PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (**http://bmjopen.bmj.com/site/about/resources/checklist.pdf**) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Modeling the impact of pre-semester testing on COVID-19 outbreaks in university campuses
AUTHORS	Rennert, Lior; Kalbaugh, Corey Andrew; Shi, Lu; McMahan, Christopher

VERSION 1 – REVIEW

REVIEWER	Stephen Beckett Georgia Institute of Technology USA
REVIEW RETURNED	10-Aug-2020

GENERAL COMMENTS	This study argues in favor of entry testing for students returning to college campuses as a method to reduce outbreak potential using a very simple mathematical model. The CDC has no strong position on entry testing citing a lack of evidence. This paper provides evidence that entry testing would be beneficial, especially when used together with other strategies to lower transmission. The model used by the authors is the SIR model, which is very simplistic, and misses many aspects of disease transmission and features associated with SARS-CoV-2 including age-associated risk and pre/asymptomatic transmission. However, in terms of conceptually testing the efficacy of entry testing the model is appropriate within the context of the manuscript. I found the manuscript concise, well laid out and well written. I have a few points that I hope will help to improve the manuscript. I think that a major consideration that is missing from the current manuscript is one of timing. If results are not returned quickly there will be a delay between testing and when students are put into isolation dorms in which transmission events could occur. The faster test results are returned, the faster the results will be acted upon. e.g. see Larremore et al. 2020 https://www.medrxiv.org/content/10.1101/2020.06.22.20136309v2 There are many reports in the USA of test results taking longer than a week to process, which would provide little value to intervention efforts. I would encourage including some discussion of timing in the manuscript. As an additional concern, I am a little unsure about the function of isolation beds – are these available just for those in University housing? Or available to all students returning to campus e.g. those in private accommodations? Given differences between Universities it may be useful to clarify this in the text. The current model appears to assume all students could access isolation beds, but if this is not the case, it would mean that the isolation beds would take longer to fill (not much when R0 is large, but could make quite a difference

when R0<3). In this case, I think it would be useful to include more discussion about the appropriateness of using isolation beds as a "trigger" to closing campus and moving online.

Extra points:
1. I would encourage the authors to add that pre-symptomatic/asymptomatic transmission makes entry testing worthwhile – and that limiting testing to only those with symptoms will not be enough to stop spread.

2. Whilst the authors focus on students within their manuscript, I would encourage them to additionally consider knock-on effects to University staff and faculty, who may be at higher risk of facing severe infections (based on age, though age is not the only factor affecting severity). It may also be worth mentioning that the buck does not stop on campus, as campuses are not isolated from the larger community – in which students may live, socialize, shop and work. e.g., campus outbreaks may lead to wider community transmission.

3. This news report from Iowa State University suggesting 2.2% of 3,037 students returning to residence halls tested positive may be useful for the authors:
https://www.news.iastate.edu/news/2020/08/07/moveintesting
It supports the assumptions being made by the authors regarding case ascertainment bias.

4. In the spirit of open access I would encourage the authors to archive their code e.g. using figshare/zenodo.

REVIEWER	Saurabh Gombar Stanford University
REVIEW RETURNED	14-Aug-2020

| GENERAL COMMENTS | Thank you for asking me to review, "Reopening universities during the COVID-19 pandemic: A testing strategy to minimize active cases and delay outbreaks." In this very timely manuscript, the authors set out to model the effect of COVID NAT testing on students prior to returning to campus in the fall. The authors describe well the limits of published contact tracing plans which can be overwhelmed if an outbreak becomes too large. It is prudent to explore a strategy that delays spread of COVID in the student population.

The methods the authors use is a simple dynamic transmission epidemiological model fitting different testing scenarios and different viral infectivity rates. Using this model the authors clearly convey that a testing strategy in place at the beginning of the semester would postpone the time until resource (isolation bed) exhaustion.

I believe the authors do convey their message, and that this message is timely and relevant and worth publishing. Furthermore, the authors do a great job to highlight no testing strategy has nearly the same impact as keeping transmission low. However, I do have some concerns with the assumptions used in the modeling and believe those should be expanded on if the editors see fit. |

	1) The authors assumed 10% of the population was immune/previously infected and cited a single paper Martin et. al for this assumption (Martin N, Schooley RT, De Gruttola V. Modelling Testing Frequencies Required for Early Detection of a SARS-CoV-2 Outbreak on a University Campus. Infectious Diseases (except HIV/AIDS); 2020. doi:10.1101/2020.06.01.20118885). I do not believe that this citation alone is enough to support a 10% immunity rate. Instead of basing the number on seroprevalence studies across different regions in the US would be more appropriate; ie ranging from an I of <1% to 15+%. It is possible that parameter will ultimately make little difference into the time of resource exhaustion so alternatively that could be mentioned instead of testing a range of values for I. 2) The average infectious period of 3 days seems inadequate given SARS-CoV-2 dynamics and probably warrants modeling across a range of infectious periods. Similarly, the median time of positive NAT testing of 11 days is smaller than several publications demonstrating an average time of positivity greater than 20 days. It is these longer median lengths of positive NAT testing that have prompted a symptom-based return to work /end of isolation strategies commonly used by health care workers. It might be worth adding a small supplemental section with a sensitivity analysis of each of these parameters to be clear that the key message holds over a wide range of assumptions.

VERSION 1 – AUTHOR RESPONSE

Reviewer(s)' Comments to Author:

Reviewer: 1

Please leave your comments for the authors below This study argues in favor of entry testing for students returning to college campuses as a method to reduce outbreak potential using a very simple mathematical model. The CDC has no strong position on entry testing citing a lack of evidence. This paper provides evidence that entry testing would be beneficial, especially when used together with other strategies to lower transmission. The model used by the authors is the SIR model, which is very simplistic, and misses many aspects of disease transmission and features associated with SARS-CoV-2 including age-associated risk and pre/asymptomatic transmission. However, in terms of conceptually testing the efficacy of entry testing the model is appropriate within the context of the manuscript. I found the manuscript concise, well laid out and well written. I have a few points that I hope will help to improve the manuscript.

We thank the Reviewer for the positive feedback, and the point about the simplicity of the model is well taken. We have therefore adhered to the Reviewer's advice and have included an exposed compartment (those with the disease but not yet infectious) and an asymptomatic compartment (infectious but not detectable). We also now explicitly include a compartment for isolation of confirmed cases in this model. Furthermore, to address the suggestion about the availability of isolation beds for

on versus off campus, we consider both populations in our model. The details of this model are now provided in Supplementary Tables 1 and 2.

I think that a major consideration that is missing from the current manuscript is one of timing. If results are not returned quickly there will be a delay between testing and when students are put into isolation dorms in which transmission events could occur. The faster test results are returned, the faster the results will be acted upon. e.g. see Larremore et al. 2020
https://www.medrxiv.org/content/10.1101/2020.06.22.20136309v2
There are many reports in the USA of test results taking longer than a week to process, which would provide little value to intervention efforts. I would encourage including some discussion of timing in the manuscript.

We thank the Reviewer for this suggestion, and we now discuss this important issue in our discussion:
"Another logistical challenge is the turnaround time of the diagnostic tests. It has been noted that test turnaround time could be more important than test sensitivity in controlling this pandemic,[20] and if the turnaround time is too long, then the follow-up isolation, quarantine and contact tracing will be infeasible. There has been serious concern about the bottleneck with testing services and the associated wait time for test results.[21] However, with a series of point-of-care tests now authorized by the Food and Drug Administration and the congressionally funded RADx–Advanced Technologies Platforms (RADx-ATP) program to support 24-hour test turnaround time,[22] there is reason to anticipate that the testing bottleneck will be less of a serious challenge for American colleges and universities in the coming months of the pandemic. "

As an additional concern, I am a little unsure about the function of isolation beds – are these available just for those in University housing? Or available to all students returning to campus e.g. those in private accommodations? Given differences between Universities it may be useful to clarify this in the text. The current model appears to assume all students could access isolation beds, but if this is not the case, it would mean that the isolation beds would take longer to fill (not much when R0 is large, but could make quite a difference when R0<3). In this case, I think it would be useful to include more discussion about the appropriateness of using isolation beds as a "trigger" to closing campus and moving online.

We thank the Reviewer for raising this issue, and agree with these statements. Our models now assume both an on- and off-campus population. We assume that 50% of on-campus students are detected and require isolation, while only 25% of off-campus students are detected and require isolation. We agree that isolation bed capacity surely depends on the proportion off on/off-campus students requiring isolation, and these proportions may vary by university. We have therefore developed a free web application where the user can specify these input parameters for their setting. The proportion of on/off-campus students requiring isolation are now specific inputs in the model and

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can be varied by the user. The model is available at:

https://rennertl.shinyapps.io/PresemesterTesting/

In response to the last point, we agree that more discussion is needed. We now provide a justification for using isolation bed capacity as a trigger: "The latter (isolation bed capacity) could be viewed as a potential "trigger" that would initiate moving the university online, since a lack of isolation beds will force universities to allow infectious individuals to live among susceptible students. This would substantially increase the risk of disease transmission and would violate current CDC guidelines.[12]"

Extra points:

1. I would encourage the authors to add that pre-symptomatic/asymptomatic transmission makes entry testing worthwhile – and that limiting testing to only those with symptoms will not be enough to stop spread.

We agree with the Reviewer that this is a valid reason as to why pre-semester screening of all students is needed, and we now include this statement in the Discussion Section (first paragraph).

2. Whilst the authors focus on students within their manuscript, I would encourage them to additionally consider knock-on effects to University staff and faculty, who may be at higher risk of facing severe infections (based on age, though age is not the only factor affecting severity). It may also be worth mentioning that the buck does not stop on campus, as campuses are not isolated from the larger community – in which students may live, socialize, shop and work. e.g., campus outbreaks may lead to wider community transmission.

We thank the Reviewer for raising this point and agree that this is an important issue that warrants future investigation. We therefore discuss this as a limitation of our existing approach and to highlight that future research is warranted in our Discussion Section:

"One limitation of our model is that it exclusively focuses on the student population, whereas the disease transmission could very well occur between a student and a faculty/staff member of the university, who is on average older and more at risk for severe outcomes from contracting COVID-19. An outbreak within the university community could also influence the disease transmission pattern among local residents, and vice versa. Future variants of our model could incorporate interactions between students, university faculty/staff, and local residents around the university campus."

3. This news report from Iowa State University suggesting 2.2% of 3,037 students returning to residence halls tested positive may be useful for the authors:

https://www.news.iastate.edu/news/2020/08/07/moveintesting

It supports the assumptions being made by the authors regarding case ascertainment bias.

Thank you for making us aware of this information. We now use this information to set the infection rate for students returning to campus, and cite this news report.

4. In the spirit of open access I would encourage the authors to archive their code e.g. using figshare/zenodo.

We thank the Reviewer for this suggestion. We have now developed an R shiny app that is freely available for users to cater the model parameters of their current environment. We also include the source code at the following site: https://rennertl.shinyapps.io/PresemesterTesting/. Our source code is now also provided as supplementary material.

Reviewer: 2

Please leave your comments for the authors below Thank you for asking me to review, "Reopening universities during the COVID-19 pandemic: A testing strategy to minimize active cases and delay outbreaks." In this very timely manuscript, the authors set out to model the effect of COVID NAT testing on students prior to returning to campus in the fall. The authors describe well the limits of published contact tracing plans which can be overwhelmed if an outbreak becomes too large. It is prudent to explore a strategy that delays spread of COVID in the student population.

The methods the authors use is a simple dynamic transmission epidemiological model fitting different testing scenarios and different viral infectivity rates. Using this model the authors clearly convey that a testing strategy in place at the beginning of the semester would postpone the time until resource (isolation bed) exhaustion.

I believe the authors do convey their message, and that this message is timely and relevant and worth publishing. Furthermore, the authors do a great job to highlight no testing strategy has nearly the same impact as keeping transmission low. However, I do have some concerns with the assumptions used in the modeling and believe those should be expanded on if the Editors see fit.
We thank the Reviewer for the positive feedback, and are grateful for the suggestions. To ensure that our model meets the current assumptions in the literature, we have added compartments to our model (see response to comment 2 below, or response to Reviewer above). We provide additional detail of this model in Supplementary Table 1. We also agree that sensitivity to model input parameter assumptions is a concern, and have therefore created a web-based application where the user can specify their own input parameters as more data comes out
(**https://rennertl.shinyapps.io/PresemesterTesting/**). However, we have ensured that our parameters are the most up-to-date based on the existing literature. We list our parameters in Supplementary Table 2, along with the data sources. Point-by-point responses are provided below.

1) The authors assumed 10% of the population was immune/previously infected and cited a single paper Martin et. al for this assumption (Martin N, Schooley RT, De Gruttola V. Modelling Testing Frequencies Required for Early Detection of a SARS-CoV-2 Outbreak on a University Campus.

Infectious Diseases (except HIV/AIDS); 2020. doi:10.1101/2020.06.01.20118885). I do not believe that this citation alone is enough to support a 10% immunity rate. Instead of basing the number on seroprevalence studies across different regions in the US would be more appropriate; ie ranging from an I of <1% to 15+%. It is possible that parameter will ultimately make little difference into the time of resource exhaustion so alternatively that could be mentioned instead of testing a range of values for I.

We thank the Reviewer for the suggestions, and strongly agree that sensitivity analyses for the assumptions of our model need to be performed. Given the amount of input parameters that affect the projections, we have developed an Rshiny app that allows the user to vary all parameters in the model (**https://rennertl.shinyapps.io/PresemesterTesting/**). We discuss the limitations of our model due to uncertainty in the input parameters in our discussion (limitations). Based on our sensitivity analyses, we now state in the discussion that a lower proportion of the population that is immune at the semester start corresponds to earlier and larger peaks.

2) The average infectious period of 3 days seems inadequate given SARS-CoV-2 dynamics and probably warrants modeling across a range of infectious periods. Similarly, the median time of positive NAT testing of 11 days is smaller than several publications demonstrating an average time of positivity greater than 20 days. It is these longer median lengths of positive NAT testing that have prompted a symptom-based return to work /end of isolation strategies commonly used by health care workers. It might be worth adding a small supplemental section with a sensitivity analysis of each of these parameters to be clear that the key message holds over a wide range of assumptions.

We agree with the Reviewer, and have made several changes to our models to better reflect what is known about disease transmission parameters for SARS-CoV-2. Specifically, we have added an exposure compartment with an average latency period of 3 days, an asymptomatic compartment/undetected compartment with an average infectious period of 14 days, and a symptomatic/detectable compartment with an average infectious period of 3 days (2 days pre-symptomatic and 1 day lag between onset of symptoms and presentation to health services). We now include all model input parameters, and their justification based on the published literature, in Supplementary Table 2.

Per your suggestion, we now explicitly include the infection time and isolation time as parameters in our web-based application to assess sensitivity to model parameters. We discuss the impact of these parameters in our Discussion Section (limitations):

"…However, information on these parameters may change with time, and may vary from institution to institution. We have therefore created a web application that allows the user to set the model parameters to reflect their instutitonal settings and/or to update parameters as more information becomes available (https://rennertl.shinyapps.io/PresemesterTesting/). The choices of these parameters may have a substantial impact on the timing and the size of the peak number of active infections. For example, longer infectious periods and a lower proportion of the population that is immune at the semester start correspond to earlier and larger peaks, while an increase in the time

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spent in isolation decreases the time until isolation bed capacity is reached. More robust data on these parameters and test sensitivity, disease prevalence at the onset of the semester, and the impact of mitigation strategies on disease spread would vastly improve these estimates by minimizing uncertainty. "

VERSION 2 – REVIEW

REVIEWER	Dr. Stephen Beckett Georgia Institute of Technology, USA
REVIEW RETURNED	10-Nov-2020

| GENERAL COMMENTS | The authors have taken on board comments from the previous round of reviews; and in doing so have completely redrawn the mathematical model that is the basis of their arguments for pre-semester testing. I think this work has come a long way and I think the Rshiny applet with attached code is a nice touch. I have some comments about the new model.

Methods:
Page 4: "we assume that 50% of on-campus students and 25% of off-campus students are detected and require isolation, respectively."
I am unsure what the authors mean here? Are off-campus students less likely to be detected by pre-semester testing or semester testing? Why don't all detected cases require isolation? There are many things baked into this parameter – including the effectiveness of semester testing, which may be confusing. I don't want the authors to detract from their main argument that focuses on pre-semester testing. However, I think it would benefit the reader to clarify what the meaning of this parameter is; and the basis on which different values have been assumed.

Discussion:
Here the authors focus on how pre-semester testing may have helped with a focus on the 2020 Fall semester. I think the authors would do well to add a couple of sentences reflecting on the broader relevance of their results for the spring 2020 semester; and also the relevance of pre-semester testing as an intervention strategy for future pandemics. How can this work inform future guidance?

Supplementary Table 1:
* I think that the infection link may be misstated – it appears to conflate transmission from asymptomatic and symptomatic infectors. In a single population model -- the loss from the susceptible pool should be e.g.:
$-S * (beta_{1}*I_{1}/N + beta_{2}*I\{2\}/N)$
Here, I think the authors are considering a model with cross-coupling between the on-campus and off-campus populations. This means the loss from the susceptible pools should look something like e.g.:
$-S_{1} * ($ sum over index i from 1 to 2 $(beta_{1,i}*I_{1,i})/N_{1} +$ sum over index i from 1 to 2 $(beta_{2,i}*I_{2,i})/N_{1}$ |

i.e. symptomatic transmission from from on and off-campus; and asymptomatic transmission from on and off-campus. I would ask the authors to revisit and double-check the equations here.
* The caption of this table refers to a compartment A which does not appear in the equations. I think the authors mean the asymptomatic/undetected classes – could they clarify?

Supplementary Table 2:
* I am confused by the parameter alpha in Supplementary Table 2. Why is it different for campus and non-campus residents? Could the authors please clarify.
* There are two lines describing "Within population transmission rate, β_{ii}". Not sure if this is intended.
* The epsilon parameter is not explained here, I think it would help to do so.
* "Baseline infectious rate" and "Baseline recovered rate" do the authors mean the assumed proportion of infectious individuals and recovered individuals at the beginning of the semester? Note, these are not rates.

REVIEWER	Saurabh Gombar Stanford University
REVIEW RETURNED	12-Nov-2020

GENERAL COMMENTS	Thank you for the additional revisions to the manuscript. The changes improve the readability and the ability to interpret/apply the work.

VERSION 2 – AUTHOR RESPONSE

Reviewer: 1

Comments to the Author
The authors have taken on board comments from the previous round of reviews; and in doing so have completely redrawn the mathematical model that is the basis of their arguments for pre-semester testing. I think this work has come a long way and I think the Rshiny applet with attached code is a nice touch. I have some comments about the new model.

Thank you for your insightful comments and for catching the mistakes in our notation. We believe we have made the appropriate corrections. Note that we have slightly altered our model based on the comments. This had minimal impact on the results, and did not affect any of the conclusions of our study.

Methods:
Page 4: "we assume that 50% of on-campus students and 25% of off-campus students are detected and require isolation, respectively."
I am unsure what the authors mean here? Are off-campus students less likely to be detected by pre-semester testing or semester testing? Why don't all detected cases require isolation? There are many things baked into this parameter – including the effectiveness of semester testing, which may be confusing. I don't want the authors to detract from their main argument that focuses on pre-semester testing. However, I think it would benefit the reader to clarify what the meaning of this parameter is; and the basis on which different values have been assumed.

Thank you for raising this important point. Yes, it is indeed the case that many things are baked into these parameters. The first infectious compartment, I1, is for all those who do not isolate throughout the course of their infection. This can be due to a lack of symptoms, failure to get tested, or noncompliance with regards to isolation. The second infectious compartment captures those who do indeed test positive and isolate.

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The detection rate of on campus and off campus populations will be different for several reasons. First, on campus students have easier access to university testing centers and are therefore more likely to be tested. Secondly, because on campus students do indeed use campus facilities, universities can enforce isolation from other students. Universities do not have the same jurisdiction for those living off campus. It is therefore expected that there will be more members in this population who will not self-isolate.

However, we appreciate the Reviewer's point about detracting from the main argument of the paper. To keep things simple, we have set this proportion to 1/3 both groups. This is based on empirical data showing that 50% of infections among university students are symptomatic, but assumes that only 2/3's of symptomatic students will get tested and isolate. This is now updated in the text and supplementary Table 2. We note that these assumptions may vary from institution to institution. We therefore explicitly allow this parameter to vary in our Rshiny application. Thus users can specify appropriate input parameters that pertain to their setting.

We now add the following to the main text (end of 2nd paragraph in Methods Section): "We assume that 50% of infections are symptomatic [Denny et al, 2020] but only two out of three symptomatic students will get tested and isolate. Thus, we implicitly assume that one-third of all infected students are detected and require an isolation bed."

We have also changed the verbiage in supplementary table 2 from "Proportion of infections that are symptomatic and *require isolation*" to "Proportion of infections that are symptomatic and *isolate.*"

Discussion:
Here the authors focus on how pre-semester testing may have helped with a focus on the 2020 Fall semester. I think the authors would do well to add a couple of sentences reflecting on the broader relevance of their results for the spring 2020 semester; and also the relevance of pre-semester testing as an intervention strategy for future pandemics. How can this work inform future guidance?

We thank the reviewer for this suggestion, and have added an additional paragraph to our Discussion (2nd paragraph):

"Given the recent surge of COVID-19[25] and vaccination will unlikely be available to students and institutional employees before 2021,[26] implementation of pre-arrival testing will still be relevant for the Spring 2021 semester. Our recommendations for pre-arrival testing are indeed relevant for both future waves of the COVID-19 pandemic and future pandemics. Furthermore, pre-arrival testing is applicable to any institution (e.g., schools, companies, etc.) returning individuals to high-density environments that are conducive to disease spread."

Supplementary Table 1:
* I think that the infection link may be misstated – it appears to conflate transmission from asymptomatic and symptomatic infectors. In a single population model -- the loss from the susceptible pool should be e.g.:
  -S * (beta_{1}*I_{1}/N + beta_{2}*I{2}/N)
Here, I think the authors are considering a model with cross-coupling between the on-campus and off-campus populations. This means the loss from the susceptible pools should look something like e.g.:
-S_{1} * (sum over index i from 1 to 2 (beta_{1,i}*I_{1,i})/N_{1} + sum over index i from 1 to 2 (beta_{2,i}*I_{2,i})/N_{1}
i.e. symptomatic transmission from from on and off-campus; and asymptomatic transmission from on and off-campus. I would ask the authors to revisit and double-check the equations here.

*We thank the reviewer for pointing this out. Our model for the S compartment is based on equation 8 of Lloyd and Jansen (2004). Indeed, our formula did have an error. It should read:
$$dS_i(t) = -S_i \times \sum_{j=1}^{2}\{\beta_{ij} \times (I_{i1} + I_{i2})/N_j\}$$
These corrections have now been made Supplementary Table 1. In our code, this does indeed model the cross-coupling of on and off campus (as opposed to between infection compartments). However, we did find a minor error in the implementation of the matrix multiplication for this compartment. We

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have made the appropriate correction, and this has not substantially impacted our results or conclusions.

* The caption of this table refers to a compartment A which does not appear in the equations. I think the authors mean the asymptomatic/undetected classes – could they clarify?

*Thank you for catching this error. This compartment should have been labeled I_1; the correction has been made.

Supplementary Table 2:
* I am confused by the parameter alpha in Supplementary Table 2. Why is it different for campus and non-campus residents? Could the authors please clarify.

*Thank you for raising this important point. This has now been changed to a proportion of 1/3 for both populations. The justification for this choice is provided in the response to the reviewer's first comment (page 2).
* There are two lines describing "Within population transmission rate, β_{ii}". Not sure if this is intended.

* We thank the reviewer for pointing this out. The second line should have read *between* population transmission rate β_{ij}. This has been corrected.

* The epsilon parameter is not explained here, I think it would help to do so.

* We agree with the Reviewer, and have added a couple sentences to the footnote of Supplementary Table 2 in order to provide some detail (and a reference) for the cross-coupling assumption and the epsilon parameter.

* "Baseline infectious rate" and "Baseline recovered rate" do the authors mean the assumed proportion of infectious individuals and recovered individuals at the beginning of the semester? Note, these are not rates.

* We have corrected this to "Percent infected at baseline" and "Percent recovered at baseline".

1. Lloyd AL, Jansen VAA. Spatiotemporal dynamics of epidemics: synchrony in metapopulation models. *Mathematical Biosciences*. 2004;188(1):1-16. doi:10.1016/j.mbs.2003.09.003

2. Denny TN, Andrews L, Bonsignori M, et al. Implementation of a Pooled Surveillance Testing Program for Asymptomatic SARS-CoV-2 Infections on a College Campus — Duke University, Durham, North Carolina, August 2–October 11, 2020. 2020;69:5.

Reviewer: 2

Comments to the Author
Thank you for the additional revisions to the manuscript. The changes improve the readability and the ability to interpret/apply the work.

We thank the Reviewer for their feedback in the previous revision.

VERSION 3 – REVIEW

REVIEWER	Dr. Stephen Beckett Georgia Institute of Technology, USA
REVIEW RETURNED	28-Nov-2020

GENERAL COMMENTS	I thank the authors for their revisions which have improved the manuscript; I have no further comments to make at this time.