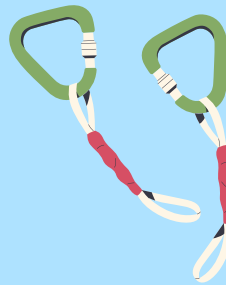
- exhaustion
- dehydration
- altitude sickness



can trigger accidents. These factors can affect a climber's judgement, coordination, and physical performance.

EQUIPMENT FAILURE:

2



Such as

- rope breaking
- carabiner malfunctioning, which can trigger accidents.

4

HUMAN FACTORS:

Such as

- fatigue
- stress
- fear
- emotional instability



can trigger accidents. The desire to reach the summit or complete a challenging trek can lead to taking unnecessary risks or making poor decisions.



COMMUNICATION BREAKDOWN:

5



Communication breakdown between climbers or trekkers can lead to accidents. Misunderstandings about the route or weather conditions, or failure to communicate clearly about potential dangers, can result in accidents.

F. PREVENTATIVE MEASURES – MOUNTAIN CLIMBING, TREKKING, RAFTING & PARAGLIDING

MEASURES FOR PREVENTION

The data emphasize the need for good training, equipment maintenance, and key safety measures in each of the three tasks.

- In the case of paragliding, it is critical to maintaining adequate equipment and landing skills.
- Adequate training, good planning, and communication are essential in mountain climbing and trekking/hiking.
- Risk assessment and safety procedures are required in rafting to avoid capsizing.

Additionally, the data suggest that different adventure sports may have varying risk factors and causes of accidents, which should be taken into consideration while developing accident prevention techniques. A comprehensive approach that integrates quantitative and qualitative approaches could be useful in identifying potential risks and developing appropriate preventive measures.

Overall, the data underscores the need for a responsible and safety-conscious approach to adventure sports to prevent accidents and ensure the well-being of participants.



RESEARCH TEAM



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Edited, structured, and compiled the data. Designed Graphics and photographs.

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OUR STUDY SHOWS OUR DESIRE TO
FURTHER OUR KNOWLEDGE IN THE
FIELD OF ADVENTURE SPORTS.

WE BELIEVE THAT A GREATER
UNDERSTANDING OF ACCIDENT
SITUATIONS AND RISK VARIABLES CAN
IMPROVE PREVENTATIVE ACTIVITIES
AND TRAINING COURSES.

SINCE 2010, ASCENT DESCENT
ADVENTURES HAS BEEN OFFERING
ASSISTANCE TO THE MOUNTAIN AND
CLIMBING COMMUNITIES.



Thank you!