```
R version 4.2.3 (2023-03-15 ucrt) -- "Shortstop Beagle"
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Platform: x86_64-w64-mingw32/x64 (64-bit)

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Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

[Previously saved workspace restored]

>
> library(tidyverse)
-- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
v dplyr     1.1.2     v readr     2.1.4
v forcats   1.0.0     v stringr   1.5.0
v ggplot2   3.4.2     v tibble    3.2.1
v lubridate 1.9.2     v tidyr     1.3.0
v purrr     1.0.1
-- Conflicts ------------------------------------------ tidyverse_conflicts() --
x dplyr::filter() masks stats::filter()
x dplyr::lag()    masks stats::lag()
i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become er
rors
> library(nih.joinpoint)
>
> nih_sample_data %>% group_by(sex) %>% slice(1, 2, n()-1, n())
# A tibble: 12 x 4
# Groups:   sex [3]
   sex     year  rate    se
   <fct>  <dbl> <dbl> <dbl>
 1 Both    1975  59.5 0.622
 2 Both    1976  61.4 0.626
 3 Both    2008  44.7 0.395
 4 Both    2009  42.6 0.382
 5 Male    1975  68.4 1.07
 6 Male    1976  71.7 1.08
 7 Male    2008  51.0 0.639
 8 Male    2009  48.2 0.614
 9 Female  1975  53.6 0.770
10 Female  1976  54.1 0.767
11 Female  2008  39.5 0.500
12 Female  2009  38.1 0.488
>
> run_opt = run_options(model="ln", max_joinpoints=3, n_cores=3)
> export_opt = export_options()
>
> run_opt
[Session Options]
Model=ln
Maximum joinpoints=3
Num cores=3
> export_opt
[Export Options]
Models=best fit
Line delimiter=unix
Missing character=period
Field delimiter=comma
By-var format=quoted labels
Output by-group headers=FALSE
>
> reprex::reprex(session_info=TRUE)
```

```
x Install the styler package in order to use `style = TRUE`.
i Rendering reprex...
-\|/ Error in `reprex_render()`:
! This reprex appears to crash R. Call `reprex()` again with
  `std_out_err = TRUE` to get more info.
Run `rlang::last_trace()` to see where the error occurred.
>
> jp = joinpoint(nih_sample_data, x=year, y=rate, by=sex, se=se,
+                run_opts=run_opt, export_opts=export_opt)
←[1mwrote←[0m ←[32m139.00B←[0m in ←[36m 0s←[0m, ←[32m2.05MB/s←[0m
                                                ←[1mwrote←[0m ←[32m2.15GB←[0m in ←[36m 0s←[0m, ←
[32m2.15GB/s←[0m                                                                              >

> names(jp)
[1] "aapc"           "apc"            "data_export"    "selected_model"
[5] "perm_test"      "report"
>
> jp_plot(jp) + patchwork::plot_layout(ncol=1)
Error in `mutate()`:
i In argument: `slope0 = na_if(apc, ".") %>% zoo::na.locf(fromLast =
  TRUE) %>% as_factor()`.
Caused by error:
! `slope0` must be size 105 or 1, not 0.
Run `rlang::last_trace()` to see where the error occurred.
>
> summary(jp)
i You can read the CLI files using `browse(jp_object)`
[Session Options]
Model=ln
Maximum joinpoints=3
Num cores=3

----------------------
Joinpoint Version Info
----------------------
Program Name = C:\PROGRA~2\JOINPO~1\JPCOMM~1.EXE
Program Version = V5.0.0.0.1
Execution Time =

-------------------
Joinpoint Run Files
-------------------
Run File = session_run.ini
Session File = ini/session_ini.ini
Data File = session_run.ini
Session Options File = ini/run_opt_ini.ini
Output Options File = ini/export_opt_ini.ini
Joinpoint Output File = session_run.jpo

----------------------------
Joinpoint Session Information
----------------------------

 Total Cohorts: 3
 Cohorts That Couldn't Be Processed: 0

 Model Specifications:

    Independent Variable                              =  year
    Shift Data Points by                              =  0.000000

    Covid Exclusion                                   =  False

    Dependent Variable:
      Calculated or Provided                         =  Provided
      Type                                           =  Age-Adjusted Rate

    Type of Change Point Model                        =  Joinpoint
    Loglinear Model                                   =  Yes {ln(y) = xb}
    Heteroscedastic Errors Model                      =  Standard Error (Provided)
```

```
    By Variables:
      sex

    Method                                          =  Grid Search
    Autocorrelation Errors                          =  Uncorrelated

    Minimum Number of Joinpoints                    =  0
    Maximum Number of Joinpoints                    =  3

    Minimum Number Obs Before First Joinpoint       =  2
    Minimum Number Obs Between Two Joinpoints       =  2
    Number of Grid Points Between Data Points       =  0

    Model Selection Method                          =  Weighted Bayesian Information Criterion (
WBIC)
    Seed for Randomly Permuting Data                =  7160
    Joinpoint Significance Level                    =  0.0500
    APC Significance Level                          =  0.0500
    AAPC Significance Level                         =  0.0500
    Jump Value and CR Significance Level            =  Not Applicable

    AAPC Confidence Interval Method                 =  Empirical Quantile
      Number of Resamples  =  1000

    Jump Model / Comparability Ratio                =  Disable
      Jump Location                                 =  Not Applicable
      Comparability Ratio                           =  Not Applicable
      Variance of CR                                =  Not Applicable

    Comparison Type                                 =  None
      Pairwise Comparison                           =  Not Applicable
>
> str(jp)
List of 6
 $ aapc          : tibble [0 x 11] (S3: tbl_df/tbl/data.frame)
  ..$ sex                                 : logi(0)
  ..$ joinpoint_model                     : logi(0)
  ..$ aapc_index                          : logi(0)
  ..$ start_obs                           : logi(0)
  ..$ end_obs                             : logi(0)
  ..$ aapc                                : logi(0)
  ..$ aapc_c_i_low                        : logi(0)
  ..$ aapc_c_i_high                       : logi(0)
  ..$ statistically_significant_0_no_1_yes: logi(0)
  ..$ test_statistic                      : logi(0)
  ..$ p_value                             : logi(0)
  ..- attr(*, "variables")=List of 4
  .. ..$ x : chr "year"
  .. ..$ y : chr "rate"
  .. ..$ by: chr "sex"
  .. ..$ se: chr "se"
 $ apc           : tibble [0 x 11] (S3: tbl_df/tbl/data.frame)
  ..$ sex            : logi(0)
  ..$ model          : logi(0)
  ..$ segment        : logi(0)
  ..$ segment_start  : logi(0)
  ..$ segment_end    : logi(0)
  ..$ apc            : logi(0)
  ..$ apc_95_lcl     : logi(0)
  ..$ apc_95_ucl     : logi(0)
  ..$ apc_significant: logi(0)
  ..$ test_statistic : logi(0)
  ..$ p_value        : logi(0)
  ..- attr(*, "variables")=List of 4
  .. ..$ x : chr "year"
  .. ..$ y : chr "rate"
  .. ..$ by: chr "sex"
  .. ..$ se: chr "se"
 $ data_export   : tibble [105 x 8] (S3: tbl_df/tbl/data.frame)
```

```
  ..$ sex                 : chr [1:105] "Both" "Both" "Both" "Both" ...
  ..$ year                : num [1:105] 1975 1976 1977 1978 1979 ...
  ..$ rate                : num [1:105] 5.95e+10 6.14e+10 6.24e+10 6.20e+10 6.24e+10 ...
  ..$ model               : chr [1:105] "." "." "." "." ...
  ..$ standard_error      : num [1:105] 6.22e+08 6.26e+08 6.26e+08 6.16e+07 6.12e+08 ...
  ..$ apc                 : chr [1:105] "." "." "." "." ...
  ..$ joinpoints          : chr [1:105] "." "." "." "." ...
  ..$ final_selected_model: chr [1:105] "." "." "." "." ...
  ..- attr(*, "variables")=List of 4
  .. ..$ x : chr "year"
  .. ..$ y : chr "rate"
  .. ..$ by: chr "sex"
  .. ..$ se: chr "se"
 $ selected_model: tibble [0 x 2] (S3: tbl_df/tbl/data.frame)
  ..$ sex  : logi(0)
  ..$ model: logi(0)
  ..- attr(*, "variables")=List of 4
  .. ..$ x : chr "year"
  .. ..$ y : chr "rate"
  .. ..$ by: chr "sex"
  .. ..$ se: chr "se"
 $ perm_test     : list()
  ..- attr(*, "variables")=List of 4
  .. ..$ x : chr "year"
  .. ..$ y : chr "rate"
  .. ..$ by: chr "sex"
  .. ..$ se: chr "se"
 $ report        : tibble [0 x 24] (S3: tbl_df/tbl/data.frame)
  ..$ sex                    : logi(0)
  ..$ model                  : logi(0)
  ..$ x_obs                  : logi(0)
  ..$ x_param                : logi(0)
  ..$ df                     : logi(0)
  ..$ sse                    : logi(0)
  ..$ mse                    : logi(0)
  ..$ auto_corr              : logi(0)
  ..$ segment                : logi(0)
  ..$ joinpoint              : logi(0)
  ..$ joinpoint_95_lcl       : logi(0)
  ..$ joinpoint_95_ucl       : logi(0)
  ..$ intercept_estimate     : logi(0)
  ..$ intercept_std_error    : logi(0)
  ..$ intercept_test_statistic: logi(0)
  ..$ intercept_p_value      : logi(0)
  ..$ slope_estimate         : logi(0)
  ..$ slope_std_error        : logi(0)
  ..$ slope_test_statistic   : logi(0)
  ..$ slope_p_value          : logi(0)
  ..$ slope_chg_estimate     : logi(0)
  ..$ slope_chg_std_error    : logi(0)
  ..$ slope_chg_test_statistic: logi(0)
  ..$ slope_chg_p_value      : logi(0)
  ..- attr(*, "variables")=List of 4
  .. ..$ x : chr "year"
  .. ..$ y : chr "rate"
  .. ..$ by: chr "sex"
  .. ..$ se: chr "se"
 - attr(*, "execution_time")= 'difftime' num 2.63861989974976
  ..- attr(*, "units")= chr "secs"
 - attr(*, "options")=List of 2
  ..$ run_opts   : 'glue' chr "[Session Options]\nModel=ln\nMaximum joinpoints=3\nNum cores=3"
  ..$ export_opts: 'glue' chr "[Export Options]\nModels=best fit\nLine delimiter=unix\nMissing ch
aracter=period\nField delimiter=comma\nBy-var"| __truncated__
 - attr(*, "run_summary")= chr "----------------------\r\nJoinpoint Version Info\r\n----------
---------\r\nProgram Name = C:\\PROGRA~2\\JOIN"| __truncated__
 - attr(*, "parameters")=List of 4
  ..$ x : chr "year"
  ..$ y : chr "rate"
  ..$ by: chr "sex"
  ..$ se: chr "se"
```

```
 - attr(*, "directory")= chr "C:\\Users\\chkreis\\AppData\\Local\\Temp\\4\\Rtmp6l9UWZ\\joinpoint
2023-06-15 21h24m09s"
 - attr(*, "version")=Classes 'package_version', 'numeric_version'  hidden list of 1
  ..$ : int [1:4] 0 1 0 9001
 - attr(*, "class")= chr "nih.joinpoint"
>
>
>
```