DUToolkit

The DUToolkit package provides a suite of tools and visualization for the characterization, estimation, and communication of parameter uncertainty and decision risk. The package is designed to evaluate the impact of policy alternatives on outcomes compared to baseline (i.e., counterfactual analysis), leveraging model outputs from uncertainty analysis.

During public health crises such as the COVID-19 pandemic, decision-makers relied on models to predict and estimate the impact of various policy alternatives on health outcomes. Often, there is a high degree of uncertainty in the evidence base underpinning these models. When there is increased uncertainty, the risk of selecting a policy option that does not align with the intended policy objective also increases; we term this decision risk. Even when models adequately capture uncertainty, the tools used to communicate their outcomes, underlying uncertainty, and the associated decision risk are important to mitigate decisions to adopt sub-optimal policies and/or critical health technologies.

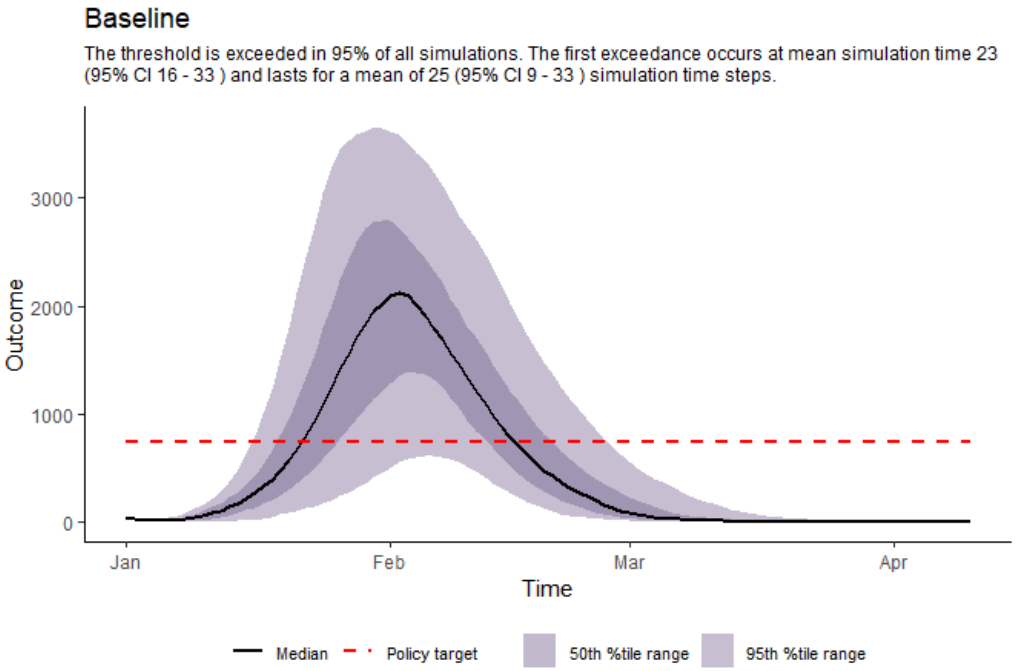
Installation

You can install the 'DUToolkit' package from CRAN with the following command in the console:

```
#> Installing package into 'C:/Users/mwiggins/AppData/Local/Temp/R
#> (as 'lib' is unspecified)
#> Warning: package 'DUToolkit' is not available for this version
#>
#> A version of this package for your version of R might be availa
#> see the ideas at
#> https://cran.r-project.org/doc/manuals/r-patched/R-admin.html#I
```

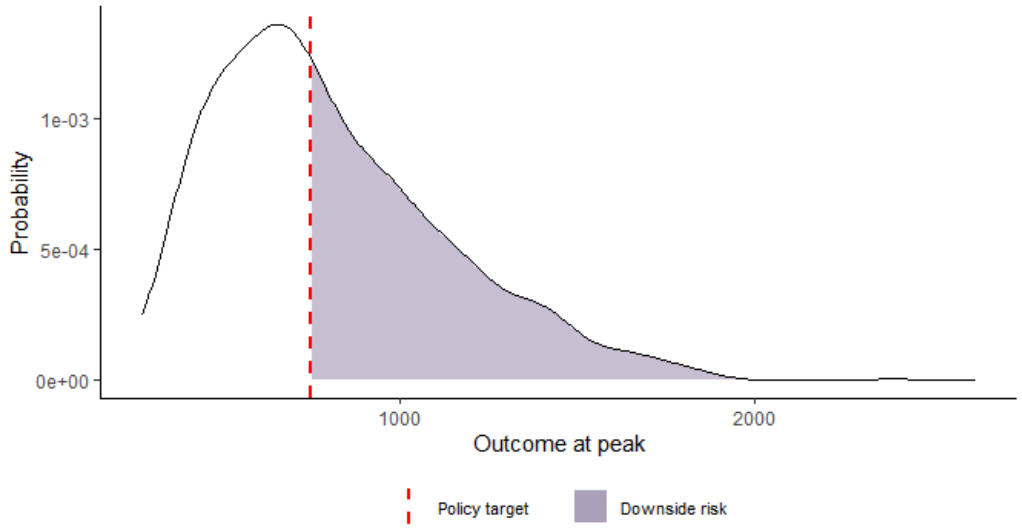
Usage

```
#> Policy risk impact "-"      "-91%"
```



Refer to the DUToolkit vignette 'Time-outcome fan plots' for the recommended standard description to accompany this plot.

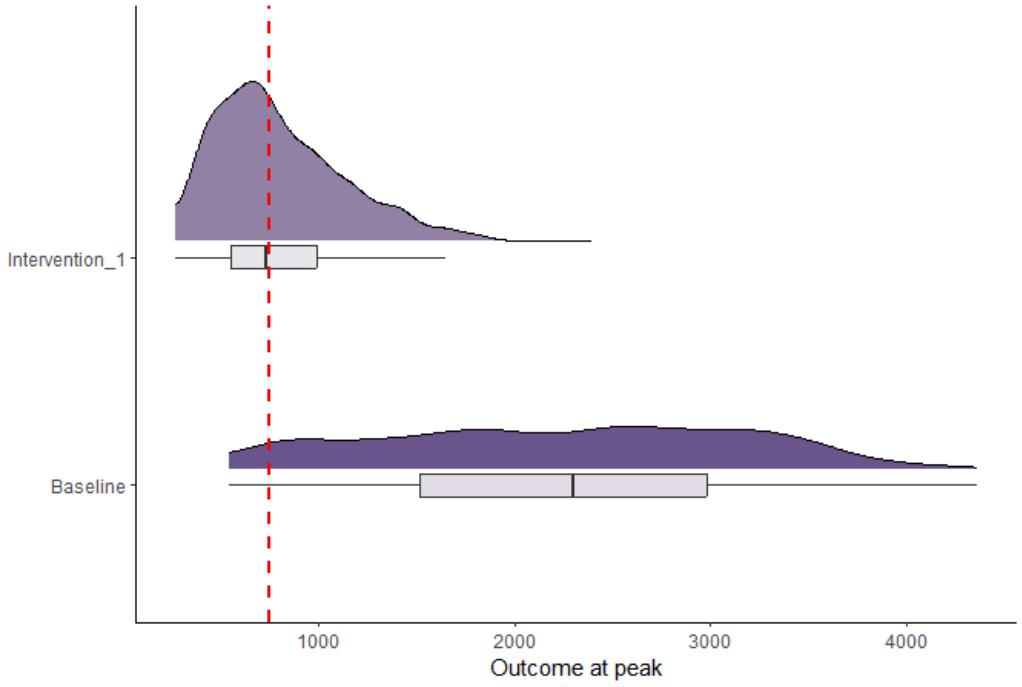
```
#>   N  outcome     i_time
#> 1 1 4207.443 2021-01-26
#> 2 2 1681.521 2021-02-01
#> 3 3 2539.177 2021-02-04
#> 4 4 2969.721 2021-01-31
#> 5 5 3073.741 2021-02-05
#> 6 6 1520.144 2021-02-08
```



Refer to the DUToolkit vignette 'Probability density plots with risk shading' for the recommended standard description to accompany this plot.

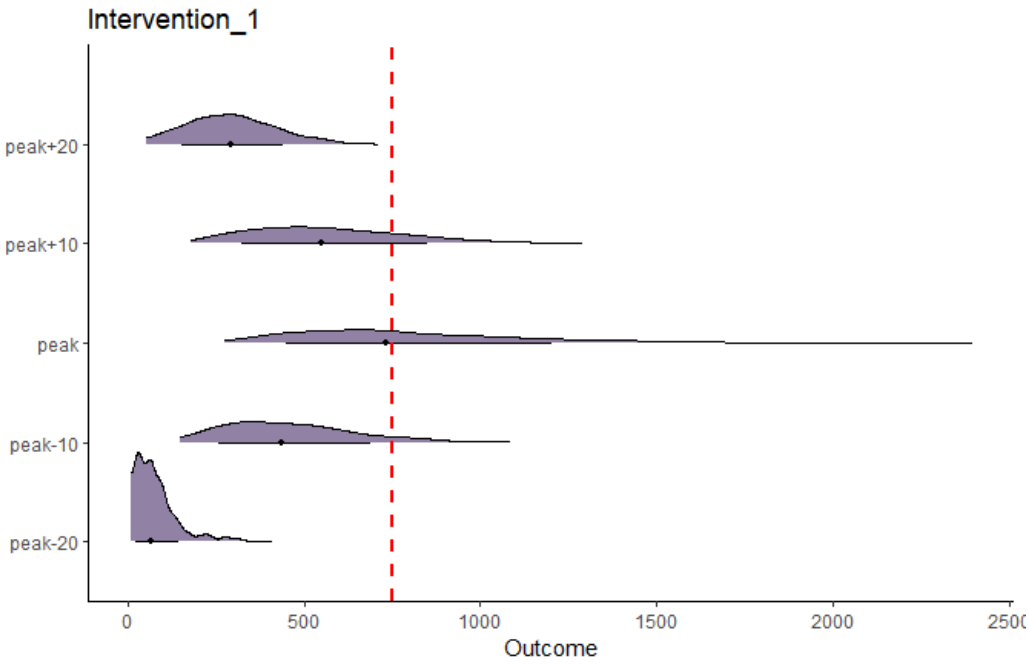
```
#>    750   1000   2000
#> 0.9494 0.8887 0.5895

#>                   Baseline Intervention 1
#> Risk              "1501"   "157"
#> Policy risk impact "-"     "-90%"
```



Refer to the DUToolkit vignette 'Raincloud plots' for the recommended standard description to accompany this plot.

```
#> 2 peak 1681.521
#> 3 peak 2539.177
#> 4 peak 2969.721
#> 5 peak 3073.741
#> 6 peak 1520.144
```



Refer to the DUToolkit vignette 'Temporal probability density plots' for the recommended standard description to accompany this plot.

```
#>   time_step   n      q1  median    mean      q3
#> 1   peak-20 813   90.32  136.99  157.21  210.21
#> 2   peak-10 813  738.29 1013.14 1005.52 1260.49
#> 3      peak 813 1520.14 2300.14 2247.85 2982.81
#> 4   peak+10 813  884.80 1246.00 1211.20 1548.80
#> 5   peak+20 813  247.77  326.34  338.76  418.55
```

Acknowledgments

We would like to thank everyone whom we engaged with including workshop participants for their feedback on the Decision Uncertainty Toolkit.

License

Citation

Citing DUToolkit

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