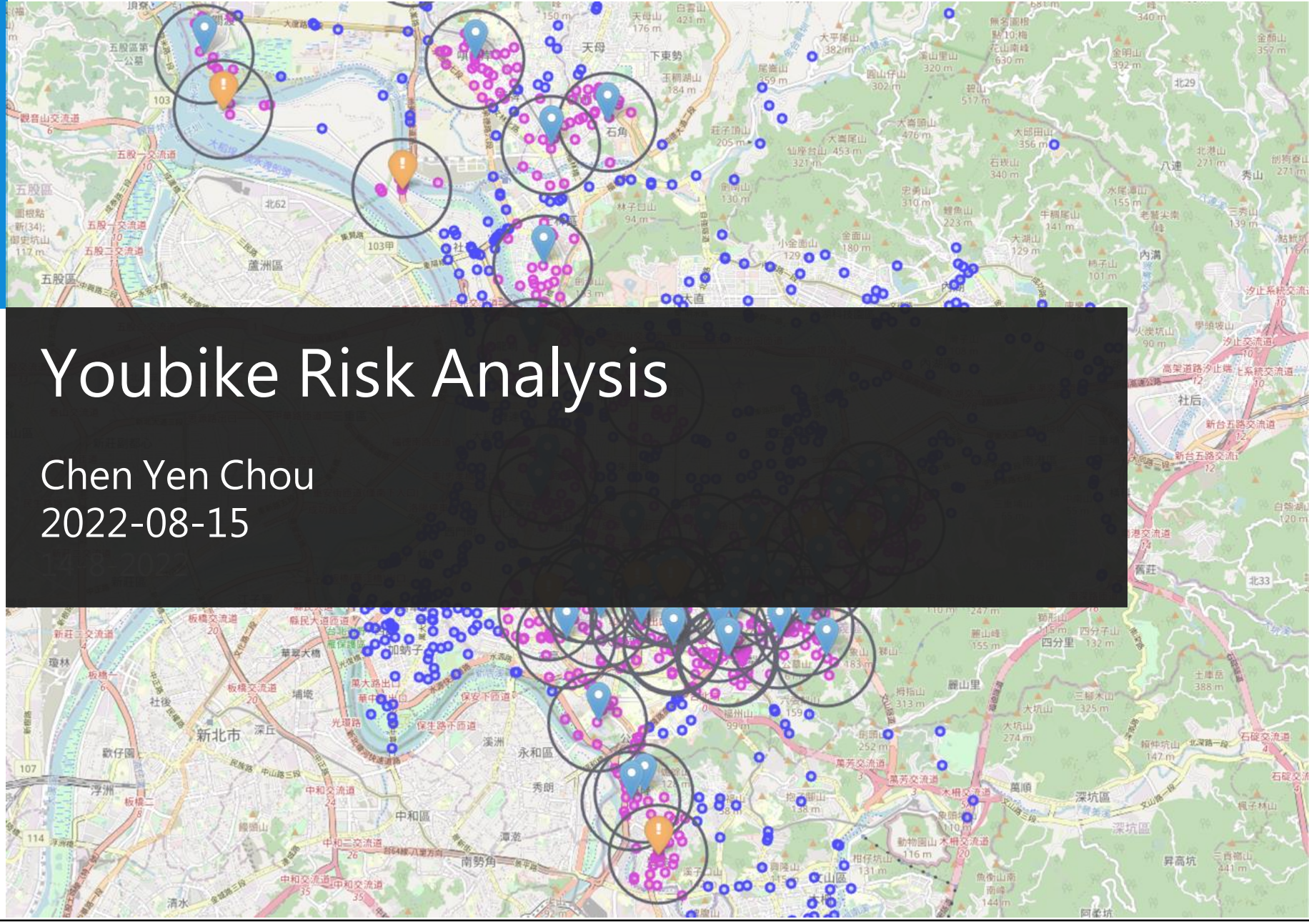

Youbike Risk Analysis

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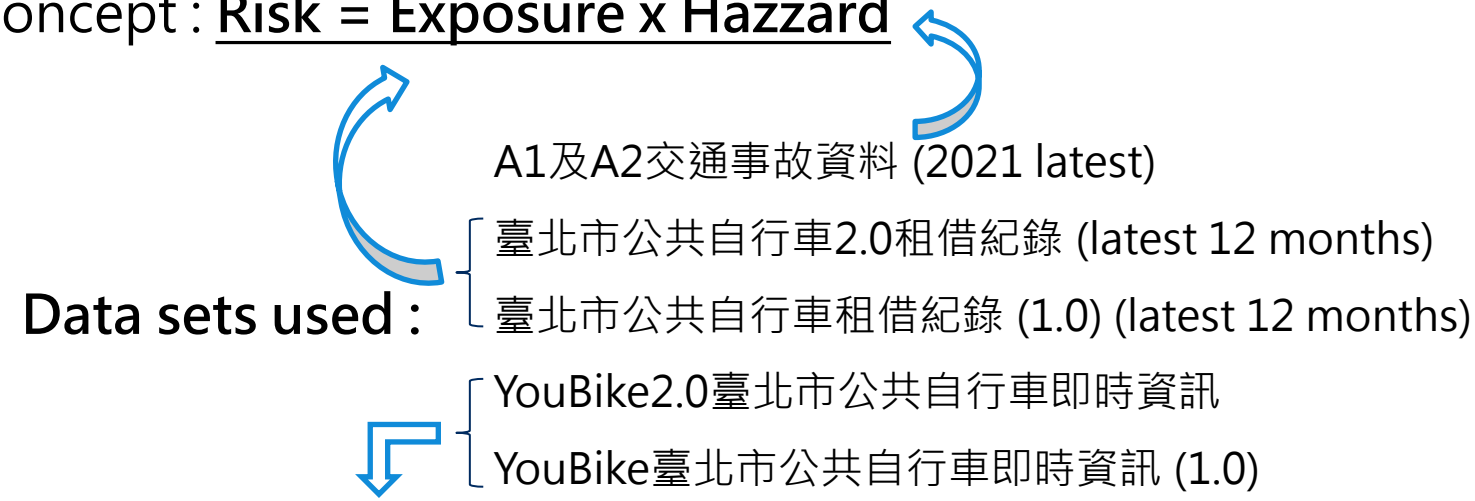
Introduction

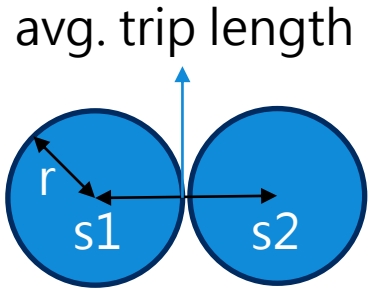
- Objective: Find out potential safety risk at each Youbike station
- Direction: Decision support
- Questions: Which station(s) has the most fatality risk in Taipei City?
- Concept : **Risk = Exposure x Hazzard**



Approach

Risk = Exposure x Hazzard

Ridership Accident

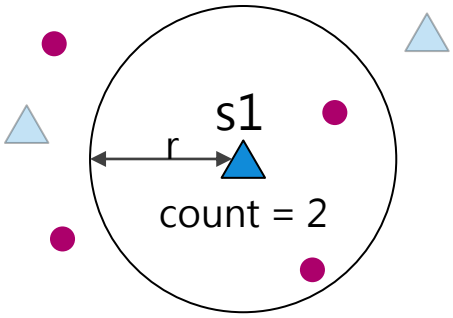


- Acquire the *risk radius* (r) from average trip length (linear distance)
- Count the accidents happened within the risk radius
- Calculate the risk score with 2 algorithms

Note: The accident counts in Algo.2 are weighted by reciprocal of distance to reflect the effect of other stations

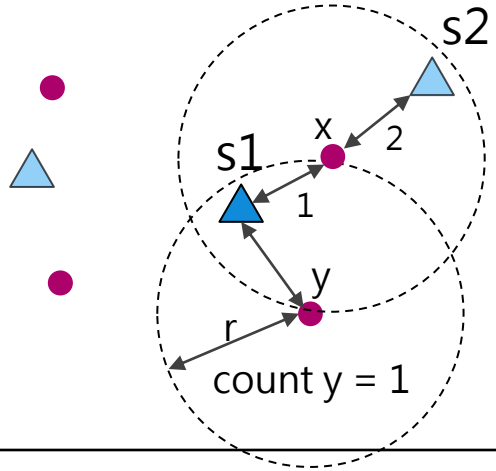
Algorithm 1
Single-Station Risk

Rides = 100
accident
station



s1 risk score: 100 x 2 = 200

Algorithm 2
Multi-Station Risk



reciprocal of distance

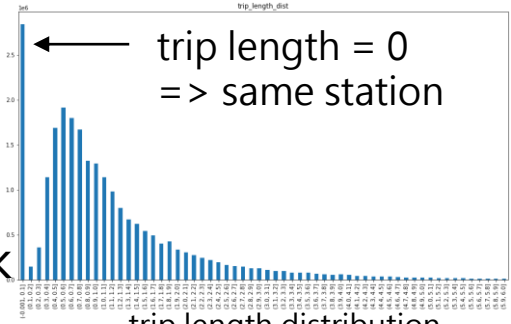
weight s1 : s2 = 2 : 1
count x = 2/(1+2)

count (x+y) = 5/3

s1 risk score =
100 x 5/3 = ~167

Results

- Results show the top 50 stations with highest risk score
  - Top 10 stations at risk are highlighted with orange color
  - Link to result of algorithm 1 (m1.html)
  - Link to result of algorithm 2 (m2.html)
- Two algorithm shows different results
  - Algo. 1 indicates stations at risk are mostly in city center
  - Algo. 2 indicates stations at risk are distributed more evenly in the city
  - 金華杭州南路口(2.0) rank 1 in both algorithms.
- Other findings:
  - ~10% of trips rent and return at the same station
  - Evening peak is higher longer than morning peak



trip length distribution