Public Health Implications of SARS-CoV-2 VOC, updated September 10, 2021

Supplementary Table 1. Summary of studies (n=86)

Author, date	Date of publicat-ion	Date of data collection	Source	Study design	Cou-n-try	Setting	Samp-le size	Outcome measures	Objective	VOC	Main Findings
INCLUDED STUDIES FROM JULY 14 TO AUGUST 25, 2021 (N=32)											
Adenaiye 2021[1]	13-Aug-21	May 2020 to Apr 2021	medRxiv [preprint]	Observ-ational	USA	Community	61	Amount of RNA exhaled in alpha variant infection; face mask efficacy	Examine impact alpha variant has on aerosol shedding and the efficacy of face masks as a source of control	Alpha	Face masks provided significant protection against infectious aerosols, indicating importance of community wide masking in the prevention of virus transmission.
Amirth-alingam 2021[2]	28-Jul-21	Jan – May 2021	medRxiv [preprint]	Observ-ational	UK	Primary care networks	750	Antibody responses	Compare serological response to vaccination with different intervals in between doses	Alpha & Delta	Prioritizing the first dose of vaccine was supported, as the evidence suggested that there was higher protection on extended vaccination schedules.
Aruffo 2021[3]	13-Aug-21	Dec 28th 2020 to May 19th 2021	medRxiv [preprint]	Modell-ing	CAD	Community	N/A	Impact of lifting NPIs on dates of cases, hospitalizati ons, and deaths	Determine the optimal strategy to lifting NPIs	Alpha	Efforts should be directed towards individuals ages 20-59. NPIs should be considered when reopening, as a complete reopening lacking NPIs would result in substantial spread of the virus, regardless of vaccination coverage.
Arumuru 2021[4]	21-Jul-21	NR	Physics of Fluids	Labor-atory	IND	Community	NR	Leakage of droplets from various masks and mask combinatio ns	Determine optimal masking strategies	Alpha, Beta & Gamm a	Double masking is effective in improving mask fitment and protection. The most effective combination was cotton mask with N95 mask.
Bablani 2021[5]	21-Aug-21	NR	medRxiv [preprint]	Modell-ing	AUS	Community	N/A	Determine number of cases, hospitaliz-tions and deaths 100	Estimate length of time for cases to reach less than five per day, under various lockdown strategies	Delta	Accelerating vaccine rollout is important to making the population more resilient to outbreaks. Until vaccination coverage is at an effective level, the strength of lockdowns, public health and social measures which will have the largest impact on

Public Health Implications of SARS-CoV-2 VOC, updated September 10, 2021

									days after Aug 1		preventing COVID-19 hospitalizations and deaths.
Cazelles 2021[6]	03-Aug-21	June 2020 to March 25th 2021	BMC Infect-ious Diseases	Modell-ing	IRL	Community	N/A	Observed daily infections, hospital and ICU admissions, daily deaths, and hospital discharges and cases	Examine the dynamics of COVID-19 in Ireland using public data	Alpha	Sharp decline of cases seems to be the result of mitigation measures, when in the presence of the Alpha variant.
Chang 2021[7]	10-Aug-21	June to July 2021	Research Square [preprint]	Modell-ing	AUS	Community	N/A	Agent based modelled tested the adequacy of outbreak control measures	Calibrate R0 of the Delta variant, and using the model, NPIs are investigated for feasibility in virus control. Outbreak suppression conditions are quantified.	Delta	Current social distancing requirements are not adequate for control. With 80% compliance, and month will be needed to control case numbers.
Colosi 2021[8]	21-Aug-21	Mar 8th – Jun 7th 2021	medRxiv [preprint]	Modell-ing	FRA	Schools	683 schools	Empirical contact data: examination of screening protocols was used to perform a cost-benefit analysis for varying scenarios	Model transmission of COVID-19 in schools	Delta	COVID-19 will still pose a risk to the safe opening of schools. Vaccination coverage of adolescents should be increased, and regular testing should be prioritized.
Contreras 2020[9]	25-Aug-21	Feb 2021	medRxiv [preprint]	Modell-ing	EU	Community	N/A	Effectiveness of NPIs, spreading dynamics	Model a stable equilibrium at low case numbers, where test-trace-and-isolate policies compensate for local spreading events and only	Alpha	A lockdown and regain control over the spread of COVID-19, vaccination helps mitigate VOCs. In the future, immunization, large scale testing and international coordination will further facilitate virus control.

Public Health Implications of SARS-CoV-2 VOC, updated September 10, 2021

									moderate restrictions remain		
Dick 2021[10]	24-Aug-21	Data up to Jun 27th, 2021, projections to Mar 2022	medRxiv [preprint]	Modell-ing	CAD	Community	N/A	Distribution of immunity in the Canadian population, by age, from infection and from vaccination.	Estimate the distribution of immunity to COVID-19 in the Canadian population, and determine the risk of resurgence in Fall 2021-Winter 2022.	Delta	Model predicts 60-80% of population will have some immunity to COVID-19 by the end of the vaccination campaign. Population is vulnerable to resurgence of virus because of the relaxation of NPIs and the reopening of schools.
Enright 2021[11]	04-Aug-21	Sep 2020 to Dec 2020	Royal Society Open Science	Modell-ing	UK	Universities	N/A	Contributing factors to within-institution spread	Summarize the understanding of COVID-19 patterns from Fall 2020 and explore strategies for the safe return of students in the future	Alpha	Residences with higher populations posed a greater risk of higher transmission. The proposal of staggering the return of students was not successful in reducing transmission. Adherence to testing and self-isolation is modelled to be much more effective in reducing transmission.
España 2021[12]	07-Sep-21	NR	medRxiv [preprint]	Modell-ing	COL	Community	N/A	Time-varying trends of cases and deaths; population based seroprevalence data	Explore the impact of circulating VOCs	Alpha, Beta & Gamma	COVID-19 in the city could be explained by higher mobility and higher number of social contacts. A preferred strategy to mitigation is maintaining moderate levels of social mixing, combined with a rapid increase in vaccination rates.
Giardina 2021[13]	07-Aug-21	N/A	medRxiv [preprint]	Modell-ing	USA	Schools	N/A	Agent-based dynamic transmission model	Evaluate the probability of in-school transmission and the increase of infections	Alpha & Delta	The risk of transmission between students and their households remains high. Mitigation measures and student vaccinations can reduce these risks significantly.
Gorji 2021[14]	16-Jul-21	Feb to Mar 2021	medRxiv [preprint]	Observ-ational	CHE	Community	27514 employees	Mass testing campaign relying on voluntary repetitive testing	Provide empirical evidence that repetitive mass testing can be effective in preventing the spread of COVID-19	Alpha & Beta	Applying a mass testing strategy can prevent the spread of COVID-19. Program should consider and try to control for the population outside of the program.

Public Health Implications of SARS-CoV-2 VOC, updated September 10, 2021

Head 2021[15]	23-Aug-21	Feb to Apr 2021	medRxiv [preprint]	Modell-ing	USA	Schools	N/A	Individual based transmission model to simulate Delta variant transmission, to examine school reopening policies	Characterize the risks to students and teachers in schools under various scenarios (varying NPIs and vaccination coverage)	Delta	Vaccination of adult community members can protect unvaccinated elementary school students. Schools can have low risks with high community vaccination levels and universal masking. If schools support additional measures such as cohorts and testing, they should consider doing so.
Hillus 2021[16]	13-Aug-21	Dec 27, 2020 - June 14, 2021	The Lancet Respiratory Medicine	Observ-ational	DEU	Community (population: healthcare workers)	380 participants	Reactogenicity (by use of electronic questionnaires); immunogenicity (by the presence of SARS-CoV-2-specific antibodies, an RBD–ACE2 binding inhibition assay, a pseudovirus neutralisation assay and anti-S1-IgG avidity); T-cell reactivity (by IFN-γ release assay)	To assess the reactogenicity and immunogenicity of heterologous immunizations with homologous ChAdOx1 nCov-19 or heterologous ChAdOx1 nCov-19–BNT162b2 vaccination with a 10–12-week vaccine interval or homologous BNT162b2 vaccination with a 3-week vaccine interval	Alpha & Beta	The heterologous ChAdOx1 nCov-19–BNT162b2 immunization with 10–12-week interval, recommended in Germany, is well tolerated and improves immunogenicity compared with homologous ChAdOx1 nCov-19 vaccination with 10–12-week interval and BNT162b2 vaccination with 3-week interval. Heterologous prime-boost immunization strategies for COVID-19 might be generally applicable.
Karaba 2021[17]	14-Aug-21	Blood samples submitted 0-4 weeks before	medRxiv [preprint]	Observ-ational	USA	Community (particularly solid organ	31 SOTRs	Pre and post-third dose	Investigate the efficacy of third-dose	Delta	A third dose of the vaccine showed an increase of antibody levels as well as

		third dose and 2 weeks after				transplant recipients [SOTRs])		samples of recipients were compared for immunogen icity	vaccinations in organ transplant recipients		neutralizing abilities against VOCs in some organ transplant recipients.
Koslow 2021[18]	14-Jul-21	June to August 2021 (90-day period beginning June 6, 2021)	medRxiv [preprint]	Modelling	DEU	Community	N/A	Effects of non-pharmaceut ical intervention s in Germany, age-dependent factors and commuting activities between regions; vaccination process; timing of return to pre-pandemic contacts and suspension of mask wearing and testing	To analyze different strategies for removing the restrictions of non pharmaceutical interventions that were in effect during the SARS-CoV-2 pandemic, while accounting for the new Delta variant and the ongoing vaccination process	Alpha & Delta	At the current rate of vaccination, there is still a great risk of another wave of infections if NPIs are lifted too early. The severity of these infections will be significantly reduced compared to previous waves due to the prioritization of the older population during the vaccination process. In all scenarios, rising infection numbers will hit school children the hardest. A key role will be played by the duration of immunity conferred by the licensed vaccines.
Krueger 2021[19]	18-Jul-21	Not reported	medRxiv [preprint]	Modelling	FRA, UK	Community	N/A	Vaccine effectivenes s, re-vaccination rate, waning immunity	To illustrate vaccination dynamics and possible different restrictions for VP holders in relation to the Alpha & Delta variants	Alpha & Delta	Risk of virus resurgence is higher with the introduction of vaccine passports and exempting holders from wearing masks and testing. Resurgence (particularly Delta-driven) can be mediated with high restrictions for the general population and small-moderate restrictions for holders. Public health measures flexibility is

											favored in a model where there is high vaccine effectiveness, low number of never-vaccinated, high re-vaccination rate, slowly waning immunity, and proportional social mixing
Layton 2021[20]	12-Aug-21	January 1, 2020, to December 31, 2021 (projections)	Research Square [preprint]	Modelling	CAD	Community	N/A	Dynamics and interactions of 3 SARS-CoV-2 strains, including (i) asymptomatic and symptomatic infections, (ii) two-dose vaccinations with variable dosing intervals, (iii) effects of NPI	To develop and apply a much expanded Susceptible-Infection-Recovered-type model to better understand to what extent the competition and interaction of VOC impact the spread of SARS-CoV-2	Alpha & Delta	In addition to infectivity, the extent of the NPI, and vaccination rate, factors that determine how fast COVID-19 spreads include: the prevalence of asymptomatic infections; enhanced infectivity of asymptomatic patients; fraction of the population who are vaccinated; types of vaccines distributed; and contextual differences between countries/regions. Both simultaneous and rapid deployment of pharmaceutical and NPI are needed to combat a dangerous VOC.
Liu 2021[21]	23-Jul-21	Vaccination capacity data up to May 23, 2021	medRxiv [preprint]	Modelling	CHN	Community	N/A	Herd immunity under three scenarios	To evaluate the feasibility of reaching herd immunity against SARS-CoV-2 through vaccination, considering heterogeneity in population age, age-specific patterns, vaccine efficacy and virus plus variants characteristics	Alpha, Beta, Gamma, Delta	Reaching herd immunity is challenging; authorizing vaccines for children is essential; highly efficacious vaccines in particular against the variants is necessary; despite all, vaccination is paramount to pandemic control.
Marziano 2021[22]	19-May-21	Daily vaccination supply estimates cover each	medRxiv [preprint]	Modelling	ITA	Community	N/A	Fraction of individuals recovered (and immune)	To simulate the effect of a vaccine rollout assuming that governments will be capable to maintain	Alpha	The combination of vaccine roll-out and effective mitigation strategies is expected to prevent a large proportion of deaths while at the same time allowing a progressive

		quarter of 2021 and first half of 2022						from SARS-CoV-2 infection; age-specific vaccination rates over time; COVID-19-related deaths; alternative prioritization orders for vaccination; vaccine coverage; duration of vaccine protection; incidence level of reported cases; vaccine efficacy	an approximately constant incidence by adjusting physical distancing restrictions as immunity accumulates.		lifting of physical distancing restrictions. A complete return to a pre-pandemic lifestyle can be expected between 9 and 15 months since the start of vaccination, only if a number of conditions are simultaneously met.
Paassen 2021[23]	22/Jul/21	Not reported	medRxiv [preprint]	Modelling	DEU	Community (Workplace)	N/A	Testing strategies, isolation and quarantine management; these are combined to develop a novel risk strategy	To develop and present epidemiologic modelling that calculates infection risks and the expected success of the measures across virus generations and that allows for a differentiated risk analysis for contact persons based on the day-dependent infectivity	Alpha	Public health measures implemented in workplaces can be effective, particularly combined measures (isolation, quarantine, symptom monitoring, testing) compared to single measures. It is imperative to implement measures early.

Public Health Implications of SARS-CoV-2 VOC, updated September 10, 2021

Panovska-Griffiths 2021[24]	22/Jul/21	Model was calibrated until January 25, 2021, to simulate the impact of a full national lockdown with schools closed until April 19, 2021	medRxiv [preprint]	Modelling	UK	Community	N/A	Cumulative diagnoses, cumulative deaths and cumulative hospital admissions under various partial and full lockdown scenarios, accompanied by social distancing and ongoing Test, Trace and Isolate intervention	To use mathematical modelling to simulate the impact of a full national lockdown (FNL) in England from January 4, 2021 compared to partial national lockdowns (PNL) in which some elements of in-person schooling remained open	Alpha	The strict social distancing measures, i.e. national lockdown, imposed from January 2021 with schools closed was likely to have been successful in suppressing the wave of COVID-19 cases that emerged towards the end of 2020. Continued epidemic control was achievable even with cautious reopening of schools from March 8, 2021 whilst continuing the vaccination efforts initiated from December 2020. It is important to effectively roll out a mass vaccination strategy during lockdowns.
Payne 2021[25]	21-Jul-21	Dec 7, 2020 - Mar 12, 2021	Cell [preprint]	Observ-ational	UK	Community	503 partici pants	Effectiveness of the BNT162b2 vaccine against PCR-confirmed infection (asymptomatic and symptomatic) was estimated in SIREN participants by comparing time to infection in vaccinated and unvaccinate	To describe the dynamics of T cell and Ab responses after the first dose of BNT162b2 mRNA vaccine over an extended dosing interval, and to compare the magnitude of Ab and T cell responses 4 weeks after dose 2 between short and long vaccination regimens	Alpha	Extension of the dosing interval is an effective, immunogenic protocol (even against Alpha) and antiviral T cell responses are a potential mechanism of protection

								d participants			
Plan 2021[26]	5-Aug-21	From beginning of pandemic until June 27, 2021	medRxiv [preprint]	Modelling	VNM	Community	N/A	Total number of confirmed cases; rate of transmission (as a function of the mobility of people) and infection; effects of containment measures such as lockdown severity and temporal aspects of lockdown and isolation and testing strategies	To examine the temporal aspects of the lockdown in Ho Chi Minh City and predict the progress of the outbreak in terms of the total number of confirmed cases	Delta	An earlier lockdown is always advised as this avoids the exponential increase in the number of cases. Moreover, a lockdown duration of at least 3 weeks is ideal as there are noticeable improvements compared to a 15-day lockdown - there could be half as many cases had the inevitable lockdown started a week earlier.
Si 2021[27]	21-Jul-21	Mar 1 - 21, 2021	Frontiers in Public Health - Health Economics	Observational	CHN	Community	4,540 participants	Participants' health-protective measures, that is, wearing masks, handwashing, and keeping physical distance	To analyze the impact of vaccination against COVID-19 on participants' attitudes toward protective countermeasures	Alpha, Beta, Gamma, Delta	Vaccination lessened participants' frequency of hand washing by 1.75 times and their compliance frequency intensity of observing physical distancing by 1.24 times. However, the rate of mask-wearing did not reduce significantly. A reduction in the frequency of hand washing and observing physical distance could cause a resurgence of COVID-19. Participants' gender, age, education level, individual health risk perception, public health risk perception, social responsibility, peer effect, and government supervision are the main

Public Health Implications of SARS-CoV-2 VOC, updated September 10, 2021

											factors affecting their vaccination choice. However, cultural roots and accessibility to health-protection products do not significantly influence participants' vaccination intention.
Sonabend 2021[28]	18-Aug-21	Datasets used were "up to 8 March 2021" and "8 March to 31 July" 2021. Projections made for June 2021 - June 2022.	medRxiv [preprint]	Modelling	UK	Community	N/A	Lifting of NPIs on deaths, hospital admissions and bed occupancy, serological data and PCR testing data	To assess each step of UK's roadmap out of lockdown in relation to Delta, and potential epidemic magnitude	Alpha, Delta	The phased lifting of NPIs in England, coordinated with vaccine roll-out, has been largely successful at keeping hospitalisation and deaths at low levels since March 2021. However, the high transmissibility of Delta, imperfect VE, and future increases in contact rates are likely to lead to a substantial wave of transmission in the autumn, albeit of highly uncertain magnitude. Finally, vaccination alone in the absence of NPIs may not be sufficient to control Delta even with high vaccination coverage.
Susswein 2021[29]	10-Aug-21	Not reported	medRxiv [preprint]	Modelling	USA	Community	N/A	Transmission dynamics and spatial mobility data	To demonstrate the roles of within-community contact versus between-community mobility in transmission risk, the role of natural versus vaccine-induced immunity in structuring the susceptibility landscape, the variable impact of potential variant mutations on disease dynamics, and the influence of altering each of these mechanisms in the effectiveness of public health intervention	Alpha, Delta	Regional mobility networks drive patterns of COVID-19 transmission throughout the United States. The COVID-19 pandemic in the US is characterized by a geographically localized mosaic of transmission along an urban-rural gradient, with many outbreaks sustained by between-county transmission. There is a dynamic tension between the spatial scale of public health interventions and population susceptibility as pre-pandemic contact is resumed. Due to spatial connectivity, certain regions are rendered particularly at risk from invasion by variants of concern.

Public Health Implications of SARS-CoV-2 VOC, updated September 10, 2021

Tran Kiem 2021[30]	14-Jul-21	September 1, 2021, to April 1, 2022	EClinicalMedicine	Modelling	FRA	Community	N/A	Risk of severe disease by age and comorbidity and transmission dynamics	To understand how vaccine characteristics, levels of vaccine coverage and heterogeneities in individual risks may affect the impact of vaccination in the short and medium term, using France as a case study	Alpha	Prioritizing at-risk individuals reduces morbi-mortality the most if vaccines only reduce severity, but is of less importance if vaccines also substantially reduce infectivity or susceptibility. Age is the most important factor to consider for prioritization; additionally accounting for comorbidities increases the performance of the campaign in a context of scarce resources.
Vie 2021[31]	26-Mar-21	Not reported	arXiv [preprint]	Modelling	Globally	Community	N/A	Emergence of more contagious variants using genetic algorithms (GAs); policy measures aiming at minimizing infection rates in the population; how they competitively evolve	To examine the phenomenon of coevolution with COVID-19 variants and evaluate the impact of policy interventions over the evolution of the viruses	Alpha	Under coevolution, virus adaptation towards more infectious variants is considerably faster than when the virus evolves against a static policy. More contagious strains become dominant much faster in the virus population under coevolution. Seeing more infectious virus variants becoming dominant may signify that the policy measures are effective. Seeing more infectious virus variants becoming dominant may signify that the policy measures are effective.
Zhang 2021[32]	3-Sep-21	Not reported	medRxiv [preprint]	Modelling	USA	Schools (K -12)	N/A	Number of infections	To estimate the number of new infections during one semester among a student population under different assumptions about mask usage, routine testing, and levels of incoming protection.	Delta	Without interventions in place (testing & masking), the vast majority of susceptible students (≥75%) will become infected through the semester. Universal masking can reduce student infections by 26-78% (dependent upon incoming protection), and biweekly testing along with masking reduces infections by another 50%.
INCLUDED STUDIES FROM MAY 11 TO JULY 14, 2021 (N=33)											

Public Health Implications of SARS-CoV-2 VOC, updated September 10, 2021

Adamoski 2021[33]	21-Jun-21	Oct 10th 2020 to May 24th 2021	medRxiv [preprint]	Observati onal	BRA	University	7249 peopl e; 12558 tests	Positive sample Genotype	Provide safer work environment for employees of the Federal University of Paraná in Brazil	Gam-ma	Analysis of saliva presents a cheap, easy to collect, & feasible asymptomatic screening strategy.
Adeyinka 2021[34]	05-Jul-21	Jan 3rd to Feb 6th 2020 & Jan 1st to Jun 15th 2021	medRxiv [preprint]	Modelling	CAD	Community	NR	Prevalence of VOC, vaccination data & public health measures	Examine clustering patterns of COVID-19 public health efforts & cluster differences in prevalence of VOC in Canada	Alpha, Beta, Gam-ma & Delta	Public health measures varied greatly across provinces, indicating the importance for increasing the number of fully vaccinated individuals
Aubrey 2021[35]	21-Jun-21	July 15th 2020 to Feb 15th 2021	medRxiv [preprint]	Surveil-lance	PYF	Community	59,49 0 individ ual self-collect ed sampl es	Number of positive SARS-CoV-2 cases	Reduce the importation of SARS COV-2 into French Polynesia through travel	Alpha	Self-collection & pooling proved to be a low resource-intensive approach to testing, while still effectively detecting VOC
Bauer 2021[36]	25-Aug-21	May 2021 to Fall of 2021	ArXiv [preprint]	Modelling	Euro pe	Community	N/A	Rate at which NPIs can be lifted in relation to vaccine campaigns	To study how the planned vaccine rollout in the EU along with cumulative post-infection immunity allows for lifting restrictions; In particular, we study how precisely the number of contacts can be increased without rendering disease spread uncontrolled over the year 2021	All (but the model is based on Alpha)	Recommendation is to keep case numbers as low as possible to facilitate test-traceand-isolate programs, reduce mortality and morbidity, and offer better preparedness against emerging variants, potentially escaping immune responses. Keeping moderate preventive measures in place (such as improved hygiene, use of face masks, and moderate contact reduction) is highly recommended will further facilitate control.
Berec 2021[37]	05-Jul-21	Aug 31st 2020 to Jun 30th 2021	medRxiv [preprint]	Modell-ing	CZE	Community	N/A	COVID-19 related deaths	Determine whether delaying the 2nd vaccine dose from 21 to 42 days is advantageous	Alpha	A 2nd dose at 21 days is advantageous when vaccine supply is sufficient & epidemic is mild, while a 2nd dose at 42 days is advantageous when vaccine supply is insufficient & epidemic is severe

Public Health Implications of SARS-CoV-2 VOC, updated September 10, 2021

Betti 2021[38]	03-Jun-21	Dec 12th 2020 to May 7th 2021	Vaccines	Modell-ing	CAD	Community	N/A	Number of positive SARS-CoV-2 cases	Predict when new variants overtake the wildtype during an outbreak	Alpha	Due to current underreporting of COVID-19 cases, it is estimated that a VOC wouldn't become dominant until March/April 2021. Therefore, NPIs should be maintained in ON along with vaccination to prevent further outbreaks.
Bilinski 2021[39]	10-Aug-21	N/A	medRxiv [preprint]	Modell-ing	USA	Schools	N/A	30-day cumulative incidence of SARS-CoV-2 infection; proportion of cases detected; proportion of planned and unplanned days out of school; cost of testing programs and childcare costs	Identify the costs and benefits of testing strategies to reduce the infection risks of full-time in-person K-8 education at different levels of community incidence	Delta	"Test to stay" policies and/or screening tests can facilitate consistent in-person school attendance with low transmission risk across a range of community incidence. Surveillance may be a useful reduced-cost option for detecting outbreaks and identifying school environments that may benefit from increased mitigation.
Borch-ering 2021[40]	14-May-21	Mar 27th 2021	CDC MMWR	Modell-ing	USA	Community	n/a	Weekly reported cases, hospitalizations & deaths	Provide COVID-19 projections in the US over 6 months	Alpha	High vaccination coverage & moderate NPI adherence would allow hospitalizations & deaths to remain low, with a projected decline in cases by July 2021. Lower NPI adherence would lead to increases in severe COVID-19 outcomes, even with enhanced vaccination coverage.
Bowie 2021[41]	10-Jun-21	Jun 1st 2021	medRxiv [preprint]	Modell-ing	UK	Community	n/a	Incidence, death rate & reproductive ratio	Determine whether an effective find, test, trace, isolate & support (FTTIS) system would be helpful in the UK with low case numbers, moderate	Delta	An improved FTTIS system could help prevent a 3rd wave caused by VOC

									immunization levels & a circulating VOC		
Braun 2021[42]	15-Jun-21	Jan to Mar 2021	International Journal of Clinical Pharmacology & Therapeutics	Modell-ing	DEU	Community	N/A	Daily number of newly infectious persons, total number of infected persons & occupancy of ICU	Model the epidemiological effect of vaccination in relation to the presence of Alpha in Germany	Alpha	Daily number of new infections, total number of infections & ICU occupancy is directly related to the speed of vaccine rollout amongst the population
Chen 2021[43]	15-Jun-21	Nov 1st 2020 to Jan 20th 2021	SSRN The Lancet [preprint]	Observ-ational	UK	Community	41,341 type 1 groups comprising 160,600 backward events available for analysis	SGTF prev-alence (proxy for Alpha)	Estimate COVID-19 transmission risk, including Alpha, across comm-unity settings in Engl&	Alpha	Highest risk of transmission associated with personal services (e.g. hairdressers), visiting friends/relatives & daycare/educational settings. Transmission risk depends on environmental factors with higher risk in certain settings likely associated with single source transmission or indoor environments.
Conn 2021[44]	22-May-21	3 data-sets: Jun 12th to Nov 13th 2020; Nov 14th 2020 to Mar 24th 2021; & Mar 2020 to May 12th 2021	medRxiv [preprint]	Modell-ing	UK	Community	N/A	Reproduction number, daily infections & daily deaths	Estimate reproduction numbers & transmission rate of Alpha to assess the UK's re-opening plan in relation to vaccine rollout	Alpha	Number of daily cases are predicted to increase as NPIs are lifted in May & Jun 2021. A further significant increase in cases is predicted with a reduced uptake of vaccination by eligible individuals.
Domenico 2021[45]	16-May-21	Mar 2020 to Apr 2021	medRxiv [preprint]	Modell-ing	FRA	Community	N/A	Number of cases of SARS-CoV-2	Compare various intervention scenarios to examine adherence to &	Alpha	An estimated increase in cases predicted for May & Jun 2021 as NPIs are lifted. Moderate NPIs should be in place for extended time to achieve

Public Health Implications of SARS-CoV-2 VOC, updated September 10, 2021

									sustainability of epidemic control		similar results as high intensity lockdowns. Short & strict lockdowns perform better than longer moderate lockdowns due to waning adherence of lockdown measures.
Dimeglio 2021[46]	12-May-21	Feb 5th to 12th 2021 & Mar 5th to 12th 2021	Viruses	Modell-ing	FRA	Community	N/A	Number of new daily SARS-CoV-2 cases	Estimate transmission dynamics of SARS-CoV-2 in Toulouse, France in the presence of VOC & in relation to public health measures, including vaccination rollout .	Alpha	Alpha became dominant in Feb 2021, which indicates its capacity to adapt to new hosts. Its transmission dynamics suggest that the public health measures are effective against Alpha in contrast to some reports
Du 2021[47]	01-Jul-21	NA	SSRN The Lancet [preprint]	Modell-ing	USA	Community	N/A	Testing strategies & number of positive SARS-CoV-2 cases	Assess the economic impact of proactive testing strategies versus different transmission scenarios of SARS-CoV-2	Alpha, Beta, Gam-ma & Delta	Modell-ing suggests daily testing is needed for confirmed cases when population immunity is low & weekly testing when immunity is high. As transmission rate increases in the population, testing becomes more economical.
Jaya-sundara 2021[48]	07-Jul-21	N/A	medRxiv [preprint]	Modell-ing	MYS	Community	N/A	Number of SARS-CoV-2 cases	Predict the impact of vaccine rollout on controlling the spread of SARS-CoV-2 in relation to various public health response scenarios in Malaysia	Alpha, Beta & Delta	Under current vaccination rollout, lifting all NPIs would lead to a surge in cases. VOC are estimated to be responsible for the current resurgence in case numbers & therefore, rapid vaccine rollout is necessary to mitigate the spread of SARS-CoV-2, along with continuation of NPIs
Lane 2021[49]	09-Jul-21	Jan 25th 2020 to Jan 31st 2021	Lancet Public Health	Observati onal	AUS	Community	20 451 cases of COVID-19	Genomic analyses & associated case clusters	Explore the role of genomic epidemiology in mitigating COVID-19 outbreaks in Australia	Alpha	Swift & comprehensive quarantine & public health measures are effective at mitigating COVID-19 outbreaks, even with high viral growth rates. Real-time genomic analysis surveillance is a useful public health tool
Li 2021[50]	27-Jun-21	Mar 1st 2020 to May 31st 2021 & Dec 13th 2020 to May 31st 2021	medRxiv [preprint]	Modell-ing	USA	Community	N/A	Number of wildtype & Alpha cases	Estimate the transmission dynamics of wildtype & VOC SARS-CoV-2 in	Alpha	Current vaccines are effective against the alpha variant, & 70% coverage would be sufficient protection, to allow for social activities to resume

Public Health Implications of SARS-CoV-2 VOC, updated September 10, 2021

									relation to vaccine coverage in the US		
Loenen-bach 2021[51]	2027-05-21	Jan to Feb 2021	Euro-surveillance	Observational	DEU	Childcare centres	3 outbreaks	Secondary attack rate	Investigate childcare center outbreaks & assess secondary attack rate within centers & associated households	Alpha	Evidence supports a higher transmissibility rate of alpha variant, & there are indications that it affects children at a higher rate. This highlights the need for NPIs
Maison 2021[52]	09-Jun-21	Apr 2nd 2021	Research Square [preprint]	Observational	USA	Community	Alpha & Beta	Prev-alence & origin of VOC in Hawai'i	Demonstrate a method to defining COVID-19 variants' lineages	Alpha, Beta, Gamma	Quarantine prevented VOC from entering Hawai'i. There would be benefit from a collective quarantine across various states rather than individual state quarantines
Mancuso 2021[53]	13-Jul-21	Jan 22nd, 2020 to Mar 6th, 2021	medRxiv [preprint]	Modelling	USA	Community	N/A	Vaccine effective-ness	Assess the impact of vaccination & vaccine-induced cross-protection against COVID-19 & the alpha variant	Alpha	Wide-scale vaccination & vaccine-induced cross protection is imperative to slowing the spread of COVID-19
Moghadas 2021[54]	08-Jul-21	Dec 12th 2020 to Jun 28th 2021	medRxiv [preprint]	Modelling	USA	Community	N/A	Case data in areas with different vaccination progress	Quantify impact of vaccination on cases	Alpha, Gamma & Delta	Vaccination program is highly effective in preventing COVID-19 cases. The speed of vaccination can have a very large impact on outbreak prevention, & increasing vaccination rates in areas which are underserved should be a priority
Neu-berger 2021[55]	03-Jul-21	Aug 31st 2020 to May 31st 2021 & Ongoing	medRxiv [preprint]	Observational	DEU	Childcare centres	8,500 ECEC managers	Reported infections	Define risk determinants & underst& difference in risk between children & adults	Alpha	Centers with children with lower socioeconomic status have a higher risk of infection, strict contact restrictions have shown to prevent infection
Nielson 2021[56]	06-Jul-21	NR	medRxiv [preprint]	Modelling	N/A	Community	N/A	Overdispersion & mean infectiousness of variants	Determine how overdispersion will affect the variant	Alpha	Overdispersion is evolutionarily unstable, & variants could become dominant
Quilty 2021[57]	14-Jun-21	NR	medRxiv [preprint]	Modelling	Global	Community	N/A	Proportion of infected travelers	Assess the effectiveness of quarantine & testing strategies for travelers	Alpha	Quarantine & strategic testing are effective methods in preventing transmission due to traveling

Public Health Implications of SARS-CoV-2 VOC, updated September 10, 2021

Quinonez 2021[58]	17-May-21	Dec 2019 to Apr 2021	Viruses	Modell-ing	NA	Community	N/A	Estimates of VOC infection	Forecast the variant behaviour due to selective pressure	Alpha, Beta, Gam-ma & Delta	B.1.351, B.1.617, & P.1 variants have shown to escape vaccine induced immunity, indicating the potential need for a third dose of vaccination
Sachak-Patwa 2021[59]	02-Jun-21	Mar 12th to Apr 11th 2021 & Mar 22nd to April 21st 2021	Research Square [preprint]	Modell-ing	IMN & ISR	Community	N/A	Viral transmission	Assess the risk of virus outbreak upon the removal of NPIs & travel restrictions	Alpha	Upon lifting travel restrictions, surveillance of incoming passengers will be crucial to preventing outbreaks
Salvatore 2021[60]	30-June-21	March & April 2021	medRxiv [preprint]	Modell-ing	IND	Community	N/A	Number of deaths and case counts	To compare the second and first waves, nationally and across states and union territories, in terms of public health metric. Then, to investigate the extent to which the emergence and altered epidemiological properties of the SARS-CoV-2 Delta variant might have driven the surge in the observed case and death counts in the 2nd wave in India. Finally, to estimate the number of deaths that could have been averted through an early nationwide intervention (like a lockdown) at various time points in March and April 2021 during the onset of the second wave.	Delta	Using an extended SIR model accounting for reinfections and waning immunity, we produce evidence in support of how early public interventions in March 2021 would have helped to control transmission in the country. We argue that enhanced genomic surveillance along with constant assessment of risk associated with increased transmission is critical for pandemic responsiveness. [...] To summarize, had action taken place at any time in March, it is plausible that more than 90% of observed cases and deaths between March 1-May 15 could potentially be avoided under both strong and moderate intervention scenarios.
Sanz-Leon 2021[61]	08-Jul-21	Mar to May 2020 & Feb to Mar 2021	medRxiv [preprint]	Modell-ing	AUS	Community	N/A	Estimated transmissio	Assess the risk of continued transmission with the	Alpha	A small group of people infected with variants with increased transmissibility

Public Health Implications of SARS-CoV-2 VOC, updated September 10, 2021

								n of COVID-19	presence more transmissible variants		could result in larger & longer community transmission outbreaks
Turner 2021[62]	Jun-2021	Jan 2020 to May 2021	CESifo Working Papers	Modelling	OECD countries	Community	N/A	Reproduction number	Analyze the impact of a set of policies, & the importance of vaccination in relation to variants	Alpha, Beta, Gamma, Delta	Increased vaccination rates would provide economic relief due to fewer containment policies & lower infection rates
Van Egeren 2021[63]	18-May-21	N/A	medRxiv [preprint]	Modelling	USA	Community	N/A	Estimated transmission rates of VOC in presence of vaccines	To model the impact of vaccine-evading variants on the course of the COVID-19 pandemic in the presence of vaccines	Alpha, Beta, Gamma	Variants that are already present within the population may be capable of quickly defeating the vaccines as a public health intervention, a fatal flaw in strategies that emphasize rapid reopening before achieving control of SARS-CoV-2
Yang 2021[64]	25-Jun-21	Mar 2020 to May 2021	medRxiv [preprint]	Modelling	IND	Community	N/A	Number of infections, reported cases, & reported deaths	Understand the epidemiological characteristics & impact of the Delta variant	Delta	Case decline was most likely due to NPIs & weather conditions which negatively impacted SARS-CoV-2 transmission, rather than high population immunity
Zou 2021[65]	07-Jul-21	Jan 25th 2020 to Mar 12th 2021	medRxiv [preprint]	Modelling	AUS	Community	N/A	Effective reproduction number	Create a model to inform decision makers on suitable timing for public health measure implementation	Alpha, Delta	The number of cases which were reported on the day of public health measure implementation predicted the size of case outbreaks
INCLUDED STUDIES FROM EARLIER RAPID REVIEW[66] (N=21)											
Ahn 2021[67]	05-May-21	N/A	SSRN The Lancet [preprint]	Modelling	USA	Community	Not reported	Policies	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	Alpha	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.
Borges 2021[68]	11-Mar-21	Dec 2020 to Feb 5, 2021	Eurosurveillance	Modelling	PRT	Community	3367 positive SGTF tests (proxy for Alpha) from Portuguese National Institute of Health	SGTF & SGTL test	To investigate the proportion of SGTF cases to gain insight on Alpha frequency and spread in Portugal	Alpha	After implementing public health measures, a decelerating trend was observed in proportion of SGTF/SGTL remaining below 50% in week 7 of 2021
Bosetti 2021[69]	23-Feb-21	N/A	HAL Archives	Modelling	FRA	Community	N/A	Hospitalization	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	Alpha	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[70]	05-Apr-21	Feb 7-27, 2021	medRxiv [preprint]	Observational	CAD	Community	5617 index cases and 3397 secondary cases	Household secondary attack rate 1-14 days after index case	To compare household secondary attack rates in those with VOC versus non-VOC index cases in Ontario	Alpha	Secondary attack rate 1.31 higher in VOC vs non-VOC in same household, further accentuated in asymptomatic (RR=1.91) and pre-symptomatic (RR=3.41) cases. Findings suggest need for aggressive public health measures physical distancing, masking, testing and contact tracing
Chudasama 2021[71]	10-May-21	Oct 1 to Dec 15, 2020	Journal of Infection	Observational	UK	Community	57,382	Household outbreak	A comparative analysis of household	Alpha	Analysis of national data has shown that Alpha cases were almost twice as

									clustering to provide a rapid assessment of transmissibility of this variant against other sequenced cases		likely to give rise to 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.
Domenico 2021[72]	14-Apr-21	Jan 7-8, 2021	medRxiv [preprint]	Modelling	FRA	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	To assess the impact of implemented measures on two COVID strains (i.e., Alpha and wild type) through modeling	Alpha	Social distancing implemented in Jan 2021 would bring down the R of historical strain, however VOC would continue to increase. School holidays also slowed down dynamics. Accelerating vaccinations will help but won't be sufficient to stop the spread of the VOC, even with optimistic vaccination rates
Giordano 2021[73]	16-Apr-21	February 24, 2020, through March 26, 2021	Nature Medicine	Modelling	ITA	Community	N/A	Health care costs, death	To compare different vaccines campaign scenarios, varying SARS-CoV-2 profiles and NPI restriction	Alpha, Beta	Findings strongly advocate for NPI to remain in place during vaccine roll out until sufficient population immunity is reached. Pre-emptive NPI actions (close then open at low case #s) could drastically reduce hospitalizations and deaths
Gurbaxani 2021[74]	27-Apr-21	N/A	medRxiv [preprint]	Modelling	USA	Community	N/A	Effectiveness of mask wearing	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	Alpha	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.

								both employing the measured face mask efficacy parameters for a variety of specific types of masks and for efficacy estimates that can act as benchmarks for evaluating these products		
Kim 2021[75]	13-Apr-21	Dec 14, 2020, to Mar 2, 2021	medRxiv [preprint]	Modelling	USA	Community	N/A	Evaluate the impact of each vaccine type using infection attack rate (IAR) as the main health outcome	To evaluate the trade-offs between speed of distribution vs. efficacy of multiple vaccines when variants emerge	Alpha, Beta	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.
Kühn 2021[76]	26-Apr-21	N/A	medRxiv [preprint]	Modelling	DEU	Community	N/A	Effectiveness of lockdowns, measured by number of new cases	To provide viable strategies of careful opening of facilities in low-incidence regions without being affected by neighboring regions of substantially higher incidence.	Alpha	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.
Linka 2021[77]	27-Apr-21	N/A	medRxiv [preprint]	Modelling	USA	University campus	N/A	Effective reproduction number	To 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; and to explore the possible effect of variants on the	Alpha, Beta	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 new and more infectious variants emerging across the globe. Tight outbreak control through mandatory quarantine and

									overall disease dynamics		test-trace-isolate strategies will be critical in successfully managing these local outbreak dynamics
Meister 2021[78]	16-May-21	N/A	Journal of Infectious Diseases	Laboratory	DEU	Community	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)	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	Alpha, Beta	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
Munitz 2021[79]	18-May-21	Dec 6, 2020, to Feb 10, 2021	Cell Reports Medicine	Modelling	ISR	Community; Nursing homes	N/A	SGTF data, reproduction number (Rt) & cycle threshold	To explore the transmission dynamics of the variant B.1.1.7 and to estimate the success of the above operations to mitigate the risk in the general population and in the elderly	Alpha	Israel's national vaccine program which initially targeted the elderly (60+ years) resulted in containment of Alpha in that population. By Jan 14th, 2021 when 50% of the 60+ were 2 weeks beyond their first dose of Pfizer vaccine, a striking decline was observed in the incidence of Alpha in the 60+ age group compared with 0-19 or 20-59 years of age (r=0.075, p=0.74; r=-0.005, p=0.98, respectively)
Pageaud 2021[80]	20-Mar-21	Santé publique France data from Jan 8 to	medRxiv [preprint]	Modelling	FRA	Community	N/A	# of individuals recovered, # of in hospital	To model the expected dynamics of COVID-19 with variant strains applying protective	Alpha, Beta, Gamma	While rapid vaccination of the whole population within 6 months provides the best outcome, a one-year vaccination campaign with extended non-pharmaceutical interventions

Public Health Implications of SARS-CoV-2 VOC, updated September 10, 2021

		27, 2021, and Feb 18, 2021					deaths, ICU resource use	measures and several vaccine strategies		(i.e., public health measures) would limit the number of deaths and avoid ICU resource saturation
Piantham 2021[81]	30-Mar-21	Sep 1, 2020 to Feb 19, 2021	medRxiv [preprint]	Modelling	UK	Community	71692 Alpha strains and 65850 non-Alpha strains	Time from illness onset in a primary case to illness onset in secondary case (using serial interval distribution)	To propose a method to estimate selective advantage of mutant strain over previous strains	Alpha	Alpha has an estimated reproduction advantage of 33.7% over non-VOC, suggesting control measures need to be strengthened by 33.7%
Sah 2021[82]	07-Apr-21	N/A	Eclinical Medicine	Modelling	USA	Community	N/A	Transmission probability; Hospitalization (non-ICU and ICU)	To evaluate the impact of accelerated vaccine distribution on curbing the disease burden of novel SARS-CoV-2 variants	Alpha	The current pace of vaccine rollout is insufficient to prevent the exacerbation of the pandemic that will be 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.
Scherbina 2021[83]	20-Feb-21	N/A	SSRN The Lancet [preprint]	Modelling	USA	Community	N/A	Estimated future monetary cost of the pandemic	To estimate the benefits of a lockdown in the US similar to those imposed in Europe	Alpha	Modeling suggests strict lockdown could reduce R by 76%, or R0: 0.933. A less restrictive lockdown would lead to R0:1.66. Optimal lockdown time of 6-7 weeks is needed to achieve high-dQALY outcomes, or 4-5 weeks to meet low-dQALY outcomes
Tokuda 2021[84]	07-May-21	Jan 14 to Apr 20, 2021	medRxiv [preprint]	Modelling	JPN	Community	N/A	Number of new infections per day	To construct the COVID-19 epidemic curve to examine effect of vaccination schedules and need for restrictions (lockdown)	Alpha	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.
Victora 2021[85]	30-Apr-21	Weeks 1-14, 2021	medRxiv [preprint]	Observational	BRA	Community	370,000 regist	Mortality rate ratios over two-	To evaluate the real-life effectiveness of the vaccination	Gamma	Rapid scale up of vaccination among elderly Brazilians in early 2021 was associated with a decline in relative

								ered deaths in Brazil	weekly periods in between Jan 3rd, 2021 and Apr 22nd, 2021 for individuals aged 80+ and 90+ years	campaign among the elderly in Brazil		mortality compared to younger individuals
Wells 2021[86]	07-May-21	N/A	medRxiv [preprint]	Modelling	USA	Community	N/A	Length of quarantine for origin-destination pairs of European countries	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	Alpha, Beta	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. For Alpha, in countries with similar prevalence, quarantine and testing strategies are similar for wild-type transmission. In contrast there is much greater variance between countries in prevalence of Beta VOC. Consequently, more extreme quarantine and testing measures would be needed to mitigate its impact.
Zimerman 2021[87]	11-Mar-21	Jun 1, 2020 to Jan 10, 2021	Cureus	Modelling	BRA	Community	773 genomic sequence samples	Social isolation index (SII), which is based on percentage of individuals who stayed within 450m of their home	To assess whether social isolation into small families or groups is associated with the emergence of new variants	Gamma	In the state of Amazonas, where household sizes are large, there was a positive correlation between SII and the prevalence of Gamma when SII was above 40%. Authors hypothesize that forced prolonged cohabitation may boost viral mutation and increased infectivity.

AUS: Australia; Brazil: BRA; CAD: Canada; CDC: centres for disease control & prevention; CHN: China; CZE: Czech Republic; DEU: Germany; FRA: France; IND: India; ISR: Israel; IMN: Isle of Man; ITA: Italy; JPN: Japan; MMWR: morbidity & mortality weekly report; MYS: Malaysia; NA: North America; N/A: Not available;

Public Health Implications of SARS-CoV-2 VOC, updated September 10, 2021

NPI: non-pharmaceutical intervention; PRT: Portugal; PYF: French Polynesia; USA: United States of America; UK: United Kingdom; VNM: Vietnam; VOC: variant/s of concern

Supplementary Table 2. Critical appraisal results of included studies

Author, Year	Source	Preprint or Peer Review	Adjusted score for PP	Total Score (%)	Overall Quality
Cohort Studies Appraised with NOS Tool[a]					
Buchan, 2021[70]	MedRxiv	PP	-2	6 (67)	Medium
Chudasama, 2021[71]	Journal of Infection	PR	N/A	8 (89)	High
Cross-sectional Studies Appraised with NOS Tool[b]					
Victora, 2021[85]	MedRxiv	PP	-2	6 (60)	Medium
Cohort Studies Appraised with JBI Tool[d]					
Amirthalingam, 2021[2] f	MedRxiv	PP	-2	9 (81.8)	High
Karaba, 2021[17]	MedRxiv	PP	-2	7 (63.6)	Medium
Hillus, 2021[16]	The Lancet: Respiratory Medicine	PR	N/A	11 (100)	High
Payne, 2021[25]	SSRN	PP	-2	9 (81.2)	High
Cross-sectional Studies Appraised with JBI Tool[c]					
Adenaiye, 2021[1]	MedRxiv	PP	-2	3 (37.5)	Medium
Neuberger, 2021[55]	MedRxiv	PP	-2	3 (37.5)	Medium
Si, 2021[27]	Frontiers in Public Health	PR	N/A	5 (62.5)	Medium
Prevalence Studies Appraised with JBI Tool[a]					
Gorji, 2021[14]	MedRxiv	PP	-2	6 (66.6)	High
Lane, 2021[49]	Lancet Public Health	PR	N/A	9 (100)	High

Public Health Implications of SARS-CoV-2 VOC, updated September 10, 2021

Loenenbach, 2021[51]	Eurosurveillance	PR	N/A	9 (100)	High
Case Series Studies Appraised with JBI Tool[c]					
Ademoski, 2021[33]	MedRxiv	PP	-2	2 (25)	Low
Maison, 2021[52]	Research Square	PP	-2	2 (25)	Low

[a]Total scores calculated out of 9; [b]Total score calculated out of 10; [c]Total score calculated out of 8; [d]Total score calculated out of 11

Search Strategies

All searches last executed on August 25, 2021.

MEDLINE (Ovid MEDLINE All)

COVID-19 search filter: CADTH https://covid.cadth.ca/literature-searching-tools/cadth-covid-19-search-strings/

1	(coronavirus/ or betacoronavirus/ or coronavirus infections/) & (disease outbreaks/ or epidemics/ or p&emics/)
2	(ncov* or 2019ncov or 19ncov or covid19* or covid or sars-cov-2 or sarscov-2 or sarscov2 or severe acute respiratory syndrome coronavirus 2 or severe acute respiratory syndrome corona virus 2).ti,ab,kf,nm,ot,ox,rx,px.
3	((new or novel or "19" or "2019" or wuhan or hubei or china or chinese) adj3 (coronavirus* or corona virus* or betacoronavirus* or CoV or HCoV)).ti,ab,kf,ot.
4	((coronavirus* or corona virus* or betacoronavirus*) adj3 (p&emic* or epidemic* or outbreak* or crisis)).ti,ab,kf,ot.
5	((wuhan or hubei) adj5 pneumonia).ti,ab,kf,ot.
6	or/1-5 [CADTH COVID-19 filter, no date limit]
7	(((uk or united kingdom or engl& or english or britain or british or kent) adj3 (variant* or voc or vui)) or "b117" or "20i 501yv1" or "variant of concern 202012 01" or "voc 202012 01" or "variant under investigation in december 2020" or "variant under investigation 202012 01" or "vui 202012 01").ti,ab,kw,kf.
8	(((south africa* or sa) adj3 (variant* or voc or vui)) or "b1351" or "501v2" or "501yv2" or "20h 501yv2" or "20c 501yv2").ti,ab,kw,kf.
9	((brazil* adj3 (variant* or voc or vui)) or "p1" or "b11281" or ((mutation* or spike*) adj3 (k417t or e484k or n501y))).ti,ab,kw,kf.
10	((mutation* or spike*) adj3 d614g).ti,ab,kw,kf.
11	((india* adj3 (variant* or voc or vui)) or "b1617*" or "g 452v3" or "voc 21apr" or "vui 21apr" or double mutation or double mutant or double variant or triple mutation or triple mutant or triple variant or ((mutation* or spike*) adj3 (e484q or l452r or p681r))).ti,ab,kw,kf.
12	((alpha or beta or Gam-ma or delta) adj3 variant*).ti,ab,kw,kf.
13	or/7-12
14	6 & 13

Public Health Implications of SARS-CoV-2 VOC, updated September 10, 2021

Embase (Elsevier Embase.com)

COVID-19 search filter: CADTH adapted to Embase.com format; line 1 exploded

1	'SARS-related coronavirus'/exp
2	('coronavirinae'/de OR 'betacoronavirus'/de OR 'coronavirus infection'/de) & ('epidemic'/de OR 'p&emic'/de)
3	(ncov* OR 2019ncov OR 19ncov OR covid19* OR covid OR 'sars-cov-2' OR 'sarscov-2' OR 'sars-cov2' OR sarscov2 OR 'severe acute respiratory syndrome coronavirus 2' OR 'severe acute respiratory syndrome corona virus 2'):ti,ab,kw,de,tt,oa,ok
4	((new OR novel OR '19' OR '2019' OR wuhan OR hubei OR china OR chinese) NEAR/3 (coronavirus* OR 'corona virus*' OR betacoronavirus* OR cov OR hcov)):ti,ab,kw,de,tt,oa,ok
5	((coronavirus* OR 'corona virus*' OR betacoronavirus*) NEAR/3 (p&emic* OR epidemic* OR outbreak* OR crisis)):ti,ab,kw,tt,oa,ok
6	((wuhan OR hubei) NEAR/5 pneumonia):ti,ab,kw,tt,oa,ok
7	#1 OR #2 OR #3 OR #4 OR #5 OR #6
8	(((uk OR 'united kingdom' OR engl& OR english OR britain OR british OR kent) NEAR/3 (variant* OR voc OR vui)) OR 'b.1.1.7' OR b117 OR '20i 501y.v1' OR 'variant of concern 202012 01' OR 'voc 202012 01' OR 'variant under investigation in december 2020' OR 'variant under investigation 202012 01' OR 'vui 202012 01'):ti,ab,kw
9	((('south africa*' OR sa) NEAR/3 (variant* OR voc OR vui)) OR 'b.1.351' OR b1351 OR '501.v2' OR '501y.v2' OR '20h 501y.v2' OR '20c 501y.v2'):ti,ab,kw
10	((brazil* NEAR/3 (variant* OR voc OR vui)) OR 'p.1' OR p1 OR 'b.1.1.28.1' OR b11281 OR ((mutation* OR spike*) NEAR/3 (k417t OR e484k OR n501y))):ti,ab,kw
11	((mutation* OR spike*) NEAR/3 d614g):ti,ab,kw
12	((india* NEAR/3 (variant* OR voc OR vui)) OR 'b.1.617*' OR b1617* OR 'g 452.v3' OR 'voc 21apr' OR 'vui 21apr' OR 'double mutation' OR 'double mutant' OR 'double variant' OR 'triple mutation' OR 'triple mutant' OR 'triple variant' OR ((mutation* OR spike*) NEAR/3 (e484q OR l452r OR p681r))):ti,ab,kw
13	((alpha OR beta OR Gam-ma OR delta) NEAR/3 variant*):ti,ab,kw
14	#8 OR #9 OR #10 OR #11 OR #12 OR #13
15	#7 & #14

Cochrane Database of Systematic Reviews & Cochrane CENTRAL (Cochrane Library, Wiley)

1	MeSH descriptor: [Coronavirus] this term only
2	MeSH descriptor: [Betacoronavirus] this term only
3	MeSH descriptor: [Coronavirus Infections] this term only
4	{or #1-#3}

Public Health Implications of SARS-CoV-2 VOC, updated September 10, 2021

5	MeSH descriptor: [Disease Outbreaks] this term only
6	MeSH descriptor: [Epidemics] this term only
7	MeSH descriptor: [P&emics] this term only
8	{or #5-#7}
9	#4 & #8
10	(ncov* or 2019ncov or 19ncov or covid19* or covid or "sars-cov-2" or "sarscov-2" or sarscov2 or "severe acute respiratory syndrome coronavirus 2" or "severe acute respiratory syndrome corona virus 2"):ti,ab,kw
11	((new or novel or "19" or "2019" or wuhan or hubei or china or chinese) near/3 (coronavirus* or "corona virus*" or betacoronavirus* or cov or hcov)):ti,ab,kw
12	((coronavirus* or "corona virus*" or betacoronavirus*) near/3 (p&emic* or epidemic* or outbreak* or crisis)):ti,ab,kw
13	((wuhan or hubei) near/5 pneumonia):ti,ab,kw
14	{or #9-#13}
15	(variant* or voc or vui or mutation* or spike):ti,ab
16	#14 & #15

Epistemonikos Living Overview of the Evidence (LOVE) for COVID-19
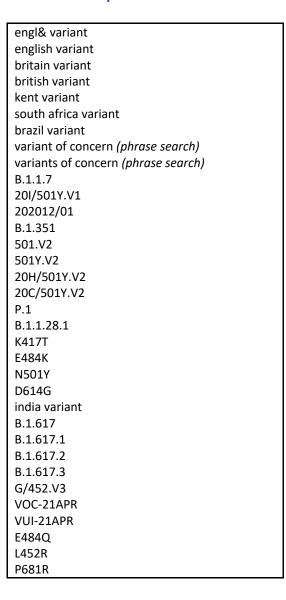
Basic search of the following terms within the LOVE:

variant* OR voc OR vui OR "B.1.1.7" OR "20I/501Y.V1" OR "202012/01" OR "B.1.351" OR "501.V2" OR "501Y.V2" OR "20H/501Y.V2" OR "20C/501Y.V2" OR "P.1" OR "B.1.1.28.1" OR "K417T" OR "E484K" OR "N501Y" OR "D614G" OR "B.1.617" OR "B.1.617.1" OR "B.1.617.2" OR "B.1.617.3" OR "G/452.V3" OR "VOC-21APR" OR "VUI-21APR" OR "double mutation" OR "double mutant" OR "triple mutation" OR "triple mutant" OR "E484Q" OR "L452R" OR "P681R"

medRxiv / bioRxiv

medRxiv & bioRxiv simultaneous search; Date limit changed for each search update (this update: May 11 - July 14, 2021); Title & Abstract search; All words (unless otherwise specified); 50 per page; Best Match; export first 50 results only

Searches:

alpha variant
beta variant
Gam-ma variant
delta variant
uk variant
united kingdom variant

Public Health Implications of SARS-CoV-2 VOC, updated September 10, 2021

engl& variant
english variant
britain variant
british variant
kent variant
south africa variant
brazil variant
variant of concern *(phrase search)*
variants of concern *(phrase search)*
B.1.1.7
20I/501Y.V1
202012/01
B.1.351
501.V2
501Y.V2
20H/501Y.V2
20C/501Y.V2
P.1
B.1.1.28.1
K417T
E484K
N501Y
D614G
india variant
B.1.617
B.1.617.1
B.1.617.2
B.1.617.3
G/452.V3
VOC-21APR
VUI-21APR
E484Q
L452R
P681R

Public Health Implications of SARS-CoV-2 VOC, updated September 10, 2021

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