1   **Supplement 4**

2 **GATHER compliance**
3 This analysis complied with the Guidelines for Accurate and Transparent Health Estimates Reporting (GATHER).[1]
4 We have documented the steps in our analytical procedures and detailed the data sources used. The GATHER
5 recommendations can be found on the <u>GATHER website</u>.

Item #	Checklist item	Reported on page #
Objectives and funding		
1	Define the indicator(s), populations (including age, sex, and geographic entities), and time period(s) for which estimates were made.	Key Points Abstract Design Introduction paragraph 4 Methods
2	List the funding sources for the work.	*All funding sources are listed in the Acknowledgments*
Data Inputs		
For all data inputs from multiple sources that are synthesized as part of the study:		
3	Describe how the data were identified and how the data were accessed.	Methods *Input data* eSection 3 *Asymptomatic cases: Data* eSection 3 *Non-hospitalized cases: Proportion of deaths in long-term care* eSection 3 *Hospitalized cases: Proportion deaths among hospitalized and ICU cases* eSection 4 *Data sources*
4	Specify the inclusion and exclusion criteria. Identify all ad-hoc exclusions.	Methods *Input data* eSection 3 *Asymptomatic cases: Data* eSection 3 *Non-hospitalized cases: Proportion of deaths in long-term care* eSection 3 *Hospitalized cases: Proportion deaths among hospitalized and ICU cases* eSection 4 *Data sources* eFigure 8 *PRISMA diagram*
5	Provide information on all included data sources and their main characteristics. For each data source used, report reference information or contact name/institution, population represented, data collection method, year(s) of data collection, sex and age range, diagnostic criteria or measurement method, and sample size, as relevant.	Table 2, eTable 2 eSection 4

		Supplementary Appendix Data Inputs
6	Identify and describe any categories of input data that have potentially important biases (e.g., based on characteristics listed in item 5).	Table 2 Discussion *Limitations* eSection 4 *Data sources*
For data inputs that contribute to the analysis but were not synthesized as part of the study:		
7	Describe and give sources for any other data inputs.	Table 1 *Disability weights* eSection 4 *Severity-weighted prevalence*
For all data inputs:		
8	Provide all data inputs in a file format from which data can be efficiently extracted (e.g., a spreadsheet rather than a PDF), including all relevant meta-data listed in item 5. For any data inputs that cannot be shared because of ethical or legal reasons, such as third-party ownership, provide a contact name or the name of the institution that retains the right to the data.	*All input data are available in Supplementary Appendix Data Inputs*
Data analysis		
9	Provide a conceptual overview of the data analysis method. A diagram may be helpful.	Figure 1 *conceptual framework of long COVID analysis* eFigure 1 eFigure 2 eFigure 7
10	Provide a detailed description of all steps of the analysis, including mathematical formulae. This description should cover, as relevant, data cleaning, data pre-processing, data adjustments and weighting of data sources, and mathematical or statistical model(s).	<u>Data cleaning, pre-processing, and adjustments:</u> Methods eSection 3 *Data* subheadings eSection 4 *Data sources, Data adjustments* <u>Models:</u> Methods eSection 3 *Methods* subheadings eSection 4 *Duration estimates* eSection 4 *Prevalence estimates* eSection 4 *Incidence and prevalence estimates* eSection 4 *Severity-weighted prevalence*

11	Describe how candidate models were evaluated and how the final model(s) were selected.	*Models were pre-specified with covariates and informative priors.*
12	Provide the results of an evaluation of model performance, if done, as well as the results of any relevant sensitivity analysis.	eSection 4 *Sensitivity analysis of recovery pattern prior*
13	Describe methods for calculating uncertainty of the estimates. State which sources of uncertainty were, and were not, accounted for in the uncertainty analysis.	Methods *Incidence, prevalence, and severity-weighted prevalence* eSection 4 *Duration estimates* eSection 4 *Incidence and prevalence estimates*
14	State how analytic or statistical source code used to generate estimates can be accessed.	Data and code used for analyses are available in the upcoming GBD input data tool. Code is also available upon request to swulf@uw.edu. Input data are available as Appendix 2.
Results and Discussion		
15	Provide published estimates in a file format from which data can be efficiently extracted.	*Will be provided upon publication*
16	Report a quantitative measure of the uncertainty of the estimates (e.g. uncertainty intervals).	*Tables and in-text estimates include uncertainty intervals.*
17	Interpret results in light of existing evidence. If updating a previous set of estimates, describe the reasons for changes in estimates.	Discussion paragraphs 1-7
18	Discuss limitations of the estimates. Include a discussion of any modelling assumptions or data limitations that affect interpretation of the estimates.	Discussion *Limitations*

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1. Stevens GA, Alkema L, Black RE, et al. Guidelines for Accurate and Transparent Health Estimates Reporting: the GATHER statement. *PLOS Med*. 2016;13(6):e1002056. doi:10.1371/journal.pmed.1002056

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