Member's Paper

COVID-19 Mortality Model

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Abstract	Résumé
This tool is designed to capture ultimate extra deaths as a result of COVID-19. It provides an estimate of extra deaths by age and sex for any chosen country where statistics are readily available.	Cet outil est conçu pour saisir les décès supplémentaires ultimes résultant de la COVID-19. Il fournit une estimation des décès supplémentaires selon l'âge et le sexe pour tout pays choisi où les statistiques sont facilement accessibles.
Extra deaths are illustrated per 100,000 of the relevant age and sex and in total by age. The user only has to select the country and the ultimate population infection rate. Users can also adjust for insured to population ratios of mortality.	Les décès supplémentaires sont illustrés par 100 000 par rapport à l'âge et au sexe pertinents et au total selon l'âge. L'utilisateur n'a qu'à sélectionner le pays et le taux d'infection ultime de la population. Les utilisateurs peuvent également ajuster les ratios de mortalité assurés de la population.
This tool can be used to estimate COVID-19 extra deaths for pricing, valuation, stress testing and other work. It is important to keep in mind that extra deaths is a different concept than a mortality rate. A mortality rate refers to the rate of death over a specific period of time. This is typically one year. The extra deaths reflected in this tool applies for the duration of the pandemic. Care should be taken in converting these extra deaths to an annual mortality rate.	Cet outil peut être utilisé pour estimer les décès supplémentaires résultant de la COVID-19 pour la tarification, l'évaluation, la simulation de crise et d'autres travaux. Il est important de garder à l'esprit que les décès supplémentaires sont un concept différent d'un taux de mortalité. Ce dernier fait référence au taux de décès sur une période de temps spécifique qui est généralement d'un an. Les décès supplémentaires reflétés dans cet outil s'appliquent pendant toute la durée de la pandémie. Il faut veiller à convertir ces décès supplémentaires en un taux de mortalité annuel.
The Instructions tab provides instructions on how to use the tool as well as various disclaimers. The Extra Mortality tab is the main sheet being used. It provides an input area as well as the output from the model in the section below. The Raw Data sheet contains the key assumptions on infection and fatality rates.	L'onglet *Instructions* fournit des directives sur la façon d'utiliser l'outil ainsi que divers avis de non-responsabilité. L'onglet *Extra Mortality* est la feuille principale utilisée. Il fournit une zone d'entrée ainsi que la sortie du modèle dans la section qui suit.

These tables will be updated periodically as newer data emerges. The Fatality Rate sheet provides fatality rates (deaths/infections) by country and is updated periodically. The Live Data sheet is the key update on infection and death data from around the world. The Popn sheet shows population data by country as well as age and sex specific census data for the US and Canada. The Links sheet provides a series of links that are useful in obtaining data and other resources.	La fiche *Raw Data* contient les hypothèses clés sur les taux d'infection et de létalité. Ces tableaux seront mis à jour périodiquement à mesure que de nouvelles données émergent. La feuille *Fatality Rate* fournit les taux de létalité (décès/infections) par pays et est mise à jour périodiquement. La feuille *Live Data* est la principale mise à jour des données sur les infections et les décès dans le monde entier. La feuille *Popn* montre les données démographiques par pays ainsi que les données de recensement spécifiques à l'âge et au sexe pour les États-Unis et le Canada. La feuille *Links* fournit une série de liens utiles pour obtenir des données et d'autres ressources.

Using the COVID-19 Mortality Tool

To access the mortality tool, click here. This tool is used for predicting crude COVID-19 deaths by age and sex for most countries. Data is updated frequently.

Disclaimer

Users are asked to use caution with this tool as it's based on a set of assumptions that are being continually updated as the pandemic emerges. The data used is dependent on reported infections and deaths by country. It can not be assumed that all countries are collecting and reporting data using the same methodology. All models are wrong. All models are only as good as their assumptions. Every attempt has been made to ensure the accuracy of information provided. Because COVID-19 is new and emerging, assumptions used in the model maybe changed at a later date.

This model may not be used for commercial purposes. This model may not be modified in any form without the author's permission. See the author's contact information below. The author takes no responsibility for faulty predictions.

Instructions

The model is run from the Extra Mortality sheet.

Cells C5:C8 in yellow are the only input areas of the model.

Cell C5 allows the user to choose the country for which extra deaths as a result of C-19 are required.

Cell C6 sets an assumption about total final infection rate for the country. It is a key assumption that drives the ultimate expected deaths from the pandemic. Use care in setting this assumption.

It cannot be assumed that all countries are collecting infection and death information using the same methodology.

Cells C7 and C8 provide the ratio of population to insured influenza deaths from the SOA report *Connecting COVID-19 Data to Insured Claims.*

It is not ordinarily required that cells C7 and C8 be changed unless the user has a compelling reason to do so.

Cells C13:E118 provide the deaths per 100,000 (previously said 1,000,000) of insured lives by age and sex and in total for the selected country in cell C6.

Cells H13:J118 provide the COVID-19 extra deaths of the population in total as well as infection and fatality rates by age.

The Raw Data sheet shows infection and fatality rates from Johns Hopkins website for Germany, Spain, Italy, Belgium and the Netherlands, and North America respectively.

The Fatality Rate sheet shows fatality rates by country. Some countries are under-reporting and others are likely over-reporting. This is a key assumption and could influence final results.

Live Data is updated frequently from the WorldInData website and shows new and total infections and new and total deaths in addition to testing information for all listed countries where available.

The Popn sheet provides population data from the latest US and Canadian census.

The Links sheet provides links to most of the data used in this model.