

# Package ‘demcon’

September 1, 2022

**Type** Package

**Title** Interfacing with Popular Polity, Institutional, and Constitutional Datasets

**Version** 0.3.0

**Description** An open-source toolkit developed by ISciences, LLC and the DANTE Project that is intended for learning, accessing, pre-processing, and visualizing popular political, institutional, and constitutional datasets. ‘demcon’ aims to reduce barriers to entry in political science research by automating common acquisition and pre-processing procedures. This package particularly focuses on the V-Dem dataset (<<https://www.v-dem.net/vdemds.html>>), and provides adaptations of methods presented in Fjelde, H., Knutsen, C. H. & Nygård, H. M. 2021, <[doi:10.1093/isq/sqaa076](https://doi.org/10.1093/isq/sqaa076)>.

**License** GPL (>= 3)

**URL** <https://gitlab.com/dante-sttr/demcon>,  
<https://dante-sttr.gitlab.io/demcon/index.html>,  
<https://www.isciences.com>

**BugReports** <https://gitlab.com/dante-sttr/demcon/-/issues>

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---

cow_index	<i>CoW States Index</i>
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---

### Description

Create an annual index of valid Correlates of War Nations States.

### Usage

```
cow_index()
```

### Details

This function generates a dataset to be used for indexing country-year datasets against the validated CoW states membership. In short, it will permit the user to quickly drop observations from country/territory-year data that although they are commonly included in a variety of political/geographical datasets, these nations or territories may be disputed (Palestine, Kosovo pre 2008), have a parent nation (Puerto Rico), or have other peculiarities that do not align with international standards (CoW, G&W, WDI, IMF).

This is built off of the states packages, which matched the official Correlates of War record at the time of publishing.

**Value**

A data.frame of annual CoW states.

**Examples**

```
cow_index<-demcon::cow_index()
```

---

cow_iso_clean	<i>Clean Up</i> <code>countrycode::countrycode()</code> CoW > ISO3 conversion.
---------------	--

---

**Description**

Given a data.frame with ISO3 country codes that were derived from a `countrycode::countrycode()` `cown > iso3c` formula, clean up the common errors in coding respective to an additional designation for the year of the observation.

**Usage**

```
cow_iso_clean(x, cow.col, iso3.col, year.col)
```

**Arguments**

<code>x</code>	A data.frame with CoW, ISO3, and year designations.
<code>cow.col</code>	A character string of the column name with <b>numeric</b> CoW codes.
<code>iso3.col</code>	A character string of the column name with ISO3 <b>character</b> codes.
<code>year.col</code>	A character string of the column name for country- <b>year</b> observation.

**Details**

`countrycode::countrycode()` can result in messy ISO3 conversions; especially when historic data is included. This cleans up some common post-WWII historical (and other current bugs present at the time of publishing) ISO3C codes that are useful but no longer part of the current slate of ISO3C. The [ISO\\_3166-1\\_alpha-3](#) Wikipedia page was used as reference for this function.

**Value**

A data.frame.

**Examples**

```
vdem<-demcon::get_vdem()
vdem$iso3<-countrycode::countrycode(vdem$COWcode, origin = "cown", destination = "iso3c")
vdem<-demcon::cow_iso_clean(x = vdem, cow.col = "COWcode", iso3.col = "iso3", year.col = "year")
```

cshp\_mult

*Mapping cshapes Multiples***Description**

Create a sequence of cshapes maps highlighting changes in nation-state independence.

**Usage**

```
cshp_mult(
  dates,
  cowcodes,
  bb,
  jitter_labs = TRUE,
  highlight = "#00dada",
  lat_grat = round(as.numeric(abs(bb[2] - bb[4])/4)),
  long_grat = round(as.numeric(abs(bb[1] - bb[3])/4)),
  lab_size = 3
)
```

**Arguments**

dates	A vector of dates indicating time-steps of interest. Each element must be formatted with <code>as.Date(YYYY-M-D)</code> .
cowcodes	A vector, or list, of Correlates of War numeric country codes to highlight at each corresponding timestep specified in date. The length of dates and cowcodes must be equal. Multiple countries can be highlighted at a given timestep by using a list.
bb	A bounding box to crop the the global cshapes map. Must be a named vector of the form <code>c(xmin=long, ymin=lat, xmax=long, ymax=lat)</code> .
jitter_labs	Logical to toggle country label jittering with <code>ggrepel::geom_text_repel()</code> .
highlight	Hex color value for country highlighting.
lat_grat	Numeric value for latitudinal graticule spacing.
long_grat	Numeric value for longitudinal graticule spacing.
lab_size	Numeric value for country label text size.

**Details**

The `chsp_mult` and `plot.chsp_mult` functions are currently experimental functions that are slated for future improvements to the interface, automated ease of use, and stability. Despite the testing procedures in place, they may produce odd results with certain combinations of dates, countries (`cow_codes`), and bounding boxes (`bb`).

**Value**

A list of `ggplot2` plotting devices. Each element corresponds to an element of dates.

## Examples

```
if(requireNamespace("cshapes")){
  dates = c(
    as.Date("1989-1-1"),
    as.Date("1992-5-1"),
    as.Date("1993-5-1"),
    as.Date("2006-7-1"),
    as.Date("2008-3-1")
  )
  cow_codes = list(345,
                  c(344, 346, 349),
                  343,
                  341,
                  347)

  bb<-c(xmin=13,ymin=40,xmax=24,ymax=47)

  balkans<-cshp_mult(dates = dates, cowcodes = cow_codes, bb = bb,jitter_labs = FALSE)}
```

---

get\_cce

*Retrieve Chronology of Constitutional Events Dataset*

---

## Description

Downloads the Chronology of Constitutional Events (CCE) Dataset to a temporary directory from the Comparative Constitutions Project website.

## Usage

```
get_cce(load = TRUE, del_file = TRUE, write_out = FALSE)
```

## Arguments

load	Logical to load downloaded data into local environment.
del_file	Logical to delete downloaded and unzipped files/directories after loading into the local environment.
write_out	Logical to write the CCE dataset to your local directory as a .csv file.

## Details

### The CCE Dataset:

The Chronology of Constitutional Events (CCE) is a narrowly focused offering containing annual country-year observations of generalized "constitutional events". There are 6 unique designations:

1. New Constitution
2. Amendment
3. Interim Constitution

4. Suspended Constitution
5. Reinstated Constitution
6. Non-Event (years without the above)

The limited scope of the CCE lends itself more to timeline visualizations or a quick reference, but could be helpful when used in conjunction with additional datasets or in other applications. CCE could also be used to derive quantitative metrics of constitutional stability similar to those included with version 2.0 of the Institutions and Elections Project.

*Variables:*

Version 1.3 of the CCE dataset contains 20,429 observations and 6 variables. The include:

**cowcode** The numeric Correlates of War country code.

**country** The CCE country name.

**year** Year of observation.

**systid** CCE identification number for the constitutional system.

**evntid** CCE identification number for the constitutional event.

**evnttype** CCE event type; see above.

### Value

A data.frame of CCE country-year data.

### See Also

[The Comparative Constitutions Project](#)

### Examples

```
cce<-get_cce(del_file=TRUE, write_out = FALSE)
```

---

get\_polity5

*Retrieve the Polity5 Dataset*

---

### Description

Download the Polity5 Dataset from the Center for Systemic Peace website.

### Usage

```
get_polity5(load = TRUE, del_file = TRUE, excel = TRUE, write_out = FALSE)
```

### Arguments

load	Logical to load downloaded data into local environment.
del_file	Logical to delete downloaded and unzipped files/directories after loading into the local environment.
excel	Logical to download the .xls (TRUE) or the SAS .sav format (FALSE).
write_out	Logical to write the Polity 5 dataset to your local directory as a .csv file.

## Details

### Polity5:

The Polity5 project continues the Polity research tradition of coding the authority characteristics of states in the world system for purposes of comparative, quantitative analysis. The original Polity conceptual scheme was formulated and the initial Polity I data collected under the direction of Ted Robert Gurr and informed by foundational, collaborative work with Harry Eckstein, *Patterns of Authority: A Structural Basis for Political Inquiry* (New York: John Wiley & Sons, 1975). The Polity project has proven its value to researchers over the years, becoming the most widely used resource for monitoring regime change and studying the effects of regime authority.

### Structure:

The Polity5 dataset contains 17,574 country-year observations and 37 variables. For more information regarding variable descriptions and other dataset documentation, please refer to the [POLITY5: Political Regime Characteristics and Transitions, 1800-2018 Dataset Users' Manual](#).

## Value

A data.frame of Polity5 country-year data.

## Examples

```
polity <- demcon::get_polity5(excel = TRUE, del_file = TRUE, write_out = FALSE)
```

---

get\_vdem

*Download V-Dem (Current Version)*

---

## Description

Download a copy of the most recent version of V-Dem that is housed in the official vdemdata GitHub package.

## Usage

```
get_vdem(write_out = FALSE)
```

## Arguments

`write_out` Logical to write the V-Dem dataset to your local directory.

## Details

This function is a simple download wrapper to directly acquire V-Dem's current dataset from their GitHub repo. The vdemdata package is not available on CRAN or Bioconductor so it can disrupt workflows that do not permit non-standard package installations. Additionally, this function contains test scripts that will notify the package manager if the remote dataset undergoes significant structural changes (dimensions, location, etc.)

**Value**

A data.frame of V-Dem data.

**Examples**

```
vdem <- demcon::get_vdem(write_out = FALSE)
```

---

hci	<i>Horizontal Constraints Index (HCI)</i>
-----	---

---

**Description**

Calculate the horizontal constraints index defined by Fjelde et al. (2021).

**Usage**

```
hci(vdem, append = FALSE)
```

**Arguments**

vdem	A data.frame of V-Dem data containing the required variables.
append	Logical indicating whether to return the original data.frame with hci. If set to FALSE, the function returns a numeric vector of hci scores.

**Details****Source:**

The horizontal constraints index specified in this function were developed by Fjelde et al. (2021) in:

Fjelde, H., Knutsen, C. H. & Nygård, H. M. 2021. Which Institutions Matter? Re-Considering the Democratic Civil Peace. *International Studies Quarterly* 65, 223–237, doi:10.1093/isq/sqaa076.

**The Index:**

Horizontal constraints (HCI) represent checks and balances on centralized executive power. These include constraints put in place by executive and judicial branches of government. Horizontal constraints mainly serve the interests of non-governmental elites by protecting their interests against an uncontrolled executive.

**Methods:**

The Horizontal Constraints Index represents a simple arithmetic mean (see of V-Dem's legislative constraints (v2x1g\_legcon) and judicial constraints variables (v2x\_jucon).

**Value**

A numeric vector of the horizontal constraints index.



**See Also**

[vci\(\)](#), [vdem\\_vci\\_hci](#)

**Examples**

```
vdem <- demcon::get_vdem()
vdem$hci<-demcon::hci(vdem, append = FALSE)
```

---

 iaepv2\_adj

*Adjusted Institutions and Elections Project Data (V2.0)*


---

**Description**

A pre-processed and amended subset of the Institutions and Elections Project Data (V2.0) dataset.

**Usage**

```
iaepv2_adj
```

**Format**

An 8 column, 10648 row, `data.table` where each row is a country-year:

**cname** Country name.

**cowcode** The numeric Correlates of War country code.

**iso3** The International Organization for Standardization (ISO) 3 character country code.

**year** Numeric year.

**formalconstit** Binary indicator if constitution exists.

**ineffect** Binary indicator if constitution was in effect on January 1 of the specified year.

**timeineffect** Numeric value specifying number of years the current constitution has been in effect as of January 1.

**timeineffect2** Numeric value specifying number of consecutive years a constitution has been in effect without interruptions as of January 1.

**Details****About:**

This dataset was constructed after detecting numerous and egregious inconsistencies in the official dataset. We discovered several errors for the coding of constitutions and constitutional ages in the original dataset. This subset contains manual fixes using multiple sources for constitutional data. These corrections were carried out by Lisa Emmer under guidance from Joshua Brinks and Thomas Parris. For additional information regarding the official IAEP (V2) dataset refer to the [user manual](#).

If you are hesitant to use our adjusted dataset, you might consider using Constitutes' Chronology of Constitutional Events (CCE). You could construct a constitutional stability counter with CCE data using counter functions like Base R's `rle()` or `data.table`'s `data.table::rleid()`.

**Amendment References:**

Edits to the original IAEP (V2.0) dataset were determined by reviewing several constitutional databases and news articles. Some are not listed below, because the websites are no longer available, but the currently available sources include:

- [Constitution Net](#)
- [Country Studies](#)
- [Stanford Law](#)
- [Exit News](#)
- [Wikipedia](#)
- [Constitute](#)
- [CIA World Factbook](#)
- [Gulf Labor Markets and Migration](#)
- [Dynamic Analysis of Dispute Management \(DADM\) Project](#)
- [World Constitutions Illustrated](#)
- [Konrad Adenauer Stiftung](#)
- [The New York Times](#)
- [The USC USA-China Institute](#)
- [Global Security](#)
- [Egypt Today](#)
- [SciElo South Africa](#)
- [Nijji](#)
- [Law Hub Gambia](#)
- [University of Alberta](#)
- [Political Database of the Americas](#)
- [Library of Congress](#)
- [International Constitutional Law Countries](#)
- [Kazakhstan History Portal](#)
- [Cambridge University Press](#)
- [Malawi Legal Information Institute](#)
- [World Intellectual Property Organization](#)
- [University of Washington Law: Digital Commons](#)
- [Digital Himalaya](#)
- [Hathi Trust Digital Library](#)
- [International Labour Organization](#)
- [International Foundation for Electoral Systems](#)
- [Congreso de la Republica](#)
- [Official Gazette of the Republic of the Philippines](#)
- [U.S. Agency for International Aid](#)
- [Michigan State University Vietnam Group Archives](#)

- [Marxist Internet Archive](#)
- [Sierra Leone Web](#)
- [Government of South Africa](#)
- [Open Journal Systems](#)
- [UK Legislation](#)
- [Ministry of Foreign Affairs of Turkmenistan](#)
- [State House Uganda](#)
- [The United Arab Emirates' Government Portal](#)
- [Constitution of the Republic of Uzbekistan](#)
- [Vietnam Law and Legal Forum](#)
- [Embassy of the Socialist Republic of Vietnam](#)

### See Also

The original dataset release was accompanied by a peer reviewed manuscript:

Wig, T., Hegre, H., & Regan, P. M. (2015). Updated data on institutions and elections 1960–2012: Presenting the IAEP dataset version 2.0. *Research & Politics*, 2(2). doi:10.1177/2053168015579120.

---

multi_sub	<i>Multiple Column Subset</i>
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---

### Description

Multiple Column Subset

### Usage

```
multi_sub(dat, key.dat, vars = names(key.dat))
```

### Arguments

dat	A data.table to be subsetted.
key.dat	A data.table containing multiple columns used to index and subset dat.
vars	Character string of columns in key.dat to be used for subsetting.

### Value

A data.frame, data.table subsetted by key.dat.

**Examples**

```

cow_index<-demcon::cow_index()
names(cow_index)[1]<-"COWcode"
dat <- demcon::get_vdem()

dat <- demcon::multi_sub(dat, cow_index, vars = c("COWcode", "year"))

```

---

p5\_reg\_cat

*Code Polity Regime Classification*


---

**Description**

Determine qualitative regime classifications based on Goldstone et al. (2010) Figure 1.

**Usage**

```
p5_reg_cat(exrec, parcomp, pretty = FALSE)
```

**Arguments**

exrec	Executive Recruitment Concept (exrec) variable from raw Polity5 data.
parcomp	Competitive of Participation (parcomp) variable from raw Polity5 data.
pretty	Logical to format categories with no spaces and first letter capitalized.

**Value**

A character vector of ordinal categorical regime classifications based on [Goldstone et al. \(2010\)](#).

**Source**

Methods for this function are adapted from:

Goldstone, J. A. et al. A Global Model for Forecasting Political Instability. *American Journal of Political Science* 54, 190–208 (2010).

[Website](#)

**Examples**

```

polity<-demcon::get_polity5(write_out = FALSE)

polity$reg_cat<-demcon::p5_reg_cat(polity$exrec, polity$parcomp, pretty = TRUE)

```

plot.cce

*Plotting Method for CCE Object***Description**

Create timeline plots for Chronology of Constitutional Event datasets.

**Usage**

```
## S3 method for class 'cce'
plot(
  x,
  y,
  ...,
  cntry,
  lab_adj = 0.25,
  detailed_lab = TRUE,
  no_lab = FALSE,
  years = c(min(x$year), max(x$year)),
  plot_pal = c("#003f5c", "#ff6361", "#20639b", "#ffa600", "#58508d", "#bc5090"),
  text_col = "#3d3d3d"
)
```

**Arguments**

x	A dataset of class cce prepared by <a href="#">prep_cce()</a> .
y	ignored
...	Additional arguments to pass to the ggplot device.
cntry	The country to plot. This may be a character string with the country name or the numeric Correlates of War code. For a list of possible values use the command <code>unique(x[, c("country", "cowcode")])</code> .
lab_adj	Numeric value to buffer label positions near terminal point.
detailed_lab	Logical to print detailed or simple labels. Detailed labels contain event type and year, simple labs contain just the year.
no_lab	Logical to suppress event labels. Will make plots easier to read for countries with either long or active histories.
years	Numeric vector of length representing the starting and ending years to plot.
plot_pal	Character vector of length 6 containing color hex codes for plotting. The first element controls the line segments color, elements 2:6 control the evnttype colors.
text_col	Character string with hex code for text labeling.

**Value**

A `ggplot2::ggplot()` device.

**See Also**

[The Comparative Constitutions Project](#)

**Examples**

```
cce<-demcon::get_cce(del_file=TRUE, write_out = FALSE)

cce<-demcon::prep_cce(cce, evnttype_fix = TRUE)

plot(cce, cntry = "France", years = c(1850, 2010))
```

---

plot.cshp_mult	<i>Plot A cshapes Multiple</i>
----------------	--------------------------------

---

**Description**

Plot A cshapes Multiple

**Usage**

```
## S3 method for class 'cshp_mult'
plot(x, y, ...)
```

**Arguments**

x	A list of class <code>cshp_mult</code> with multiple cshapes <code>ggplot2::ggplot()</code> devices produced by <code>cshp_mult()</code> .
y	ignored.
...	Additional arguments to be passed to the plotting device.

**Value**

A single `ggplot2::ggplot()` device.

**Examples**

```
if(requireNamespace("cshapes")){
  dates = c(
    as.Date("1989-1-1"),
    as.Date("1992-5-1"),
    as.Date("1993-5-1"),
    as.Date("2006-7-1"),
    as.Date("2008-3-1"))

  cow_codes = list(345,
                   c(344, 346, 349),
```

```

      343,
      341,
      347)

bb<-c(xmin=13,ymin=40,xmax=24,ymax=47)

balkans<-cshp_mult(dates = dates, cowcodes = cow_codes,
                  bb = bb,jitter_labs = FALSE)

plot(balkans)
}

```

---

prep\_cce

---

*Pre-Process Chronology of Constitutional Events (CCE) Data*


---

### Description

Pre-Process Chronology of Constitutional Events (CCE) Data

### Usage

```

prep_cce(
  cce,
  cow_fix = TRUE,
  evnttype_fix = TRUE,
  years = c(min(cce$year), max(cce$year))
)

```

### Arguments

cce	A data.frame or data.table of CCE data.
cow_fix	Logical to hardcode changes to CCE cowcode values for Yugoslavia/Serbia, present day Germany, and present day Yemen to match official CoW designations.
evnttype_fix	Logical to hardcode (presumed) typos in evnttype coding.
years	Numeric vector of length 2 to subset data with.

### Value

A data.frame of pre-processed CCE data.

### See Also

[The Comparative Constitutions Project](#)

## Examples

```
cce<-demcon::get_cce(del_file=TRUE, write_out = FALSE)

cce<-demcon::prep_cce(cce, cow_fix = TRUE, evnttype_fix = TRUE)
```

---

```
prep_vdem
```

---

```
Prepare V-Dem Data
```

---

## Description

Given a raw data.frame of vdem data, enact further automated pre-processing.

## Usage

```
prep_vdem(
  vdem,
  years = NULL,
  metrics = NULL,
  drop_no_cow = FALSE,
  cow_index = FALSE,
  drop_pal = FALSE,
  srb_kos = FALSE,
  srb_mon = FALSE,
  micro = TRUE,
  iso3 = FALSE
)
```

## Arguments

vdem	A data.frame or data.table of raw vdem observations.
years	A numeric vector of length 2 with start and end years to subset by.
metrics	Character vector of vdem metrics of interest to subset against. These will be combined with country-year id variables by default.
drop_no_cow	Logical to drop observations without Correlates of War country codes.
cow_index	Logical to index vdem against valid Correlates of War country-years.
drop_pal	Logical to remove all Palestine related observations.
srb_kos	Logical to average metrics Serbia/Yugoslavia with Kosovo for all years < 2008.
srb_mon	Logical to calculate values for the State Union of Serbia and Montenegro (2003-2006) using the average of Serbia's and Montenegro's scores. To include Kosovo, specify srb_kos = TRUE.
micro	Logical to keep (TRUE) or drop (FALSE) microstates.
iso3	Logical to generate ISO3C country codes.



**Value**

A data.frame of post-processed vdem data.

**Examples**

```
vdem<-demcon::get_vdem(write_out = FALSE)
```

```
vdem<-prep_vdem(vdem, years = c(2010, 2020), cow_index = TRUE, micro = FALSE)
```

---

range01

*Standardize a Variable to 0-1*

---

**Description**

Standardize a vector to 0-1 using the cumulative distribution function of the normal distribution.

**Usage**

```
range01(x)
```

**Arguments**

x                    A vector of numeric values.

**Value**

A standardized numeric vector scaled to 0-1.

**Examples**

```
nums<-rnorm(50, 6.5, 3)
```

```
nums<-demcon::range01(nums)
```

---

vci *Vertical Constraints Index (VCI)*

---

### Description

Calculate an the vertical constraints index defined by Fjelde et al. (2021).

### Usage

```
vci(vdem, append = TRUE)
```

### Arguments

vdem	A data.frame of V-Dem data containing the required variables.
append	Logical indicating whether to return the original data.frame with vci and modified modified v2xel_frefair index (v2xel_frefair_adj). If set to FALSE, the function returns a numeric vector of VCI scores.

### Details

#### Source:

The vertical constraints metrics specified in this function were developed by Fjelde et al. (2021) in:

Fjelde, H., Knutsen, C. H. & Nygård, H. M. 2021. Which Institutions Matter? Re-Considering the Democratic Civil Peace. *International Studies Quarterly* 65, 223–237, doi:10.1093/isq/sqaa076.

#### The Index:

The Vertical constraints index (VCI) represent civil liberties attributed to the general populace the constrain executive actions. These include suffrage, the presence of elections that appoint executive officials, freedom of association, freedom of expression, and the presence of clean and fair elections.

#### Methods:

At it's core, VCI is a multiplicative aggregation of 5 V-Dem variables designed to measure suffrage, elected officials, freedom of association, freedom of expression and clean elections, (v2x\_suffr, v2x\_accex, v2x\_frassoc\_thick, v2x\_freexp\_thick, v2xel\_frefair). However, the final component (v2xel\_frefair) is a composite index developed with a Bayesian factor analysis of 8 other V-Dem indicators (v2elembaut, v2elembcap, v2elrgstry, v2elvotbuy, v2elirreg, v2elintim, v2elpeace, v2elfrfair), of which, the authors adapted by purging 2 of the components representing government intimidation or violent actions (v2elintim, v2elpeace) to prevent potential endogeneity in their regressions for the onset of conflict; i.e. you don't want to predict the onset of conflict with and independent variable that is, in-part, composed of measures of conflict.

Although the original v2xel\_frefair composite index was developed using V-Dem's **Bayesian Factor Measurement Model**, the VCI adapted for this study took a simpler approach. In footnote 12, the authors state that the modified composite index was created by averaging the 6 non-violent

indicators of v2xe1\_frefair (v2e1embaut, v2e1embcap, v2e1rgstry, v2e1votbuy, v2e1irreg, v2e1frfair). Although not explicitly stated, it's presumed that the average for these 6 indicators was converted to a 0-1 scale using "...the cumulative distribution function of the normal distribution". This is the standard V-Dem procedure for their 0-1 interval indices as stated on page 7 of the [V-Dem V11.1 Methodology](#) handbook.

Lastly, the VCI constructed for this manuscript was carried out using the V-Dem 7.1 dataset. Since that time (current version is V11.1), 2 of the indicators used in the VCI calculation have been renamed and slightly altered:

1. v2x\_freexp\_thick was converted to v2x\_freexp\_altinf starting with version 11. The sub-components of this composite index were altered slightly, but they still encompass the same concepts of censorship in media.
2. v2x\_accex was renamed v2x\_elecoff starting with version 8. This was due to changes in the aggregation method for calculating the composite index. Although the conceptual design for the composite indicator has not changed, the aggregation formula is more complex and consists of 20 indicators (opposed to 10 for the original v2x\_accex).

### Value

A data.frame with a modified v2xe1\_frefair index (v2xe1\_frefair\_adj) and the calculated VCI (vci).

### See Also

[hci\(\)](#), [vdem\\_vci\\_hci](#)

### Examples

```
vdem <- demcon::get_vdem()

# Appended to the input dataset

vdem.dat<-demcon::vci(vdem, append = TRUE)

# Just return the numeric vector

vci<-demcon::vci(vdem = vdem, append = FALSE)
```

---

vdem\_vci\_hci

*Vertical and Horizontal Constraints Indices*

---

### Description

A dataset of country-year vertical and horizontal constraints as calculated by Fjelde et al. 2021.

### Usage

```
vdem_vci_hci
```

## Format

A data frame with 15040 rows and 6 variables:

- country\_name** The common country name.
- gwno** The Gleditsch and Ward numeric country code.
- cowcode** The Correlates of War numeric country code.
- year** The year of valid CoW observations.
- hci** The horizontal constraint index.
- vci** The vertical constrain index. ...

## Details

### Data Source:

The horizontal and vertical constraints metrics in this dataset were developed by Fjelde et al. (2021) in:

Fjelde, H., Knutsen, C. H. & Nygård, H. M. Which Institutions Matter? Re-Considering the Democratic Civil Peace. *International Studies Quarterly* 65, 223–237 (2021), [doi:10.1093/isq/sqaa076](https://doi.org/10.1093/isq/sqaa076).

Dataset is available in the supplementary materials [Replication Package](#)

### The Indices:

Horizontal constraints (HCI) represent checks and balances on centralized executive power. These include constraints put in place by executive and judicial branches of government. Horizontal constraints mainly serve the interests of non-governmental elites by protecting their interests against an uncontrolled executive.

This is in contrast to vertical constraints (VCI), which represent civil liberties attributed to the general populace that constrain executive actions. These include suffrage, the presence of elections that appoint executive officials, freedom of association, freedom of expression, and the presence of clean and fair elections.

### Methods:

Both indices were developed from existing variables in the greater V-Dem data. Although HCI represents a simple arithmetic mean (see [hci\(\)](#)) of V-Dem's legislative constraints (`v2xlg_legcon`) and judicial constraints variables (`v2x_jucon`), the methods behind the VCI are more complicated.

At its core, VCI is a multiplicative aggregation of 5 V-Dem variables designed to measure suffrage, elected officials, freedom of association, freedom of expression and clean elections, (`v2x_suffr`, `v2x_accex`, `v2x_frassoc_thick`, `v2x_freexp_thick`, `v2xel_frefair`). However, the final component (`v2xel_frefair`) is a composite index developed with a Bayesian factor analysis of 8 other V-Dem indicators (`v2elmbaut`, `v2elmbcap`, `v2elrgstry`, `v2elvotbuy`, `v2elirreg`, `v2elintim`, `v2elpeace`, `v2elfrfair`), of which, the authors adapted by purging 2 of the components representing government intimidation or violent actions (`v2elintim`, `v2elpeace`) to prevent potential endogeneity in their regressions for the onset of conflict; i.e. you don't want to predict the onset of conflict with and independent variable that is, in-part, composed of measures of conflict.

Although the original `v2xel_frefair` composite index was developed using V-Dem's [Bayesian Factor Measurement Model](#), the VCI adapted for this study took a simpler approach. In footnote

12, the authors state that the modified composite index was created by averaging the 6 non-violent indicators of `v2xel_frefair` (`v2e1embaut`, `v2e1embcap`, `v2e1rgstry`, `v2e1votbuy`, `v2e1irreg`, `v2e1frfair`). Although not explicitly stated, it's presumed that the average for these 6 indicators was converted to a 0-1 scale using "...the cumulative distribution function of the normal distribution". This is the standard V-Dem procedure for their 0-1 interval indices as stated on page 7 of the [V-Dem V11.1 Methodology](#) handbook.

Lastly, the VCI constructed for this manuscript was carried out using the V-Dem 7.1 dataset. Since that time (current version is V11.1), 2 of the indicators used in the VCI calculation have been renamed and slightly altered:

1. `v2x_freexp_thick` was converted to `v2x_freexp_altinf` starting with version 11. The sub-components of this composite index were altered slightly, but they still encompass the same concepts of censorship in media.
2. `v2x_accex` was renamed `v2x_elecuff` starting with version 8. This was due to changes in the aggregation method for calculating the composite index. Although the conceptual design for the composite indicator has not changed, the aggregation formula is more complex and consists of 20 indicators (opposed to 10 for the original `v2x_accex`).

### Source

[doi:10.1093/isq/sqaa076](https://doi.org/10.1093/isq/sqaa076)

### See Also

[hci\(\)](#), [vci\(\)](#)

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