**INTRODUCTION**

Numerous researchers have cited the COVID-19 pandemic as one of the most impactful events or shocks to social and societal activities in recent history that is associated with drops in criminal activity.1

Trinidad and Tobago (T&T) makes for an interesting case study as the presence of a growing street gang culture normalizes disidence and violence as a means to maintain social control over turf and settle disputes, which has led to a steady increase in murders over the last 20 years.

Uniqueness of study

- Assesses COVID-19’s effect on murder rate
- Bayesian Structural Time-Series analysis with a longer temporal dimension than previous studies, with a national dataset
- Measurable criteria used to assess the effect of stringency measures on crime trends (murders)
- Assessed the utility of nonlinear predictive algorithms in forecasting murders post onset of the COVID-19 pandemic

**RESULTS**

Bayesian Structural Time-Series (BSTS)

- BSTS model provides a poor forecast with a Mean Absolute Percentage Error (MAPE) of 36.71% for the period under COVID-19 conditions. This is in comparison to a MAPE of 14.22% when 2019 is used as the holdout period (pre-COVID-19) for the model (not shown).
- The results suggest that the predictive accuracy of the model decreased during COVID-19 conditions.
- There was an upward trend in murders for the period 2015 to mid-2019, however, after this period murders began to decrease. However, the rate of decrease rose post implementation of COVID-19 measures in February, 2020 (Fig 1).

**CONCLUSIONS**

The population had a significantly positive response to governmental stringency measures i.e. increases in the stringency of government response resulted in decreased movement.

- The murder rate in T&T decreased during the COVID-19 pandemic.
- The increased rate of decrease in murders during the COVID-19 pandemic is not a direct result of the stringency of governmental response or the population’s adherence to stay-at-home and social distancing orders/instructions.
- However, conditions/changes resulting from the pandemic either directly resulted in a decrease in the murder rate or had an additive effect on factors which previously resulted in the pre-COVID-19 downward trend or both.
- The use of FFNN (nonlinear method of prediction) presents an opportunity for improved forecasting of murders, particularly subsequent to an exogenous shock.

**LIMITATIONS**

- Changes in police tactics (number and frequency of patrols, roadblocks) which also changed during the COVID-19 pandemic were not considered.
- Exogenous factors associated with gang dynamics (e.g. peace treaties) were not examined. This is important given that gang related murders account for a large portion of the yearly murder count.

**REFERENCES**