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Newfoundland and Labrador Two-Peaked BA.1 Wave

Before establishing the Omicron variant, Canada's province, Newfoundland and Labrador (NL), pursued a containment strategy and reported more than 150 weekly SARS-CoV-2 cases only twice out of 98 weeks. Ninety-seven (97) weekly cases were reported in the first full week after establishing the BA.1 (Omicron) variation, and over 150 cases were reported each week for the next 12 weeks. There are three months (December 15, 2021 - March 17, 2022) when both the BA.1 variant is spreading, and most individuals with at least one COVID-19 symptom are eligible for testing at the NL provincial sites. Analysis of epidemiological data reported during this period is critical to understanding SARS-CoV-2 spread in the province. Therefore, we fit an integrated Bayesian-based and machine learning framework, particle Markov-chain Monte Carlo, and a stochastic compartmental model to the epidemiological data. During this period, the trend in reported cases has two peaks: first, in early January, corresponding to the implementation of stricter non-pharmaceutical interventions (NPIs), and second, in mid-March, corresponding to when most symptomatic residents lost eligibility for COVID-19 testing at local sites. We use our parameterized epidemiological model to explore counterfactual scenarios and find that stricter NPIs and high vaccination rates could have prevented 28,897 SARS-CoV-2 cases. Our analysis suggests that implementing stricter NPIs in NL in early 2022 may have led to a switch from an increasing to a decreasing trend in SARS-CoV-2 cases. We know of little other evidence suggesting that stricter NPIs can have this effect on the highly transmissible Omicron variant.