|  |  |  |  |
| --- | --- | --- | --- |
| Data source for median Rt estimate (A) | Data source for Rt estimate with 50% credible interval (B) | % Days that median estimate of A falls within 50% CI of B | Standard deviation |
| Test positive cases | Hospital admissions | 17 | 5 |
| Test positive cases | Confirmed deaths | 22 | 8 |
| Hospital admissions | Confirmed deaths | 41 | 9 |
| Hospital admissions | Confirmed deaths, estimate lagged 7 days | 35 | 8 |
| Hospital admissions | Confirmed deaths, estimate lagged 7 days | 24 | 7 |

|  |  |  |  |
| --- | --- | --- | --- |
| Data source for Rt estimate (A) | Data source for Rt estimate (B) | Mean (and standard deviation), % days that median estimate Rt estimate (A) falls within 50% CI of Rt estimate (B) | Mean (and standard deviation) difference between median estimates |
| Community cases | Hospital admissions | 17 (5) | 0.07 (0.001) |
| Community cases | Confirmed deaths | 22 (8) | 0.11 (0.002) |
| Hospital admissions | Confirmed deaths | 41 (9) | 0.04 (0.001) |
| Hospital admissions | Confirmed deaths, estimate lagged 7 days | 35 (8) | 0.02 (0.004) |
| Hospital admissions | Confirmed deaths, estimate lagged 14 days | 24 (7) | -0.03 (0.005) |

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| --- | --- | --- | --- | --- | --- |
|  | % days that median Rt estimate from data source (A)  fell within 50% CI of Rt estimate from data source (B) | | | | |
| (A) | Community cases | | Admissions | | |
| (B) | Admissions | Deaths | Deaths | Deaths, lag 7 days | Deaths, lag 14 days |
| *North East and Yorkshire* | 19 | 20 | 43 | 28 | 21 |
| *North West* | 10 | 17 | 34 | 24 | 28 |
| *Midlands* | 13 | 16 | 31 | 27 | 18 |
| *East of England* | 16 | 12 | 32 | 36 | 36 |
| *London* | 27 | 26 | 52 | 41 | 28 |
| *South East* | 19 | 26 | 51 | 43 | 23 |
| *South West* | 14 | 36 | 43 | 43 | 13 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Mean (SD) between-estimate difference,  median estimate and lower and upper 90% CIs | | | | |
| (A) | Community cases | | Admissions | | |
| (B) | Admissions | Deaths | Deaths | Deaths, lag 7 days | Deaths, lag 14 days |
| *North East and Yorkshire* | 0.12 (0.14), 0.17 (0.14)-0.07 (0.14) |  |  |  |  |
| *North West* |  |  |  |  |  |
| *Midlands* |  |  |  |  |  |
| *East of England* |  |  |  |  |  |
| *London* |  |  |  |  |  |
| *South East* |  |  |  |  |  |
| *South West* |  |  |  |  |  |

In theory, these three processes for generating data might be expected to beare evenly distributed through the general population, all acting as lagged, partial indicators of transmission from which Rt can be estimated. **This was the approach taken in UK government policy, with the Scientific Pandemic Influenza group on Modelling (SPI-M) presenting Covid-19 Rt estimates and forecasts from March 2020 (#**[**ref**](https://www.gov.uk/government/groups/scientific-pandemic-influenza-subgroup-on-modelling)**). UK research groups contributed Rt estimates derived from a variety of public and confidential data from healthcare and community settings. These were averaged to create an ensemble estimate. Assuming the proportion of cases that result in a positive test, hospital admission, or death, remains constant, then estimating Rt from any data source should give a similar result. This also depends on using comparable methods for estimating transmission, and properly accounting for varying sources of noise in the surveillance processes.**

Where…