

A Study on Estimating the Spatial Patterns and Relationships of traffic accident blackspots in Hong Kong

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Abstract

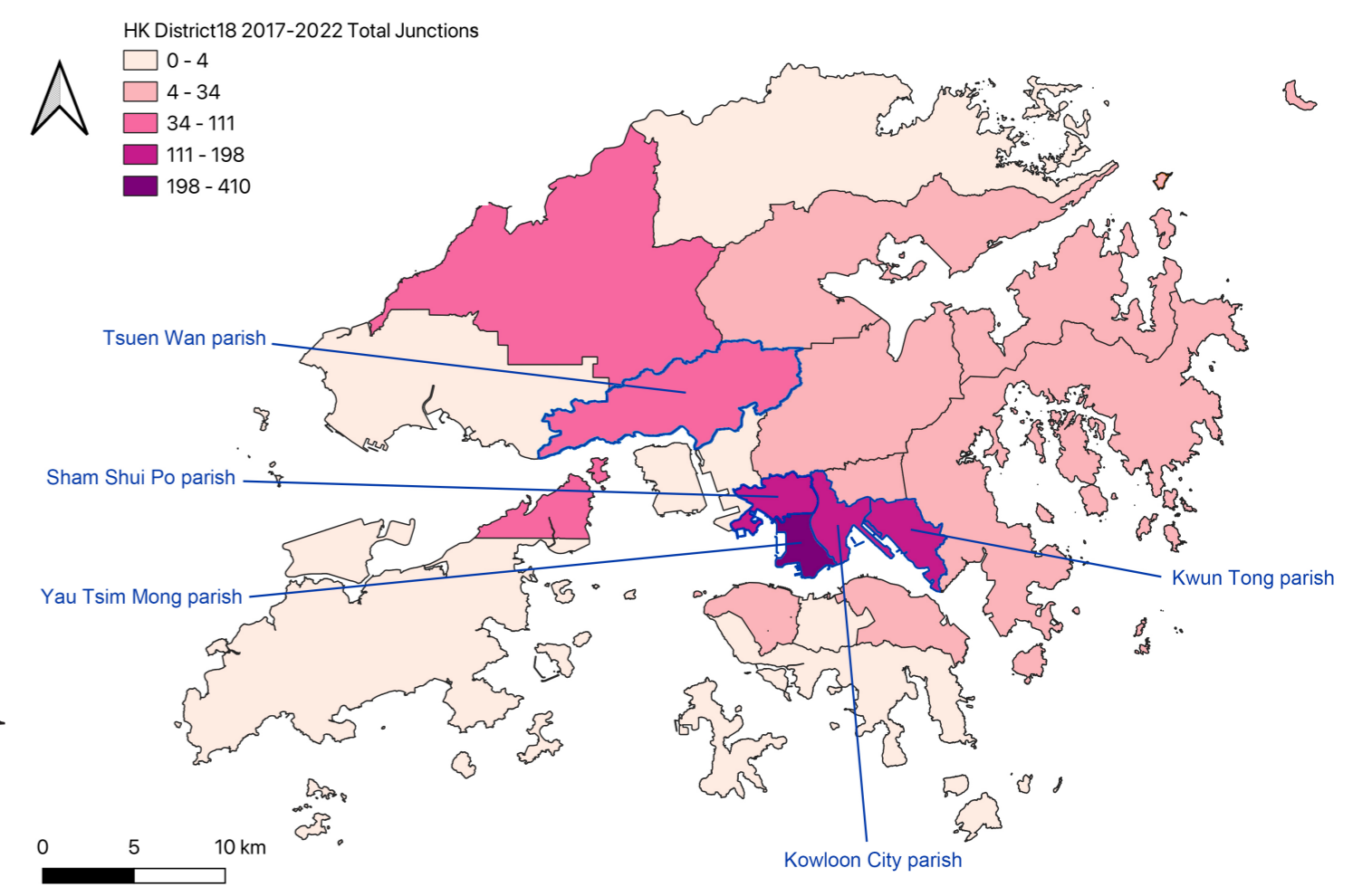
Exploring the geographical distribution of Hong Kong traffic accidents begins with the enormous concern and difficulty that traffic offers to high-density and expanding Asian cities. This research aims to explore the relationship between the spatial pattern and spatial distribution of road accidents across Hong Kong. Various official data were used, and sets of GIS analytics techniques were used to discuss. With the eventual goal of providing quantifiable and visual evidence on the spatial patterns of traffic blackspots (areas of high collision) for relevant stakeholders.

Data Analysis

- Blackspots accidents continue to decrease
- Reduction of collisions differs across intensity of the collisions
- Most blackspots cluster in 5 parishes

Research Questions

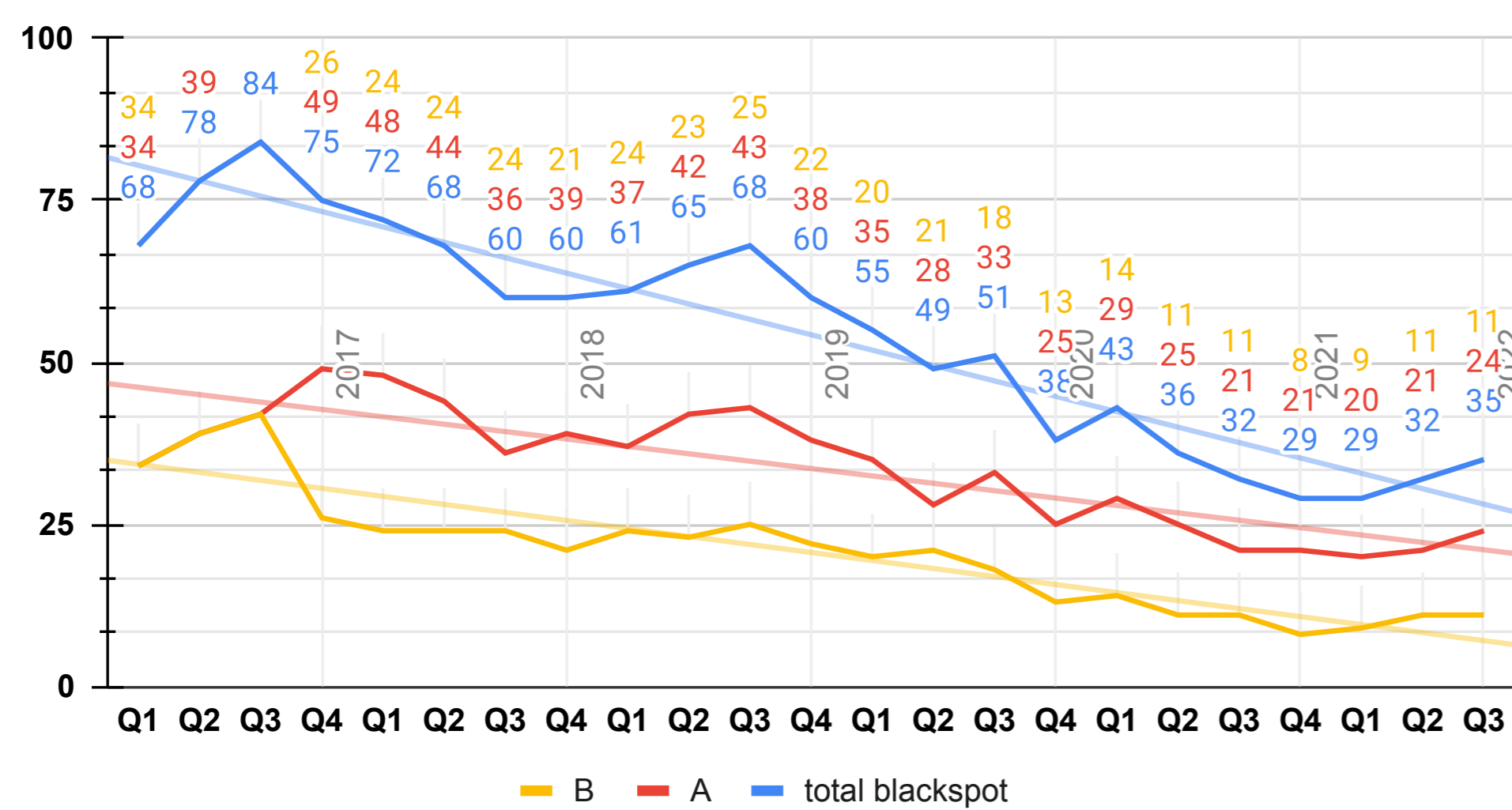
1. Do spatial patterns and the Hong Kong traffic accident contain a relationship across parishes?
2. Do traffic accident blackspots and the weather have correlations?
3. What is the strength of relationship between the Hong Kong traffic blackspots and their spatial pattern?



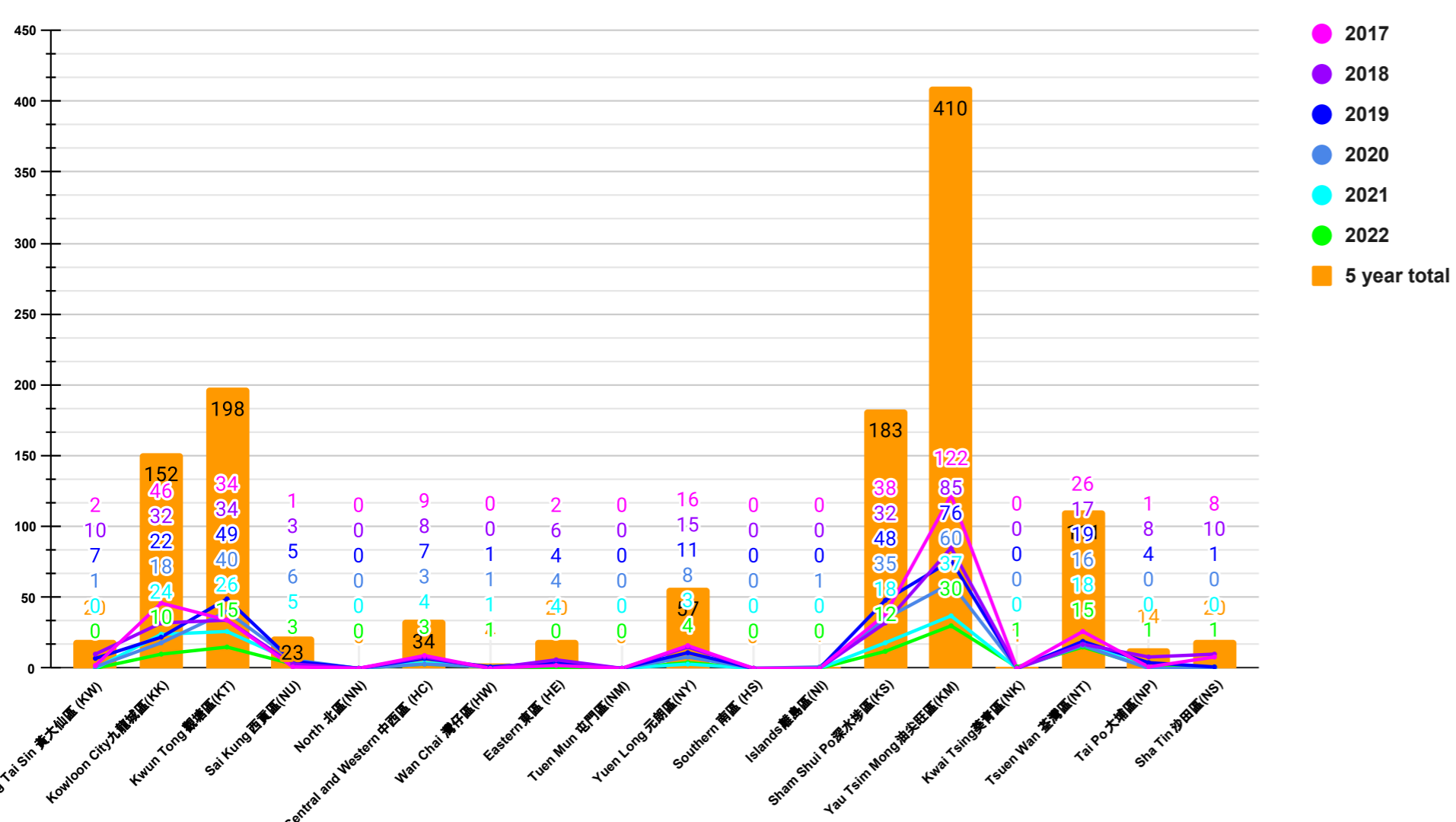
Results

- Blackspots constantly appear to have strong clustering in 5 parishes and concentrate in the downtown where the density is the highest
- Overall blackspots reduction show a similar annual trend with rainfall changes
- Limited correlation found between changes in blackspots and rainfall in quarters

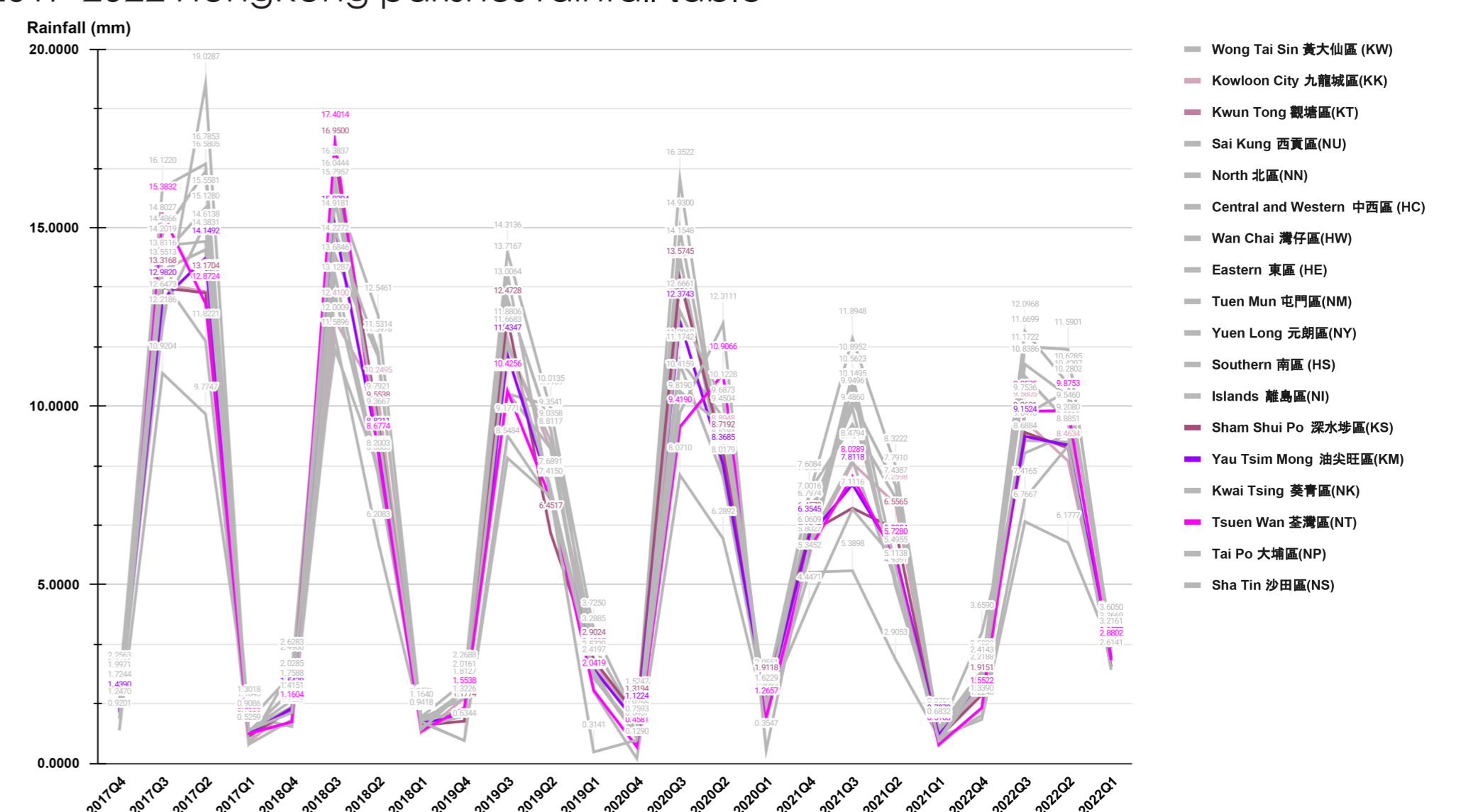
HongKong traffic accident blackspot 2017-2022



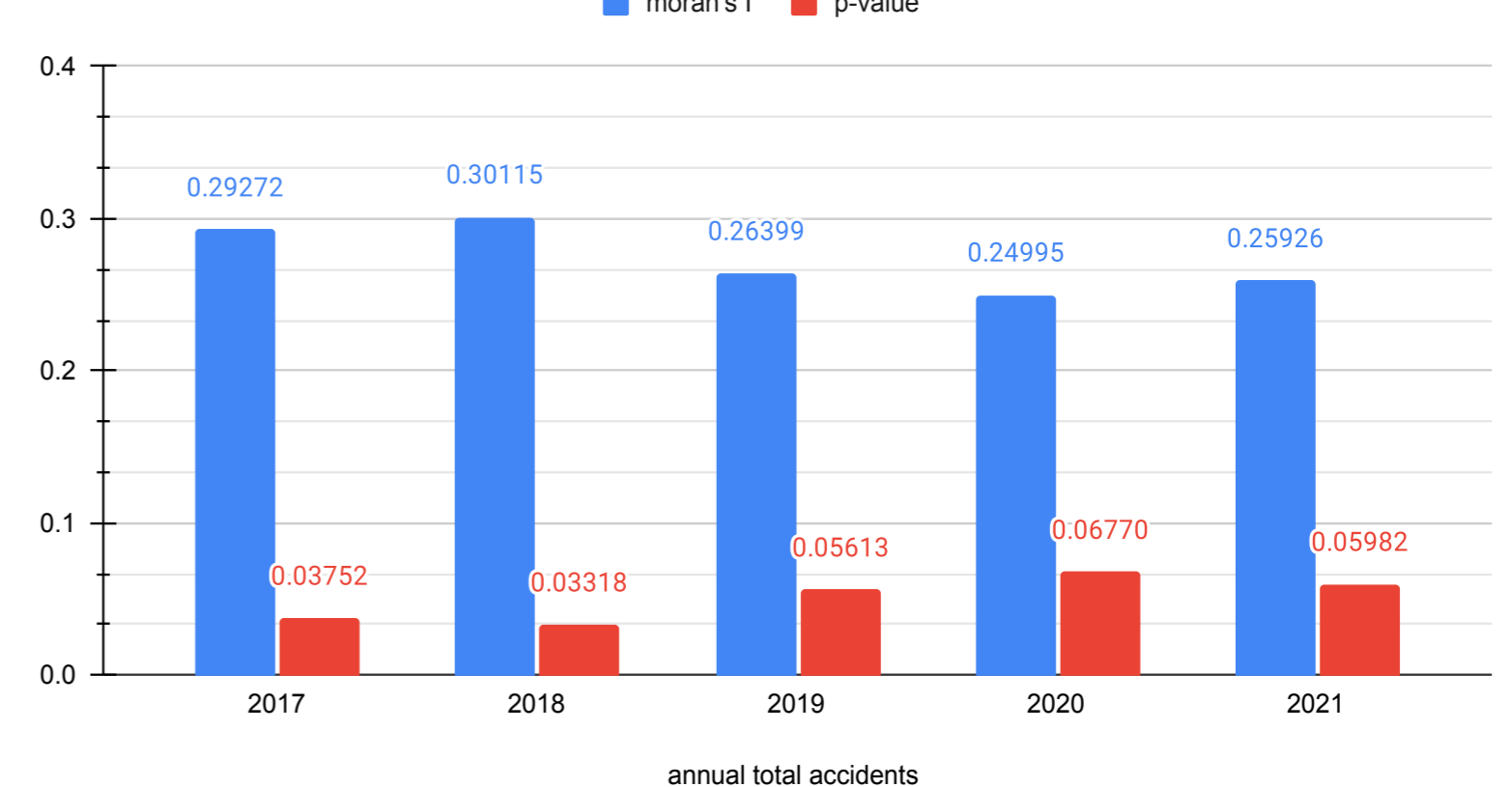
2017-2022 total accident blackspot change in HongKong



2017-2022 HongKong parishes rainfall table



2017-2022 annual total blackspot moran's I and p-value



Discussion

- Future study on blackspot accidents could focus on other core affected factors such as built-environment, density or populations
- Inequalities across different parishes and locations in terms of size, data collection observatories and differences in blackspots

Summary

- HongKong experienced strong traffic accident blackspot clustering
- Although blackspots and rainfall both show a decreasing trend from 2017 to 2021, a weak correlation was found between rainfall and blackspots