**Using the MOVES tool for Bike Life Dublin – Summary**

The [MOVES tool](https://www.sportengland.org/media/11208/moves-v2-user-guide-final.pdf) is a model developed by Sport England, and is used in the Bike Life model to estimate the number of cases of disease avoided as a result of the levels of cycling in each city (and the subsequent savings to the NHS).

As the MOVES tool is based on the UK, we have reviewed the use of the tool in an Irish context, given the different currency, health system and incidence of diseases. The following table summarises the data sources used to inform the MOVES tool, research into potential Irish equivalents and recommended decisions on whether to adopt these alternatives in the model. The data sources are arranged below according to where they appear in the MOVES tool spreadsheet.

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| **Location in the MOVES spreadsheet** | **Description of input data** | **Potential Irish equivalent data** | **Recommendations on changes to the MOVES tool for use in Bike Life Dublin** | **Links to data and further information** |
| ‘Utilities’ tab | EQ-5D scores: these are based on the EuroQol 5-dimension instrument which is used to measure health-related quality of life.The data in the standard UK MOVES tool is actually based on US population data combined with a scoring algorithm based on UK community preferences – so is not entirely UK specific. | There is one recent study that presented the first value set based on the EQ-5D framework for a sample of residents in Ireland, but this doesn’t provide values for individual diseases or the full range of possible EQ-5D scores. It therefore isn’t in the same format as the data required for the MOVES tool.  | Given the incompatibility of the only available Irish data with the MOVES tool, it will not be possible to implement an Irish equivalent for the EQ-5D scores.[[1]](#footnote-1) It is important to note that the results of the Irish EQ-5D study found that Irish values are broadly consistent with England in terms of mobility, self-care and usual activities, but that residents of Ireland attach a slightly higher decrement to pain/discomfort and anxiety/depression than other populations. This demonstrates that the UK/US scores currently in MOVES should be a sufficient proxy for Ireland for the purpose of calculating reduction in disease incidence. | More detailed description of EQ-5D and comparison of Irish and UK/US data sources is in “eq-5d info Ireland.doc”.Irish study with first EQ-5D based values is [here](https://pure.qub.ac.uk/en/publications/utility-values-for-health-states-in-ireland-a-value-set-for-the-e). |
| ‘Life table’ tab (note this is hidden when MOVES is opened) | Life tables are a summary of various mortality rates, survival rates and life expectancy estimates for a nation. | Irish life tables are comprehensive and in almost exactly the same format as the UK life tables.  | Irish life tables have been implemented into the MOVES tool following a slight modification of the data to match exactly with the existing UK life tables in the spreadsheet.  | Life tables data is saved in “Irish life tables.xls”. |
| ‘Engine’ tab | Incidence of eight diseases in two formats:* Incidence **rate** per 100,000 people for all sexes and ages.
* Incidence **number** disaggregated by age and sex.
 | The Global Burden of Disease (GBD) online database provides disease incidence data (rates and numbers) for different nations globally.  | Although based on the descriptions and units in the MOVES tool the Irish GBD data should be easily implemented, on further inspection there were significant discrepancies between the Irish data and existing UK data in the tool (differences across several orders of magnitude in some cases). To investigate this, the existing UK MOVES data, Irish GBD data and UK GBD data were compared. The Irish and UK GBD data are largely similar, with incidence rates and numbers almost always on the same order of magnitude. This highlights that there is some difference in the units/data used in the MOVES tool to reflect disease incidence rate/number. The root cause of this difference can’t be identified based on the MOVES tool technical report and user guide.[[2]](#footnote-2) Given the significant discrepancies between Irish-specific data and the current MOVES data, it is recommended that the data is **not** changed. The similarities between the UK and Irish GBD data highlight that disease incidence rates are largely comparable across the two nations, and using the existing MOVES data should therefore be sufficient for the purposes of the Bike Life model. | GBD website [here](http://ghdx.healthdata.org/gbd-results-tool).Calculation of Irish incidence rates for corresponding MOVES categories is “Incidence rates by age for MOVES tool.xls”. Also in this spreadsheet are the comparison calculations between the UK MOVES, UK GBD and Irish GBD datasets for disease incidence.  |
| ‘Cost outcomes’ tab | ‘Incident’ and ‘prevalent’ cost for each of the eight diseases.Unclear as to what the specific definition of incident and prevalent cost is. I have assumed that the incident cost is the initial cost for treating the disease in one year, and prevalent cost is ongoing cost for any subsequent years of treatment.[[3]](#footnote-3) | The Irish Healthcare Pricing Office (HIPE) has treatment costs for various forms of hospital treatment, which can be aggregated into a weighted treatment cost for each disease. These costs are for a whole course of treatment and are not split into incident and prevalent costs, or costs according to year of treatment. There are also various academic studies for the cost of treating specific diseases in Ireland, which are broadly similar to the HIPE costs and often reference HIPE costs as a data source to reach their estimates. | The HIPE data is clearly an equivalent to the NHS reference costs data which is cited as the source for the vast majority of the cost data in the MOVES tool.  However, given the lack of information on how the NHS costs are weighted, and how the incident and prevalent costs are calculated/sourced, it will not be possible to fully implement the Irish cost data in the MOVES tool.  | Further notes for cost data on each disease (including extra academic sources) is in “Irish health costs research for MOVES.doc”. Summary of the Irish health cost data aggregated for each disease is in “Irish health costs for MOVES.xls”.  |
| ‘Health outcomes’ tab | Preventable mortality figures: ‘follow up’ and ‘survival’. Units for these parameters are not specified in the MOVES tool, but are presumed to be follow up in years and survival rate as a percentage. | Academic papers with mortality rates for Ireland have been found for four of the eight diseases. Data does not appear to be available for the remaining four diseases.[[4]](#footnote-4) | Given the lack of clarity with the units of the follow up and survival rates, and the fact that Irish equivalents can only be found for half of the diseases, it is recommended that the current MOVES values are **not** changed. | Further notes with academic sources for mortality rates can be found in “Irish preventable mortality rates for MOVES.doc”. Summary of the available data can be found in the third tab of “Irish health costs for MOVES.xls”.  |

To summarise, this report recommends that the only change made to the MOVES tool to improve its applicability in an Irish context is to implement the Irish life tables. The combination of a lack of Irish data and the complexity/lack of transparency of the MOVES tool means we would not be confident implementing further changes to the other data sources to make the tool more Irish-specific. The research has highlighted no significant discrepancies between treatment costs, mortality rates or incidence rates in Ireland, and therefore the existing MOVES tool is likely to be a sufficient proxy for estimating the number of cases of disease avoided as a result of the levels of cycling in Dublin (and subsequent healthcare savings).

1. It was also explored whether it would be possible to modify the UK/US EQ-5D scores to more accurately reflect the Irish context by using Irish population weightings for the EQ-5D scores instead of the current UK population data. However, the current population data is based on an unknown subset of the UK population and therefore can’t be replaced with like-for-like Irish population data. [↑](#footnote-ref-1)
2. We did attempt to contact the original developers of MOVES, but they have since moved on from their positions and current staff at Sport England were unable to provide a more detailed methodology. [↑](#footnote-ref-2)
3. Again, this was queried with Sport England to try and get further clarification, but they weren’t able to provide any further detail about how these different costs were sourced/calculated. [↑](#footnote-ref-3)
4. We asked a contact in the Irish health service if they were able to provide any further information or links to an appropriate data source, but they weren’t able to advise any further. [↑](#footnote-ref-4)