# Package 'discrtr'

July 22, 2025

**Title** A Companion Package for the Book ``Discrete Choice Analysis with 'R"'

**Version** 0.0.1

**Description** Templates and data files to support ``Discrete Choice Analysis with R", Páez, A. and Boisjoly, G. (2023) <doi:10.1007/978-3-031-20719-8>.

**License** MIT + file LICENSE

**Encoding** UTF-8

**RoxygenNote** 7.2.3

**URL** https://github.com/paezha/discrtr

**BugReports** https://github.com/paezha/discrtr/issues

**Depends** R (>= 2.10)

**LazyData** true

**Suggests** dfidx, readr

**Imports** magrittr, rmdformats

**NeedsCompilation** no

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**Repository** CRAN

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## Contents

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`discrtr_template` *discrtr template.*

---

## Description

Template for creating a computational notebook for use with Discrete Choice Analysis with R

## Usage

```
discrtr_template()
```

## Format

An R Markdown file

---

`mc_attitudes` *McMaster Attitudes Data Set.*

---

## Description

A data set containing information about *students* commuting to McMaster University. Data were collected by means of a travel survey in the fall of 2010. Respondents were asked about their mode of travel to McMaster University, in Hamilton, Canada. They were also asked to respond to a series of attitudinal statements. The data set contains relevant attributes about the respondents. The format of the table is wide, with each row representing an individual respondent. These variables were augmented with information from the 2011 Census of Canada and land use information from local sources.

## Usage

```
data(mc_attitudes)
```

## Format

A data frame with 1230 rows and 39 variables:

**id** Unique identifier for respondents

**choice** Mode of transportation chosen: Car, HSR (local transit), Walk

**LAT** Latitude of the place or residence, geocoded at the nearest major intersection or centroid of 6-digit postal area

**LONG** Longitude of the place or residence, geocoded at the nearest major intersection or centroid of 6-digit postal area

**license** Indicator variable for holding a driver license: Yes/No

**vehicle** Indicator variable for having individual access to a private car (i.e., car not shared with other household members): Yes/No

**gender** Woman/Man

**age** Age in years

**visa** Visa status of student: Domestic

**living_arrangements** Living arrangements DURING THE SCHOOL YEAR are: 1:Living with my family or relatives/By myself off-campus/Shared off-campus accommodations

**level** Level of studies: Undergraduate Year I (UG I)/Undergraduate Year II (UG I)/Undergraduate Year III (UG III)/Undergraduate Year IV (UG IV)/Undergraduate Year V (UG V)/Masters/PhD/Other (Diploma or Certificate)

**Active_Neighborhood** Response to statement "I like to live in a neighborhood where there's a lot going on": Five point likert scale from Strongly Disagree to Strongly Agree, including a neutral point

**Community** Response to statement "There is a sense of community in my neighborhood": Five point likert scale from Strongly Disagree to Strongly Agree, including a neutral point

**Neighbors** Response to statement "I know my neighbors well": Five point likert scale from Strongly Disagree to Strongly Agree, including a neutral point

**Safe_Walk** Response to statement "I feel safe and secure when walking in my neighborhood": Five point likert scale from Strongly Disagree to Strongly Agree, including a neutral point

**Shops_Important** Response to statement "Having shops and services within walking distance of my home is important to me": Five point likert scale from Strongly Disagree to Strongly Agree, including a neutral point

**Travel_Alone** Response to statement "I like traveling alone": Five point likert scale from Strongly Disagree to Strongly Agree, including a neutral point

**DAUID** Unique ID of Dissemination Area of the Census

**Rate_Couple_Child** Proportion of families that are couples with children out of all families in Dissemination Area

**Rate_SW_Child** Proportion of families that are single parent (woman) with children out of all families in Dissemination Area

**Rate_SM_Child** Proportion of families that are single parent (man) with children out of all families in Dissemination Area

**Mean_Children** Average number of children at home per census family in Dissemination Area

**Rate_Non_Canadian** Proportion of non-Canadian residents to total population in Dissemination Area

**Median_HH_Income** Median family income in Dissemination Area in $10,000

**Mean_HH_Income** Mean family income in Dissemination Area in $10,000

**Rate_Unemployment** Unemployment rate in Dissemination Area

**Rate_1yr_Move** Proportion of residents that moved to Dissemination Area in the year previous to the census

**Rate_5yr_Move** Proportion of residents that moved to Dissemination Area in the 5 years previous to the census

**Rate_Public** Proportion of residents in Dissemination Area that used public transportation to commute to work

**Rate_Walk** Proportion of residents in Dissemination Area that walked to work

**Rate_Cycle** Proportion of residents in Dissemination Area that cycled to work

**AREA** Area of Dissemination Area in square kilometers

**LUM** Entropy-based land use mix index in Dissemination Area: lower values mean more homogenous land uses, higher values greater mix of uses

**SIDEWALK_DENSITY** Sidewalk density in Dissemination Area in km/sq.km

**STREET_DENSITY** Street density in Dissemination Area in km/sq.km

**INTERSECTION_DENSITY** Intersection density in Dissemination Area in 1/sq.km

**SF_P_RATIO** Ratio of building footprint to parcel area in Dissemination Area: a measure of density of development

**EMPLOYMENT_DENSITY** Employment density in Dissemination Area in jobs/sq.km

**POPULATION_DENSITY** Population density in Dissemination Area in people/sq.km

## Source

P\'aez, A. (2013). Mapping travelers' attitudes: does space matter?. Journal of Transport Geography, 26, 117-125. (https://doi.org/10.1016/j.jtrangeo.2012.09.002)

## Examples

```
data(mc_attitudes)
summary(mc_attitudes$Community)
```

---

# mc_commute.csv *McMaster Commuting Data Set (csv file).*

---

## Description

A delimited text file containing information about *students* commuting to McMaster University. Data were collected by means of a travel survey in the fall of 2010. Respondents were asked about their mode of travel to McMaster University, in Hamilton, Canada. They were also asked about the modes available to them. The characteristics of the trips were self-reported or imputed. The data set also contains relevant attributes about the respondents. The format of the table is long, with each row representing a choice situation.

## Usage

```
data(mc_commute_long)
```

## Format

An comma separated text file :

**RespondentID** Unique identifier for respondents

**choice** numeric variable indicating modes of transportation: (1) Cycle, (2) Walk, (3) HSR (local transit), (4) Car

**avcycle** Indicator variable for availability of cycling: (1) Yes, (0) No

**avwalk** Indicator variable for availability of walking: (1) Yes, (0) No

**avhsr** Indicator variable for availability of HSR: (1) Yes, (0) No

**avcar** Indicator variable for availability of car: (1) Yes, (0) No

**timecycle** Travel time by cycling in minutes (when mode not available coded as 100000)

**timewalk** Travel time by walking in minutes (when mode not available coded as 100000)

**accesshsr** Access time to HSR in minutes

**waitingtimehsr** Waiting time when travelling by HSR in minutes

**transfer** Number of transit transfers

**timecar** Travel time by car in minutes (when mode not available coded as 100000)

**parking** Indicator variable for holding a university parking permit: (1) Yes, (0) No

**vehind** Indicator variable for having individual access to a private car (i.e., car not shared with other household members): (1) Yes, (0) No

**owncycle** Indicator variable for owning a bicycle: (1) Yes, (0) No

**gender** Indicator variable for gender: (1) Woman, (0) Man

**age** Age in years

**solo** Indicator variable for living in solo accommodations: (1) Yes, (0) No

**shared** Indicator variable for a student living in a rental property with other students, i.e., shared accommodations: (1) Yes, (0) No

**family** Indicator variable for living in family home: (1) Yes, (0) No

**child** Indicator variable for presence of dependent minors in household: (1) Yes, (0) No

**primary_caregiver** Indicator variable for being the primary caregiver of dependent minors in household: (1) Yes, (0) No, (100000) No dependent minors in household

**LAT** Latitude of the place or residence, geocoded at the nearest major intersection or centroid of 6-digit postal area

**LONG** Longitude of the place or residence, geocoded at the nearest major intersection or centroid of 6-digit postal area

**DAUID** Unique ID of the dissemination area of place of residence according to the 2006 census of Canada

**mhi** Median household income of the dissemination area of place of residence according to the 2006 census of Canada

**dwell_den** Dwelling density in the dissemination area of the place of residence in $1/km^2$

**lum** Entropy of the land use mix

**st_den** Street density in the dissemination area of the place of residence in $km/km^2$

**inter_den** Intersection density in the dissemination area of the place of residence in $1/km^2$

**SF_P_ratio** Ratio of surface of plots to built area

**side_density** Sidewalk density in the dissemination area of the place of residence in $km/km^2$

**Shelters_SD** Response to statement "Shelters and other public transportation facilities that I commonly use are of good quality": 1 if Strongly Disagree, 0 otherwise

**Shelters_D** Response to statement "Shelters and other public transportation facilities that I commonly use are of good quality": 1 if Disagree, 0 otherwise

**Shelters_A** Response to statement "Shelters and other public transportation facilities that I commonly use are of good quality": 1 if Agree, 0 otherwise

**Shelters_SA** Response to statement "Shelters and other public transportation facilities that I commonly use are of good quality": 1 if Strongly Agree, 0 otherwise

## Source

Whalen, K. E., P\'aez, A., & Carrasco, J. A. (2013). Mode choice of university students commuting to school and the role of active travel. Journal of Transport Geography, 31, 132-142. (https://doi.org/10.1016/j.jtrangeo.2013.06.008)

## Examples

```
library(readr)
mc_commute <- read_csv(system.file("extdata", "mc_commute.csv", package = "discrtr"))
```

---

# mc_commute_long *McMaster Commuting Data Set (long format).*

---

## Description

A data set containing information about *students* commuting to McMaster University. Data were collected by means of a travel survey in the fall of 2010. Respondents were asked about their mode of travel to McMaster University, in Hamilton, Canada. They were also asked about the modes available to them. The characteristics of the trips were self-reported or imputed. The data set also contains relevant attributes about the respondents. The format of the table is long, with each row representing a choice situation.

## Usage

```
data(mc_commute_long)
```

## Format

An indexed data frame of class dfidx with 5500 rows and 62 variables:

**id** Unique identifier for respondents

**choice** Mode of transportation chosen: Cycle, Walk, HSR (local transit), Car

**parking** Indicator variable for holding a university parking permit: Yes/No

**vehind** Indicator variable for having individual access to a private car (i.e., car not shared with other household members): Yes/No

**gender** Woman/Man

**age** Age in years

**shared** Indicator variable for Indicator variable for a student living in a rental property with other students, i.e., living in shared accommodations

**family** Indicator variable for living in family home

**child** Indicator variable for presence of dependent minors in household: Yes/No

**street_density** Street density in the dissemination area of the place of residence in $km/km^2$

**sidewalk_density** Sidewalk density in the dissemination area of the place of residence in $km/km^2$

**LAT** Latitude of the place or residence, geocoded at the nearest major intersection or centroid of 6-digit postal area

**LONG** Longitude of the place or residence, geocoded at the nearest major intersection or centroid of 6-digit postal area

**PersonalVehComf_SD** Response to statement "The personal vehicles I usually travel in are comfortable": 1 if Strongly Disagree, 0 otherwise

**PersonalVehComf_D** Response to statement "The personal vehicles I usually travel in are comfortable": 1 if Disagree, 0 otherwise

**PersonalVehComf_A** Response to statement "The personal vehicles I usually travel in are comfortable": 1 if Agree, 0 otherwise

**PersonalVehComf_SA** Response to statement "The personal vehicles I usually travel in are comfortable": 1 if Strongly Agree, 0 otherwise

**Fun_SD** Response to statement "Getting there is half the fun": 1 if Strongly Disagree, 0 otherwise

**Fun_D** Response to statement "Getting there is half the fun": 1 if Disagree, 0 otherwise

**Fun_A** Response to statement "Getting there is half the fun": 1 if Agree, 0 otherwise

**Fun_SA** Response to statement "Getting there is half the fun": 1 if Strongly Agree, 0 otherwise

**ActiveNeigh_SD** Response to statement "I like to live in a neighborhood where there's a lot going on": 1 if Strongly Disagree, 0 otherwise

**ActiveNeigh_D** Response to statement "I like to live in a neighborhood where there's a lot going on": 1 if Disagree, 0 otherwise

**ActiveNeigh_A** Response to statement "I like to live in a neighborhood where there's a lot going on": 1 if Agree, 0 otherwise

**ActiveNeigh_SA** Response to statement "I like to live in a neighborhood where there's a lot going on": 1 if Strongly Agree, 0 otherwise

**UsefulTrans_SD** Response to statement "My commute trip is a useful transition between home and school": 1 if Strongly Disagree, 0 otherwise

**UsefulTrans_D** Response to statement "My commute trip is a useful transition between home and school": 1 if Disagree, 0 otherwise

**UsefulTrans_A** Response to statement "My commute trip is a useful transition between home and school": 1 if Agree, 0 otherwise

**UsefulTrans_SA** Response to statement "My commute trip is a useful transition between home and school": 1 if Strongly Agree, 0 otherwise

**BusComf_SD** Response to statement "The buses I usually travel in are comfortable": 1 if Strongly Disagree, 0 otherwise

**BusComf_D** Response to statement "The buses I usually travel in are comfortable": 1 if Disagree, 0 otherwise

**BusComf_A** Response to statement "The buses I usually travel in are comfortable": 1 if Agree, 0 otherwise

**BusComf_SA** Response to statement "The buses I usually travel in are comfortable": 1 if Strongly Agree, 0 otherwise

**TravelAlone_SD** Response to statement "I like traveling alone": 1 if Strongly Disagree, 0 otherwise

**TravelAlone_D** Response to statement "I like traveling alone": 1 if Disagree, 0 otherwise

**TravelAlone_A** Response to statement "I like traveling alone": 1 if Agree, 0 otherwise

**TravelAlone_SA** Response to statement "I like traveling alone": 1 if Strongly Agree, 0 otherwise

**Shelters_SD** Response to statement "Shelters and other public transportation facilities that I commonly use are of good quality": 1 if Strongly Disagree, 0 otherwise

**Shelters_D** Response to statement "Shelters and other public transportation facilities that I commonly use are of good quality": 1 if Disagree, 0 otherwise

**Shelters_A** Response to statement "Shelters and other public transportation facilities that I commonly use are of good quality": 1 if Agree, 0 otherwise

**Shelters_SA** Response to statement "Shelters and other public transportation facilities that I commonly use are of good quality": 1 if Strongly Agree, 0 otherwise

**Community_SD** Response to statement "There is a sense of community in my neighborhood": 1 if Strongly Disagree, 0 otherwise

**Community_D** Response to statement "There is a sense of community in my neighborhood": 1 if Disagree, 0 otherwise

**Community_A** Response to statement "There is a sense of community in my neighborhood": 1 if Agree, 0 otherwise

**Community_SA** Response to statement "There is a sense of community in my neighborhood": 1 if Agree, 0 otherwise

**personal_veh_comfortable** Response to statement "The personal vehicles I usually travel in are comfortable" as factor: SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

**getting_there_fun** Response to statement "Getting there is half the fun" as factor: SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

**like_active_neighborhood** Response to statement "I like to live in a neighborhood where there's a lot going on" as factor: SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

**commute_useful_transition** Response to statement "My commute trip is a useful transition between home and school" as factor: SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

**buses_comfortable** Response to statement "The buses I usually travel in are comfortable" as factor: SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

**prefer_travel_alone** Response to statement "I like traveling alone" as factor: SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

**shelter_good_quality** Response to statement "Shelters and other public transportation facilities that I commonly use are of good quality" as factor: SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

**sense_community** Response to statement "There is a sense of community in my neighborhood" as factor: SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree1 if Strongly Disagree, 0 otherwise

**numna** Total number of available alternatives, e.g., if bus and walk = 2, if all four = 4

**alt** A factor with the alternatives in the choice set

**available** An indicator variable for availability of the alternative

**time.Cycle** Travel time by alternative

**access** Access time to transit in minutes (i.e., reaching a transit stop)

**wait** Waiting time transit (i.e., at a transit stop)

**transfer** Number of transit transfers

**idx** Index for the table: includes chid (identifier for the choice) and alt (the alternative)

## Source

Whalen, K. E., P\'aez, A., & Carrasco, J. A. (2013). Mode choice of university students commuting to school and the role of active travel. Journal of Transport Geography, 31, 132-142. (https://doi.org/10.1016/j.jtrangeo.2013.06.008)

## Examples

```
data(mc_commute_long)
library(dfidx)
print(mc_commute_long, n = 12)
```

---

`mc_commute_wide` *McMaster Commuting Data set (wide format).*

---

## Description

A data set containing information about *students* commuting to McMaster University. Data were collected by means of a travel survey in the fall of 2010. Respondents were asked about their mode of travel to McMaster University, in Hamilton, Canada. They were also asked about the modes available to them. The characteristics of the trips were self-reported or imputed. The data set also contains relevant attributes about the respondents. The format of the table is wide, with each individual decision maker in a row.

## Usage

```
data(mc_commute_wide)
```

## Format

A data frame with 1375 rows and 74 variables:

**id** Unique identifier for respondents

**choice** Mode of transportation chosen: Cycle, Walk, HSR (local transit), Car

**available.Cycle** An indicator variable for availability of cycling: Yes/No

**available.Walk** An indicator variable for availability of walking: Yes/No

**available.HSR** An indicator variable for availability of buses: Yes/No

**available.Car** An indicator variable for availability of car: Yes/No

**time.Cycle** Travel time by bicycle to campus in minutes

**time.Walk** Travel time by walking to campus in minutes

**time.HSR** Travel time by bus to campus in minutes

**time.Car** Travel time by car to campus in minutes

**access.Cycle** Access time to mode in minutes (i.e., reaching a transit stop)

**access.Walk** Access time to mode in minutes (i.e., reaching a transit stop)

**access.HSR** Access time to mode in minutes (i.e., reaching a transit stop)

**access.Car** Access time to mode in minutes (i.e., reaching a transit stop)

**wait.Cycle** Waiting time (i.e., at a transit stop)

**wait.Walk** Waiting time (i.e., at a transit stop)

**wait.HSR** Waiting time (i.e., at a transit stop)

**wait.Car** Waiting time (i.e., at a transit stop)

**transfer.Walk** Number of transfers when travelling by transit

**transfer.Cycle** Number of transfers when travelling by transit

**transfer.HSR** Number of transfers when travelling by transit

**transfer.Car** Number of transfers when travelling by transit

**parking** Indicator variable for holding a university parking permit: Yes/No

**vehind** Indicator variable for having individual access to a private car (i.e., car not shared with other household members): Yes/No

**gender** Woman/Man

**age** Age in years

**shared** Indicator variable for a student living in a rental property with other students, i.e., living in shared accommodations

**family** Indicator variable for living in family home

**child** Indicator variable for presence of dependent minors in household: Yes/No

**street_density** Street density in the dissemination area of the place of residence in $km/km^2$

**sidewalk_density** Sidewalk density in the dissemination area of the place of residence in $km/km^2$

**LAT** Latitude of the place or residence, geocoded at the nearest major intersection or centroid of 6-digit postal area

**LONG** Longitude of the place or residence, geocoded at the nearest major intersection or centroid of 6-digit postal area

**PersonalVehComf_SD** Response to statement "The personal vehicles I usually travel in are comfortable": 1 if Strongly Disagree, 0 otherwise

**PersonalVehComf_D** Response to statement "The personal vehicles I usually travel in are comfortable": 1 if Disagree, 0 otherwise

**PersonalVehComf_A** Response to statement "The personal vehicles I usually travel in are comfortable": 1 if Agree, 0 otherwise

**PersonalVehComf_SA** Response to statement "The personal vehicles I usually travel in are comfortable": 1 if Strongly Agree, 0 otherwise

**Fun_SD** Response to statement "Getting there is half the fun": 1 if Strongly Disagree, 0 otherwise

**Fun_D** Response to statement "Getting there is half the fun": 1 if Disagree, 0 otherwise

**Fun_A** Response to statement "Getting there is half the fun": 1 if Agree, 0 otherwise

**Fun_SA** Response to statement "Getting there is half the fun": 1 if Strongly Agree, 0 otherwise

**ActiveNeigh_SD** Response to statement "I like to live in a neighborhood where there's a lot going on": 1 if Strongly Disagree, 0 otherwise

**ActiveNeigh_D** Response to statement "I like to live in a neighborhood where there's a lot going on": 1 if Disagree, 0 otherwise

**ActiveNeigh_A** Response to statement "I like to live in a neighborhood where there's a lot going on": 1 if Agree, 0 otherwise

**ActiveNeigh_SA** Response to statement "I like to live in a neighborhood where there's a lot going on": 1 if Strongly Agree, 0 otherwise

**UsefulTrans_SD** Response to statement "My commute trip is a useful transition between home and school": 1 if Strongly Disagree, 0 otherwise

**UsefulTrans_D** Response to statement "My commute trip is a useful transition between home and school": 1 if Disagree, 0 otherwise

**UsefulTrans_A** Response to statement "My commute trip is a useful transition between home and school": 1 if Agree, 0 otherwise

**UsefulTrans_SA** Response to statement "My commute trip is a useful transition between home and school": 1 if Strongly Agree, 0 otherwise

**BusComf_SD** Response to statement "The buses I usually travel in are comfortable": 1 if Strongly Disagree, 0 otherwise

**BusComf_D** Response to statement "The buses I usually travel in are comfortable": 1 if Disagree, 0 otherwise

**BusComf_A** Response to statement "The buses I usually travel in are comfortable": 1 if Agree, 0 otherwise

**BusComf_SA** Response to statement "The buses I usually travel in are comfortable": 1 if Strongly Agree, 0 otherwise

**TravelAlone_SD** Response to statement "I like traveling alone": 1 if Strongly Disagree, 0 otherwise

**TravelAlone_D** Response to statement "I like traveling alone": 1 if Disagree, 0 otherwise

**TravelAlone_A** Response to statement "I like traveling alone": 1 if Agree, 0 otherwise

**TravelAlone_SA** Response to statement "I like traveling alone": 1 if Strongly Agree, 0 otherwise

**Shelters_SD** Response to statement "Shelters and other public transportation facilities that I commonly use are of good quality": 1 if Strongly Disagree, 0 otherwise

**Shelters_D** Response to statement "Shelters and other public transportation facilities that I commonly use are of good quality": 1 if Disagree, 0 otherwise

**Shelters_A** Response to statement "Shelters and other public transportation facilities that I commonly use are of good quality": 1 if Agree, 0 otherwise

**Shelters_SA** Response to statement "Shelters and other public transportation facilities that I commonly use are of good quality": 1 if Strongly Agree, 0 otherwise

**Community_SD** Response to statement "There is a sense of community in my neighborhood": 1 if Strongly Disagree, 0 otherwise

**Community_D** Response to statement "There is a sense of community in my neighborhood": 1 if Disagree, 0 otherwise

**Community_A** Response to statement "There is a sense of community in my neighborhood": 1 if Agree, 0 otherwise

**Community_SA** Response to statement "There is a sense of community in my neighborhood": 1 if Agree, 0 otherwise

**personal_veh_comfortable** Response to statement "The personal vehicles I usually travel in are comfortable" as factor: SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

**getting_there_fun** Response to statement "Getting there is half the fun" as factor: SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

**like_active_neighborhood** Response to statement "I like to live in a neighborhood where there's a lot going on" as factor: SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

**commute_useful_transition** Response to statement "My commute trip is a useful transition between home and school" as factor: SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

**buses_comfortable** Response to statement "The buses I usually travel in are comfortable" as factor: SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

**prefer_travel_alone** Response to statement "I like traveling alone" as factor: SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

**shelter_good_quality** Response to statement "Shelters and other public transportation facilities that I commonly use are of good quality" as factor: SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

**sense_community** Response to statement "There is a sense of community in my neighborhood" as factor: SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree1 if Strongly Disagree, 0 otherwise

**numna** Total number of available alternatives, e.g., if bus and walk = 2, if all four = 4

## Source

Whalen, K. E., P\'aez, A., & Carrasco, J. A. (2013). Mode choice of university students commuting to school and the role of active travel. Journal of Transport Geography, 31, 132-142. (https://doi.org/10.1016/j.jtrangeo.2013.06.008)

## Examples

```
data(mc_commute_wide)
summary(mc_commute_wide$choice)
```

---

# mc_modality *McMaster Modality Data Set.*

---

## Description

A dataset containing information about *students*, *staff*, and *faculty* commuting to McMaster University. Data were collected by means of a travel survey in the fall of 2010. Respondents were asked about their mode of travel to McMaster University, in Hamilton, Canada. They were also asked about the modes available to them. The data set also contains relevant attributes about the respondents. The format of the table is wide, with each row representing an individual respondent. These variables were augmented with information from the 2011 Census of Canada and land use information from local sources.

## Usage

```
data(mc_modality)
```

## Format

A data frame with 4,146 rows and 37 variables:

**id** Unique identifier for respondents

**choice** Mode of transportation chosen: Active Travel (Cycle/Walk), HSR (local transit), Car, GO (regional transit)

**LAT** Latitude of the place or residence, geocoded at the nearest major intersection or centroid of 6-digit postal area

**LONG** Longitude of the place or residence, geocoded at the nearest major intersection or centroid of 6-digit postal area

**shared_vehicle** Indicator variable for having individual access to a private car (i.e., car shared with other household members): Yes/No

**bicycle** Indicator variable for owning a bicycle: Yes/No

**gender** Woman/Man

**age** Age in years

**status** Indicator variable for status at McMaster: Staff or Faculty/Student

**care_giver** Indicator variable for being primary care giver for any minors in the household: Yes/No

**modality** Indicator variable for number of available modes: One Mode/Two Modes/Three Modes/Four Modes

**Boring** Response to statement "Traveling is boring" as factor: Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree

**Buses_Comfortable** Response to statement "The buses I usually travel in are comfortable" as factor: Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree

**Clean_Fuel** Response to statement "To improve the environment, I am willing to pay a little more to use a hybrid, electric or other clean fuel vehicle" as factor: Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree

**Limit_Driving** Response to statement "I limit my auto travel to help improve congestion and the environment" as factor: Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree

**Productive_Time** Response to statement "I use my commute time productively" as factor: Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree

**Safe_Cycle** Response to statement "I feel safe and secure to cycle around town" as factor: Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree

**Shops_Services** Response to statement "Having shops and services within walking distance of my home is important to me" as factor: Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree

**Someone_Else** Response to statement "Usually, I'd rather have someone else do the driving" as factor: Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree

**Stuck_Traffic** Response to statement "Getting stuck in traffic doesn't bother me too much" as factor: Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree

**Transition** Response to statement "My commute trip is a useful transition between home and school" as factor: Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree

**Travel_Alone** Response to statement "I like traveling alone" as factor: Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree

**Travel_Tiring** Response to statement "Traveling is generally tiring for me" as factor: Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree

**Wasted_Time** Response to statement "Traveling is generally tiring for me" as factor: Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree

**Rate_Immigrant** Proportion of inmigrants to total population in Dissemination Area

**Rate_Non_Canadian** Proportion of non-Canadian residents to total population in Dissemination Area

**Rate_Labor** Proportion of residents in Dissemination Area who are in the labor force

**Rate_Unemployment** Unemployment rate in Dissemination Area

**Rate_Married** Proportion of families headed by a married couple to total population in Dissemination Area

**Mean_Age** Mean age of residents in Dissemination Area in years

**Mean_Children** Mean number of children per family in Dissemination Area

**Median_HH_Income** Median family income in Dissemination Area in $10,000

**LITA** Transit access index – combination of capacity, frequency, and coverage of service (Wiley et al., 2011)

**LUM** Entropy-based land use mix index in Dissemination Area: lower values mean more homogenous land uses, higher values greater mix of uses

**MAC_DISTANCE** Network distance from place of residence to McMaster University in km

**POPULATION_DENSITY** Population density in Dissemination Area in people/sq.km

**SF_P_RATIO** Ratio of building footprint to parcel area in Dissemination Area: a measure of density of development

## Source

Lavery, T., P\'aez, A., & Kanaroglou, P.S. (2013). Driving out of choices: An investigation of transport modality in a university sample. Transportation Research Part A: Policy and Practice, 57:37-46 (https://doi.org/10.1016/j.tra.2013.09.010)

## Examples

```
data(mc_modality)
summary(mc_modality)
```

---

# urban_types *Hamilton City boundaries and urban types*

---

## Description

Classification of regions by type: urban, suburban, and rural. This is based on the rural boundaries of the city, and the planning regions.

## Usage

```
data(urban_types)
```

## Format

An object of class `sf` (inherits from `tbl_df`, `tbl`, `data.frame`) with 3 rows and 2 columns.

## Details

#' @format A simple features data frame with 2 rows and 2 variables:

**Type** Classification of the region: "Urban", "Suburban", "Rural"

**geometry** Geometry of polygons

# Index