Package: RcmdrPlugin.DCE (via r-universe)

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Title R Commander Plug-in for Discrete Choice Experiments

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Depends support.CEs (>= 0.7-0), survival

Imports Rcmdr

Description Adds menu items for discrete choice experiments (DCEs) to
the R Commander. DCE is a question-based survey method that
designs various combinations (profiles) of attribute levels
using the experimental designs, asks respondents to select the
most preferred profile in each choice set, and then measures
preferences for the attribute levels by analyzing the
responses. For details on DCEs, refer to Louviere et al. (2000)
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RcmdrPlugin.DCE-package

R Commander Plug-in for Discrete Choice Experiments

Description

This package adds menu items for discrete choice experiments (DCEs) to the R Commander. DCE is a question-based survey method that designs various combinations (profiles) of attribute levels using the experimental designs, asks respondents to select the most preferred profile in each choice set, and then measures preferences for the attribute levels by analyzing the responses. For details on DCEs, refer to Louviere et al. (2000).

Details

This package is an R Commander plug-in package for DCEs. It depends on **support.CEs** (Aizaki 2012), **survival** (Therneau 2020; Therneau and Grambsch 2000), and **Rcmdr** (Fox 2005, 2017; Fox and Bouchet-Valat 2020). Refer to Aizaki (2012), Aizaki et al. (2014), and 'Non-Market Valuation with R' <http://lab.agr.hokudai.ac.jp/nmvr/> for a brief introduction to DCEs in R. A manual for this package is available at <https://sites.google.com/view/r4sp/rcmdrplugin>.

After successfully installing and loading **RcmdrPlugin.DCE**, the R Commander window will appear, and then you will find 'DCE' added to the top-level menus in the R Commander window.

Selecting 'DCE' displays menu items. When selecting a menu item, the corresponding dialog box opens. The following dialog boxes are provided by **RcmdrPlugin.DCE**:

- The dialog box for 'Design choice sets...' designs choice sets for DCE with the rotation design method or mix-and-match method using the function rotation.design in **support.CEs**.

- The dialog box for 'Display questions...' shows DCE questions from the choice sets designed in the first dialog box using the function questionnaire in **support.CEs**.

- The dialog box for 'Create data set for analysis...' creates a data set for DCE analysis from the choice sets designed in the first dialog box and a data set containing responses to DCE questions using the function ce.dataset in **support.CEs**. The menu item is activated if a data frame is selected as the active data set.

- The dialog box for 'Create interactions...' creates interactions between attribute/level variables and covariates in the data set for DCE analysis. The menu item is activated if the data set for DCE analysis created in the previous dialog box is selected as the active data set.

- The dialog box for 'Fit model...' implements a conditional logit model analysis of the data set for analysis using the functions clogit in **survival** and gofm in **support.CEs**. The menu item is activated if the data set for DCE analysis created in the previous dialog box is selected as the active data set.

- The dialog box for 'Calculate MWTP...' calculates marginal willingness to pays (MWTPs) of nonmonetary variables from the model fitted in the previous dialog box using the function mwtp in **support.CEs**. The menu item is activated if the fitted model is selected as the active model.

- The dialog box for 'Load saved objects...' loads an R Data file saved in the dialog box for 'Design choice sets...' or 'Create data set for analysis...' using the function load in **base**.

Acknowledgments

Author(s)

Hideo Aizaki

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Examples

```
if(interactive()) {
  library(RcmdrPlugin.DCE)
}
```

---

dceDataset   *Create Data Set for DCE Analysis*

Description

Create a data set for analysis from choice sets for DCEs and data set containing responses to DCE questions.

Details

This dialog box uses the function `ce.dataset` in **support.CEs** to create a data set for DCE analysis from the choice sets designed in the 'Design Choice Sets for DCE' dialog box and a data set containing responses to DCE questions. This dialog box is activated if a data frame is selected as the active data set. For details on the results of this dialog box, refer to help for the function `ce.dataset`.

GUI elements of this dialog box are as follows.

- `Name for data set`: An R object name into which a data set generated using this dialog box is stored. The default name 'DCEdata' can be changed following R's rules for naming objects. If changed, you should take note of the new object name, which will be used later.

- `Save to file`: A check box for saving the resultant data set to an external file in RDA format (`.rda`). If necessary, check this box.

- `Design`: An R object name containing DCE choice sets generated in the 'Design Choice Sets for DCE' dialog box. The default name 'DCEdesign' is displayed automatically. The correct name should be entered if the name for design (`DCEdesign`) was changed in the dialog box for DCE design.

- `Responses to DCE questions`: Names of variables containing responses to DCE questions in the active data set. Variable names are separated by commas (e.g., q1, q2, q3, ...).

- `Opt-out option`: A check box for an opt-out option. When the opt-out option was used in the DCE questions, check this box.

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dceDesign   *Design Choice Sets for DCE*

Description

Design choice sets for DCEs.

Details

This dialog box uses the function `rotation.design` in package **support.CEs** to design choice sets for DCE with the rotation design method or mix-and-match method. For details on the results of this dialog box, refer to help for the function `rotation.design`.

GUI elements of this dialog box are as follows.

- `Name for design`: An R object name into which choice sets generated using this dialog box are stored. The default name 'DCEdesign' can be changed following R's rules for naming objects. If changed, you should take note of the new object name, which will be used later.

- `Save to file`: A check box used to save the resultant design to an external file in RDA format (`.rda`). If necessary, check this box.

- `Design method`: A method used to generate DCE choice sets. Select one from two radio buttons corresponding to 'Rotation' and 'Mix-and-Match'. For the details on these methods, see help for function `rotation.design`.

- `Number of alternatives per set (without opt-out)`: The number of alternatives per choice set (question), where an opt-out option is not counted as this number even if the opt-out option will be used in your survey.

- `Number of blocks`: The number of blocks into which the resultant DCE choice sets are divided.

- `Quantitative`: A check box showing that a quantitative attribute is set in the corresponding row.

- `Attribute`: An attribute variable name following R's rules for naming variables. Type names without skipping from the first row.

- `Level 1` to `Level 6`: Level variable names corresponding to the attribute entered in the first column. These variable names must also follow R's rules for naming variables. Type names without skipping from the 'Level 1'.

- `Seed for random number generator (optional)`: An integer value used as a seed for generating random numbers. If reproducibility is needed, type an arbitrary value into this box.

- `Reproduce choice sets designed with R < 3.6.0`: A check box for reproducing DCE choice sets generated with R versions older than 3.6.0. If necessary, check this box.

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dceInteractions *Create Interactions between Attributes/Levels and Covariates*

Description

Create interactions between attribute/level variables and covariates in the data set for DCE analysis.

Details

This dialog box creates interactions between attribute/level variables and covariates in the data set for DCE analysis. This dialog box is activated if the data set created in the 'Create Data Set for DCE Analysis' dialog box is selected as the active data set.

GUI elements of this dialog box are as follows.

- `Attribute/level variables`: Variables to be used as attribute and/or level variables in the model. Select one or more variables from this list box.

- `Covariates`: Variables to be used as covariates in the model. Select one or more variables from this list box.

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dceModel   *Fit Model to DCE Data*

Description

Fit a model to DCE data.

Details

This dialog box fits a conditional logit model to the data set for DCE analysis using the functions [clogit](#) in **survival** and [gofm](#) in **support.CEs**. This dialog box is activated if the DCE data set created in the 'Create Data Set for DCE Analysis' dialog box is selected as the active data set. For details on the results of this dialog box, refer to helps for [clogit](#) and [gofm](#).

GUI elements of this dialog box are as follows.

- `Name for model`: An R object name into which the results of a fitted model obtained using this dialog box are stored. The default name 'DCEmodel.x', where x indicates the integer number assigned automatically from 1, can be changed following R's rules for naming objects.

- `Response variable`: A variable containing responses to DCE questions in the active data set. This variable name is fixed as RES, which cannot be changed by users (A fixed variable is colored in green).

- `Independent variables`: Variables used as independent variables in the model. Select one or more variables from this list box.

- `Stratification variable`: A variable for identifying each combination of respondents and DCE questions. This variable name is fixed as STR.

- `Subset expression`: A logical expression for specifying a subset of the observations in the active dataset to be used for the fitting.

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dceMwtp   *Calculate Marginal Willingness to Pay*

Description

Calculate marginal willingness to pay (MWTP) values of nonmonetary variables from the fitted model.

Details

This dialog box uses the function [mwtp](#) in **support.CEs** to calculate MWTP values of nonmonetary variables from the model fitted in the 'Fit Model to DCE Data' dialog box. This dialog box is activated if the fitted model is selected as the active model. For details on the results of this dialog box, refer to help for the function [mwtp](#).

GUI elements of this dialog box are as follows.

- Name for output: An R object name into which the calculated results obtained through this dialog box are stored. The default name 'MWTP' can be changed following R's rules for naming objects.

- Monetary variable: A variable used as the monetary variable in the calculation of MWTP(s). Select one from this drop-down list of variables.

- Nonmonetary variables: Variables used as the nonmonetary variable(s) in the calculation of MWTP(s). Select one or more variables from this list box.

- Calculation method: A method used to calculate confidence intervals for MWTP(s). Select one from two radio buttons corresponding to 'Krinsky and Robb' and 'Delta'. For the details on these methods, see help for [mwtp](#).

- Confidence level: A confidence level used for calculating the confidence intervals for MWTP(s). The default is 0.95.

- Number of replications: A total number of replications for the Krinsky and Robb method.

- Seed for random number generator (optional): An integer value used as a seed for generating random numbers. If reproducibility is needed, type an arbitrary value into this box.

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dceQuestions *Display DCE Questions*

Description

Display a series of questions for DCEs.

Details

This dialog box displays a series of DCE questions that are converted from the choice sets designed in the 'Design Choice Sets for DCE' dialog box. This dialog box uses the function [questionnaire](#) in **support.CEs**. For details on the results of this dialog box, refer to help for [questionnaire](#).

GUI element of this dialog box is as follows.

- Design: An R object name containing DCE choice sets generated in the 'Design Choice Sets for DCE' dialog box. The default name 'DCEdesign' is displayed automatically. The correct name should be entered if the name of DCE choice sets (DCEdesign) was changed in the dialog box for DCE design.

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