Survival models in DataSHIELD

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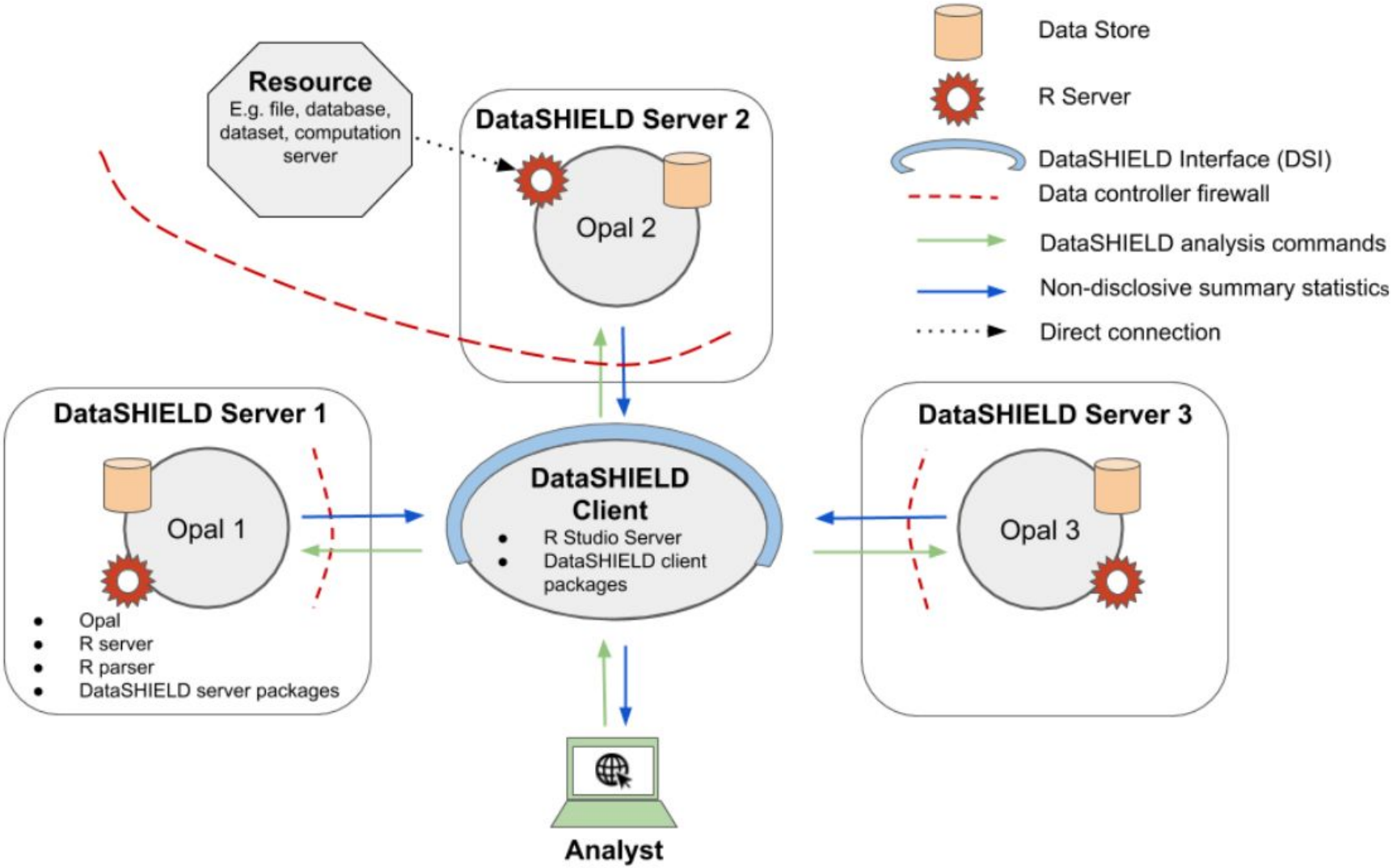
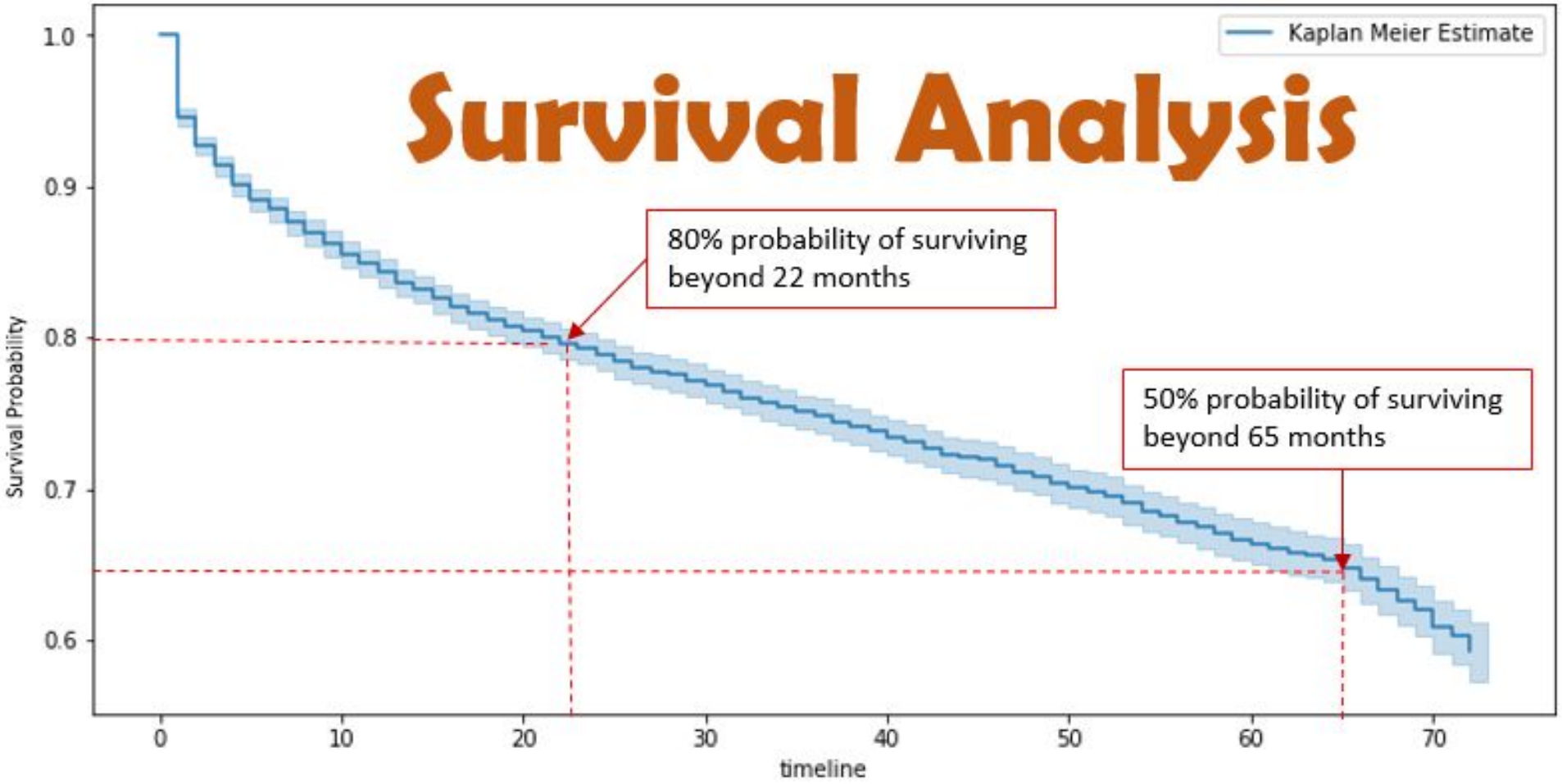
Introduction to DataSHIELD



https://www.datashield.ac.uk/about/datashielddetailedoverview/

Survival models

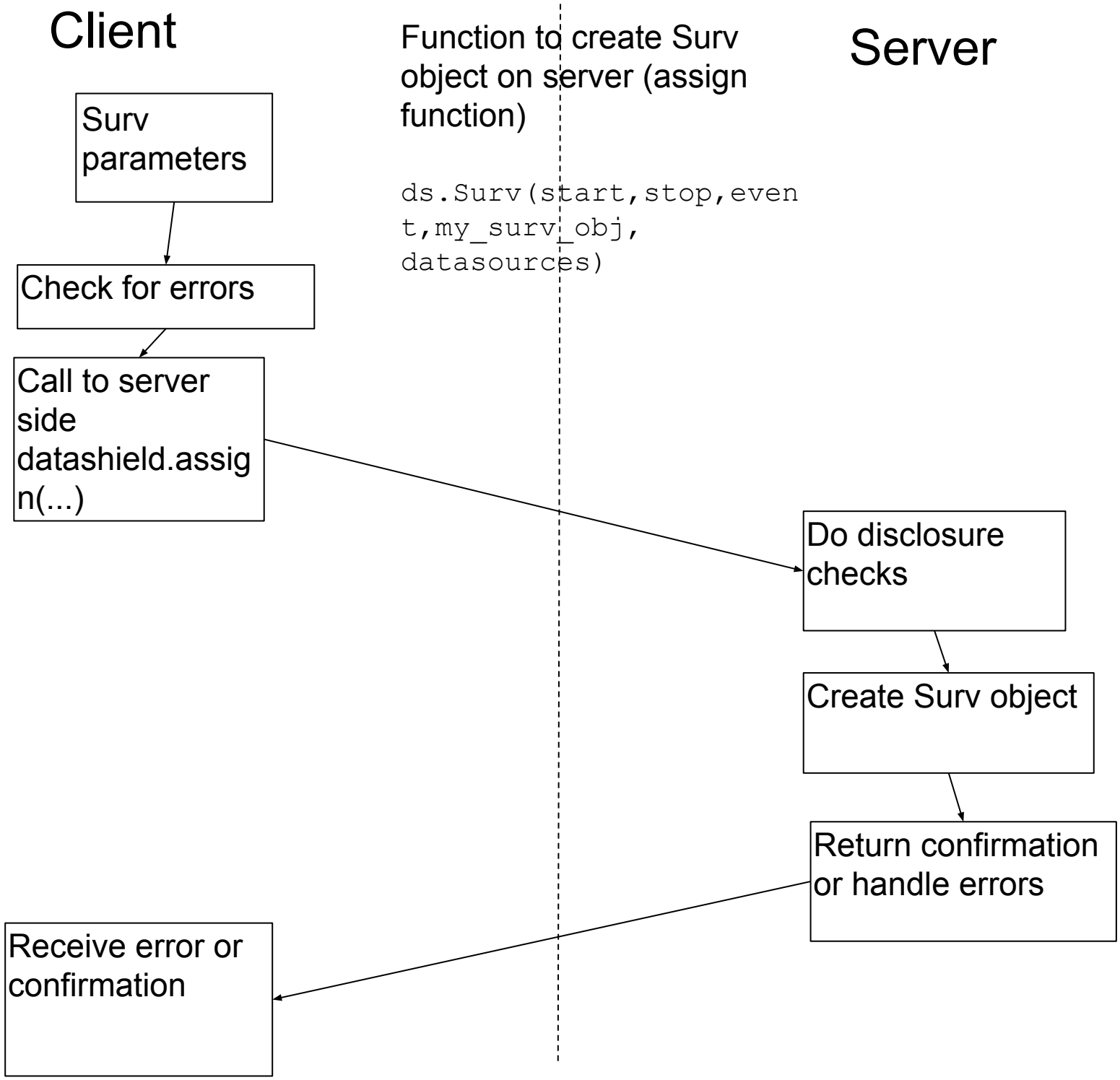


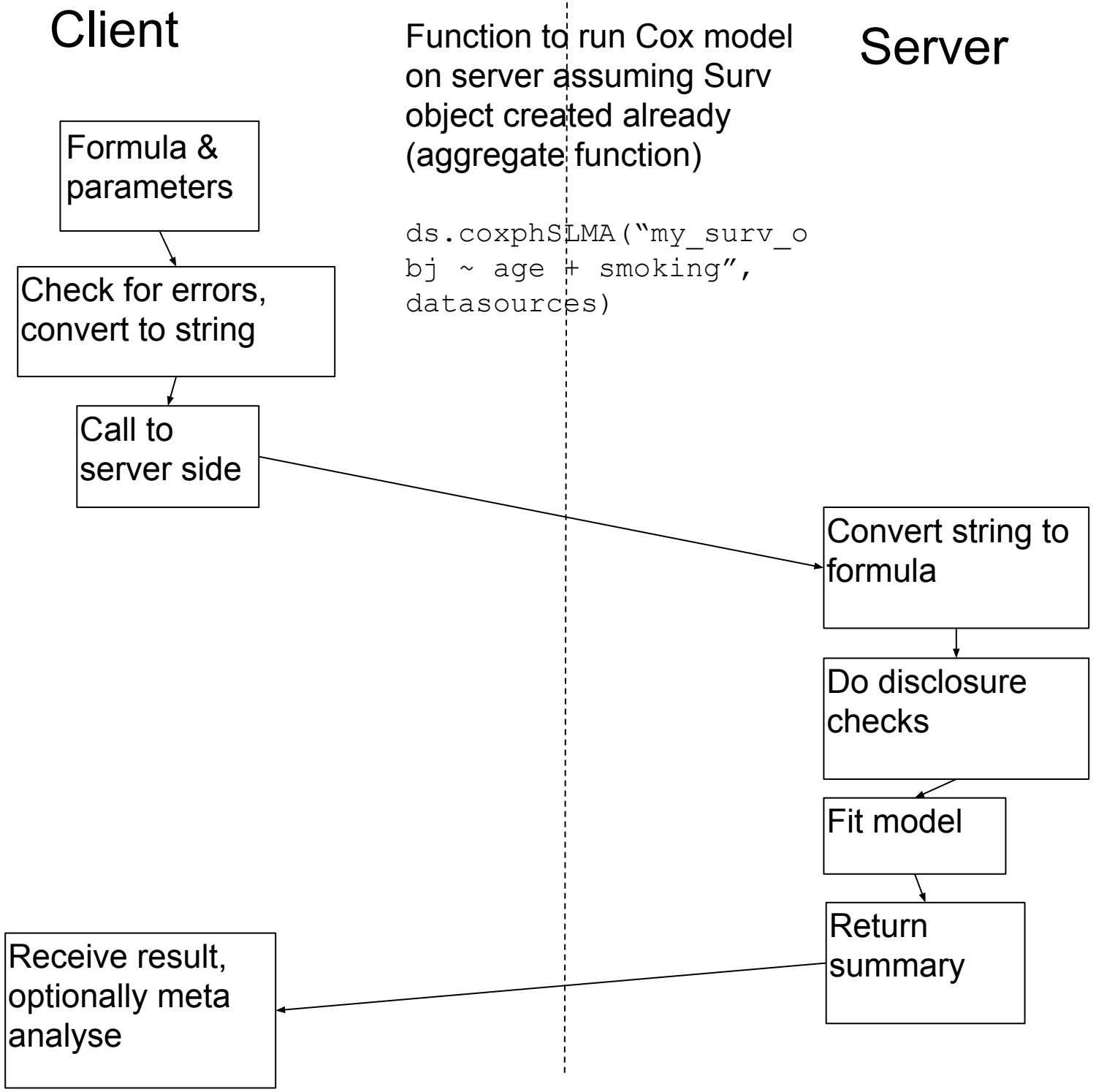
https://towardsdatascience.com/survival-analysis-intuition-implementation-in-python-504fde4fcf8e

Code snippet

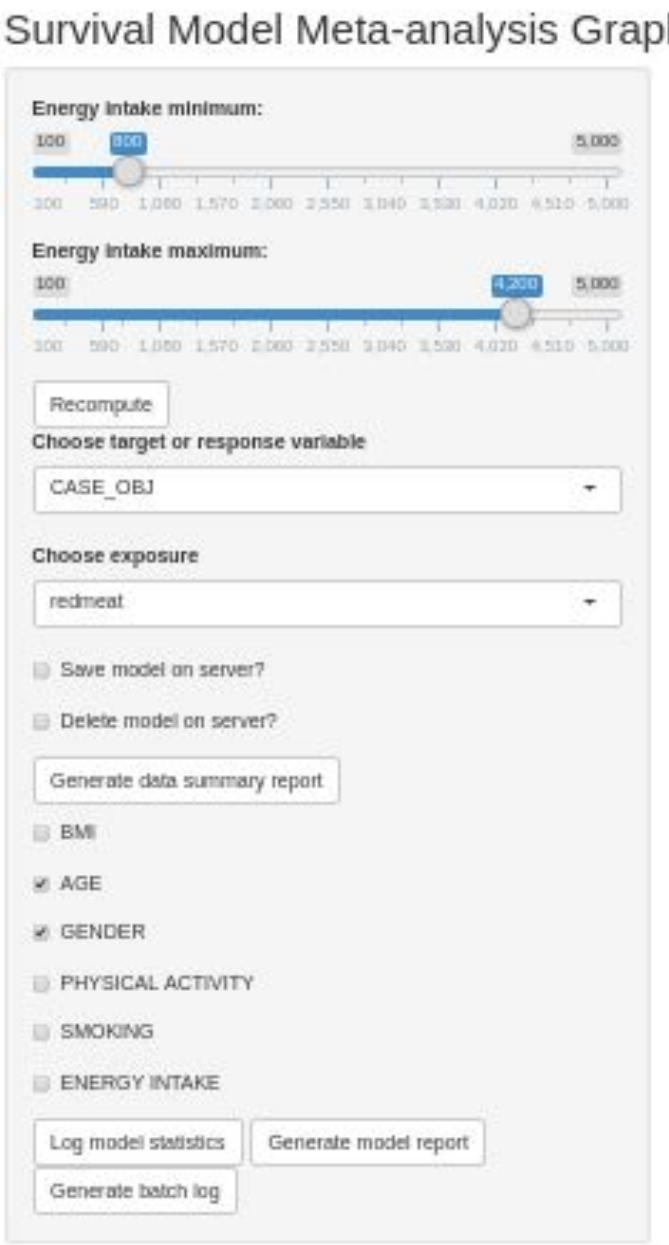
```
dsBaseClient::ds.Surv(time='STARTTIME', time2='ENDTIME',
                      event = 'EVENT', objectname='surv_object',
                      type='counting')

coxph_model_full <- dsBaseClient::ds.coxph.SLMA(formula = 'surv_object~D$age+D$female')
```

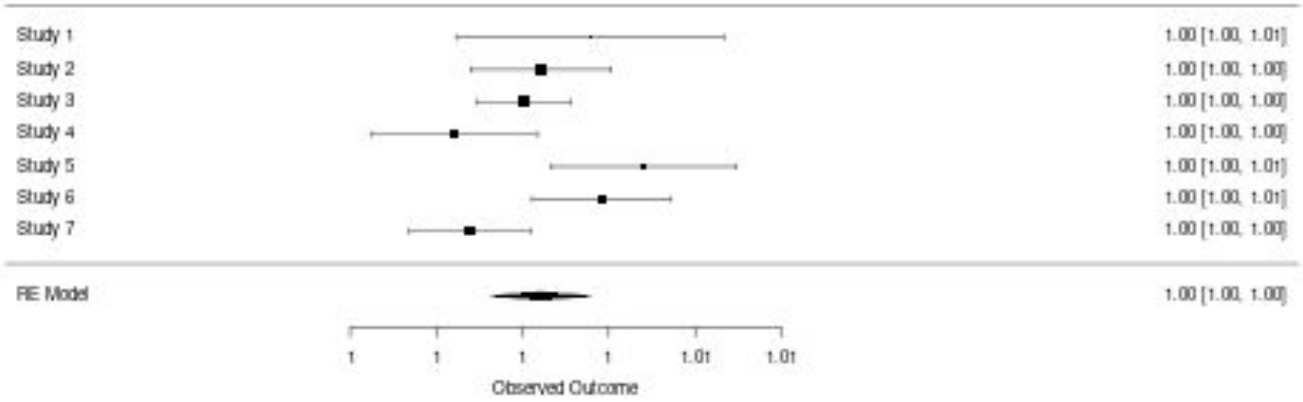
https://github.com/neelsoumya/datashield_testing_basic/blob/master/development_plan.pdf


Client
Function to create Surv object on server (assign function)
Server
Surv parameters
ds.Surv(start,stop,event,my_surv_obj, datasources)
Check for errors
Call to server side datashield.assign(...)
Do disclosure checks
Create Surv object
Return confirmation or handle errors
Receive error or confirmation


Client
Function to run Cox model on server assuming Surv object created already (aggregate function)
Server
Formula & parameters
ds.coxphSLMA("my_surv_obj ~ age + smoking", datasources)
Check for errors, convert to string
Call to server side
Convert string to formula
Do disclosure checks
Fit model
Return summary
Receive result, optionally meta analyse

Graphical user interface

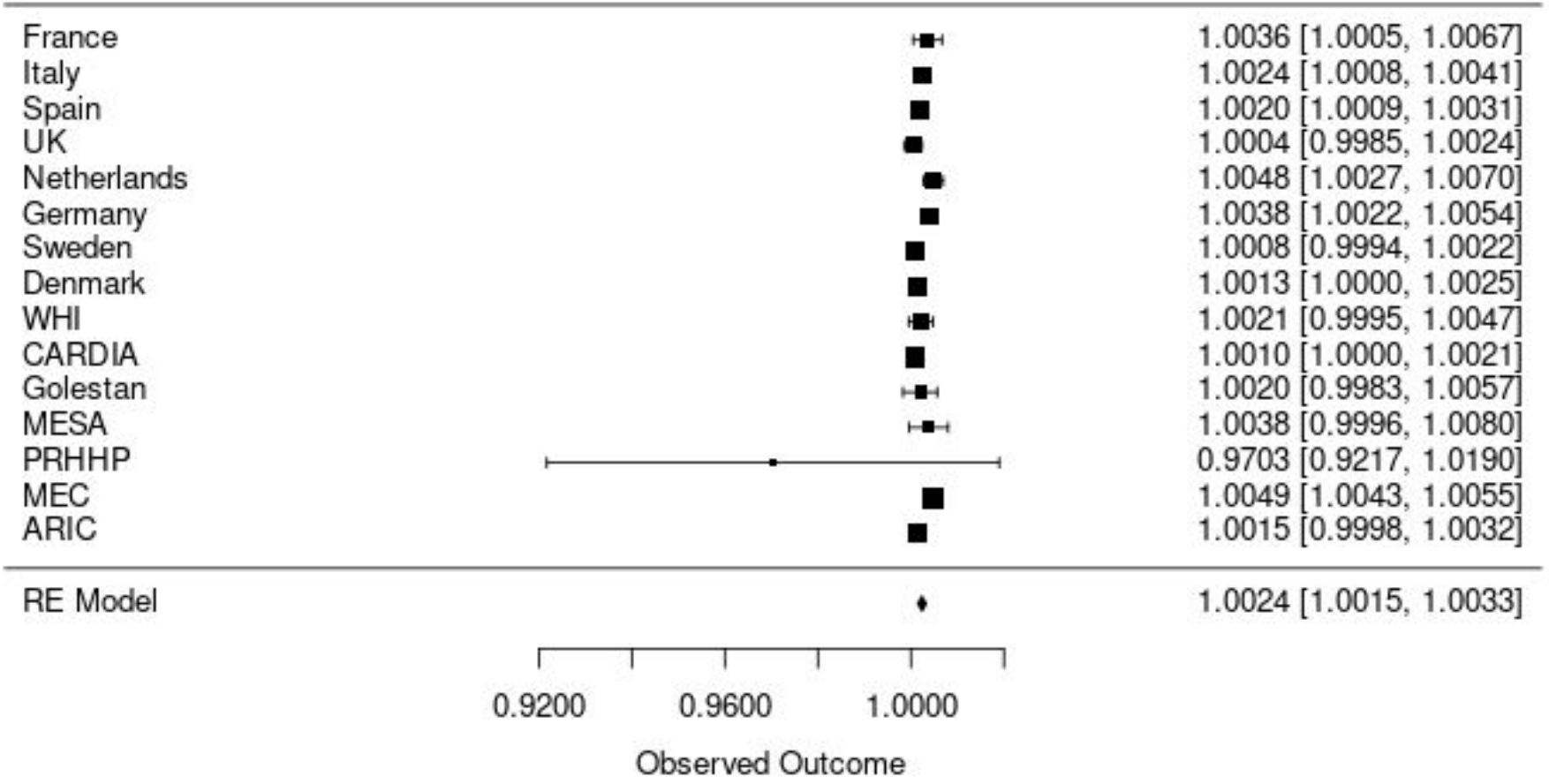




Functionalities

- Account for missing covariates in some studies
- Batch fitting
- Quality control reports and model reports

Red meat exposure and relationship with T2D (preliminary results)



Tutorial and cookbook

- https://github.com/neelsoumya/datashield_testing_basic/blob/master/development_plan.pdf

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Acknowledgements

- DataSHIELD technical team
- Paul Burton, Demetris Avraam, Stuart Wheater, Patricia Ryser-Welch, Alex Westerberg
- Tim Cadman, Sido Haakma