

Supplementary Material 2. Summary table of included studies

Author, year	Date of data collection	Source	Objective	Study design	Setting	Sample size	Outcome measures	VOC	Country	Main finding
<i>Question 1A: Modifying approach to vaccination</i>										
<i>Bachtiger , 2021</i>	Nov 13 th and Dec 31 st , 2020	medRxiv	Inform public health messaging by determining how changes in COVID-19 vaccine hesitancy, attitudes towards administration, emergence of new variants & vaccine availability may affect herd immunity	Cross-sectional	Community	9617 participants (2nd questionnaire)	Willingness to receive COVID-19 vaccine, attitudes towards prioritization, plans to change behaviour following vaccination	Alpha	UK	Slight increase in vaccine acceptance after learning of circulating VOC but vaccine acceptance is still below levels that would enable progress towards herd immunity. Overall majority (85.1%) of people want vaccine, and few people (12.5%) plan on drastically changing behavior following vaccination. Participatory community engagement should be part of a strategy to improve uptake by considering the public's preferences, such as those expressed here that teachers and BAME groups should be prioritized.
<i>Collier and Ferreira, 2021</i>	Dec 9 th , 2020-Feb 3 rd , 2021	medRxiv	Assess age correlated immune response following 1 st & 2 nd dose with mRNA-based vaccine in unselected elderly participants from the community & younger health care workers	Laboratory study	Community	51 participants; N=24, <80 years; N=27, >80 years; median age 81	Inadequate vaccine-elicited serum antibody neutralization activity at least 3 weeks after the first dose of vaccine measured as a dilution of serum required to inhibit infection by 50% in an in vitro neutralization assay	Alpha	UK	Age was statistically correlated with serum neutralization. There was a significantly higher risk of a suboptimal neutralizing antibody response following first dose vaccination with BNT162b2 in those above the age of 80, cautioning against extending the dosing interval in this high risk population.

<i>Giordano , 2021</i>	model estimated using data collected within a 110-day window ending on Feb 7 th , 2021	Nature Medicine	Model impact of mass vaccination campaigns, different transmission rates due to new variants and different enforced countermeasures and assess associated healthcare costs	Modeling study	N/A	NR	fraction of successfully immunized people within one year.	Alpha, Beta	Italy	Non-pharm interventions (Physical distancing, testing and contact tracing) are critical throughout a mass vaccination campaign to keep the reproduction numbers low until a sufficient population immunity is achieved.
<i>Jangra, 2021</i>	Not Reported	MedRxiv	To investigate the impact of the E484K mutation in the neutralizing activity of SARS-CoV-2 specific antisera	laboratory study	N/A	A total of 34 sera were selected from study participants based on their SARS-CoV-2 S enzyme linked immunosorbent assay antibody titer (negative [N=4] versus weak [N=8], moderate [N=11] or strong positive [N=11]). Sera from five individuals who received two doses of the Pfizer SARS-CoV-2 vaccine was included.	Serum neutralization efficiency	Non-specific, similar to Beta and Gamma	US	These data indicate that the E484K mutation present in circulating SARS-CoV-2 strains that belong to the Beta and Gamma lineages reduces the neutralizing activity of human polyclonal sera induced in convalescent (infected with previous strains) and vaccinated individuals. It is important to aim for the highest titers possible induced by vaccination, as this should enhance the chances for protection even in the case of antigenic drift of circulating SARS-CoV-2 strains
<i>Kim, 2021</i>	Dec 14 th , 2020-Mar 2 nd , 2021	medRxiv	To evaluate the trade-offs between speed of distribution vs. efficacy of multiple vaccines when variants emerge	Modeling Study	Community	N/A	Evaluate the impact of each vaccine type using infection attack rate (IAR) as the main health outcome	Alpha, Beta	US	That the speed of the vaccine distribution is a key factor to achieve low IAR levels, even though the vaccine may have high efficacy both before and after the variants emerge.

Lumley 2021	Sep 1 st , 2020-Feb 28 th , 2021	MedRxiv	1) Investigate & compare protection from SARS-CoV-2 infection through vaccination and prior infection (using anti-spike antibody status). 2) Estimate the protection from different vaccines, after one versus two doses and from infections with the Alpha variant	Cohort	Oxford University Hospitals (OUH)	13, 109 individual HCWs contributed 2,835,260 person-days follow-up. 74% female, 27% nurses, 14% physicians, median age 39(30-50)	PCR-confirmed symptomatic SARS-CoV-2 infection. Also considered any PCR-positive result (i.e., either symptomatic or asymptomatic) Antibody status was determined using an anti-trimeric spike IgG ELISA using an 8 million units threshold to determine antibody-positivity. To assess the impact of the Alpha variant on (re)infection risk, PCR-positive results with and without SGTF, and those confirmed as Alpha on sequencing.	Alpha	UK	Pooling data from unvaccinated and Pfizer-BioNTech and AstraZeneca vaccinated HCWs showed that natural infection resulting in detectable anti-spike antibodies and two doses of vaccine both provide robust protection against SARS-CoV-2 infection, including against the Alpha variant of concern.
Luo, 2021	N/A	medRxiv	To estimate the long-term durability of mRNA-1273 vaccine and to integrate studies about differences in antibody neutralization to SARS-CoV-2 variants to understand how variants can affect the durability of the vaccine	Modelling study	Community	N/A	Antibody level and neutralization	Alpha, Beta, Gamma	US	That mRNA1273 two dose vaccine can provide over a year of protection against COVID-19 from the initial D614G variant. It is likely by the second year, protection against COVID-19 will fall below single dose efficacy. Therefore, there should be consideration for a booster shot a year after the first set of vaccines. If there is an observed increase in variants with higher resistance such as Beta and Gamma, a booster vaccine against the newer variants should be considered to increase protection against resistant variants.

Munitz, 2021	Dec 6 th , 2020-Feb 10 th , 2021	Cell Reports Medicine	To explore the transmission dynamics of Alpha & estimate the success of screening, surveillance & vaccination on mitigating risk in the general public & elderly	Modelin g study	Community & nursing homes	primary data of >300,000 RT-PCR samples	SGTF data from RT PCR tests, effective reproduction number (R _t) and cycle threshold values (ct)	Alpha	Israel	Our data confirmed that pro-active surveillance programs of populations at risk such as those found in nursing homes were capable of early detection, which likely enabled containment of further viral spread within this housing community. This is observed by the significant difference in Ct threshold levels, which were higher in nursing homes in comparison with the general population. Thus, proactive protection programs such as routine surveillance and monitoring of populations at risk combined with prioritized vaccination, is achievable and will result in a reduction of severe illness and subsequent death.
Pageaud, 2021	N/A	medRxiv	To analyze the expected dynamics of COVID-19 epidemic after applying protective measures and considering the increasing proportion of more infectious variants and several vaccination strategies	Modelin g study	Community	N/A	Cumulative # of individuals removed, cumulative # of deaths in hospital, daily prevalence in ICU beds and its saturation indicator. Saturation of ICU beds was calculated as the cumulative # of new cases requiring ICU when all beds were already occupied.	Alpha, Beta, Gamma	Franc e	This race against the COVID-19 historical strain and its variant strains is an issue of vaccination strategy. It is mandatory to vaccinate most of the population within a year, and preferably within 6 months. Should a 6-month vaccination campaign not be feasible, then reinforced NPI should be considered.
Sah, 2021	N/A	Eclinical Medicine	To evaluate the impact of accelerated vaccine distribution on curbing the disease burden of	Modelli ng study	Community	N/A	Transmission probability; Hospitalization (non-ICU and ICU)	Alpha	US	That the current pace of vaccine rollout is insufficient to prevent the exacerbation of the pandemic that will be

			novel SARS-CoV-2 variants							attributable to the novel, more contagious SARS-CoV-2 variants. Accelerating the vaccination rate should be a public health priority for averting the expected surge in COVID-19 hospitalizations and deaths that would be associated with widespread dissemination of the SGTF variants.
Tokuda and Kuniya, 2021	Jan 14 th - Apr 20 th , 2021	medRxiv	To construct the COVID-19 epidemic curve to examine effect of vaccination schedules and need for restrictions (lockdown)	Modelling study	Community	N/A	Number of new infections per day	Alpha	Japan	If the vaccination pace could not be quadrupled from the current pace, Japan could not achieve Zero Covid status, which is reflected by a low COVID-19 death rate and less economic damage.
Victoria, 2021	Week 1-14, 2021	medRxiv	Evaluate the real-life effectiveness of the vaccination campaign among the elderly in Brazil	Cross-sectional study	Community	370,000 registered deaths in Brazil	Mortality rate ratios over two-weekly periods in between Jan 3 rd , 2021 and Apr 22 nd , 2021 for individuals aged 80+ and 90+ years	Gamma	Brazil	Rapid scale up of vaccination among elderly Brazilians in early 2021 was associated with a decline in relative mortality compared to younger individuals
<i>Question 1B: Modifying infection-prevention measures</i>										
Aiano, 2021	Nov 2 nd , 2020-Jan 31 st , 2021; contacted up to Feb 23 rd , 2021	SSRN	To assess the risk of SARS-CoV-2 infection and attack rates in staff and children attending nurseries over a three-month period when community SARS-CoV-2 infections rates were high and the Alpha variant was	Cross-sectional	Nurseries/daycares	324 nurseries had an outbreak; 173 agreed to take part, reporting 1657 cases	Outbreak sizes and attack rates	Alpha	UK, England	In nurseries reporting an outbreak, one in three staff were affected compared to one in thirty children. We found some evidence of increased transmissibility and higher attack rates associated with the Alpha variant

			spreading rapidly across England								
<i>Borges, 2021</i>	Week 49 2020 to week 3 2021	Eurosurveillance	Investigate the proportion of SGTF cases to gain insight on Alpha frequency and geographical spread in Portugal	Modeling study	Community	Of the 36,651 positive results, 3,367 (9.2%) corresponded to SGTF tests (i.e., proxy for Alpha); Equivalent to 9.5% of COVID-19 positive tests in the same time frame	Proportion of COVID-19 cases likely classified as Alpha, based on SGTF, from RT-PCR tests with TaqPath COVID-19 assay; and impact on number of cases due to lockdown measures in week 2/3	Alpha	Portugal	Physical distancing measures implemented in weeks 2 and 3 strongly decelerated the growth rate with the proportion of SGTF and SGTL remaining below 50% until week 7 2021. This reinforces the need to implement robust public health measures adapted to this new variant to mitigate the impact of COVID-19 in terms of hospitalizations and deaths.	
<i>Domenico, 2021</i>	Jan 2021 start date used for projected modelling	medRxiv	To assess the impact of implemented measures on two COVID strains (Alpha & wild type) through modeling	Modeling study	Community	N/A	Estimated # cases of historical strain and VOC based on various social distancing measures using data from a large-scale genome sequencing initiative conducted in France	Alpha	France	Social distancing and nightly curfews would bring down the R of historical strain, however VOC would continue to increase. It is important to continue strong social distancing measures while increasing vaccination to reduce hospitalization.	
<i>Gurbaxani, 2021</i>	N/A	medRxiv	To extend the model of Worby and Chang to use age-stratified social contact patterns for the general U.S. population, and we analyzed the model both employing the measured face mask efficacy parameters for a variety of specific types of masks and for efficacy estimates that can act	Modeling study	Community	N/A	Effectiveness of mask wearing	Alpha	US	Showed the potential for substantial reduction in SARS-CoV-2 transmission, even with moderately effective masks, when they are worn consistently correctly (over the chin and covering nose and mouth) and/or per manufacturers' specifications by a large portion of the population.	

			as benchmarks for evaluating these products							
<i>Lasser, 2021</i>	N/A	medRxiv	To quantify how many transmissions can be expected for the different scenarios in the different school types, in a way that is appropriate to derive evidence-based policies for keeping schools open at a controllable infection transmission risk	Modelling study	Schools	Model estimates based on data from 616 clusters involving 2,822 student-cases and 676 teacher cases	Transmission probability	Alpha	Australia	Different types of schools require different combinations of preventive measures. The ideal mix of mitigation measures needs to be more stringent in secondary schools than in primary schools and needs to preferentially focus on teachers as sources of infection. Even under strict prevention measures, larger clusters in schools will still occur at regular intervals when the incidence in the general population is high enough. However, in this work we have shown that keeping schools open during the COVID-19 pandemic a calculable risk can be achieved by a combination of stringently enforced measures.
<i>Linka, 2021</i>	N/A	medRxiv	The objectives of this study are twofold: First, we perform a retrospective study to evaluate the risks that would have been associated with the reopening of Stanford University in the spring, summer, and fall of 2020, and winter of 2021. Second, we complement our	Modelling study	University campus (Stanford)	N/A	Effective reproduction number	Alpha, Beta	US	With no additional countermeasures, during the most affected quarter, the fall of 2020, there would have been 203 cases under baseline reproduction, compared to 4727 and 4256 cases for the Alpha and Beta variants. The results suggest that population mixing presents an increased risk for local outbreaks, especially with

			analysis by exploring the possible effect of variants on the overall disease dynamics.							new and more infectious variants emerging across the globe. Tight outbreak control through mandatory quarantine and test-trace-isolate strategies will be critical in successfully managing these local outbreak dynamics.
Meister, 2021	N/A	Journal of Infectiou s Diseases	To compare the surface stability of 3 SARS-CoV-2 strains, the preexisting variant (wild type) and the currently emerging Alpha and Beta variants on different surfaces and their sensitivity to heat, soap and ethanol	Laboratory study	Community /general public	N/A	Viral stability over 48hr (for testing different surfaces); viral infectivity (for testing effect of soap/ethanol); reduction of viral titers by end point dilution to calculate TCID50 values (to test susceptibility to heat)	Alpha, Beta	Germany	The currently circulating VOC did not exhibit enhanced surface stability or differences in disinfection profiles indicating that current hygiene measures are sufficient and appropriate...Overall, our data support the application of currently recommended hygiene concepts to minimize the risk of Alpha and Beta transmission
Teslya, 2021	N/A	Research square	Use of a socio-epidemiological model to investigate the effects of waning of compliance to physical distancing measures on the dynamics of COVID-19 as vaccine is rolled out in the population	Modelling study	Community	N/A	Numbers of infected, vaccinated and compliant individuals over the course of the vaccination rollout, cumulative numbers of infected individuals after 1 and 2 years into vaccine program	Alpha	Netherlands	For Alpha, when vaccine rollout is slow, targeting the non-vaccinated population with interventions aimed at improving compliance to physical distancing measures is best for reducing the # of infections and targeting vaccinated people is better when vaccination is fast. Fast vaccination and better compliance with physical distancing of vaccinated people is the only way excessive infections can be avoided. If vaccine rollout is

											slow, the positive effects on the incidence will be counteracted by fading compliance and increasing contact rates in the population.
Vazquez, 2021	Not reported	medRxiv	To estimate the rate of transmission per proximity contact, a generative model to simulate infectious disease outbreaks within workplaces, estimates of the rate of super-spreading events per imported case and an evaluation of mask use as an example of non-pharmaceutical interventions within the workplace.	Modeling study	Modeling of workplace transmission	605 Individuals in a workplace	Using Bluetooth button devices, they tracked when the distance between two coworkers was less than 1.5m for 15 seconds. This data was used to model the spread of virus. They estimated disease transmission rates and examined super-spreading events (where # of secondary cases equals or exceeds 10). A procedure was developed to simulate the disease transmission given the proximity contact data, the disease infectious period and the probability of disease transmission after repeated contacts	Alpha	Germany	Workplace proximity contact data can be used to develop a tailored model to simulate the spread of Alpha and the impact of containment strategies	
<i>Question 1C: Modifying infection-control procedures</i>											
Abdel-Sater, 2021	Dec 9 th , 2020-Jan 10 th , 2021	medRxiv	To evaluate a Primer for use with SYBR RT-PCR test as a second step means for confirming Alpha or similar variant in COVID positive patients	Laboratory study	N/A	20 samples from COVID positive patients with Ct<30	Quantitative SYBR Green Based RT-PCR	Alpha	Lebanon	The SYBR RT-PCR test could be used as a second step test for early confirmation of VOC Alpha in COVID Positive S-Gene negative patients in case of shortage in sequencing tests. Our efforts will be helpful and can contribute to the early detection of the new variant (VUI 202012/01), for the prevention of	

										transmission and early intervention
Ahn, 2021	N/A	SSRN	To propose a multi-model optimization (MMO) framework that identifies policies that perform well across structurally distinct models, and we apply this to design 12-month COVID-19 containment strategies	Modeling study	Community	NR	Policies	Alpha	US	Considering the heterogeneity across states, we have determined the MMO policies for all 50 US states over a one-year period and estimated the associated outcomes. Under our optimal policy, we show that some states can be on the trajectory to the halfway normal or minimal response policies for most 2021, while we recommend a few states to spend a significant portion of the year in more restrictive interventions. We also find that the prevalence of highly infectious variants (e.g., Alpha) can significantly increase the 12- month cost, which strongly supports the case for aggressive work to contain variants.
Akingba, 2021	Nov 17 th - 20 th , 2020	medRxiv	Evaluate the field performance of the PanBio assay and provide evidence of performance on patients infected with 501Y.V2	Laboratory study	Community Testing, Mobile Clinics	A total of 677 patients from 6 mobile clinics were tested by both antigen and PCR	Used nasopharyngeal swabs to determine the accuracy of Abbott PanBio COVID-19 antigen RTD. RT-PCR was done using the Seegene nCoV assay with amplification on BioRad CFX realTime PCR machine	Beta	South Africa	The assay had an overall sensitivity of 69.2% and specificity of 99% in this clinical context. However, sensitivity was highly dependent on viral load. The assay reliably detected 501Y.v2 virus infection in ambulatory ill patients in this high prevalence community setting. Sensitivity was >90% in patients with high viral loads CTs<30. To optimize

											the use of antigen RDTs in different and changing circumstances, clinical predictors and the epidemiological context should be considered when deciding how to deploy these assays.
Borges, 2021	Week 49 2020 to week 3 2021	Eurosurveilliance	Investigate the proportion of SGTF cases to gain insight on Alpha frequency and geographical spread in Portugal	Modeling study	Community	Of the 36,651 positive results, 3,367 (9.2%) corresponded to SGTF tests (i.e., proxy for Alpha); Equivalent to 9.5% of COVID-19 positive tests in the same time frame	Proportion of COVID-19 cases likely classified as Alpha, based on SGTF, from RT-PCR tests with TaqPath COVID-19 assay; and impact on number of cases due to lockdown measures in week 2/3	Alpha	Portugal	Physical distancing measures implemented in weeks 2 and 3 strongly decelerated the growth rate with the proportion of SGTF and SGTL remaining below 50% until week 7 2021. This reinforces the need to implement robust public health measures adapted to this new variant to mitigate the impact of COVID-19 in terms of hospitalizations and deaths.	
Bosetti, 2021	N/A	HAL Archives	To develop mathematical models and explore scenarios that help understand how the interplay of the key drivers of the pandemic (the variants, the vaccines and the control measures) will shape its dynamics for the coming months	Modeling study	Community	N/A	Hospitalization	Alpha	France	The current curfew and conditions appear sufficient to control the spread of the historical virus but not that of Alpha. With vaccination targeting those at higher risk of hospitalization, the burden on hospitals could quickly be alleviated. However, our assessment suggests that this effect may not be sufficient to compensate for the increased transmissibility of Alpha.	
Buchan, 2021	Feb 7 th - 27 th , 2021	medRxiv	To compare secondary attack rates in households with VOC versus non-	Cohort study	Community	We identified 5,617 index cases and 3,397 secondary cases	Household secondary attack rate, defined as the number of household secondary cases that occurred 1-14	Alpha	Canada	This study provides strong evidence of increased transmissibility in households due to VOC and	

			VOC index cases in Ontario			across the study period. Amongst index cases, 1,318 were classified as VOC (151 Alpha and 1,167 N501Y) and 4,299 were classified as non-VOC	days after the index case divided by the total number of household secondary contacts.			suggests that asymptomatic and pre-symptomatic transmission may be of particular importance for VOC. Our study suggests that more aggressive public health measures will be needed to control VOC and that ongoing research is needed to understand mechanisms of VOC transmissibility to curb their associated morbidity and mortality.
<i>Chudasma, 2021</i>	Oct 1 st - Dec 15 th , 2020	Journal of Infection	Analyze household clustering to provide a rapid assessment of transmissibility of the Alpha against other sequenced cases.	Cross-sectional study	Community	57,382	Household outbreak	Alpha	UK	Alpha cases were almost twice as likely to increase household clusters compared with wild type cases. Household exposures are high risk with passive surveillance demonstrating high attack rates, providing an important indicator of transmissibility as household exposures are unlikely to differ between cases infected with different variants and their contacts.
<i>Graham, 2021</i>	Sep 8 th - Dec 31 st , 2020	Lancet Public Health	Examine the association between the regional proportion of Alpha and reported symptoms, disease course, rates of reinfection, and transmissibility.	Cross-sectional	Community	36,920 COVID-19 positive users of the COVID symptom app. Surveillance data from the (COG-UK) and a SGTF correlate in community testing data.	Regional proportion of Alpha and symptoms, disease course, rates of reinfection and transmissibility. Disease burden was also examined by assessing self-reported hospital visits and reported long symptom duration	Alpha	UK	No evidence of changes in reported symptoms, disease severity and disease duration associated with Alpha.

Kühn, 2021	N/A	medRxiv	To provide viable strategies of careful opening of facilities in low-incidence regions without being affected by neighboring regions of substantially higher incidence.	Modelling study	Community	N/A	Effectiveness of lockdowns, measured by number of new cases	Alpha	Germ any	In order to keep the spread of the virus under control, strict regional lockdowns with minimum delay and commuter testing of at least twice a week are advisable.
Moore, 2021	various time points between Jan 2021-Jan 2022	Lancet Infectiou s Diseases	To use epidemiological data from the UK together with estimates of vaccine efficacy to predict the possible long-term dynamics of SARS-CoV-2 under the planned vaccine rollout.	Modelling study	Community	N/A	Used a two-dose model to simulate the effect of vaccination in both reducing infection (and hence onward transmission) and reducing symptomatic disease.	Alpha	UK	For all vaccination scenarios they investigated, their predictions highlight the risks associated with early or rapid relaxation of NPIs. Although novel vaccines against SARS-CoV-2 offer a potential exit strategy for the pandemic, success is highly contingent on the precise vaccine properties and population uptake, both of which need to be carefully monitored.
Piantham & Ito, 2021	Sep 1 st , 2020-Feb 19 th , 2021	medRxiv	To propose a method to estimate the selective advantage of a mutant strain over previously circulating strains using the time course of Alpha strain frequencies and the distribution of serial intervals.	Modelling study	Community	71,692 of Alpha strains vs. 65,850 non-Alpha strains	The serial interval is the time from illness onset in a primary case to illness onset in a secondary case	Alpha	UK	The result indicated that the control measures against Alpha strain needs to be strengthened by 33.7% from that against previously circulating strains. To get the same control effect as before, contact rates between individuals needed to be restricted to 0.748 of the contact rates that had been achieved by the control measures taken for previously circulating strains.

<i>Scherbina, 2021</i>	Not Reported	SSRN	Whether the US would benefit from a COVID lockdown similar to the lockdowns imposed in a number of European countries using the most recent data.	Modeling study	Community	N/A	Future monetary cost of the pandemic based on: 1) loss of productivity due to missed work of the symptomatically ill, 2) the cost of medical interventions that could have been used elsewhere, 3) the value of lives of the projected fatalities. Measured based on value of statistical life (VSL) and discounted QALY	Alpha	US	In a hypothetical scenario in which the more contagious U.K. variant of the virus becomes predominant in the U.S. one month from now, a lockdown would be substantially more valuable than for the currently prevailing variant; its optimal duration will lengthen, and the associated net savings will nearly triple. Even with vaccinations, a lockdown will generate significant net benefits and that it should optimally last four weeks under the baseline assumptions.
<i>Shattock, 2021</i>	Feb 18 th , 2020-May 3 rd , 2021	medRxiv	Model multiple vaccine rollout scenarios with several phased NPI relaxation strategies and examine impact on the epidemic in Switzerland	Modeling study	Community	N/A	Number of confirmed cases, hospitalizations, ICU Admissions, and deaths	Alpha, B.1351	Switzerland	Based on their model, strong increases in vaccination rates from 0.6% to 1.2% of the population results in halved and slightly earlier third wave peak. Furthermore, gradual phased relaxation of NPI can substantially reduce ICU occupancy and deaths until Sep 2021.
<i>Smith, 2021</i>	Oct 19 th -Dec 7 th , 2020	medRxiv	To assess the impact of environment on VOC transmission	Modeling study	Community	N/A	Transmission intensity estimates (R)	Alpha	UK	Like other SARS-CoV-2 strains, Alpha spread with greater transmission in colder and more densely populated parts of England. However, there is evidence of Alpha having a transmission advantage at warmer temperatures compared to other strains. This implies that spring and

										summer conditions are unlikely to slow Alpha's invasion in Europe and across the Northern hemisphere - an important consideration for public health interventions.
Wells, 2021	N/A	medRxiv	Use modeling travel between pairs of European countries to identify travel quarantine and testing strategies that will not increase infections in the destination country compared to a strategy of complete border closure	Modelling study	Community	N/A	Length of quarantine for origin-destination pairs of European countries	Alpha, Beta	US	Quarantines for European destinations that are specific to travel origin can be informed by country-specific prevalence, daily incidence, vaccine coverage, age-demographics and travel flow. Among countries with surveillance enabling estimation of Alpha frequency, sufficient quarantine and testing is similar for this variant to that determined for general transmission. In contrast, the Beta VOC was at relatively low frequency in most European countries, with much greater variance in prevalence. Consequently, sufficient quarantine and testing would be more extreme and more distinct for this variant than that determined in a general analysis of COVID-19 transmission.
Yang, 2021	Feb 26 th , 2020-Apr 5 th , 2021	medRxiv	Develop a deterministic modeling to evaluate the partial quarantine	Modelling study	Community	N/A	COVID-19 cases and fatalities curves	Gamma	Brazil	The model fitted the CoViD-19 data (considering VOCs and transmission among isolated individuals) and provided a useful means for describing the impact of

			and further relaxation in Sao Paulo State.						quarantine, relaxation and virulence of the epidemic in Sao Paulo State, Brazil.	
Zimerman, 2021	Jun 1 st , 2020, and Jan 10 th , 2021	Cureus	To assess if social isolation into small family or groups is associated with the emergence of new severe acute respiratory syndrome Coronavirus 2 (SARS-CoV-2) variants, particularly the Gamma lineage and E484K mutants, in Brazil and in the state of Amazonas	Modelling study	Community	A total of 773 samples were obtained throughout the period encompassed by the present analysis in Brazil	For the evaluation of the prevailing SARS-CoV-2 genomes present in Brazil and in the state of Amazonas, all human related sequences available on the GISAID collected between Jun 1 st , 2020, and Jan 31 st , 2021. Social isolation was measured by the daily values of the Social Isolation Index (SII), which shows the percentage of individuals who stayed within a distance of 450 meters from their homes on a given day. Daily SII was collected from the In Loco© website between Feb 1 st , 2020, and Jan 24 th , 2021, for Brazil and the state of Amazonas. Number of daily COVID-19 deaths was noted between Mar 12 th , 2020, and Jan 24 th , 2021, through the official database of the Brazilian Ministry of Health.	Gamma	Brazil	In the present study, SII was found to be positively associated with a substantial rise in the prevalence of these new variants. However, this correlation could only be observed when SII was above 40% (Nov 2020-Jan 2021), suggesting that the SARS-CoV-2 ability to mutate was dependent on high levels of SII in the state of Amazonas, Brazil. Findings reinforce the hypothesis that forced prolonged cohabiting may boost viral ability to generate mutation.