\_AuthorGuidance

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| **Author Checklist** | NG-A60540R1 |
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| **Please check the items below carefully and add a response in each row of the table to indicate the changes that you have made. Please also check through any additional marked-up edits we may have provided within the manuscript file.** | |
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| Abstract and editor's summary |  |
| Our guidance: | Your response: |
| Your paper will be accompanied by the following editor's summary. Please let us know if there are any inaccuracies: 'The PATAT model is used to simulate SARS-CoV-2 epidemics in low- and middle-income countries, and identifies the optimal strategy of genomic surveillance sampling to ensure timely and accurate novel variant virus detection.' | This is accurate. |
| The abstract — which should be roughly 150 words long and contain no references — should serve both as a general introduction to the topic and a non-technical summary of your main results and their implications. It should contain a brief account of the background and rationale of the work, followed by a statement of the main conclusions introduced by the phrase 'Here we show' or some equivalent phrase. Because we hope that researchers in a wide range of disciplines will be interested in your work, the abstract should be as accessible as possible, explaining essential but specialized terms concisely. We encourage you to show your abstract to colleagues outside of your direct field of expertise to uncover any problematic concepts. | Done. |
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| We can accommodate up to 8 display items (Figures or Tables) in the main article and up to 10 Extended Data figures, which will be integrated into the full-text HTML version of your paper and will be appended to the online PDF.   Each Extended Data item must be cited in order in the main text. Each Figure, Table and Extended Data figure must fit easily within an A4 page (210 x 297 mm). Please ensure that the number and size of your Figures, Tables and Extended Data figures fulfil these requirements to avoid any delay in the acceptance of your article. | We have 6 (5 Figures and 1 Table) in the main article and 8 Extended Data figures.  We have checked that all Extended Data items are cited in order in the main text. All Figure, Table Extended Data figure are fitted within an A4 page. |
| **To comply with this format and optimise the presentation of data in your Article, we suggest the following changes to the display items in your paper:** |  |
| *Please convert Supplementary Figures into Extended Data figures to increase the accessibility of the data.* |  |
| We estimate that the word count of your Article is approximately 3699 words. Please ensure that your revised manuscript does not exceed 4000 words. | All Supplementary Figures are now Extended Data figures.  The article now stands at 3716 words. |
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| **Please also divide your Main text section into the following sections:** |  |
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| Main text |  |
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| Please refrain from using words such as new/novel/first, when referring to the scientific findings. | We have refrained from using these words in our manuscript. |
| Please refer to specific items within the Supplementary Information (eg. Supplementary Figure 3) rather than to just 'Supplementary Information'. | All references are now made to specific items within the Supplementary Information. |
| Genes must be clearly distinguished from gene products (e.g., “gene Abc encodes a kinase,” not “gene Abc is a kinase”). For genes please provide database-approved official symbols (e.g., NCBI Gene, http://www.ncbi.nlm.nih.gov/gene) for the relevant species the first time each is mentioned; gene aliases may be used thereafter. Italicize gene symbols and functionally defined locus symbols; do not use italics for proteins, noncoding gene products and spelled-out gene names. | Not applicable. |
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| Figures and Tables |  |
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| <https://www.nature.com/documents/NRJs-guide-to-preparing-final-artwork.pdf> | We have prepared the figures according to the guidelines. |
| Please ensure that data presented in a plot, chart or other visual representation format shows data distribution clearly (e.g. dot plots, box-and-whisker plots, violin plots). When using bar charts, please overlay the corresponding data points (as dot plots) whenever possible and always for n ≤ 10. All box-plot elements (center line, limits, whiskers, points) should be defined in the legends accompanied by precise n numbers. |  |
| **Please note that data presentation has to be revised to comply with our policy in Extended Data Figure 7** | We have now overlay each bar in Extended Data Fig. 7 with the corresponding data points as dot plots. We have also defined all box-plot elements in the legend accompanied by precise n numbers. |
| Wherever statistics have been derived (e.g. error bars, box plots, statistical significance) the legend needs to provide and define the n number (i.e. the sample size used to derive statistics) as a precise value (not a range), using the wording “n=X biologically independent samples/animals/cells/independent experiments/n= X cells examined over Y independent experiments” etc. as applicable.  We strongly discourage deriving statistics from technical replicates, unless there is a clear scientific justification for why providing this information is important. Conflating technical and biological variability, e.g., by pooling technically replicates samples across independent experiments is strongly discouraged. |  |
| **Please note that this information is missing in the legend of Extended Data Figure 7** | The n number is now in the legend of Extended Data Fig 7. |
| All error bars need to be defined in the legends (e.g. SD, SEM) together with a measure of centre (e.g. mean, median). For example, the legends should state something along the lines of “Data are presented as mean values +/- SEM” as appropriate. All box plots need to be defined in the legends in terms of minima, maxima, centre, bounds of box and whiskers and percentile. |  |
| **Please note that the measure of centre for the error bands needs to be defined in the legends of Extended Data Figures 2a-b, 5** | We have edited the legends of Extended Data Figs. 2 and 5 with clear definitions of the measure of centre and error bands. |
| All figures, tables and extended data figures must be cited in the main text, and numbered in the order in which they appear. | All figures, tables and extended data figures are cited and numbered in order of appearance. |
| If bold/italic formatting in tables is necessary, please define its meaning in a table footnote | There are no bold/italic formatting in tables. |
| Tables may not contain dividing lines within cells - please reformat | Table 1 has been reformatted such that there are no dividing lines within cells |
| Shadings or symbols in graphs must be defined in some fashion. We prefer that you use a key within the image; do not include colored symbols in the legend/caption. | All shadings and symbols are defined. |
| Generally we request the removal of background gridlines but we think they might be useful for your plots - please consider this point. | We would like to retain the gridlines as they do enhance the readability of our plots. |
| Please add a separate colour scale Legend to Fig 4. | We have now added separate color scales to Fig. 4. |
| The dashed line in Fig 5d needs to be defined. | The dashed line in Fig 5d is now defined. |
| Please format all ED/Supplementary figures to the same guidance. | All ED figures are formatted to the same guidance. |
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| Data and Code |  |
| Our guidance: | Your response: |
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| Specific advice on your Data Availability Statement: |  |
| Please ensure that you also make the code required to reproduce the major results of this analysis available online (either in the PATAT model Github repo or elsewhere). For all deposited code, please mint DOIs and cite them in your Methods-only References. Thank you also for going to the effort of sharing your raw simulation data - while it is quite large it would be great if you could also deposit this at a more permanent location than a Dropbox. One of these may be appropriate: https://www.nature.com/sdata/policies/repositories#general | The custom codes used to reproduce the major results of this analysis is available in the PATAT model Github Repo as described in the Code Availability statement.  We have also uploaded the simulation data in Zenodo. |
| Please find attached to our decision letter a marked up copy of your reporting summary. After making the requested changes, please be sure to include the final version of your reporting summary, without our comments, in your submission as a supplementary information file. The reporting summary will be published alongside the paper. Please note that this form is a dynamic 'smart pdf' and must therefore be downloaded and completed in Adobe Reader, instead of opening it in a web browser | We have updated the reporting summary accordingly. |
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| Methods |  |
| Our guidance: | Your response: |
| Please start your Methods section with a statement confirming that your research complies with all relevant ethical regulations; naming the board/committee and institution that approved the study protocol. | Our research does not involve animal or human research participants. All data generated is based on computational simulations using the PATAT model. |
| The Methods must include a “Statistics & Reproducibility” section with general information on study design, how the statistical analyses of the data were conducted and general information on the reproducibility of experiments. Please include statements on how sample sizes were chosen, on whether any data were excluded (including why), whether randomization and blinding was used. If statements are negative please include the following statements: “No statistical method was used to predetermine sample size. “No data were excluded from the analyses”; "The experiments were not randomized"; "The Investigators were not blinded to allocation during experiments and outcome assessment”. | We have now included an appropriate “Statistics and Reproducibility” section in the Methods. |
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| End matter |  |
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| **Figure 1, Please confirm whether the map in Figure 1 belongs to you. If this image is from a third party source, please fill out our third party rights table and provide proof of permission to publish this image in a commercial publication.** | The raster map file in Figure 1 was downloaded from <https://www.naturalearthdata.com/> and is in the public domain. Under the terms of use (<https://www.naturalearthdata.com/about/terms-of-use/>), no permission is needed to use the map file and crediting the authors is not necessary. Nonetheless, we have now stated where the raster map file was downloaded from in the legend of Fig. 1. |
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