Guidance on model inputs: coverage and demographic data

Input data sources

Both coverage and demographic datasets to be used in the full model runs are available for download through Montagu. Please download and use these datasets, rather than your own datasets to ensure consistency of estimates across the Consortium.

Coverage

Coverage for the 201910 full model runs will not be linked to Gavi's Operational Forecast. Instead, 'best case' and 'default' coverage is generated by Gavi and the VIMC secretariat, based on agreed assumptions.

The aim of using 'default' coverage is two-fold:

- to allow the VIMC secretariat to generate impact ratios (e.g. deaths averted per fully vaccinated person) for every country/vaccine combination
- to avoid the sensitivities of Gavi's Operational Forecast

To achieve the first aim, the default coverage assumes some coverage exists for every country/vaccine combination, in at least one year (up to and including 2030). This assumption is made solely to allow the VIMC secretariat to generate impact ratios. It should not be taken as an indication that all countries will introduce all vaccines by 2030, or that the 2031-2100 coverage projections are likely to be achieved.

Variant	Country set	Period	Type	Source / Assumptions
Default	VIMC 112	Up to 2018	Routine	WUENIC (and other historical records)
Default	VIMC 112	Up to 2018	Campaign	Records of past campaigns from Gavi and other sources
Default	VIMC 112	2019-2030	Routine	Gavi default assumptions
Default	VIMC 112	2019-2030	Campaign	Gavi default assumptions
Default	VIMC 112	2031-2100	Routine	Extrapolated by VIMC from Gavi default assumptions: 1% increase per year, up to a maximum threshold. The

				maximum threshold is (a) or (b), whichever is highest: a) 90% (or 95% for MCV1) b) highest routine coverage value for the country/vaccine combination in question, in any year up to (and including) 2030
Default	VIMC 112	2031-2100	Campaign	Assume no campaigns in this period

Variant	Country set	Period	Type	Source / Assumptions
Best case	VIMC 112	Up to 2020	Routine and campaign	'Best case' coverage to match 'Default' (see table above)
Best case	VIMC 112	2021-2100	Routine	Based on VIMC assumptions: Routine coverage is constant at 90% (95% for MCV1) for 2021-2100. Exceptions: if coverage in any year up to and including 2020 is greater than 90% (95% for MCV1), use this coverage value for 2021-2100.
Best case	VIMC 112	2021	Campaign	Based on VIMC assumptions: Rubella, MenA, HPV: for countries where the default scenario indicates no routine coverage in 2020, assume a national level catch-up campaign in 2021, targeting typical age groups. Campaign coverage will be 95%. Rubella, MenA, HPV: for countries where the default scenario indicates routine coverage in 2020, assume no campaign in 2021. YF and JE: Regardless of whether the vaccine has already been introduced, assume a campaign in 2021,

| | | | | targeting typical age groups. Campaign coverage will be 95%.

Measles - no campaigns in 2021. |
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| Best case | VIMC 112 | 2022-2100 | Campaign | Assume no campaigns in this period |

Each modelling group has several scenarios for 'default' and several scenarios for 'best case'. In addition, all groups have a 'no vaccination' scenario. Some groups also have a 'stop scenario' which mirrors the default coverage for years up to and including 2020, and then switches to zero coverage for 2021 onwards. 'Best case', 'default' and 'stop' scenarios will have the same coverage up to and including 2020.

Each scenario has one 'combined coverage dataset', which is downloadable as one single CSV file. This file may include coverage from several coverage sets, e.g. routine 1st dose, routine 2nd dose, and campaigns. The specific coverage sets included within each download are shown on the download page.

There are no coverage sets included in the no vaccination scenario, and therefore this coverage download file does not contain any data apart from the header row.

gavi_support can be ignored. All column values are 'total'; this means either Gavi-funded or not Gavi-funded.

age_range_verbatim is a description of the age range. We have used this to infer **age_first** and **age_last**. Where age_range_verbatim is 'NA', this indicates the default age_first and age_last value for that vaccine.

coverage shows the level of vaccination coverage, usually ranging from 0 (0%) to 1 (100%). In some cases, this value may be greater than 1. For example, if a campaign originally targets 1 million people but ends up vaccinating 1.1 million people, the coverage would be shown as 1.1 (equating to 110%).

Coverage and target population are now always specified at a national level. For example, where a campaign targets all ages in Region A (population 1,000,000) and achieves 90% coverage, and where the population of the whole country is 5,000,000, the coverage would appear on Montagu as 0.18 (18%) and the target population as 5,000,000. This way of specifying coverage and target population applies in both past and future years.

target is the number of individuals in the target population. This is always shown for campaigns, and is now specified at a national level. (See 'coverage' section above.) For routine, target is shown as **NA**, which means you should assume the target population matches the population shown in the demographic data downloads for the corresponding ages (age_first and age_last). HPV modellers should also filter the demographic downloads by gender=female.

Demography

Q. What is the source of the demographic data provided via Montagu for the 201910 touchstone?

A. Most of the demographic data is based on the [UN World Population Prospects (UNWPP) 2019 Revision](). Some fields were augmented to fill particular gaps; descriptions for these can be found here:

- [Neonatal Mortality]() - using the [IGME 2018 release (Sep 2019)]()
- [Kosovo]() - using most recent [population estimate]() from Kosovo Agency of Statistics
- [Marshall Islands]()
- [Tuvalu]()
- [Back-projection to birth for cohorts alive in 1950]()

Note that prior to 2019, we also calculated populations in single year bands for ages over 80 prior to 1990; this is now carried out by UNWPP.

Q. Can I use a different set of demographic data, rather than the set provided on Montagu?

A. No. In order to ensure consistency between all models, you must use the demographic data provided via Montagu.

Q. Why does male + female not equal the total population?

A. This is a property of the UNWPP data; they provide separate data for male, female, and total, and we provide the same data.

Q. Why is population at birth (age 0) not the same as the number of births?

A. In UNWPP data, age '0-0' refers to all people under 1 year old on a particular reference day. This will differ from the number of births into this cohort during the year due to the timing, and the effects of infant mortality and migration.

Q. I require demographic data that isn't available on Montagu. What should I do?

A. Please contact us at montagu-help@imperial.ac.uk or use the #montagu-help channel on [Slack](#).

Q. Can I download all demographic data in one download?

A. We are still working on this functionality. For now, you will need to download each demographic dataset separately.