Package: snakeplot (via r-universe)

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Title Serpentine Plots for Long Timeline, Sequential and Survey Data

Version 0.3.0

Description Visualize long timelines, extended sequences and temporally chained survey responses and experience sampling data using intuitive serpentine (snake) plots. Supports distribution bars, tick-mark plots, inter-item correlation arcs, faceted multi-construct panels, and daily time-of-day positioning for ecological momentary assessment data.

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Depends R (>= 3.5.0)

Imports graphics, grDevices, stats

LazyData true

URL https://github.com/mohsaqr/snakeplot, https://saqr.me/Snakeplot/

BugReports https://github.com/mohsaqr/snakeplot/issues

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Contents

`activity_snake` *Activity Snake Plot*

Description

A daily activity timeline where each band is one day and colored ticks or blocks on a dark ribbon represent events. The serpentine (boustrophedon) layout connects days via U-turn arcs.

Usage

```
activity_snake(
  data,
  band_height = 28,
  band_gap = 18,
  day_start = 360,
  day_end = 1440,
  plot_width = 500,
  band_color = "#3d3d4a",
  event_color = "#d4a843",
  arc_color = "#2a2a3a",
  band_opacity = 0.9,
  arc_opacity = 0.85,
  event_opacity = 0.85,
  tick_width = 1.5,
  show_grid = TRUE,
  show_total = TRUE,
  show_count = FALSE,
  show_hour_labels = TRUE,
  show_arc_labels = TRUE,
```

```
  shadow = TRUE,
  grid_color = "rgba(255,255,255,0.25)",
  label_color = "#cccccc",
  label_size = 0.85,
  label_align = "left",
  orientation = c("horizontal", "vertical"),
  start_from = c("left", "right"),
  flow = c("snake", "natural"),
  day_format = NULL,
  legend = NULL,
  title = NULL,
  margin = c(top = 30, right = 10, bottom = 50, left = 80),
  background = "white"
)
```

Arguments

data	Input in one of three formats. (1) **POSIXct vector**: a bare vector of timestamps, producing rug ticks grouped by day. (2) **Numeric format**: a data.frame with columns day (character/factor day label), start (numeric minutes from midnight, 0–1440), duration (numeric minutes; 0 = rug tick), and optionally label (character event label). (3) **Timestamp format**: a data.frame with POSIXct column timestamp (or start), optionally end (POSIXct; if present, duration is computed), duration (numeric minutes; used when end is absent), and label (character event label).
band_height	Numeric. Height of each day band in plot units (default 28).
band_gap	Numeric. Vertical gap between bands (default 18).
day_start	Numeric. Start of the time window in minutes from midnight (default 360 = 6AM).
day_end	Numeric. End of the time window in minutes from midnight (default 1440 = midnight).
plot_width	Numeric. Width of the band area in plot units (default 500).
band_color	Character or character vector. Band ribbon color(s). If a vector, colors cycle per day (default "#3d3d4a").
event_color	Character or character vector. Event tick/block color(s). If a vector, colors cycle per day (default "#d4a843").
arc_color	Character. Overnight arc color (default "#2a2a3a").
band_opacity	Numeric 0-1 (default 0.90).
arc_opacity	Numeric 0-1 (default 0.85).
event_opacity	Numeric 0-1 (default 0.85).
tick_width	Numeric. Minimum event width in plot units (default 1.5). Use 1.0 for thin rug style.
show_grid	Logical. Show hour gridlines (default TRUE).
show_total	Logical. Show total duration after day label (default TRUE).

show_count	Logical. Show event count in parentheses after day label (default FALSE).
show_hour_labels	Logical. Show hour labels at bottom (default TRUE).
show_arc_labels	Logical. Show "12AM" at arc tips (default TRUE).
shadow	Logical. Draw drop shadows (default TRUE).
grid_color	Character. Gridline color (default "rgba(255,255,255,0.25)").
label_color	Character. Day label color (default "#cccccc").
label_size	Numeric. Label font size multiplier (default 0.85).
label_align	Character. Label alignment: "left" (default), "right", or "direction" (follows band reading direction).
orientation	Character: "horizontal" (default) or "vertical". Controls whether the snake runs left-right or top-bottom.
start_from	Character: "left" (default) or "right". Which side the first band starts from.
flow	Character, `"snake"` (default) or `"natural"`. `"snake"` uses alternating boustrophedon direction; `"natural"` reads all bands in the same direction.
day_format	Optional strftime format for day labels when `start` is POSIXct (e.g., `"%a"` for "Mon", `"%Y-%m-%d"` for dates). NULL = auto-detect (`"%a"` for 7 or fewer days, `"%Y-%m-%d"` otherwise).
legend	List of legend items, each with `label` and `color`. NULL for no legend.
title	Optional plot title.
margin	Named numeric vector with top, right, bottom, left margins.
background	Background color (default "white").

Value

Invisible `snake_layout` object (for downstream use).

Examples

```
# Weekly rug-style activity plot
set.seed(42)
days <- c("Mon", "Tue", "Wed", "Thu", "Fri", "Sat", "Sun")
d <- data.frame(
  day      = rep(days, each = 40),
  start    = round(runif(280, 360, 1400)),
  duration = 0
)
activity_snake(d)

# Duration blocks
d2 <- data.frame(
  day      = rep(days, each = 8),
  start    = round(runif(56, 360, 1200)),
  duration = round(runif(56, 15, 120))
)
activity_snake(d2, event_color = "#e09480", band_color = "#3d2518")
```

ema_beeps *EMA Beep-Level Data (Daily Emotions)*

Description

All 11 474 experience-sampling beeps from a 14-day study of 321 university students. Each row is one beep with the participant's emotion ratings and a timestamp. Use with the `var`/`day`/`timestamp` interface of `survey_snake` for daily snake plots.

Usage

```
ema_beeps
```

Format

A data.frame with 11 474 rows and 5 columns.

Details

`id` Character. Anonymised participant identifier.

`day` Integer 1–14. Study day.

`start_time` POSIXct. Timestamp of the beep.

`happy` Integer 1–5. Self-reported happiness (rescaled from original 1–7).

`angry` Integer 1–5. Self-reported anger (rescaled from original 1–7).

Source

Neubauer, A. B., & Schmiedek, F. (2024). Approaching academic adjustment on multiple time scales. *Zeitschrift fuer Erziehungswissenschaft*, *27*(1), 147–168. doi:10.1007/s11618023011828

Data: https://osf.io/bhq3p | Codebook: https://osf.io/csfwg | Code: https://osf.io/84kdr/files | License: CC-BY 4.0

Examples

```
# Anger over 14 days, ticks by time-of-day
survey_snake(ema_beeps, var = "angry", day = "day",
             timestamp = "start_time")

# Happiness over 14 days, distribution bars
survey_snake(ema_beeps, var = "happy", day = "day",
             tick_shape = "bar")
```

ema_emotions *EMA Emotion Ratings (Person-Level)*

Description

Person-level mean emotion ratings (rounded to integers) from a 14-day experience sampling study of 280 university students. Ten emotion items rescaled to a 1–5 Likert scale (original study used 1–7; rescaled via linear transformation for simplicity). Ready to pass directly to `survey_snake`.

Usage

```
ema_emotions
```

Format

A data.frame with 280 rows and 10 columns (integers 1–5): Happy, Afraid, Sad, Balanced, Exhausted, Cheerful, Worried, Lively, Angry, Relaxed.

Source

Neubauer, A. B., & Schmiedek, F. (2024). Approaching academic adjustment on multiple time scales. *Zeitschrift fuer Erziehungswissenschaft*, *27*(1), 147–168. doi:10.1007/s11618023011828

Data: https://osf.io/bhq3p | Codebook: https://osf.io/csfwg | Code: https://osf.io/84kdr/files | License: CC-BY 4.0

Examples

```
survey_snake(ema_emotions, tick_shape = "bar", sort_by = "mean")
```

facet_snake *Faceted Snake Plot*

Description

Splits data by a grouping variable and draws side-by-side snake panels. Works with `activity_snake`, `survey_snake`, `survey_sequence`, `sequential_dist`, or `line_snake`.

Usage

```
facet_snake(data, facet_var, FUN = activity_snake, ncol = NULL, ...)
```

Arguments

data	Data to plot (passed to FUN).
facet_var	Character. Column name in data to facet by.
FUN	Function to call for each panel. Default activity_snake.
ncol	Integer. Number of columns in the facet grid. Default: number of facet levels (all in one row).
...	Additional arguments passed to FUN.

Value

Invisible list of results from each panel call.

Examples

```
set.seed(42)
d <- data.frame(
  group    = rep(c("A", "B"), each = 70),
  day      = rep(rep(c("Mon", "Tue", "Wed", "Thu", "Fri", "Sat", "Sun"),
                 each = 10), 2),
  start    = round(runif(140, 360, 1400)),
  duration = 0
)
facet_snake(d, "group")
```

---

line_snake *Line Snake Plot (Experimental)*

Description

A continuous intensity line winding through a serpentine layout. Each band represents a time segment (e.g., a day); the line's vertical position within the band encodes a continuous value (e.g., foot traffic, CPU usage). The line smoothly curves through U-turn arcs between bands.

Usage

```
line_snake(
  data,
  band_height = 40,
  band_gap = 18,
  day_start = 0,
  day_end = 1440,
  plot_width = 500,
  line_color = "#e74c3c",
  line_width = 1.5,
  fill_color = NULL,
```

```
  fill_opacity = 0.3,
  band_color = "#2d2d3d",
  arc_color = "#1a1a2e",
  band_opacity = 0.9,
  arc_opacity = 0.85,
  show_grid = TRUE,
  shadow = TRUE,
  label_color = "#cccccc",
  label_size = 0.85,
  orientation = c("horizontal", "vertical"),
  start_from = c("left", "right"),
  flow = c("snake", "natural"),
  title = NULL,
  margin = c(top = 30, right = 10, bottom = 50, left = 80),
  background = "white"
)
```

Arguments

data	A data.frame with columns: **time** Numeric (minutes from midnight) or POSIXct timestamps. **value** Numeric intensity value. **day** (Optional) Day labels. Auto-detected from timestamps if absent. Alternatively, a numeric vector (interpreted as evenly-spaced values for a single band).
band_height	Numeric (default 40).
band_gap	Numeric (default 18).
day_start	Numeric, minutes from midnight (default 0).
day_end	Numeric, minutes from midnight (default 1440).
plot_width	Numeric (default 500).
line_color	Character (default "#e74c3c").
line_width	Numeric (default 1.5).
fill_color	Optional fill color below the line (default NULL = no fill).
fill_opacity	Numeric 0-1 (default 0.3).
band_color	Character (default "#2d2d3d").
arc_color	Character (default "#1a1a2e").
band_opacity	Numeric (default 0.90).
arc_opacity	Numeric (default 0.85).
show_grid	Logical (default TRUE).
shadow	Logical (default TRUE).
label_color	Character (default "#cccccc").
label_size	Numeric (default 0.85).

orientation	Character, "horizontal" or "vertical" (default "horizontal").
start_from	Character, "left" or "right" (default "left").
flow	Character, "snake" (default) or "natural". "snake" uses alternating boustrophedon direction; "natural" reads all bands in the same direction.
title	Optional title.
margin	Named numeric vector.
background	Background color.

Value

Invisible snake_layout object.

Examples

```
set.seed(42)
hours <- seq(0, 1440, by = 10)
d <- data.frame(
  day = rep(c("Mon", "Tue", "Wed"), each = length(hours)),
  time = rep(hours, 3),
  value = sin(rep(hours, 3) / 1440 * 4 * pi) * 50 + 50 +
          rnorm(3 * length(hours), 0, 8)
)
line_snake(d, fill_color = "#e74c3c")
```

---

multi_snake *Multi-Sequence Snake Plot*

Description

Displays many sequences simultaneously in a serpentine layout. Time points are packed as blocks within each band (like sequence_snake), with multiple time points flowing through bands and arcs.

Usage

```
multi_snake(
  sequences,
  type = c("index", "distribution"),
  states = NULL,
  colors = NULL,
  sort_by = c("none", "first", "last", "freq", "entropy"),
  rows = NULL,
  band_height = 28,
  band_gap = 18,
  plot_width = 500,
  margin = c(top = 30, right = 10, bottom = 50, left = 80),
  flow = c("snake", "natural"),
```

```
  show_labels = TRUE,
  show_legend = TRUE,
  show_percent = TRUE,
  border_color = NA,
  title = NULL,
  background = "white",
  shadow = TRUE,
  legend_text_size = 0.8,
  tick_opacity = 0.85
)
```

Arguments

sequences	Matrix or data.frame where rows are sequences and columns are time points. Each cell contains a state label.
type	Character, "index" (default) or "distribution".
states	Character vector of unique states in desired legend order. If NULL, derived from the data.
colors	Named or unnamed character vector of colors. If NULL, a built-in qualitative palette is used.
sort_by	Character controlling sequence order in index mode: "none" (default), "first" (sort by first state), "last" (sort by last state), "freq" (sort by most frequent state), or "entropy" (sort by Shannon entropy).
rows	Integer, number of serpentine rows. If NULL, auto-calculated (~10 blocks per band).
band_height	Numeric, height of each band in pixels (default 28).
band_gap	Numeric, gap between bands (default 18).
plot_width	Numeric, width of each band (default 500).
margin	Named numeric vector with top, right, bottom, left margins.
flow	Character, "snake" (default) or "natural". "snake" uses alternating boustrophedon direction; "natural" reads all bands in the same direction.
show_labels	Logical, show time-point range per row (default TRUE).
show_legend	Logical, draw color legend (default TRUE).
show_percent	Logical, show percentage labels inside distribution bars (default TRUE). Only used when type = "distribution".
border_color	Color for thin borders between blocks, or NA for no borders (default NA).
title	Optional character string for plot title.
background	Background color (default "white").
shadow	Logical, draw drop shadows (default TRUE).
legend_text_size	Numeric, legend text size (default 0.8).
tick_opacity	Numeric 0-1, opacity of ticks in index mode (default 0.85).

Details

Two display modes are supported:

`"index"` Each block contains thin colored ticks stacked side by side — one tick per sequence, colored by state at that time point. Like TraMineR's `seqiplot()` folded into a serpentine.

`"distribution"` Each block is a stacked proportional bar showing what fraction of sequences is in each state at that time point. Like TraMineR's `seqdplot()`.

Value

Invisible `NULL`. Called for its side effect of producing a plot.

Examples

```
set.seed(42)
states <- c("Active", "Passive", "Absent")
seqs <- matrix(sample(states, 500, replace = TRUE), nrow = 50, ncol = 10)
multi_snake(seqs, type = "index")
multi_snake(seqs, type = "distribution")
```

---

sequence_snake *Sequence Index Snake Plot*

Description

Displays a state sequence as colored blocks flowing through a serpentine (boustrophedon) layout. Each block represents one time point colored by its state. Blocks flow continuously through both bands AND arcs, wrapping a long sequence into a compact multi-row display.

Usage

```
sequence_snake(
  sequence,
  states = NULL,
  colors = NULL,
  rows = NULL,
  band_height = 28,
  band_gap = 18,
  plot_width = 500,
  margin = c(top = 30, right = 10, bottom = 50, left = 80),
  orientation = "horizontal",
  start_from = "left",
  flow = c("natural", "snake"),
  show_labels = TRUE,
  show_legend = TRUE,
  show_numbers = FALSE,
```

```
  show_state = FALSE,
  state_size = 0.35,
  show_ticks = FALSE,
  tick_labels = NULL,
  transition_labels = NULL,
  transition_pos = NULL,
  tick_color = "#333333",
  tick_length = 5,
  tick_size = 0.4,
  style = c("block", "rug"),
  band_color = "#3d3d4a",
  rug_opacity = 0.9,
  jitter = 0,
  border_color = NA,
  block_labels = NULL,
  band_labels = NULL,
  title = NULL,
  background = "white",
  shadow = TRUE,
  text_size = 0.5,
  legend_text_size = 0.8
)
```

Arguments

sequence	Input in flexible formats: • **Vector**: character, integer, or factor vector of states. • **Data.frame**: first character/factor column is used. • **Comma-separated string**: "A,B,C,A" is split automatically. • **List**: unlisted to a vector. NA values are dropped with a warning.
states	Character vector of unique states in desired order. If NULL, derived from unique(sequence).
colors	Named character vector of colors keyed by state, or an unnamed vector recycled to match states. If NULL, a built-in qualitative palette is used.
rows	Integer, number of serpentine rows. If NULL, auto-calculated targeting approximately 10 blocks per band.
band_height	Numeric, height of each band in pixels (default 28).
band_gap	Numeric, gap between bands (default 18).
plot_width	Numeric, width of each band (default 500).
margin	Named numeric vector with top, right, bottom, left margins.
orientation	Character, "horizontal" (default) or "vertical".
start_from	Character, "left" (default) or "right".
flow	Character, "natural" (default) or "snake". "natural" reads all bands left-to-right; "snake" uses alternating boustrophedon direction. Default "natural".

show_labels Logical, show position range labels per row (default TRUE).

show_legend Logical, draw color legend (default TRUE).

show_numbers Logical, print small position numbers inside blocks (default FALSE).

show_state Logical, print the state name inside each block (default FALSE).

state_size Numeric, text size for state labels (default 0.35).

show_ticks Logical, draw ruler-style tick marks at block boundaries outside the bands (default FALSE).

tick_labels Character vector of labels for evenly spaced ruler marks within each band (e.g., month.abb for monthly ticks). Implies show_ticks = TRUE.

transition_labels
Character vector of date labels for state transition points (e.g., c("Oct 2017", "Apr 2019")). One label per transition (length = number of state changes).

transition_pos Numeric vector of fractional block positions for transition labels (e.g., c(6.5, 24.3)). When provided, labels are placed at exact interpolated positions along the serpentine path rather than at state-change boundaries.

tick_color Color for tick marks (default "#333333").

tick_length Numeric, length of tick marks in pixels (default 5).

tick_size Numeric, text size for tick labels (default 0.4).

style Character, "block" (default) or "rug". "block" fills the full band height with colored blocks. "rug" draws thin colored tick marks on a dark ribbon, similar to activity_snake.

band_color Character, band ribbon color for rug mode (default "#3d3d4a").

rug_opacity Numeric 0-1, opacity of rug tick marks (default 0.9).

jitter Numeric 0-1, vertical jitter as fraction of band height (default 0). When > 0, tick marks scatter vertically across the band instead of sitting at a fixed position.

border_color Color for thin borders between blocks, or NA for no borders (default NA).

block_labels Optional character vector of labels to display inside each block (same length as sequence). Overrides show_numbers.

band_labels Character vector of labels to display centered below each band (e.g., year labels). Length must equal rows.

title Optional character string for plot title.

background Background color (default "white").

shadow Logical, draw drop shadows (default TRUE).

text_size Numeric, text size multiplier for block labels (default 0.5).

legend_text_size
Numeric, legend text size (default 0.8).

Value

Invisible NULL. Called for its side effect of producing a plot.

Examples

```
set.seed(42)
verbs <- c("Read", "Write", "Discuss", "Listen",
           "Search", "Plan", "Code", "Review")
seq75 <- sample(verbs, 75, replace = TRUE)
sequence_snake(seq75)

# Custom colors
cols <- c(Read = "#E41A1C", Write = "#377EB8", Discuss = "#4DAF4A",
          Listen = "#984EA3", Search = "#FF7F00", Plan = "#A6D854",
          Code = "#A65628", Review = "#F781BF")
sequence_snake(seq75, colors = cols, rows = 5)
```

---

sequential_dist *Sequential Distribution Plot*

Description

Like survey_sequence but uses a sequential (monochrome) palette instead of diverging colors. Suitable for ordinal scales without a natural midpoint (e.g., "Never" to "Always").

Usage

```
sequential_dist(
  counts,
  labels = NULL,
  levels = NULL,
  hue = 210,
  band_height = 28,
  band_gap = 14,
  plot_width = 500,
  colors = NULL,
  show_percent = TRUE,
  min_segment = 34,
  arc_style = c("gradient", "neutral"),
  arc_opacity = 0.85,
  sort_by = c("none", "mean", "net"),
  shadow = TRUE,
  show_legend = TRUE,
  label_color = "#333333",
  label_size = 0.85,
  label_align = "left",
  reverse_rtl = FALSE,
  start_from = c("left", "right"),
  flow = c("snake", "natural"),
  title = NULL,
```

```
  margin = c(top = 30, right = 10, bottom = 55, left = 100),
  background = "white"
)
```

Arguments

counts	Numeric matrix of response counts (rows=items, cols=levels).
labels	Character vector of item labels.
levels	Character vector of level labels.
hue	Numeric 0-360. Base hue for the sequential palette (default 210 = blue).
band_height	Numeric (default 28).
band_gap	Numeric (default 14).
plot_width	Numeric (default 500).
colors	Character vector of segment colors. Default: diverging palette.
show_percent	Logical. Show percentages inside segments (default TRUE).
min_segment	Numeric. Hide label if segment narrower than this (default 34).
arc_style	Character: "gradient" or "neutral" (default "gradient").
arc_opacity	Numeric 0-1 (default 0.5).
sort_by	Character: "none", "mean", "net" (default "none").
shadow	Logical (default TRUE).
show_legend	Logical (default TRUE).
label_color	Character (default "#333333").
label_size	Numeric (default 0.85).
label_align	Character. Label alignment: "left" (default), "right", or "direction" (follows band reading direction).
reverse_rtl	Logical. Reverse segment order on right-to-left bands so the visual reading direction mirrors the data order (default FALSE).
start_from	Character: "left" (default) or "right". Which side the first band starts from.
flow	Character, `"snake"` (default) or `"natural"`. `"snake"` uses alternating boustrophedon direction; `"natural"` reads all bands in the same direction.
title	Optional title.
margin	Named numeric vector.
background	Background color.

Value

Invisible `snake_layout` object.

Examples

```
counts <- matrix(c(
  15, 25, 60, 80, 45,
  10, 20, 50, 90, 55,
  20, 30, 65, 70, 40
), nrow = 3, byrow = TRUE)
labels <- c("Behavior A", "Behavior B", "Behavior C")
levs <- c("Never", "Rarely", "Sometimes", "Often", "Always")
sequential_dist(counts, labels, levs, hue = 160)
```

---

snake_palette *Get a Snake Plot Palette*

Description

Returns a color palette interpolated to n colors.

Usage

```
snake_palette(name = "classic", n = 7L)
```

Arguments

name	Character, palette name (see snake_palettes).
n	Integer, number of colors to return (default 7).

Value

Character vector of n hex color strings.

Examples

```
snake_palette("ocean", 5)
snake_palette("earth", 7)
snake_palette("blues", 3)
```

snake_palettes *Built-in Color Palettes*

Description

A named list of 10 color palettes for snake plots. Each palette contains 7 anchor colors that can be interpolated to any length with snake_palette.

Usage

```
snake_palettes
```

Format

A named list of 10 character vectors, each with 7 hex color strings.

Details

classic Diverging red-to-blue. Clean Likert default.

earth Diverging brown-to-teal. Natural, understated.

ocean Diverging coral-to-navy. Warm/cool contrast.

sunset Diverging orange-to-indigo. Vivid but balanced.

berry Diverging rose-to-green. High contrast.

blues Sequential light-to-dark blue.

greens Sequential light-to-dark green.

grays Sequential light-to-dark gray.

warm Sequential cream-to-dark red.

viridis Sequential yellow-green-blue-purple (viridis-inspired).

Examples

```
snake_palettes$ocean
survey_snake(ema_emotions, colors = snake_palettes$earth,
             tick_shape = "bar", sort_by = "mean")
```

`student_survey` *Student Survey (Cross-Sectional, Multi-Construct)*

Description

Person-level mean scores (rounded to integers) from a 14-day experience sampling study of 280 university students. Contains 34 items across four construct groups, rescaled to a 1–5 Likert scale (original 1–7). Column name prefixes enable automatic faceting with `survey_snake(student_survey, facet = TRUE)`.

Usage

```
student_survey
```

Format

A data.frame with 280 rows and 34 integer columns (values 1–5).

Details

`Emo_` 10 emotion items: Happy, Afraid, Sad, Balanced, Exhausted, Cheerful, Worried, Lively, Angry, Relaxed.

`Mot_` 8 study motivation items: Disappointed, FeltBad, Important, Interesting, Compulsory, Proving, Understanding, Enjoyment.

`Reg_` 5 emotion regulation items: SeeGood, FocusGood, Suppression, ChangedFeeling, Rumination.

`Eng_` 11 study engagement items: Enjoy, WearingDown, Satisfied, DifficultReconcile, Interesting, Exhausted, OnlyNecessary, Energy, Identification, Expectations, ConsiderQuitting.

Source

Neubauer, A. B., & Schmiedek, F. (2024). Approaching academic adjustment on multiple time scales. *Zeitschrift fuer Erziehungswissenschaft*, *27*(1), 147–168. doi:10.1007/s11618023011828

Data: https://osf.io/bhq3p | Codebook: https://osf.io/csfwg | Code: https://osf.io/84kdr/files | License: CC-BY 4.0

Examples

```
survey_snake(student_survey, facet = TRUE, tick_shape = "bar",
             sort_by = "mean", facet_ncol = 2L)
```

survey_sequence *Survey Sequence Plot*

Description

Each survey item is a 100\ Color segments represent response levels; percentages are shown inside segments when wide enough. Arcs blend adjacent end-colors.

Usage

```
survey_sequence(
  counts,
  labels = NULL,
  levels = NULL,
  band_height = 28,
  band_gap = 14,
  plot_width = 500,
  colors = NULL,
  show_percent = TRUE,
  min_segment = 34,
  arc_style = c("gradient", "neutral"),
  arc_opacity = 0.5,
  sort_by = c("none", "mean", "net"),
  shadow = TRUE,
  show_legend = TRUE,
  label_color = "#333333",
  label_size = 0.85,
  label_align = "left",
  reverse_rtl = FALSE,
  start_from = c("left", "right"),
  flow = c("snake", "natural"),
  title = NULL,
  margin = c(top = 30, right = 10, bottom = 55, left = 100),
  background = "white"
)
```

Arguments

counts	Numeric matrix of response counts (rows=items, cols=levels).
labels	Character vector of item labels.
levels	Character vector of level labels.
band_height	Numeric (default 28).
band_gap	Numeric (default 14).
plot_width	Numeric (default 500).
colors	Character vector of segment colors. Default: diverging palette.

show_percent	Logical. Show percentages inside segments (default TRUE).
min_segment	Numeric. Hide label if segment narrower than this (default 34).
arc_style	Character: "gradient" or "neutral" (default "gradient").
arc_opacity	Numeric 0-1 (default 0.5).
sort_by	Character: "none", "mean", "net" (default "none").
shadow	Logical (default TRUE).
show_legend	Logical (default TRUE).
label_color	Character (default "#333333").
label_size	Numeric (default 0.85).
label_align	Character. Label alignment: "left" (default), "right", or "direction" (follows band reading direction).
reverse_rtl	Logical. Reverse segment order on right-to-left bands so the visual reading direction mirrors the data order (default FALSE).
start_from	Character: "left" (default) or "right". Which side the first band starts from.
flow	Character, `"snake"` (default) or `"natural"`. `"snake"` uses alternating boustrophedon direction; `"natural"` reads all bands in the same direction.
title	Optional title.
margin	Named numeric vector.
background	Background color.

Value

Invisible `snake_layout` object.

Examples

```
counts <- matrix(c(
  110, 210, 79, 84, 42,
  126, 205, 68, 100, 26,
  184, 226, 47, 58, 10,
  200, 205, 52, 47, 21,
  205, 210, 42, 53, 15,
  197, 214, 53, 47, 14,
  194, 242, 47, 31, 11
), nrow = 7, byrow = TRUE)
labels <- c("LOC1", "LOC2", "LOC3", "CCA1", "LOC5", "LOC5", "LOC4")
labels <- paste0(labels, " (n=525)")
levs <- as.character(1:5)
survey_sequence(counts, labels, levs)
```

survey_snake *Survey Snake Plot*

Description

Each survey item is a horizontal band in a serpentine layout. The band body is shaded by item mean (warm = low, cool = high). Individual responses are shown as colored tick marks. Inter-item correlations appear at U-turns.

Usage

```
survey_snake(
  counts,
  labels = NULL,
  levels = NULL,
  var = NULL,
  day = NULL,
  timestamp = NULL,
  level_labels = NULL,
  band_height = 28,
  band_gap = 18,
  plot_width = 500,
  tick_shape = c("line", "dot", "bar"),
  bar_reverse = FALSE,
  tick_opacity = 0.75,
  level_gap = 15,
  color_mode = c("level", "individual"),
  colors = NULL,
  shade_band = TRUE,
  show_mean = TRUE,
  show_median = FALSE,
  show_correlation = TRUE,
  jitter_range = 0.22,
  sort_by = c("none", "mean", "net"),
  shadow = TRUE,
  label_color = "#333333",
  label_size = 0.85,
  label_align = "left",
  show_legend = TRUE,
  legend_text_size = 0.65,
  arc_color = "#2c3e6b",
  arc_opacity = 0.8,
  arc_fill = c("none", "correlation", "mean_prev", "blend"),
  band_palette = NULL,
  start_from = c("left", "right"),
  flow = c("snake", "natural"),
  facet = FALSE,
```

```
  facet_ncol = 2L,
  title = NULL,
  margin = c(top = 30, right = 10, bottom = 55, left = 100),
  background = "white",
  seed = 42L
)
```

Arguments

counts	Input in one of four formats: **Raw responses** (data.frame) — each column is a survey item, each row is a respondent. Responses are auto-tabulated into counts. `labels` and `levels` are inferred from column names and unique values. Simplest usage: `survey_snake(survey_df)`. **Counts matrix** — rows = items, columns = response levels. **Counts data.frame** — coerced to matrix. **ESM / longitudinal data.frame** — when `var` and `timestamp` are provided, data is automatically pivoted by day. Each band becomes one day. Ticks are positioned by time-of-day.
labels	Character vector of item labels (length = nrow(counts)).
levels	Character vector of level labels (length = ncol(counts)).
var	Character, column name of the response variable for ESM mode. When provided with `day`, data is auto-pivoted by period.
day	Character, column name for the day/period grouping variable (e.g. `"day"`). Each unique value becomes one band.
timestamp	Character, column name of a POSIXct timestamp for ESM mode. When provided alongside `var` and `day`, ticks are positioned by time-of-day within each band.
level_labels	Optional named character vector mapping raw level values to display labels (e.g. `c("1"="Str. Disagree", "5"="Str. Agree")`). Applied to legend and any level-based text. If unnamed and same length as levels, used positionally.
band_height	Numeric (default 28).
band_gap	Numeric (default 18).
plot_width	Numeric (default 500).
tick_shape	Character: "line" (default), "dot", or "bar" (stacked proportional bars with percentage labels).
bar_reverse	Logical. When `TRUE` and `tick_shape = "bar"`, draw segments from the highest level (left) to the lowest (right). Default `FALSE`.
tick_opacity	Numeric 0-1 (default 0.55).
level_gap	Numeric. Gap between response-level zones in plot units (default 15). Set to 0 for no separation.
color_mode	Character, "level" (color by response level) or "individual" (unique hue per respondent). Default "level".
colors	Character vector of colors for response levels. Default uses a diverging palette.

shade_band Logical. Shade band body by item mean (default TRUE).

show_mean Logical. Diamond marker at mean (default TRUE).

show_median Logical. Vertical line at median (default FALSE).

show_correlation
Logical. Show Pearson r at U-turns (default TRUE).

jitter_range Numeric. Vertical jitter fraction (default 0.22).

sort_by Character: "none", "mean", or "net" (default "none").

shadow Logical (default TRUE).

label_color Character (default "#333333").

label_size Numeric (default 0.85).

label_align Character. Label alignment: "left" (default), "right", or "direction" (follows band reading direction).

show_legend Logical (default TRUE).

legend_text_size
Numeric, legend text size (default 0.65).

arc_color Character (default "#2c3e6b").

arc_opacity Numeric (default 0.80).

arc_fill Character controlling arc fill style:

"none" (default) Two-tone split: upper half colored by the upper band's mean shade, lower half by the lower band's mean shade.

"correlation" Brown/blue tint by correlation sign, opacity scaled by |r|. The original behavior.

"mean_prev" Solid fill using the upper (preceding) band's mean shade.

"blend" Solid fill: 50/50 RGB average of adjacent band shades.

band_palette Character vector of 2+ anchor colors for the band shading gradient. Low item means map to the first color, high means to the last. Default NULL uses the built-in brown-to-slate ramp. For darker plots try `c("#1a1228", "#1a2a42")`.

start_from Character: "left" (default) or "right". Which side the first band starts from.

flow Character, "snake" (default) or "natural". "snake" uses alternating boustrophedon direction; "natural" reads all bands in the same direction.

facet Logical or named list. When TRUE, columns are auto-grouped by their name prefix (e.g. LOC1-LOC5 → "LOC") and each group is drawn as a facet panel. A named list of column-name vectors gives explicit grouping. Default FALSE.

facet_ncol Integer, number of columns in the facet grid (default 2).

title Optional plot title.

margin Named numeric vector.

background Background color.

seed Integer for reproducible jitter (default 42).

Value

Invisible snake_layout object (or list of layouts when faceted).

Examples

```
counts <- matrix(c(
  110, 210, 79, 84, 42,
  126, 205, 68, 100, 26,
  184, 226, 47, 58, 10,
  205, 210, 42, 53, 15,
  197, 214, 53, 47, 14
), nrow = 5, byrow = TRUE)
labels <- paste0("LOC", 1:5, " (n=525)")
levs <- as.character(1:5)
survey_snake(counts, labels, levs)
```

---

timeline_snake *Timeline Snake Plot*

Description

Displays a career or life-event timeline as a serpentine sequence of colored phases. Each block represents one month, colored by the current state/role. State names are overlaid inside runs of consecutive blocks, and transition dates are shown at juncture points where the state changes.

Usage

```
timeline_snake(
  sequence,
  states = NULL,
  colors = NULL,
  rows = NULL,
  band_height = 28,
  band_gap = 30,
  plot_width = 500,
  margin = c(top = 35, right = 10, bottom = 65, left = 20),
  orientation = "horizontal",
  start_from = "left",
  flow = c("natural", "snake"),
  show_labels = FALSE,
  show_legend = TRUE,
  show_numbers = FALSE,
  show_state = TRUE,
  state_size = 1,
  show_ticks = FALSE,
  tick_labels = NULL,
  transition_labels = NULL,
  transition_pos = NULL,
  tick_color = "#444444",
  tick_length = 6,
```

```
  tick_size = 0.8,
  border_color = NA,
  block_labels = NULL,
  band_labels = NULL,
  title = NULL,
  background = "white",
  shadow = TRUE,
  text_size = 0.5,
  legend_text_size = 1.2
)
```

Arguments

sequence	Either a character/factor vector of states (one per time unit), or a **data.frame with 3 columns**: state/role, start date ("YYYY-MM" or Date), end date. When a data.frame is given, the function auto-generates monthly blocks, transition labels, and band labels.
states	Character vector of unique states in desired order. If NULL, derived from unique(sequence).
colors	Named character vector of colors keyed by state, or an unnamed vector recycled to match states. If NULL, a built-in qualitative palette is used.
rows	Integer, number of serpentine rows. If NULL, auto-calculated targeting approximately 10 blocks per band.
band_height	Numeric, height of each band (default 28).
band_gap	Numeric, gap between bands (default 18).
plot_width	Numeric, width of each band (default 500).
margin	Named numeric vector with top, right, bottom, left margins (default c(top = 35, right = 10, bottom = 65, left = 20)).
orientation	Character, "horizontal" (default) or "vertical".
start_from	Character, "left" (default) or "right".
flow	Character, "natural" (default) or "snake". "natural" reads all bands left-to-right; "snake" uses alternating boustrophedon direction.
show_labels	Logical, show position range labels (default FALSE).
show_legend	Logical, draw color legend (default TRUE).
show_numbers	Logical, print small position numbers inside blocks (default FALSE).
show_state	Logical, show state names inside blocks (default TRUE).
state_size	Numeric, state label size (default 1).
show_ticks	Logical, draw ruler-style tick marks at block boundaries outside the bands (default FALSE).
tick_labels	Character vector of labels for evenly spaced ruler marks within each band (e.g., month.abb for monthly ticks). Implies show_ticks = TRUE.
transition_labels	Character vector of date labels for state transition points (e.g., c("Oct 2017", "Apr 2019")). One label per transition (length = number of state changes).

transition_pos	Numeric vector of fractional block positions for transition labels (e.g., c(6.5, 24.3)). When provided, labels are placed at exact interpolated positions along the serpentine path rather than at state-change boundaries.
tick_color	Color for tick marks (default "#333333").
tick_length	Numeric, length of tick marks in pixels (default 5).
tick_size	Numeric, text size for band and transition labels (default 0.8).
border_color	Color for thin borders between blocks, or NA for no borders (default NA).
block_labels	Optional character vector of labels to display inside each block (same length as sequence). Overrides show_numbers.
band_labels	Character vector of labels to display centered below each band (e.g., year labels). Length must equal rows.
title	Optional character string for plot title.
background	Background color (default "white").
shadow	Logical, draw drop shadows (default TRUE).
text_size	Numeric, text size multiplier for block labels (default 0.5).
legend_text_size	Numeric, legend text size (default 1.2).

Value

Invisible NULL. Called for its side effect of producing a plot.

Examples

```
# Data.frame input (easiest)
career <- data.frame(
  role  = c("Junior", "Senior", "Lead"),
  start = c("2018-01", "2020-06", "2023-01"),
  end   = c("2020-05", "2022-12", "2024-12")
)
timeline_snake(career, title = "Career Timeline")
```

Index