Hiking Safety in Hong Kong

AIDM7360 Group Project
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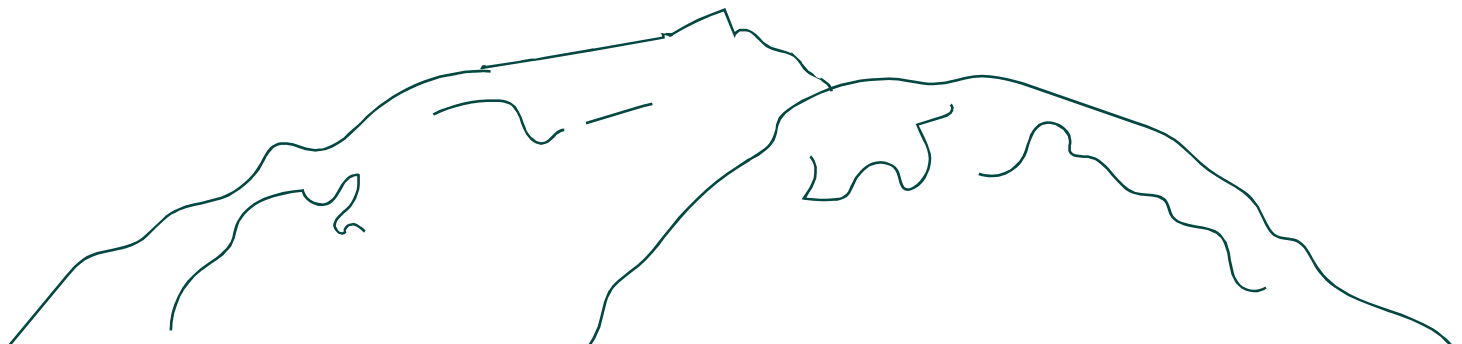
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Introduction

For Hongkongers, hiking is a way of life.

According to the findings of the "Territory-wide Physical Fitness Survey for the Community" released previously, hiking was among one of the most popular physical activities for members of the public.

However, some people lack safety awareness, resulting in frequent accidents. In recent years, the number of fatal accidents and injuries related to hiking has risen, and the hiking season is starting again.

Therefore, our project will conclude by proposing measures to enhance hiking safety and raise awareness among hikers.

And mention the importance of identifying high-risk areas and potential safety hazards along hiking trails.
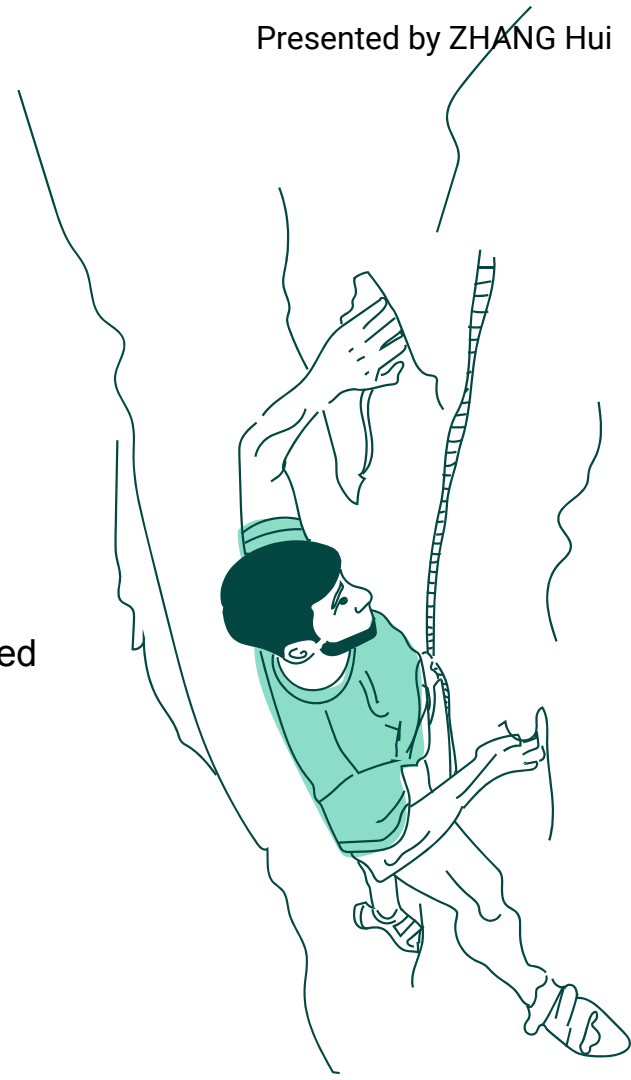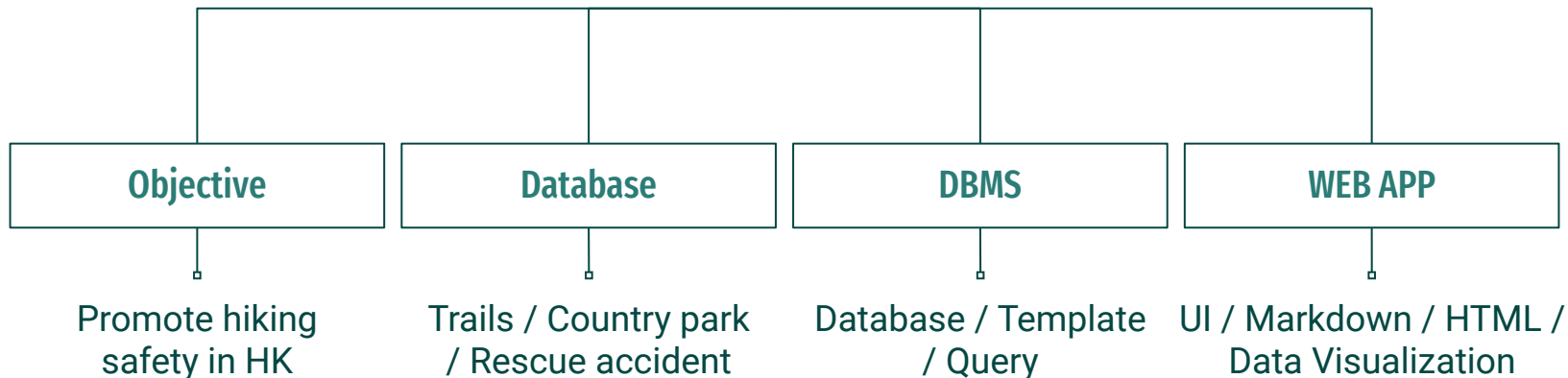
Methods

For our Automated Content Management System, we used trails, country parks, and 2020-2022 climbing rescue requests data as our dataset to provide the public with **a general report on hiking trails as well as potentially hazardous areas**.
- generate HTML templates with placeholders for displaying content
- use SQL queries to retrieve data, calculate key figures, and accident-related information

Process of analysis and implementation

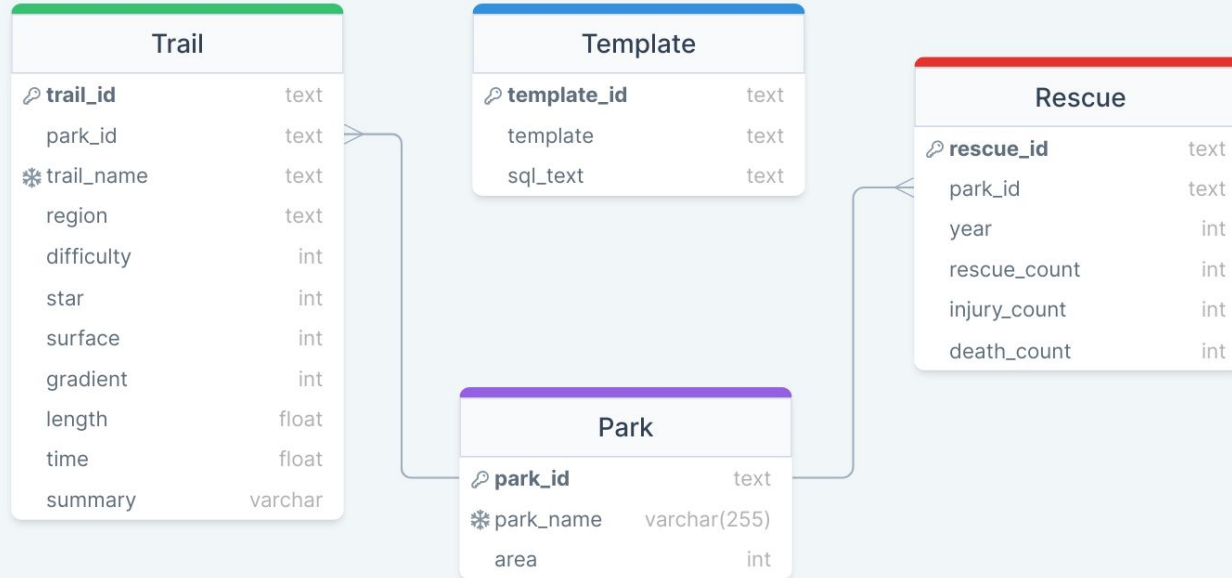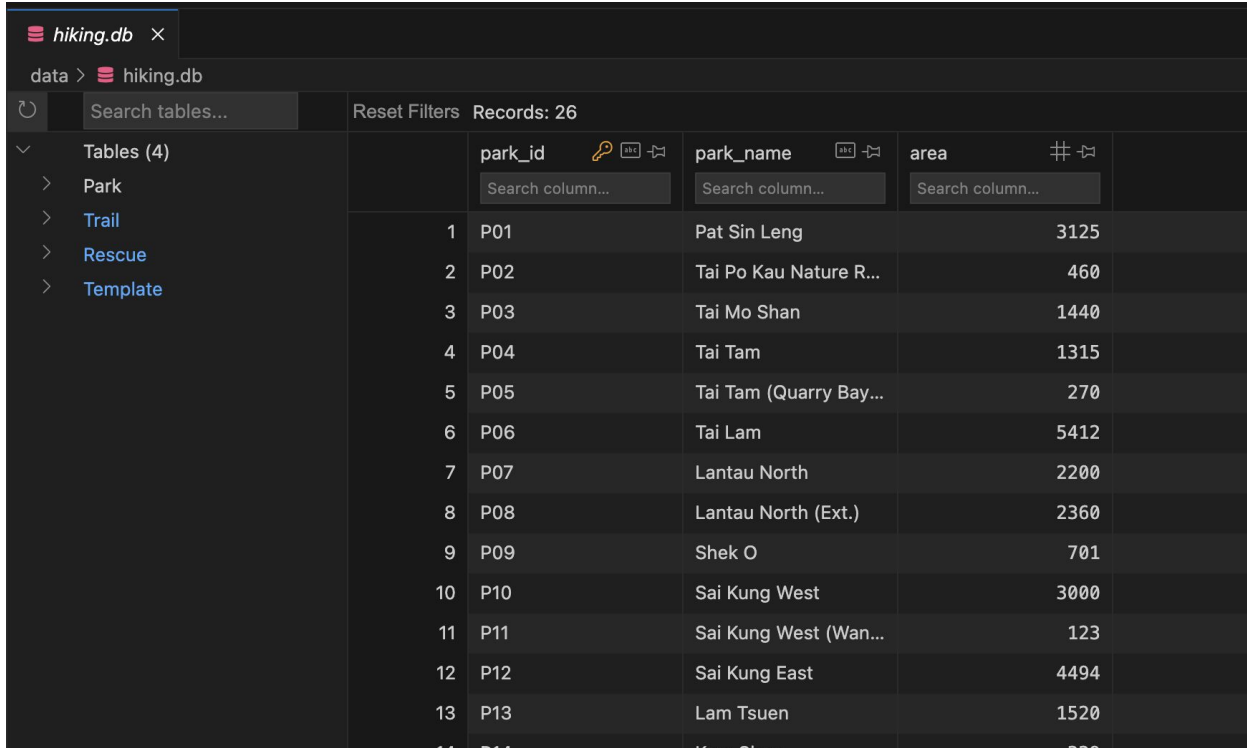| Objective	Database	DBMS	WEB APP
Promote hiking safety in HK	Trails / Country park / Rescue accident	Database / Template / Query	UI / Markdown / HTML / Data Visualization

Database - Schema

Table - Park
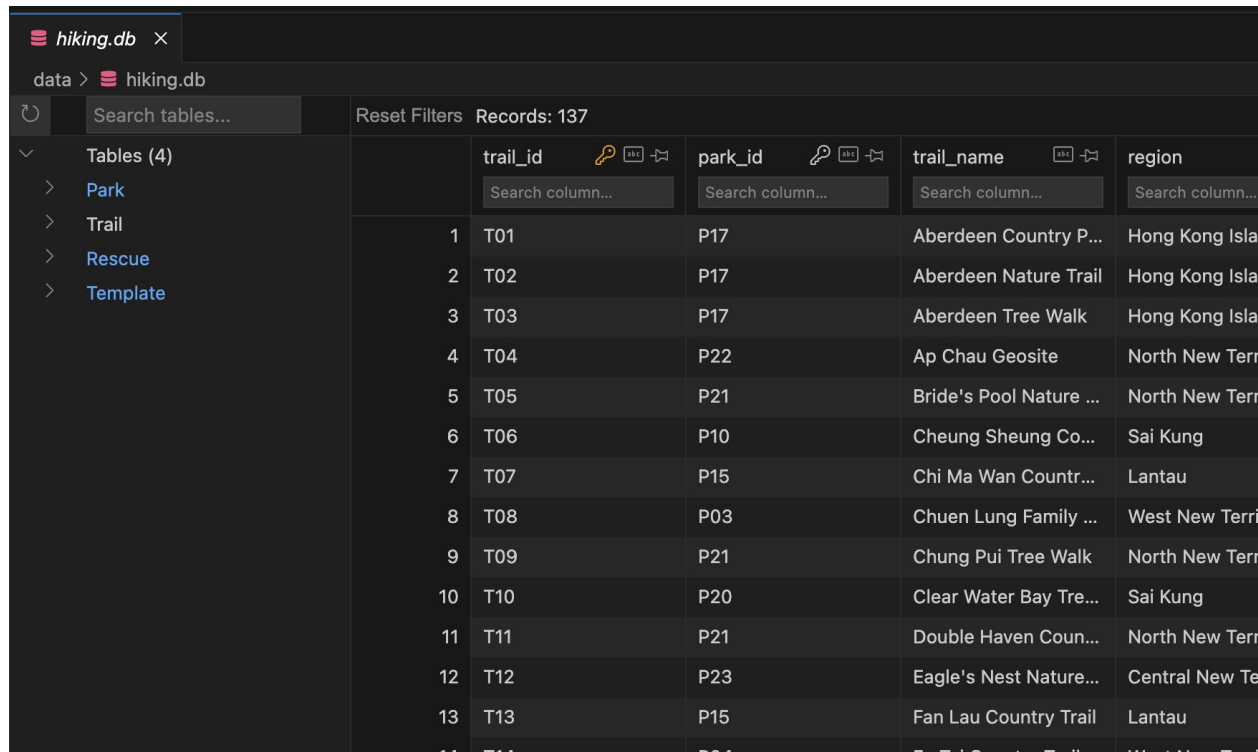
Source:
https://www.afcd.gov.hk/english/country/cou_lea/the_facts.html

Method:
Manual collection

Table - Trail

Source:
https://www.hiking.gov.hk/trail

Method:
Web Scraping
Data Processing

Table - Rescue

Table - Templates & Queries

Method:
- Manual collection
- Each template matches one SQL query

User Interface

Markdown
01

Report Format
Text / Cover / Table

HTML
02

Render Markdown to
HTML / Flask / Web App

Python
03

DBMS / SQL / PyQt5
Data Visualization

Introduction

For Hongkongers, hiking is a way of life. According to the findings of the "Territory-wide Physical Fitness Survey for the Community" released previously, hiking was among one of the most popular physical activities for members of the public.

User Interface

01

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HTML / Flask / Web App

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Python

DBMS / SQL / PyQt5
Data Visualization

Discover the Hiking Trails in Hong Kong

Hong Kong has a vivid hiking culture. From short nature trails to steep mountains, its Country Parks have something for everyone. These hikes cover Hong Kong Island, Kowloon, New Territories, Sai Kung, and the Outlying Islands.

Basic Information for Each Hiking Trail

Search for trails

Selecte a Trail: | Aberdeen Country Park (Aberdeen Upper Reservoir) Accessible Route ▾ | submit
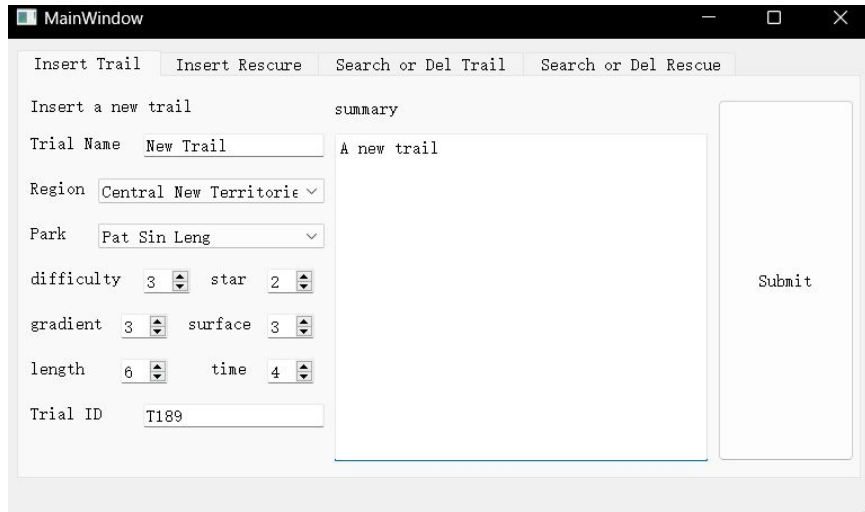
Waiting to be selected

Remarks: A 5-star system is adopted for assessing the difficulty levels of hiking routes. 5-star represents the most difficult one. The assessment of individual trail conditions, including the "length", "time required to finish the whole trip", "gradient" and "surface condition" is tabulated.

GUI - Insert & Query & Delete

Integrate the GUI with the underlying database management system to perform the required operations on the data.

- a user-friendly GUI for data management, allowing for easy record insertion, querying, and deletion.

Insert new trail

Insert new rescue record

GUI - Insert & Query & Delete

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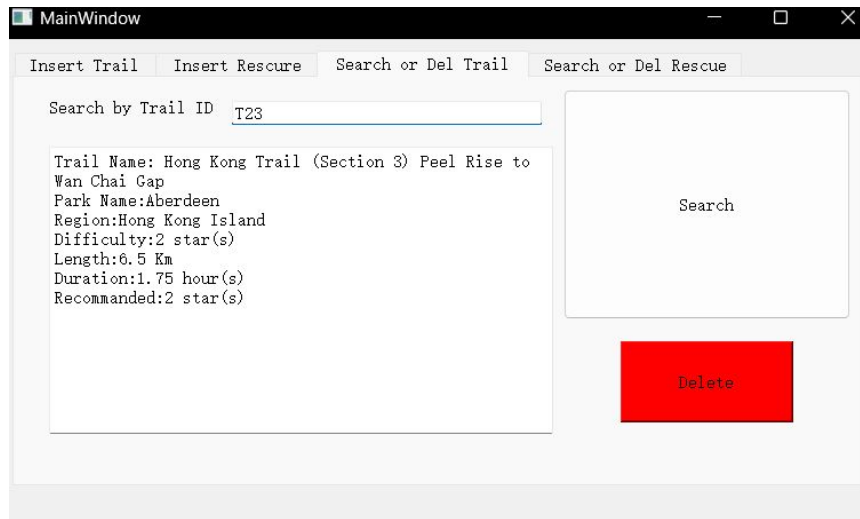
Search or delete trail
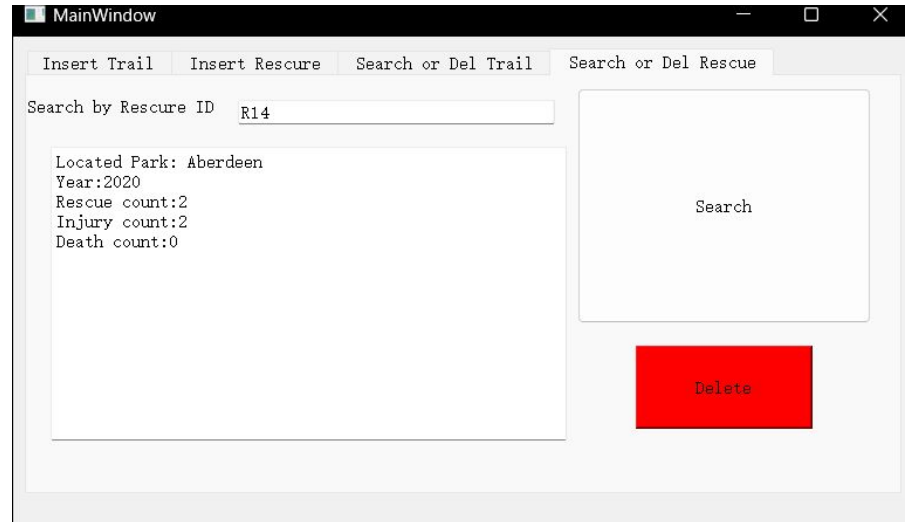
Search or delete record

Templates

50 %

Discover Hiking Trails 🚶

Emphasize the importance of understanding the characteristics of the trails

50 %

Promoting Hiking Safety 🚶

Highlight any significant trends or patterns observed in the rescue incidents

Example - TP02

Text

The longest country trail in Hong Kong is the {trail_name}, located in {park_name} Country Park. It spans {length}km and takes {time} hours to complete, but shorter routes are available.

SQL

SELECT t.trail_name, p.park_name, t.length, t.time
FROM Trail AS t
JOIN Park AS p ON t.park_id = p.park_id
WHERE t.length = (SELECT MAX(length) FROM Trail)

Templates - TP01

Basic Information for Each Hiking Trail

Selecte a Trail: [Aberdeen Country Park (Aberdeen Upper Reservoir) Accessible Route ▾] [submit]

The Aberdeen Country Park (Aberdeen Upper Reservoir) Accessible Route is located in Aberdeen Country Park, situated in Hong Kong Island The hiking trail has a difficulty level of 2 stars and spans a total length of 2.58 km. The estimated time for completing the trip is 2.0 hours. The gradient level and surface condition level of the trail are 1 and 2 respectively. Overall, the hiking experience is rated 4 star(s). Hikers can find detailed information on popular photo spots and the diverse natural scenery the trail offers in the following introduction: Located in the Aberdeen Country Park, the Aberdeen Reservoirs consist of the Upper Aberdeen Reservoir and the Lower Aberdeen Reservoir. Built in 1890, the latter was formerly a private reservoir owned by Tai Shing Paper Factory until 1929, when it was bought by the government to increase water supply to Aberdeen and Ap Lei Chau; the Upper Aberdeen Reservoir was later constructed upstream of it. In 1932, the renovation and reconstruction of the two reservoirs was completed. Visitors can get off the bus on Yue Kwong Road and go uphill along Aberdeen Reservoir Road. The dam of the Upper Reservoir, which lies in the woodlands, comes into view shortly after. To reach it, visitors can set out along the broad and well-shaded path, which offers the scenic beauty of the dam and passes through Aberdeen P.H.A.B. Site. The site is an ideal place for rest and refreshments as it has a light refreshment kiosk, an accessible barbecue site, and toilet. As soon as they arrive at the destination, they can explore the bridge, valve house and dam of the reservoir, which are all declared monuments.

Trail Difficulty Distribution

- Easy
- Moderate
- Demanding
- Difficult
- Very Difficult

35.8% — 30.7% — 22.6% — 10.2% — 0.73%
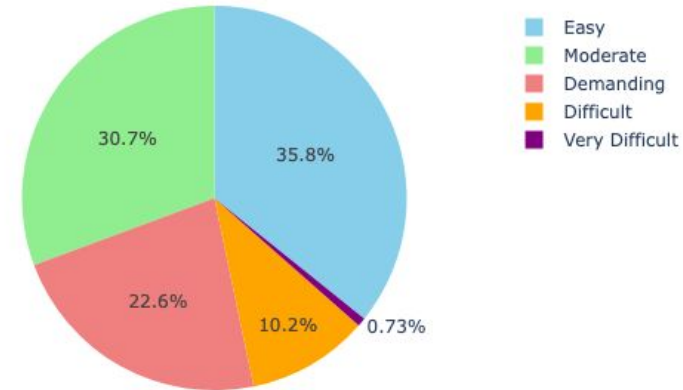
- Enables editors to quickly find basic information and summaries for each trail.
- Over 1/3 of the trails in our dataset have an overall difficulty level above demanding.

Templates - TP02&03

The Longest Hiking Trail in Hong Kong

The longest country trail in Hong Kong is the Chi Ma Wan Country Trail located in Lantau South Country Park. It spans 18.5 km and takes 8.0 hours to complete, but shorter routes are available.

The Big Four Trails

The MacLehose Trail (100.0 km), Wilson Trail (77.99999999999999 km), Lantau Trail (70.0 km) and Hong Kong Trail (50.0 km) are the four official hiking trails in Hong Kong with the highest degree of restoration, the longest route mileage, and the best overall scenery.

- Which is the longest hiking trail in Hong Kong?
- Which four trails attract the most hikers?
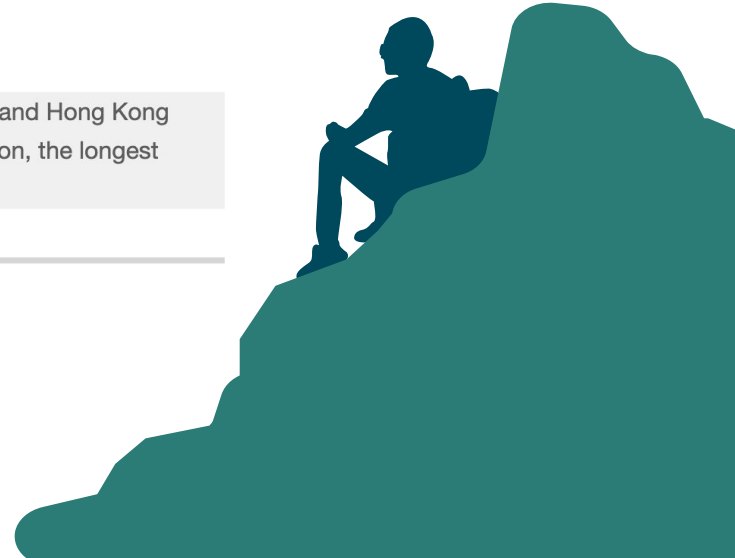
Templates - TP05

Distribution of Hiking Trails in Each Park

The Lantau South Country Park has the greatest number of hiking trails in the Country Park with a total of 23 meanwhile, the Sai Kung East Country Park has the second most number of hiking trails with 16

- Which country park has the most trails?

Trail Count by Park
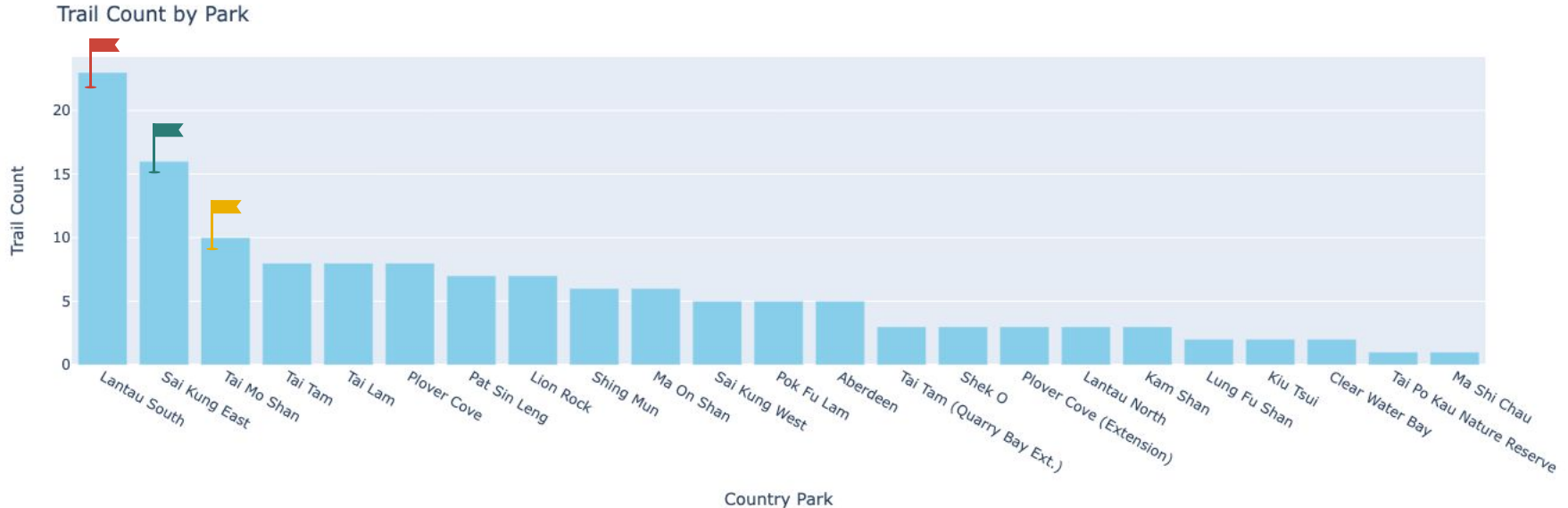
Templates - TP06

During the three-year epidemic period, Hong Kong people flocked to country parks for hiking, leading to a sharp increase in the number of rescue incidents.

Year	Number of Rescue Requests Received	Increase from 2020
2020	328	0
2021	588	79%
2022	600	82%

Overview of the Rescue Accidents in Country Parks

Over the past three years, the FSD has responded to 1516 rescue incidents related to hiking and climbing in country parks. These cases have recorded 736 injuries and 20 deaths in total. In 2020, the FSD responded to 328 incidents, while in 2022 the figure increased to 600 . This represents a 82.92682926829268 % increase.

- Rescue, injury, and death statistics
- The growth rate of rescue requests over the past three years

1500+
Of total rescue requests

736
Of total injuries

20
Of total deaths

82%
Of increase from 2020 to 2022

Templates - TP07

Country Parks with the Highest Number of Rescue Requests

The Ma On Shan Country Park received the highest number of rescue requests involving mountain climbing, with 265 cases. The number of rescue accidents was also higher in the Sai Kung East Country Park with 263 cases and the Lantau South Country Park with 196 cases.

Finding: the number of incidents in three country parks, namely **Ma On Shan, Sai Kung East and Lantau South**, is obviously prominent and much higher than that in other country parks.

In addition, Pat Sin Leng, Sai Kung West, Plover Cove, Tai Lam and Lion Rock country parks also have a high number of climbing rescue accidents, with the number of such accidents ranging **from 50 to 100**.

Top 10 Country Parks by Mountain Rescue Requests in the Past Three Years
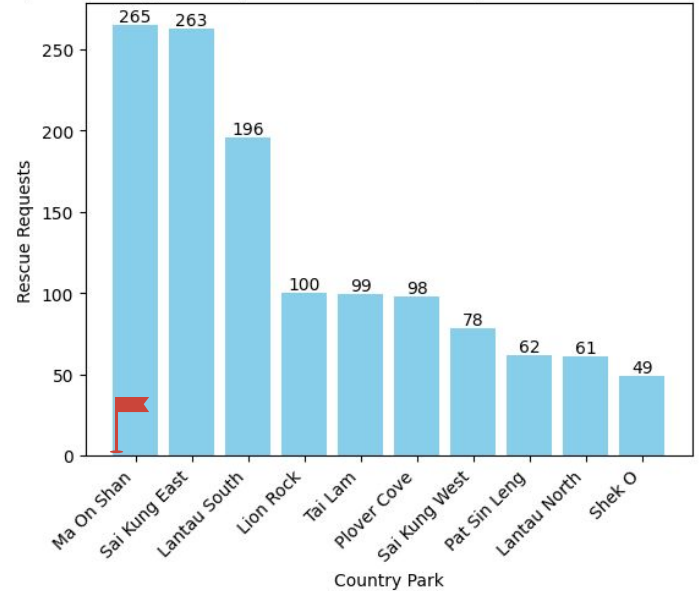
Templates - TP08

Country Parks with the Highest Number of Injuries

Country Park	Injury Count
Ma On Shan	110
Lantau South	107
Sai Kung East	106
Lion Rock	55
Plover Cove	53
Tai Lam	51
Shek O	32
Sai Kung West	31
Clear Water Bay	28
Pat Sin Leng	26

Country Parks with the Highest Number of Fatalities

Country Park	Fatality Count
Sai Kung East	5
Lantau South	4
Pat Sin Leng	3
Sai Kung West	2
Lion Rock	2
Tai Tam	1
Shek O	1
Ma On Shan	1
Clear Water Bay	1
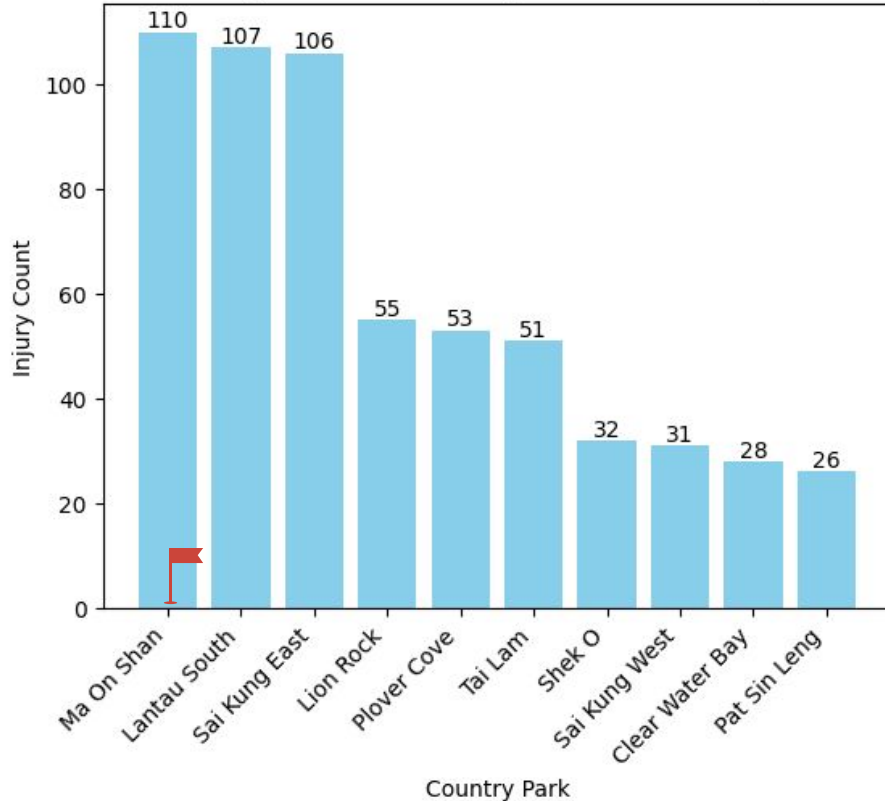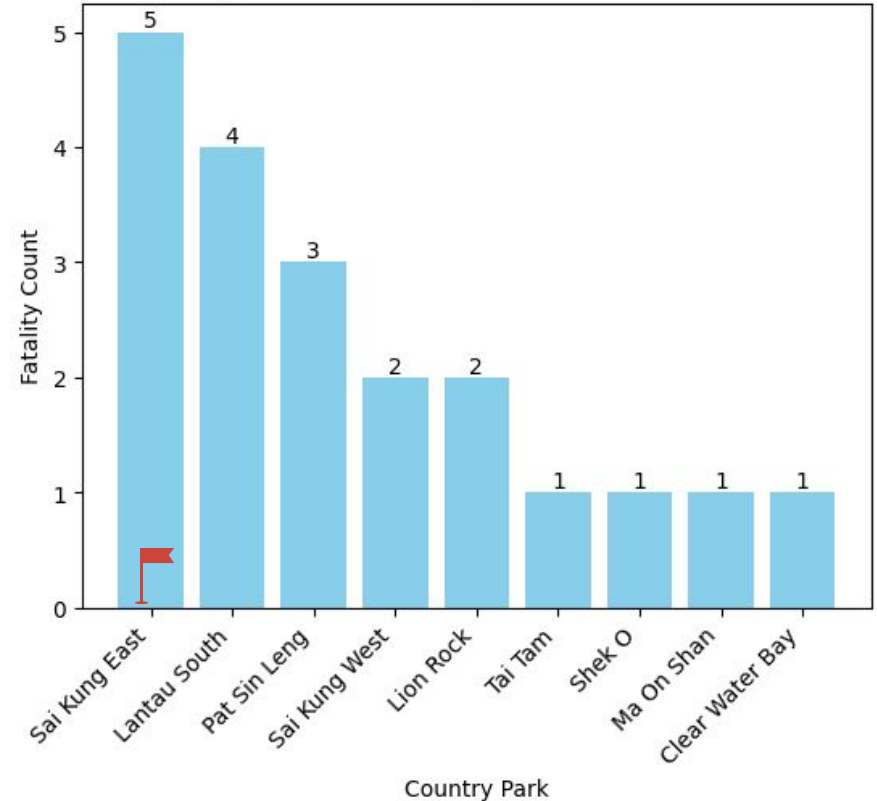
Templates - TP08

Country Parks with Highest Number of Injuries and Fatalities

The Ma On Shan Country Park had the highest number of injuries in the last 3 years with 110 people injured. The Sai Kung East Country Park had the highest number of fatalities in the last 3 years in rescue accidents, with 5 people losing their lives in the incident.

Finding:
- Statistics show that Ma On Shan Country Park is the black spot of accidents.
- Sai Kung East has the highest number of deaths, with a total of 5 people losing their lives.
- Lantau South also has a high number of accidents, with 107 injuries and 4 deaths.

Templates - TP09

Country Parks with the Highest Increase in Accidents in the Past Three Years

Comparing the figures for 2020 and 2022, the Sai Kung East Country Park experienced the highest increase of rescue accidents, increase 63 cases. And the Lantau South Country Park increases 56 cases.

Finding:
- The largest increase in rescue accidents was recorded in Sai Kung East Country Park and Lantau South Country Park, indicating that the safety hazards in these areas are on the increase.
- It is interesting to point out that we noticed that Lantau South and Sai Kung East are the two country parks with the most trails. From another angle, it means that because of the variety of trails, there are more people going there for hiking, and the chance of accidents may also be higher.

Conclusion

The danger level of country parks is highly related to the difficulty and number of routes.
The number of hiking rescue cases in country parks has shown a significant upward trend.

Measures
For high-risk country parks in *Ma On Shan, Sai Kung East and Lantau South*

The park management
1. Setting up more safety warning signs on difficult trails and dangerous areas
2. Increasing the frequency of patrols and improve safety and first aid measure

The government
3. Enhancing hiking safety education, like organising public education activities and seminars
4. Improving and optimising official Apps & websites to update the latest information on country parks and trails timely.

THANK YOU!

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