

## Resale Housing Development Board Price Prediction Considering Covid-19 through Sentiment Analysis

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**Abstract :** Twitter sentiment has been used as a predictor to predict price values or trends in both the stock market and housing market. The pioneering works in this stream of research drew upon works in behavioural economics to show that sentiment or emotions impact economic decisions. Latest works in this stream focus on the algorithm used as opposed to the data used. A literature review of works in this stream through the lens of data used shows that there is a paucity of work that considers the impact of sentiments caused due to an external factor on either the stock or the housing market. This is despite an abundance of works in behavioural economics that show that sentiment or emotions caused due to an external factor impact economic decisions. To address this gap, this research studies the impact of Twitter sentiment pertaining to the Covid-19 pandemic on resale Housing Development Board (HDB) apartment prices in Singapore. It leverages SNSCRAPE to collect tweets pertaining to Covid-19 for sentiment analysis, lexicon based tools VADER and TextBlob are used for sentiment analysis, Granger Causality is used to examine the relationship between Covid-19 cases and the sentiment score, and neural networks are leveraged as prediction models. Twitter sentiment pertaining to Covid-19 as a predictor of HDB price in Singapore is studied in comparison with the traditional predictors of housing prices i.e., the structural and neighbourhood characteristics. The results indicate that using Twitter sentiment pertaining to Covid19 leads to better prediction than using only the traditional predictors and performs better as a predictor compared to two of the traditional predictors. Hence, Twitter sentiment pertaining to an external factor should be considered as important as traditional predictors. This paper demonstrates the real world economic applications of sentiment analysis of Twitter data.

**Keywords :** sentiment analysis, Covid-19, housing price prediction, tweets, social media, Singapore HDB, behavioral economics, neural networks

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