Package ‘ssrn’

June 23, 2020

Title  Scan Statistics for Railway Network
Version  0.1.0
Date  2020-06-14
Description  Implement the algorithm provided in scan for estimating the transmission route on railway network using passenger volume. It is a generalization of the scan statistic approach for railway network to identify the hot railway route for transmitting infectious diseases.

URL  https://github.com/uribo/ssrn

BugReports  https://github.com/uribo/ssrn/issues

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Encoding  UTF-8

LazyData  true

RoxygenNote  7.1.0

Depends  R (>= 3.2.0)

Imports  dplyr (>= 1.0.0), magrittr (>= 1.5), purrr (>= 0.3.4), rlang (>= 0.4.6), stringr (>= 1.4.0), tibble (>= 3.0.1), tidyr (>= 1.1.0)

Suggests  testthat, scanstatistics

NeedsCompilation  no

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Repository  CRAN

Date/Publication  2020-06-23 13:40:03 UTC
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jreast_jt

East Japan Railway’s Tokaido Line Data

Description

East Japan Railway’s Tokaido Line Data

Details

Includes the names of stations between Tokyo and Yugawara as of June 2020.

- st_code: A unique number to identify the station.
- st_name: Romanization of station names.

Value

- jreast_jt a tibble

jreast_jt_od

JR-East Tokaido Line OD Data

Description

JR-East Tokaido Line OD Data

Details

Census values made in 2015. The number of passengers between stations on the Tokaido Line. These values are those of commuter pass users.

- departure_st_code: Departing station identification number.
- arrive_st_code: The identification number of the station you are arriving at.
- volume Number of people getting on and off the train.
**make_adjacency_matrix**

Value

- jreast_jt_od a tibble

See Also

https://www.mlit.go.jp/sogoseisaku/transport/sosei_transport_tk_000035.html

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**make_adjacency_matrix**  
Convert station data to adjacency matrix

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**Description**

Convert station data to adjacency matrix

**Usage**

```r
make_adjacency_matrix(stations, depart, arrive)
```

**Arguments**

- **stations**  
  data.frame which set of stopping points recorded in order of stopping.
- **depart**  
  Column name of a stop.
- **arrive**  
  Give the name of the column indicating the next stop at the target stop.

**Examples**

```r
make_adjacency_matrix(jreast_jt, st_code, next_st_code)
```

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**make_passenger_matrix**  
Convert passenger and station data to origin-destination matrix

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**Description**

Convert passenger and station data to origin-destination matrix

**Usage**

```r
make_passenger_matrix(passenger, stations, depart, arrive, location, value)
```

**Arguments**

- **passenger**  
  passenger data
- **stations**  
  data.frame which set of stopping points recorded in order of stopping.
- **depart**  
  Column name of a stop.
- **arrive**  
  Give the name of the column indicating the next stop at the target stop.
- **location**  
  Name of the variable to use for the join, indicating its location.
- **value**  
  origin-destination value name
make_passenger_od

Examples

jreast_jt_od %>%
  make_passenger_matrix(jreast_jt,
    departure_st_code,
    arrive_st_code,
    st_code,
    volume)

make_passenger_od  Summaries a passenger volume

Description

Summaries a passenger volume

Usage

make_passenger_od(
  passenger,
  stations,
  depart,
  arrive,
  location,
  value,
  .all = FALSE
)

Arguments

passenger  passenger data
stations  data.frame which set of stopping points recorded in order of stopping.
depart  Column name of a stop.
arrive  Give the name of the column indicating the next stop at the target stop.
location  Name of the variable to use for the join, indicating its location.
value  origin-destination value name
.all  Make a join that contains rows of two datasets. The default value is FALSE.

Examples

jreast_jt_od %>%
  make_passenger_od(jreast_jt,
    depart = departure_st_code,
    arrive_st_code,
    location = st_code,
    value = volume) %>%
  dplyr::left_join(jreast_jt %>%

network_window

dplyr::select(arrive_st_code = st_code,
    next_st_name = st_name),
by = "arrive_st_code")

network_window Create network window zones

Description
Create network window zones

Usage
network_window(adjacency_matrix, dist_matrix, type, cluster_max)

Arguments
adjacency_matrix
A boolean matrix, with element \((i,j)\) set to TRUE if location \(j\) is adjacent to location \(i\).
dist_matrix Distance matrix
type Currently, "connected_B" only.
cluster_max Maximum cluster size. Zone If this value is reached, the area will not be expanded any further. It’s a good idea to keep it to the number of stops on the line you’re dealing with.

transit_table Create transit table

Description
Create transit table

Usage
transit_table(stations, ..., reverse = FALSE)

Arguments
stations data.frame which set of stopping points recorded in order of stopping.
... Arguments passed on to dplyr::across
cols <tidy-select> Columns to transform. Because across() is used within functions like summarise() and mutate(), you can’t select or compute upon grouping variables.
reverse Option to swap the order of the stopping points.
Examples

# The next stop is stored in the variable of column next_.
jreast_jt %>%
  transit_table()

# Switch between inbound and outbound lines.
jreast_jt %>%
  transit_table(reverse = TRUE)
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