# Code integration

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## Summary

### Objective

- test new function with the rest of the package by using the rest of the package to create a NpdeObject then loading the new code
  - check structure of object
    - does data always have cens and mdv ? => mdv yes, cens no
    - does res always have ycomp and ydobs ? => yes

### Code changes

- **new functions in kompareCode**
  - **plotNpde-scatterplot.R**: main mid-level function called using a NpdeObject
  - **plotNpde-auxScatter.R**: auxiliary functions to compute and transform obsmat, pimat, ref profiles.
    - **aux.npdeplot.computepi** : Compute prediction intervals, the size of which depends on the number of observations in each bin
    - **aux.npdeplot.meanprof** : Compute a reference profile based on simulations from the model
    - **aux.npdeplot.transformPI** : transform pimat with a reference profile **TODO** check if applies to pd (not sure it makes sense), and if there is a non-parametric version (using quantiles instead of E/SD)
    - **aux.npdeplot.transformObs** : transform obsmat with a reference profile **TODO** same
    - **aux.npdeplot.pimat** : create pimat for plot function
  - **npde.scatterplot.R**: actual plot function => rename this file (plotNpde-auxPlotScatter.R ?) or include it in plotNpde-auxScatter.R
- functions in npde/R
  - plotNpde-unitFunctionsPI.R: bins the X data, creating plot.opt$bin.number bins, computing the mean value of x for each bin, and associating groups to the observed data
- **functions renamed => TODO** for final version
  - for consistency, aux.plot.hist and aux.plot.dist renamed to aux.npdeplot.hist and aux.npdeplot.dist
  - aux.npdeplot.plot renamed to aux.npdeplot.scatter
  - npde.plot.meanprofile renamed to npde.plot.scatterplot
- **functions removed***
  - **compute.vpc.pi** : old code to compute PI for VPC, now computed in the same way as the other PI using *aux.npdeplot.computepi*

### Functions to create

- plot functions
  - **aux.npdeplot.scatter.facet** : not done yet, but should be a modified version of the plot with a facet layout (same y scales ? or add a graphical option ?) instead of a list of plots
- testthat files for unitary tests

  - **Romain TODO +++** : test replacement options (are we capturing the ..., are we capturing errors, are we superseding the right things ?)
    * why is plot.opt part of the options in npde.plot.scatterplot ? (we should use the prefs element of the object npdeObject ???)

## Notes

- to investigate
  - mclust library not loaded automatically (check when running the package)
  - transformation using a reference profile
    * check if applies to pd (not sure it makes sense), and if there is a non-parametric version (using quantiles instead of E/SD)
    * check if need to compute the transformation after exponential transformation (probably not, the current plots seem to work also in log-scale)
- improvements
  - need an option to facet the plots split by covariate
- bugs:
  - plot.opt option **main** doesn't work in *aux.npdeplot.plot()*
  - Romain **TODO +++** : reprendre la partie avec avoid_code() dabs NpdeData qui empêche de lire toutes les covariables
- note: test data was created with nrep=200 to have files that are not too large, but probably needs more simulations for stable npde (so some results may be artefactual)

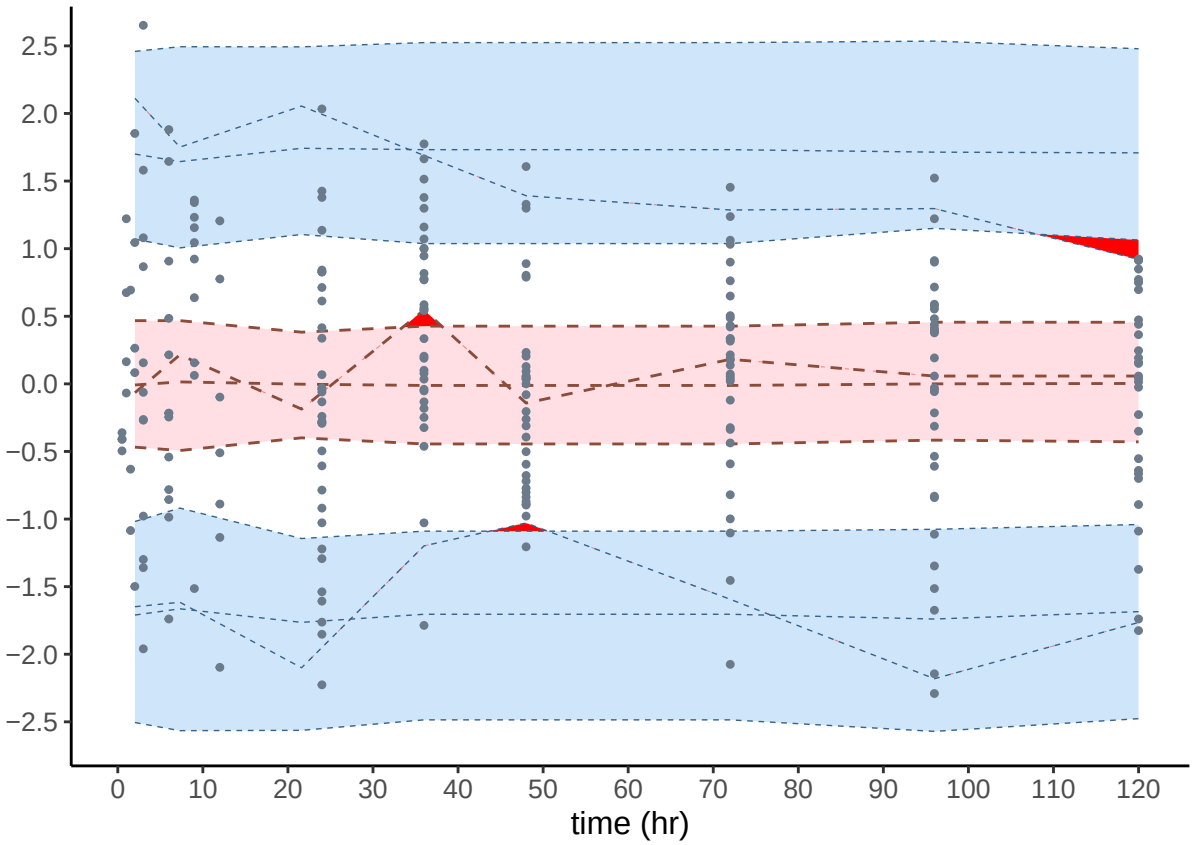
**Defining folders, loading libraries**

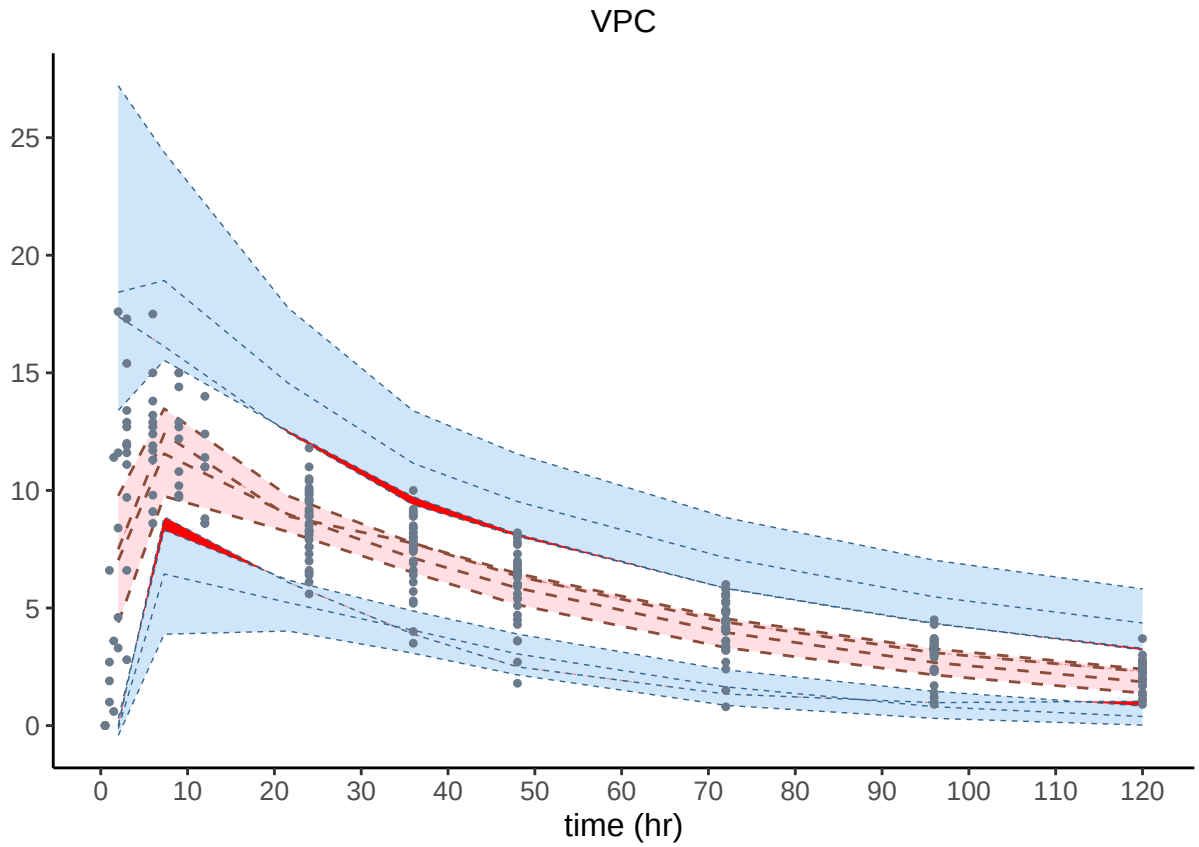
**Creating NpdeObject using the current version of the package**

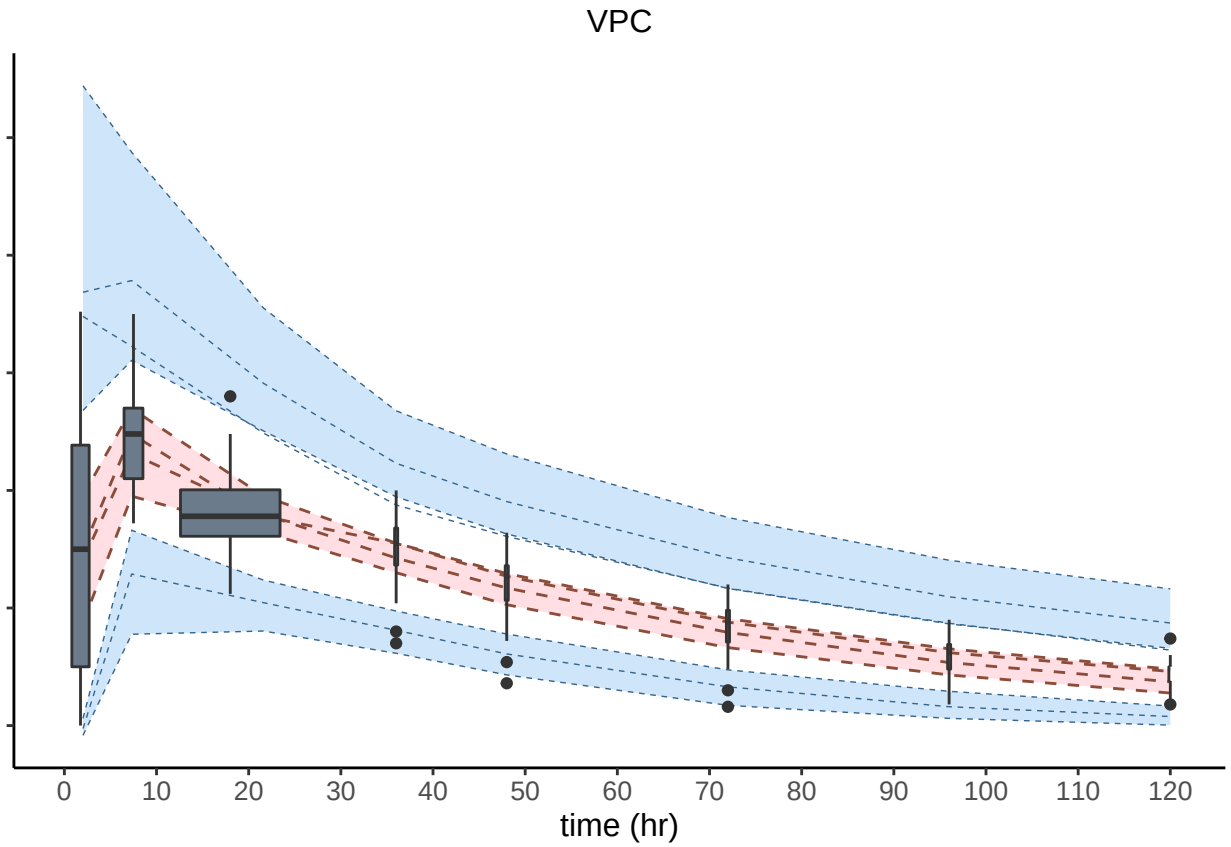
**Run npde with previous version of package**

**Graphs with the new functions to check if the methods work**

Works but - no observations not plotted, despite plot.obs being set to TRUE in @prefs - sorting problem in weight when using covsplit: need to sort level of categories properly - not sure box size is set correctly


2.5
2.0
1.5
1.0
0.5
0.0
−0.5
−1.0
−1.5
−2.0
−2.5
0
10
20
30
40
50
60
70
80
90
100
110
120
time (hr)


VPC
25
20
15
10
5
0
0
10
20
30
40
50
60
70
80
90
100
110
120
time (hr)


VPC
0
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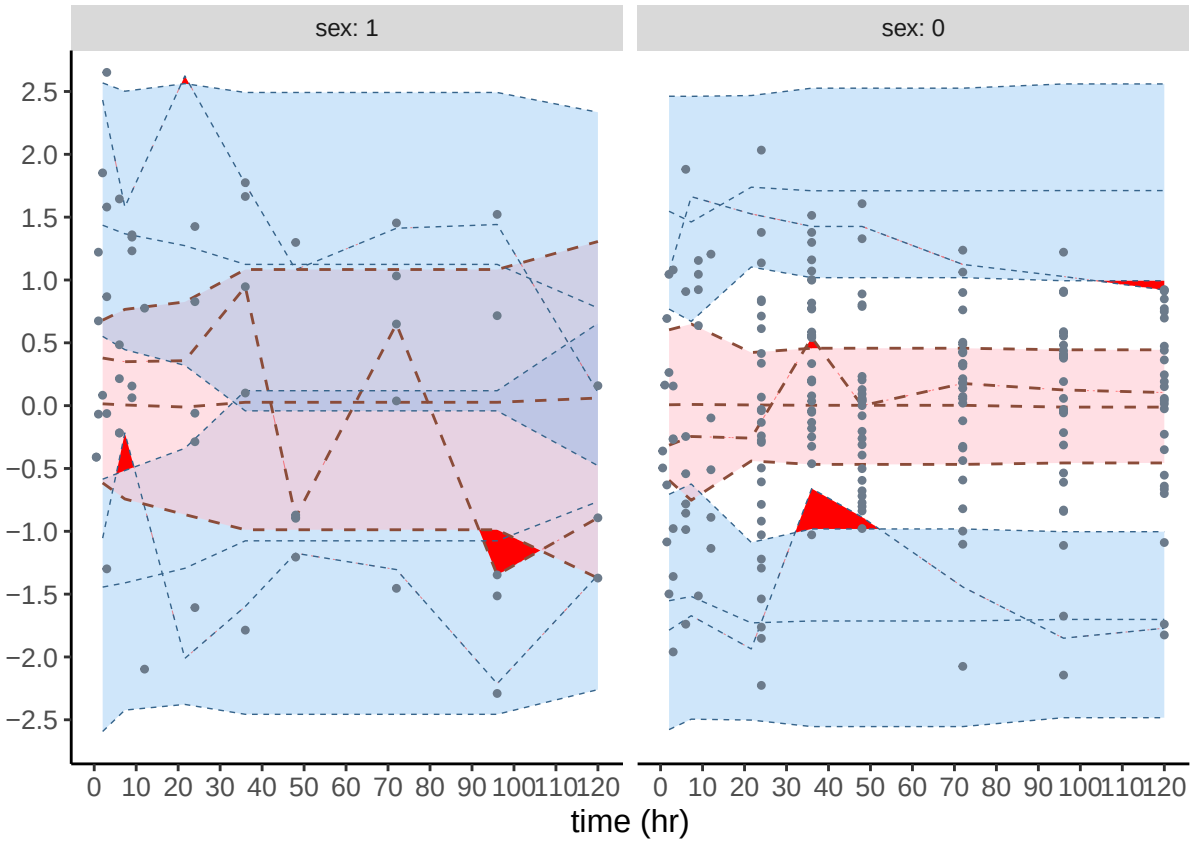
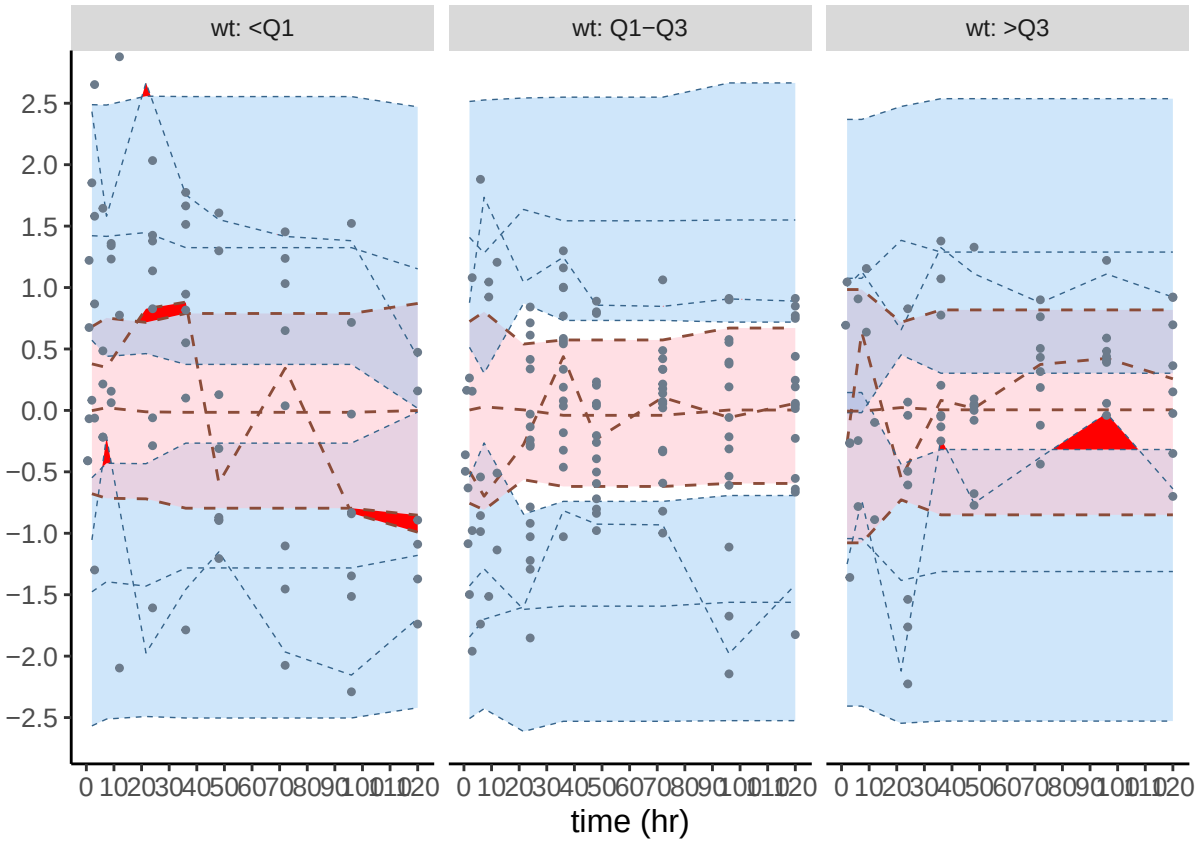
time (hr)


sex: 1
sex: 0
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
−1.0
−1.5
−2.0
−2.5
0 10 20 30 40 50 60 70 80 90 100 110 120
0 10 20 30 40 50 60 70 80 90 100 110 120
time (hr)




```
##   index  id time   dv amt   wt sex mdv
## 1     1 100  0.5  0.0 100 66.7   1   0
## 2     1 100  1.0  1.9 100 66.7   1   0
## 3     1 100  2.0  3.3 100 66.7   1   0
## 4     1 100  3.0  6.6 100 66.7   1   0
## 5     1 100  6.0  9.1 100 66.7   1   0
## 6     1 100  9.0 10.8 100 66.7   1   0
```

```
##        ypred ycomp    pd       ydobs       npde       tnpde
## 1  0.5814627   0.0 0.359 -0.43862113 -0.3611330  4.79538371
## 2  3.1220995   1.9 0.454 -0.05116685  0.1636585  6.98209215
## 3  8.4386880   3.3 0.126 -1.35607837 -1.4985131  0.05613313
## 4 11.2936700   6.6 0.140  0.04661369  0.1560419  6.95035522
## 5 12.6249280   9.1 0.127 -0.56691520 -0.5417366  4.04284249
## 6 11.7504645  10.8 0.355  0.89677342  0.9230138 10.14618430
```