Package ‘ssrn’

October 14, 2022

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

License  MIT + file LICENSE

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

Author  Shinya Uryu [aut, cre] (<https://orcid.org/0000-0002-0493-6186>), Yuta Tanoue [aut], Daisuke Yoneoka [aut]

Maintainer  Shinya Uryu <suika1127@gmail.com>

Repository  CRAN

Date/Publication  2020-06-23 13:40:03 UTC
R topics documented:

jreast_jt ................................................................. 2
jreast_jt_od ............................................................ 2
make_adjacency_matrix .................................................. 3
make_passenger_matrix .................................................... 3
make_passenger_od ......................................................... 4
network_window .......................................................... 5
transit_table ............................................................. 5

Index

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

make_adjacency_matrix  Convert station data to adjacency matrix

Description

Convert station data to adjacency matrix

Usage

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

make_adjacency_matrix(jreast_jt, st_code, next_st_code)

make_passenger_matrix  Convert passenger and station data to origin-destination matrix

Description

Convert passenger and station data to origin-destination matrix

Usage

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

```r
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

```r
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

```r
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**

```r
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**

```r
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`

- `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)
Index

dplyr::across, 5
jreast_jt, 2
jreast_jt_od, 2
make_adjacency_matrix, 3
make_passenger_matrix, 3
make_passenger_od, 4
network_window, 5
transit_table, 5