GENAIZ Clinical Data Standard

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# Introduction

Correct clinical data processing requires well defined and understood data. Errors result without the latter. The goal of this data standard is to specify and describe a clinical data standard that supports correct processing and increases confidence in results. The standard is particularly focused on providing the tooling for artificial intelligence (e.g., machine learning) processing pipelines.

This data standard is meant to be lightweight and flexible. It should therefore be easy to implement and accommodating to many different forms of data.

Each document section addresses a particular type of data (e.g., demographic, serology). Furthermore, there is common standard that guarantees extensibility and coverage over new data sets.

# Version

|  |  |  |
| --- | --- | --- |
| Version | Date | Changes |
| 0.1 | July 28, 2023 | * Created |
| 0.2 | August 9, 2023 | * Added infinite to numeric data types. Helpful in ranges. |
| 0.3 | August 10, 2023 | * Relaxed identifier naming conventions |
| 0.4 | Nov 20, 2023 | * Removed redundant “Assay type (vaccine)” in serology. * Added “Target” data type for machine learning in demographic data. * Serology “comorbidity” was renamed to “comorbidities”. * Several data types erroneously stated as “list” were renamed to “set”. * “Period from onset” was considered ambiguous and removed. * Removed uninformative demographic data example. * Added experimental condition as a mandatory column in flow cytometry data. |
| 0.5 | Nov 29, 2023 | * The sample identifier in flow cytometry data is now optional. * Fixed formatting. |
| 0.6 | Apr 9, 2024 | * Allowed a greater variety of characters in column names * Introduced a type called ignore * Made serology sample identifier and assay type optional * Created a new mandatory serology type called collection name |
| 0.7 | Apr 16, 2024 | * Only participant identifier and clinical group are mandatory columns. |
| 0.8 | Apr 21, 2025 | * Changes to tabular data format * Range moved to categorical from numeric |

# Common standards

This section describes a common data standard and guidelines. It is used as a foundation when defining more specific standards such the demographic graphic data standard. More specific data standards take precedence over the common standard if ever there is disagreement. In the absence of information, the common standard is applied.

## Names

Data names (e.g., column names) are alphanumeric, and may further include space, underscore, dash, slash, parentheses, angle brackets, star, plus sign and equal sign (ASCII) characters.

## Semantics

Semantics will be defined in a future version of the GENAIZ clinical data standard. There is currently space reserved for semantic data within the tabular data format. Any values within this space (i.e., row) are currently ignored.

## Data types

There are several common data types:

* Categorical
  + Identifiers (unique)
  + Boolean
  + Set
  + Range
  + Target
* Numeric
  + Discrete (Integers)
  + Continuous (Reals)
  + Currency
* Date
* Duration
* Ignore

Note that any of the names above may be used to specify a data’s type.

### Categorical

Categorical values are represented by strings. They may not contain a comma character. Whitespace proceeding and trailing categorical values are ignored. Case (upper vs lower) is also ignored.

Note that only identical strings (ignoring case) are considered identical categories. Slight differences between Categorical values are treated as different categories. For example, diabetes and diabetic or coughs and cough are considered separate categories.

Identifiers: Identifiers uniquely identify data such as a participant’s or sample’s data. Identifiers are constructed from an alphanumeric character set which is extended to include dash, underscore, period, and colon. Identifiers may not include white space characters. Numeric identifiers may be coerced to string.

Boolean: Boolean data is categorical and has two values (e.g., present, absent). Such data has no special status beyond being categorical. In other words, no distinction is made for Boolean values vs general Categorical values.

Set: A set is an enumeration of categorical values. The values are separated by a comma (ASCII character 54). Duplicate values are removed. For example, the set “femur, tibia, femur” is understood as “femur, tibia”. The duplicate femur value is discarded.

Range: A range is a pair of numeric values separated by a dash (ASCII character 55). The first numeric value must be lower than the second numeric value. 0 - 35000 and -34 - 20 are both valid ranges. The entirety of the range is interpreted as a categorical value. For example, 0 – 35000 is considered a single categorical value.

Target: Target is a categorical value that indicates the target column for machine learning (ML) output. Only one target column may be defined per clinical data analysis. The target is often the treatments or experimental groups. Numeric targets may be coerced to string.

### Numeric

Numeric values are represented using decimal notation without spaces or commas, and scientific notation in E-notation format. Several examples of these notations follow:

* 3.145
* 1.7×10−31 would be written as 1.7E-31 or 1.7e-31
* 10
* -65
* -inf

We identify two subtypes of numeric values being: discrete and continuous, respectively integers and reals.

Currency: There is no special numeric format for currency. Currency values, therefore, do not contain the currency name or symbol. In some cases, it is recommended, though, not required to convert all currencies to a standard unit (e.g., convert all currencies to USD).

### Date

Dates are recorded following the ISO 8601 standard with dash notation. In practice, dates would be written as YYYY-MM-DD (year, month, day). Please see the ISO standard on how to resolve issues including time zone difference, etc.

### Duration

Duration captures a period of time. It is a positive non-zero numeric value. All durations are assumed to represent a quantity of days.

### Ignore

A column of type ignore is dropped during processing.

## State

State is a small string that identifies a data’s state. For example, processing data could result in a state of cleaned or normalized. There is one reserved state source which indicates no processing or data manipulation has occurred.

## Unknown and missing values

A special value is used to distinguish unknown values from missing values. A consequence of explicitly defining unknown values is that no data value should be unfilled. For example, tabular data should have no empty cells. In the latter case, a cell has either a known value or the unknown value, but no empty or missing values. There are two recommended unknown values:

* a string !unknown . It is acceptable to postfix this string with a colon and a reason such as !unknown: didn’t wish to say. There are no spaces between the word unknown and the colon character. There is currently no limitation on the types of characters used after the colon.
* a numeric value of -1.

## Mandatory vs optional

Mandatory data must be included in data submissions to the GENAIZ platform for correct processing. Optional data provides richness to the data and may be included in data submissions to the GENAIZ platform.

## Tabular data format

The tabular format attempts to be easily understood (**simple**), require few additional code modules or libraries (**light**), meaningfully explain the data (**semantic**), account for future data collection, a variety of data types and handle both dense & sparse data (**extensible**).

Data is encoded as metadata, which describes the columns contents, and values. Metadata persists in JSON format. Data persists in CSV[[1]](#footnote-2) or Matrix Market (MM) format; thus, CSV and MM capture a table or matrix of values. CSV handles a variety of values well whereas MM handles dense and sparse numeric matrices more efficiently. JSON, CSV and MM can be easily read and written in C, Matlab, Python, R and other languages making this format robust across programming languages.

These text-based formats can be compressed to save space. Compression should be as portable between systems and languages similar to JSON, CSV and MM. It is thus recommended to use zip archiving.

Note that the tabular data format may be used without adhering to a specific (e.g., demographic) GENAIZ Clinical Data Standard. This allows for the applications of analytics and artificial intelligence without having to have an additional data format. Other applications are permissible as well. In cases where the format is used without adhering to a specific standard then the format must adhere to the common standard.

### Metadata

Metadata is an unordered list of column definitions. A column definition is a map containing the following keys (values follow common standard):

* index: a 0-based index identifying the column associated with this metadata definition
* name: a column name
* semantics: a column’s semantics (reserved for future use)
* type: a column’s data type
* state: a small string that identifies the column’s data state.
* unknown: a string or numeric value that is interpreted as the column’s unknown value
* fill value: a string or numeric value that is used to fill “empty” cells. If this value is null/None then the unknown value is used instead.
* mapping: a map containing original string values that have been mapped to numeric values. For example, a column of identifiers could be mapped to integers.

Example:

[  
 {

"index": 0,

"name": "participant\_identifier",

"semantics": "s1",

"dtype": "identifier",

"state": "source",

"fill\_value": null,

"unknown\_value": "!unknown",

"mapping": {

"id1": 0,

"id2": 1,

"id3": 2,

"id4": 3

}

},  
 {  
 "index": 1,  
 "name": "CD8+",  
 "semantics": "",  
 "type": "discrete",  
 "state": "source",  
 "unknown": -1,

"mapping": null,

"fill\_value": null  
 }  
]

### Data and data formats

The first column of the data must contain unique identifiers. Unique identifiers must be consistent across all datasets if these datasets are to be merged. **Note:** MM format is designed to handle numerical data. If unique identifiers are not numbers then they cannot be stored in MM format. In cases such as single cell sequencing where MM format is required to represent the sparse sequencing data, a pseudo numeric-only identifier can be generated and used across all data sets. This mapping of original identifier to numeric-only identifier may be captured in the mapping key-value pair of the column’s metadata.

With respect to the formats, CSV and MM formats are well defined and explained elsewhere:

* <https://math.nist.gov/MatrixMarket/formats.html>
* <https://en.wikipedia.org/wiki/Comma-separated_values>

### CSV mega-data format

Although the tabular format is machine processable and human readable, it is awkward to modify manually. The CSV mega-data format combines (most) metadata and data into a single CSV which is easily modified in a spreadsheet program such as Excel. The mega-data format reserves the first five rows of the table for metadata as follows:

1. Column names
2. Semantics (reserved for future use)
3. Data types
4. States
5. Unknown values

# Demographic data

Demographic data must be reported in tabular format. Its filename must end with “\_demo.csv”.

## Mandatory columns

These columns must be included in any demographic data submission to the GENAIZ platform. These columns are typically necessary to initialize the demographic data algorithms.

1. Participant Identifier
2. Clinical group

## Optional columns

These columns are not mandatory/required but provide richness to the data. Additional information that can offer valuable insights into analyzed data is called richness. Examples include:

1. Age
2. Sex
3. Race
4. Ethnicity
5. Nationality
6. Salary bracket
7. Education level
8. Miscellaneous

## Participant identifier

Definition: Each participant (patient or subject) in a study is given a distinct identifier or designation to differentiate them from others. This identifier safeguards confidential information and facilitates anonymous data sharing between healthcare providers and research organizations.

Input type: Identifier

Example: MO6848

## Clinical group

Definition: Clinical group is the participant’s assigned group given the study design. During exploratory data analysis, clinical group may represent any grouping of interest on participants.

Input type: Categorical (Target)

Example: High-dose

## Age

Definition: The period someone or something has existed. The United Nations (UN) defines age as "the interval of time between the date of birth and the date of the census" This is recorded in years.

Input type: Numeric continuous, nonzero positive real

Example: 80 or 90.0

## Sex

Definition: "Sex refers to biological attributes in humans and animals." The FDA defined "Sex as the classification of living things, generally as male or female, according to their reproductive organs and functions assigned by the chromosomal complement." To remove ambiguity in this standard, sex is represented as Male|M or Female|F

Input type: Categorical

Examples: male|m and female|f

## Race

Definition**:** Race is a mixture of physical and behavioral attributes that categorize humans. To avoid ambiguity, the study protocol should define the races to be captured in the study.

Input type: Categorical

Examples**:** Black or African America

## Ethnicity

Definition**:** Ethnicity or ethnic group denotes groups with common identity-based ancestry, language, religion, beliefs, values, culture, or experiences. The CDC (U.S. Centers for Disease Control and Prevention) has proposed numeric codes to represent different ethnicities.

Input type: Categorical, either code or description

Example**:** European

See Annex 1

## Education level

Definition: Education is the act or process of imparting or acquiring general knowledge and developing the powers of reasoning and judgment. Education level is defined as formal education earned in schools or school-like environments. To standardize this document, education levels will be represented as categories. For instance: no education, high school, undergraduate, or postgraduate.

Input type: Categorical

Example: no education

## Salary bracket

Definition**:** A fixed amount of money or compensation paid to an employee by an employer of labour in return for work performed. Salaries are presented by a range composed of two integers: the first delimits the lower band, and the second the higher band. The currency unit must be defined prior, and all salary ranges entered are assumed to conform to that unit.

Input type: Categorical range

Example**:** 0 - 35000

## Nationality

Definition: The status of belonging to a particular country or nation. The international standard organization (ISO) proposed a three-letter representation of counties. The summary is provided below.

Input type: Set

Examples: Canada (CAN), United Kingdom (GBR)

## Miscellaneous

All other columns must conform to the common data standard discussed in Section 3.

## References

1. <https://www.ibm.com/docs/en/iodgfdfz/11.3?topic=tables-date-format-examples>
2. <https://www.fda.gov/media/123465/download>
3. <https://cihr-irsc.gc.ca/e/48642.html>
4. <https://www.genome.gov/genetics-glossary/Race>
5. <https://www.ncbi.nlm.nih.gov/books/NBK219752/>
6. <https://www.cancer.gov/publications/dictionaries/cancer-terms/def/race>
7. <https://grants.nih.gov/grants/guide/notice-files/not-od-15-089.html>
8. <https://www.cancer.gov/publications/dictionaries/cancer-terms/def/ethnicity>
9. <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2778908>
10. [https://www.fda.gov/files/about fda/published/Collection--Analysis--and-Availability-of-Demographic-Subgroup-Data-for-FDA-Approved-Medical-Products.pdf](https://www.fda.gov/files/about%20fda/published/Collection--Analysis--and-Availability-of-Demographic-Subgroup-Data-for-FDA-Approved-Medical-Products.pdf)

# Serology Data

Serology data refers to information obtained from the analysis of blood serum (samples) to detect and measure the presence of antibodies or antigens related to a particular disease or condition. Serology is an essential tool in medical diagnosis, epidemiology, and research. It can provide information on a person's immune response to a specific pathogen, such as a virus or bacterium. Serology data can diagnose acute and chronic infections, track disease progression, evaluate vaccine effectiveness, and assess population-level immunity. In addition, serology data can be used in clinical trials to assess the efficacy of vaccines or other treatments by measuring the immune response of study participants. Tests may include enzyme-linked immunosorbent assays (ELISAs), Western blotting, and neutralization assays.

Serology data must be reported in tabular format. Its filename must end with “\_serology.csv”.

## Mandatory columns

The mandatory columns must be provided for serology data:

1. Participant identifier (see “Demographic data” Section 4)
2. Collection name

## Optional columns

Other fields, in this case, refer to additional parameters being measured or reported:

1. Sample identifier
2. Sample collection date
3. Assay type
4. Initial symptoms
5. Duration of symptoms (Days)
6. Symptom severity
7. Comorbidities
8. Miscellaneous

## Collection name

Definition: Collection name is a name that represents a procedure applied to multiple participants in collecting and analyzing a sample at a point in time during the study.

Input format: Set

Example: Initial blood sample

## Sample Identifier

Definition**:** A Unique Identifier is a unique label or code assigned to a sample (biological or other types) to distinguish it from different samples and to track its origin and handling throughout a study or experiment. Sample identifiers may be A codes, barcodes, or other identifiers linked to information such as the sample type, collection date and time, and further relevant details. Sample identifiers are used to ensure that samples are correctly identified and tracked and to avoid mix-ups or errors in the collection, handling, processing, and analysis of the samples. Using unique sample identifiers is essential for maintaining the data's integrity and traceability and ensuring the study results' validity and reliability.

Input type: Identifier

Example**:** SAM\_19\_2023

## Sample collection date

Definition**:** Sample collection date refers to the specific date a biological or other sample is collected from a subject or source as part of a study or experiment. The sample collection date is important information typically recorded along with further details such as the unique identifier and sample type.

Input type: Date

Example**:** 2022-12-02

## Assay type

Definition**:** Assay type refers to the specific laboratory method or technique used to measure or detect a particular substance or property of a sample. In biomedical research, an assay is a laboratory test that measures the presence or quantity of a target substance or activity in a biological sample. Assay types can vary widely depending on the nature of the target substance or property, the sample's complexity, and the assay's sensitivity and specificity.

Input type**:** Categorical

Example**:** Enzyme-linked immunosorbent assay (ELISA), Polymerase chain reaction (PCR), Flow Cytometry, Mass Spectrometry

## ****Initial symptoms****

Definition**:** Initial symptoms refer to the first signs or indications of a disease or condition that a person experiences. Initial symptoms can vary widely depending on the type and severity of the disease, as well as individual factors such as age, gender, and overall health status. In some cases, initial symptoms may be mild or vague, making it difficult to diagnose the underlying condition.

Input type**:** Set

Example**:** Pain, rash, fever

## Duration of symptoms

Definition**:** Duration of symptoms refers to the length of time an individual experiences a particular symptom or set of symptoms. The duration of symptoms can vary widely depending on the underlying cause and personal factors such as age, gender, and overall health status. Some symptoms, such as cough, fever, and fatigue, may be short-lived and resolve independently, while others may persist for weeks, months, or even years.

The duration of symptoms can be an essential factor in diagnosing and managing many conditions. For example, a persistent cough lasting over three weeks may indicate a more serious underlying condition such as tuberculosis or lung cancer. Similarly, a fever that persists for over a week may indicate an infectious disease such as malaria or typhoid fever.

In some cases, the duration of symptoms may be influenced by treatment. For example, symptoms of depression or anxiety may improve with psychotherapy or medication. In contrast, symptoms of a chronic condition such as rheumatoid arthritis may require ongoing management with medication and lifestyle changes.

Monitoring the duration of symptoms can help healthcare providers diagnose and manage conditions more effectively and provide patients with a better understanding of what to expect regarding their overall recovery and prognosis.

Input type**:** Duration

Examples**:** 7

## Symptom severity

Definition**:** Symptom severity refers to the intensity, duration, and impact of a particular symptom or set of symptoms on an individual's physical, emotional, and social well-being. Symptom severity can vary widely depending on the underlying cause of the symptoms and individual factors such as age, gender, and overall health status. Symptom severity can be measured using various scales or rating systems, which may consider the frequency and duration of symptoms, the degree of pain or discomfort, and the impact of the symptoms on daily activities and quality of life.

It's crucial to comprehend the symptoms' severity to diagnose and treat different illnesses accurately. This information can also aid in clinical decision-making and enhance patient outcomes by determining the most suitable treatment options based on the symptom's severity and impact. To simplify use, symptom severity will be shown as categorical values: no symptoms, mild, moderate, and severe.

Input type**:** Categorical (scale)

Example**:** mild

## ****Comorbidities****

Definition**:** Comorbidity refers to one or more additional health conditions or diseases in an individual diagnosed with a primary disorder or disease. Comorbidities may coexist with the primary condition or illness and may be unrelated or related in some way.

Comorbidities are common in many chronic conditions, such as diabetes, hypertension, and cardiovascular disease. For example, a person with diabetes may also have comorbidities such as hypertension, obesity, and dyslipidemia. Comorbidities can complicate the diagnosis and treatment of the primary condition and increase the risk of complications and poor outcomes.

In some cases, comorbidities may share common risk factors with the primary condition, such as lifestyle factors like smoking, poor diet, or lack of physical activity. In other cases, comorbidities may arise due to the primary condition or its treatment, such as the development of depression in cancer patients or osteoporosis in individuals taking corticosteroids for autoimmune disease.

Identifying and managing comorbidities is essential to healthcare management and can improve the overall health outcomes and quality of life for individuals with chronic conditions.

Input type**:** Set

Examples**:** diabetes, hypertension, cardiovascular disease

# Flow cytometry data

Flow cytometry data must be reported in tabular format. Its filename must end with “\_flow\_cytometry.csv”.

## Mandatory Columns

1. Participant identifier (see “Demographic data” Section 4)
2. Experimental condition
3. Flow data, additional columns

## Optional columns

Other fields, in this case, refer to additional parameters being measured or reported:

1. Sample identifier

## Experimental condition

Definition: Experimental condition is defined as the varied procedure to estimate a variable effect. The researcher manipulates a level of the independent variable to assess the effect on a dependent variable. The conditions must be provided in a column to allow the AI access to the effects of the varying conditions.

Input format: Set

Example: Tube names

## Processed cytometry data

Definition: The flow cytometry data analysis pipeline output, including the gating results. This information is in columns with the header corresponding to a specific antibody being measured.

Input type: Numeric

Example:

|  |  |  |  |
| --- | --- | --- | --- |
| Sample Identifer | Tube name | Antibody\_1 | Antibody\_2 |
| Obi | NS | 84.6 | 90 |
| Obi\_001 | SP | 84.4 | 1.54 |

## Sample Identifier

Definition**:** This is a unique code or number assigned to a sample to be tested.

Input type: Identifier

Example: Obi\_001, 0001, Obi

# Annex 1 - Ethnicities

Numeric code depicting different ethnicities. This table is adapted from [“](https://en.wikipedia.org/wiki/Algeria)[Race, Ethnicity, and Language Data: Standardization for Health Care Quality Improvement](https://www.ncbi.nlm.nih.gov/books/NBK219752/).[”](https://en.wikipedia.org/wiki/Algeria)

|  |  |
| --- | --- |
| **Ethnic Code** | **Ethnicity Description** |
| 21261 | Afghanistani |
| 20602 | African |
| 20586 | African American |
| 21386 | Andalusian |
| 00017 | American |
| 21295 | Arab |
| 21667 | Argentinean |
| 21097 | Armenian |
| 20297 | Asian Indian |
| 21196 | Assyrian |
| 21394 | Asturian |
| 20677 | Bahamian |
| 20305 | Bangladeshi |
| 20685 | Barbadian |
| 21428 | Balearic Islander |
| 20313 | Bhutanese |
| 20560 | Black |
| 21675 | Bolivian |
| 00005 | Bosnian |
| 20610 | Botswanan |
| 00029 | Brazillian |
| 20321 | Burmese |
| 20339 | Cambodian |
| 21634 | Canal Zone |
| 21451 | Canarian |
| 20925 | Carolinian |
| 21402 | Castillian |
| 21410 | Catalonian |
| 21550 | Central American |
| 21626 | Central American Indian |
| 20883 | Chamorro |
| 21519 | Chicano |
| 21683 | Chilean |
| 20347 | Chinese |
| 20974 | Chuukese |
| 21691 | Colombian |
| 21568 | Costa Rican |
| 21766 | Criollo |
| 21824 | Cuban |
| 00000 | Decline to state |
| 20701 | Dominica Islander |
| 20693 | Dominican |
| 21840 | Dominican |
| 21709 | Ecuadorian |
| 21204 | Egyptian |
| 21105 | English |
| 20628 | Ethiopian |
| 21089 | European |
| 21014 | Fijian |
| 20362 | Filipino |
| 21113 | French |
| 21436 | Gallego |
| 21121 | German |
| 20875 | Guamanian |
| 20867 | Guamanian or Chamorro |
| 21576 | Guatemalan |
| 20719 | Haitian |
| 20022 | Hindi |
| 21352 | Hispanic/Latino |
| 20370 | Hmong |
| 21584 | Honduran |
| 20388 | Indonesian |
| 21212 | Iranian |
| 21220 | Iraqi |
| 21139 | Irish |
| 21279 | Israeli |
| 21147 | Italian |
| 20487 | Iwo Jiman |
| 20727 | Jamaican |
| 20396 | Japanese |
| 20966 | Kiribati |
| 20404 | Korean |
| 20933 | Kosraean |
| 00013 | Kurdish |
| 21527 | La Raza |
| 20412 | Laotian |
| 21782 | Latin American |
| 21238 | Lebanese |
| 20636 | Liberian |
| 20529 | Madagascar |
| 20420 | Malaysian |
| 20495 | Maldivian |
| 20891 | Mariana Islander |
| 20909 | Marshallese |
| 21006 | Melanesian |
| 21485 | Mexican |
| 21493 | Mexican American |
| 21535 | Mexican American Indian |
| 21501 | Mexicano |
| 20859 | Micronesian |
| 21188 | Middle Eastern or North African |
| 00026 | Mixtec, Mexican Indian |
| 20644 | Namibian |
| 20792 | Native Hawaiian |
| 20503 | Nepalese |
| 21048 | New Hebrides |
| 21592 | Nicaraguan |
| 20651 | Nigerian |
| 20438 | Okinawan |
| 00002 | Other Ethnicity |
| 00030 | Other Latino |
| 20446 | Pakistani |
| 20917 | Palauan |
| 21246 | Palestinian |
| 21600 | Panamanian |
| 21022 | Papua New Guinean |
| 21717 | Paraguayan |
| 21725 | Peruvian |
| 20941 | Pohnpeian |
| 21154 | Polish |
| 20784 | Polynesian |
| 00014 | Portuguese |
| 21808 | Puerto Rican |
| 00027 | Punjabi, India |
| 00016 | Russian |
| 20958 | Saipanese |
| 21618 | Salvadoran |
| 20800 | Samoan |
| 21162 | Scottish |
| 20511 | Singaporean |
| 21030 | Solomon Islander |
| 21659 | South American |
| 21758 | South American Indian |
| 21378 | Spaniard |
| 21469 | Spanish Basque |
| 20453 | Sri Lankan |
| 21253 | Syrian |
| 20818 | Tahitian |
| 20354 | Taiwanese |
| 20461 | Thai |
| 20735 | Tobagoan |
| 20834 | Tokelauan |
| 20826 | Tongan |
| 20743 | Trinidadian |
| 00001 | Unknown |
| 21733 | Uruguayan |
| 21444 | Valencian |
| 21741 | Venezuelan |
| 20479 | Vietnamese |
| 20750 | West Indian |
| 00025 | Yao, Mien |
| 20982 | Yapese |
| 20669 | Zairean |

# Annex 2 – Nationalities

Summary of Nations encoded with three letters. Table adapted from [ISO](https://en.wikipedia.org/wiki/List_of_ISO_3166_country_codes).

|  |  |
| --- | --- |
| [**Alpha-2 code**](https://en.wikipedia.org/wiki/ISO_3166-1_alpha-2#Officially_assigned_code_elements) | **Three letter code** |
| [The Islamic Republic of Afghanistan](https://en.wikipedia.org/wiki/Islamic_Republic_of_Afghanistan) | AFG |
| [Åland](https://en.wikipedia.org/wiki/%C3%85land) | ALA |
| [The Republic of Albania](https://en.wikipedia.org/wiki/Albania) | ALB |
| [The People's Democratic Republic of Algeria](https://en.wikipedia.org/wiki/Algeria) | DZA |
| [The Territory of American Samoa](https://en.wikipedia.org/wiki/American_Samoa) | ASM |
| [The Principality of Andorra](https://en.wikipedia.org/wiki/Andorra) | AND |
| [The Republic of Angola](https://en.wikipedia.org/wiki/Angola) | AGO |
| [Anguilla](https://en.wikipedia.org/wiki/Anguilla) | AIA |
| All land and ice shelves south of the [60th parallel south](https://en.wikipedia.org/wiki/60th_parallel_south) | ATA |
| [Antigua and Barbuda](https://en.wikipedia.org/wiki/Antigua_and_Barbuda) | ATG |
| [The Argentine Republic](https://en.wikipedia.org/wiki/Argentina) | ARG |
| [The Republic of Armenia](https://en.wikipedia.org/wiki/Armenia) | ARM |
| [Aruba](https://en.wikipedia.org/wiki/Aruba) | ABW |
| [The Commonwealth of Australia](https://en.wikipedia.org/wiki/Australia) | AUS |
| [The Republic of Austria](https://en.wikipedia.org/wiki/Austria) | AUT |
| [The Republic of Azerbaijan](https://en.wikipedia.org/wiki/Azerbaijan) | AZE |
| [The Commonwealth of The Bahamas](https://en.wikipedia.org/wiki/The_Bahamas) | BHS |
| [The Kingdom of Bahrain](https://en.wikipedia.org/wiki/Bahrain) | BHR |
| [The People's Republic of Bangladesh](https://en.wikipedia.org/wiki/Bangladesh) | BGD |
| [Barbados](https://en.wikipedia.org/wiki/Barbados) | BRB |
| [The Republic of Belarus](https://en.wikipedia.org/wiki/Belarus) | BLR |
| [The Kingdom of Belgium](https://en.wikipedia.org/wiki/Belgium) | BEL |
| [Belize](https://en.wikipedia.org/wiki/Belize) | BLZ |
| [The Republic of Benin](https://en.wikipedia.org/wiki/Benin) | BEN |
| [Bermuda](https://en.wikipedia.org/wiki/Bermuda) | BMU |
| [The Kingdom of Bhutan](https://en.wikipedia.org/wiki/Bhutan) | BTN |
| [The Plurinational State of Bolivia](https://en.wikipedia.org/wiki/Bolivia) | BOL |
| [Bonaire, Sint Eustatius and Saba](https://en.wikipedia.org/wiki/Caribbean_Netherlands) | BES |
| [Bosnia and Herzegovina](https://en.wikipedia.org/wiki/Bosnia_and_Herzegovina) | BIH |
| [The Republic of Botswana](https://en.wikipedia.org/wiki/Botswana) | BWA |
| [Bouvet Island](https://en.wikipedia.org/wiki/Bouvet_Island) | BVT |
| [The Federative Republic of Brazil](https://en.wikipedia.org/wiki/Brazil) | BRA |
| [British Indian Ocean Territory](https://en.wikipedia.org/wiki/British_Indian_Ocean_Territory) | IOT |
| [The Nation of Brunei, the Abode of Peace](https://en.wikipedia.org/wiki/Brunei) | BRN |
| [The Republic of Bulgaria](https://en.wikipedia.org/wiki/Bulgaria) | BGR |
| [Burkina Faso](https://en.wikipedia.org/wiki/Burkina_Faso) | BFA |
| [The Republic of Burundi](https://en.wikipedia.org/wiki/Burundi) | BDI |
| [The Republic of Cabo Verde](https://en.wikipedia.org/wiki/Cape_Verde) | CPV |
| [The Kingdom of Cambodia](https://en.wikipedia.org/wiki/Cambodia) | KHM |
| [The Republic of Cameroon](https://en.wikipedia.org/wiki/Cameroon) | CMR |
| [Canada](https://en.wikipedia.org/wiki/Canada) | CAN |
| [The Cayman Islands](https://en.wikipedia.org/wiki/Cayman_Islands) | CYM |
| [The Central African Republic](https://en.wikipedia.org/wiki/Central_African_Republic) | CAF |
| [The Republic of Chad](https://en.wikipedia.org/wiki/Chad) | TCD |
| [The Republic of Chile](https://en.wikipedia.org/wiki/Chile) | CHL |
| [The People's Republic of China](https://en.wikipedia.org/wiki/China) | CHN |
| [The Territory of Christmas Island](https://en.wikipedia.org/wiki/Christmas_Island) | CXR |
| [The Territory of Cocos (Keeling) Islands](https://en.wikipedia.org/wiki/Cocos_(Keeling)_Islands) | CCK |
| [The Republic of Colombia](https://en.wikipedia.org/wiki/Colombia) | COL |
| [The Union of the Comoros](https://en.wikipedia.org/wiki/Comoros) | COM |
| [The Democratic Republic of the Congo](https://en.wikipedia.org/wiki/Democratic_Republic_of_the_Congo) | COD |
| [The Republic of the Congo](https://en.wikipedia.org/wiki/Republic_of_the_Congo) | COG |
| [The Cook Islands](https://en.wikipedia.org/wiki/Cook_Islands) | COK |
| [The Republic of Costa Rica](https://en.wikipedia.org/wiki/Costa_Rica) | CRI |
| [The Republic of Côte d'Ivoire](https://en.wikipedia.org/wiki/Ivory_Coast) | CIV |
| [The Republic of Croatia](https://en.wikipedia.org/wiki/Croatia) | HRV |
| [The Republic of Cuba](https://en.wikipedia.org/wiki/Cuba) | CUB |
| [The Country of Curaçao](https://en.wikipedia.org/wiki/Cura%C3%A7ao) | CUW |
| [The Republic of Cyprus](https://en.wikipedia.org/wiki/Cyprus) | CYP |
| [The Czech Republic](https://en.wikipedia.org/wiki/Czech_Republic) | CZE |
| [The Kingdom of Denmark](https://en.wikipedia.org/wiki/Denmark) | DNK |
| [The Republic of Djibouti](https://en.wikipedia.org/wiki/Djibouti) | DJI |
| [The Commonwealth of Dominica](https://en.wikipedia.org/wiki/Dominica) | DMA |
| [The Dominican Republic](https://en.wikipedia.org/wiki/Dominican_Republic) | DOM |
| [The Republic of Ecuador](https://en.wikipedia.org/wiki/Ecuador) | ECU |
| [The Arab Republic of Egypt](https://en.wikipedia.org/wiki/Egypt) | EGY |
| [The Republic of El Salvador](https://en.wikipedia.org/wiki/El_Salvador) | SLV |
| [The Republic of Equatorial Guinea](https://en.wikipedia.org/wiki/Equatorial_Guinea) | GNQ |
| [The State of Eritrea](https://en.wikipedia.org/wiki/Eritrea) | ERI |
| [The Republic of Estonia](https://en.wikipedia.org/wiki/Estonia) | EST |
| [The Kingdom of Eswatini](https://en.wikipedia.org/wiki/Eswatini) | SWZ |
| [The Federal Democratic Republic of Ethiopia](https://en.wikipedia.org/wiki/Ethiopia) | ETH |
| [The Falkland Islands](https://en.wikipedia.org/wiki/Falkland_Islands) | FLK |
| [The Faroe Islands](https://en.wikipedia.org/wiki/Faroe_Islands) | FRO |
| [The Republic of Fiji](https://en.wikipedia.org/wiki/Fiji) | FJI |
| [The Republic of Finland](https://en.wikipedia.org/wiki/Finland) | FIN |
| [The French Republic](https://en.wikipedia.org/wiki/France) | FRA |
| [Guyane](https://en.wikipedia.org/wiki/French_Guiana) | GUF |
| [French Polynesia](https://en.wikipedia.org/wiki/French_Polynesia) | PYF |
| [The French Southern and Antarctic Lands](https://en.wikipedia.org/wiki/French_Southern_and_Antarctic_Lands) | ATF |
| [The Gabonese Republic](https://en.wikipedia.org/wiki/Gabon) | GAB |
| [The Republic of The Gambia](https://en.wikipedia.org/wiki/The_Gambia) | GMB |
| [Georgia](https://en.wikipedia.org/wiki/Georgia_(country)) | GEO |
| [The Federal Republic of Germany](https://en.wikipedia.org/wiki/Germany) | DEU |
| [The Republic of Ghana](https://en.wikipedia.org/wiki/Ghana) | GHA |
| [Gibraltar](https://en.wikipedia.org/wiki/Gibraltar) | GIB |
| [The Hellenic Republic](https://en.wikipedia.org/wiki/Greece) | GRC |
| [Kalaallit Nunaat](https://en.wikipedia.org/wiki/Greenland) | GRL |
| [Grenada](https://en.wikipedia.org/wiki/Grenada) | GRD |
| [Guadeloupe](https://en.wikipedia.org/wiki/Guadeloupe) | GLP |
| [The Territory of Guam](https://en.wikipedia.org/wiki/Guam) | GUM |
| [The Republic of Guatemala](https://en.wikipedia.org/wiki/Guatemala) | GTM |
| [The Bailiwick of Guernsey](https://en.wikipedia.org/wiki/Bailiwick_of_Guernsey) | GGY |
| [The Republic of Guinea](https://en.wikipedia.org/wiki/Guinea) | GIN |
| [The Republic of Guinea-Bissau](https://en.wikipedia.org/wiki/Guinea-Bissau) | GNB |
| [The Co-operative Republic of Guyana](https://en.wikipedia.org/wiki/Guyana) | GUY |
| [The Republic of Haiti](https://en.wikipedia.org/wiki/Haiti) | HTI |
| [The Territory of Heard Island and McDonald Islands](https://en.wikipedia.org/wiki/Heard_Island_and_McDonald_Islands) | HMD |
| [The Holy See](https://en.wikipedia.org/wiki/Holy_See) | VAT |
| [The Republic of Honduras](https://en.wikipedia.org/wiki/Honduras) | HND |
| [The Hong Kong Special Administrative Region of The Hong Kong Special Administrative Region of China](https://en.wikipedia.org/wiki/Hong_Kong)[[10][10]](https://en.wikipedia.org/wiki/List_of_ISO_3166_country_codes#cite_note-24) | HKG |
| [Hungary](https://en.wikipedia.org/wiki/Hungary) | HUN |
| [Iceland](https://en.wikipedia.org/wiki/Iceland) | ISL |
| [The Republic of India](https://en.wikipedia.org/wiki/India) | IND |
| [The Republic of Indonesia](https://en.wikipedia.org/wiki/Indonesia) | IDN |
| [The Islamic Republic of Iran](https://en.wikipedia.org/wiki/Iran) | IRN |
| [The Republic of Iraq](https://en.wikipedia.org/wiki/Iraq) | IRQ |
| [Ireland](https://en.wikipedia.org/wiki/Republic_of_Ireland) | IRL |
| [The Isle of Man](https://en.wikipedia.org/wiki/Isle_of_Man) | IMN |
| [The State of Israel](https://en.wikipedia.org/wiki/Israel) | ISR |
| [The Italian Republic](https://en.wikipedia.org/wiki/Italy) | ITA |
| [Jamaica](https://en.wikipedia.org/wiki/Jamaica) | JAM |
| [Japan](https://en.wikipedia.org/wiki/Japan) | JPN |
| [The Bailiwick of Jersey](https://en.wikipedia.org/wiki/Jersey) | JEY |
| [The Hashemite Kingdom of Jordan](https://en.wikipedia.org/wiki/Jordan) | JOR |
| [The Republic of Kazakhstan](https://en.wikipedia.org/wiki/Kazakhstan) | KAZ |
| [The Republic of Kenya](https://en.wikipedia.org/wiki/Kenya) | KEN |
| [The Republic of Kiribati](https://en.wikipedia.org/wiki/Kiribati) | KIR |
| [The Democratic People's Republic of Korea](https://en.wikipedia.org/wiki/North_Korea) | PRK |
| [The Republic of Korea](https://en.wikipedia.org/wiki/South_Korea) | KOR |
| [The State of Kuwait](https://en.wikipedia.org/wiki/Kuwait) | KWT |
| [The Kyrgyz Republic](https://en.wikipedia.org/wiki/Kyrgyzstan) | KGZ |
| [The Lao People's Democratic Republic](https://en.wikipedia.org/wiki/Laos) | LAO |
| [The Republic of Latvia](https://en.wikipedia.org/wiki/Latvia) | LVA |
| [The Lebanese Republic](https://en.wikipedia.org/wiki/Lebanon) | LBN |
| [The Kingdom of Lesotho](https://en.wikipedia.org/wiki/Lesotho) | LSO |
| [The Republic of Liberia](https://en.wikipedia.org/wiki/Liberia) | LBR |
| [The State of Libya](https://en.wikipedia.org/wiki/Libya) | LBY |
| [The Principality of Liechtenstein](https://en.wikipedia.org/wiki/Liechtenstein) | LIE |
| [The Republic of Lithuania](https://en.wikipedia.org/wiki/Lithuania) | LTU |
| [The Grand Duchy of Luxembourg](https://en.wikipedia.org/wiki/Luxembourg) | LUX |
| [The Macao Special Administrative Region of The Macao Special Administrative Region of China](https://en.wikipedia.org/wiki/Macau)[[11][11]](https://en.wikipedia.org/wiki/List_of_ISO_3166_country_codes#cite_note-29) | MAC |
| [TheThe RRepupubliclic of Norof North Mh Maccedoniadonia](https://en.wikipedia.org/wiki/North_Macedonia)[[12][12]](https://en.wikipedia.org/wiki/List_of_ISO_3166_country_codes#cite_note-31) | MKD |
| [The Republic of Madagascar](https://en.wikipedia.org/wiki/Madagascar) | MDG |
| [The Republic of Malawi](https://en.wikipedia.org/wiki/Malawi) | MWI |
| [Malaysia](https://en.wikipedia.org/wiki/Malaysia) | MYS |
| [The Republic of Maldives](https://en.wikipedia.org/wiki/Maldives) | MDV |
| [The Republic of Mali](https://en.wikipedia.org/wiki/Mali) | MLI |
| [The Republic of Malta](https://en.wikipedia.org/wiki/Malta) | MLT |
| [The Republic of the Marshall Islands](https://en.wikipedia.org/wiki/Marshall_Islands) | MHL |
| [Martinique](https://en.wikipedia.org/wiki/Martinique) | MTQ |
| [The Islamic Republic of Mauritania](https://en.wikipedia.org/wiki/Mauritania) | MRT |
| [The Republic of Mauritius](https://en.wikipedia.org/wiki/Mauritius) | MUS |
| [The Department of Mayotte](https://en.wikipedia.org/wiki/Mayotte) | MYT |
| [The United Mexican States](https://en.wikipedia.org/wiki/Mexico) | MEX |
| [The Federated States of Micronesia](https://en.wikipedia.org/wiki/Federated_States_of_Micronesia) | FSM |
| [The Republic of Moldova](https://en.wikipedia.org/wiki/Moldova) | MDA |
| [The Principality of Monaco](https://en.wikipedia.org/wiki/Monaco) | MCO |
| [Mongolia](https://en.wikipedia.org/wiki/Mongolia) | MNG |
| [Montenegro](https://en.wikipedia.org/wiki/Montenegro) | MNE |
| [Montserrat](https://en.wikipedia.org/wiki/Montserrat) | MSR |
| [The Kingdom of Morocco](https://en.wikipedia.org/wiki/Morocco) | MAR |
| [The Republic of Mozambique](https://en.wikipedia.org/wiki/Mozambique) | MOZ |
| [The Republic of the Union of Myanmar](https://en.wikipedia.org/wiki/Myanmar) | MMR |
| [The Republic of Namibia](https://en.wikipedia.org/wiki/Namibia) | NAM |
| [The Republic of Nauru](https://en.wikipedia.org/wiki/Nauru) | NRU |
| [The Federal Democratic Republic of Nepal](https://en.wikipedia.org/wiki/Nepal) | NPL |
| [The Kingdom of the Netherlands](https://en.wikipedia.org/wiki/Kingdom_of_the_Netherlands) | NLD |
| [New Caledonia](https://en.wikipedia.org/wiki/New_Caledonia) | NCL |
| [New Zealand](https://en.wikipedia.org/wiki/New_Zealand) | NZL |
| [The Republic of Nicaragua](https://en.wikipedia.org/wiki/Nicaragua) | NIC |
| [The Republic of the Niger](https://en.wikipedia.org/wiki/Niger) | NER |
| [The Federal Republic of Nigeria](https://en.wikipedia.org/wiki/Nigeria) | NGA |
| [Niue](https://en.wikipedia.org/wiki/Niue) | NIU |
| [The Territory of Norfolk Island](https://en.wikipedia.org/wiki/Norfolk_Island) | NFK |
| [The Commonwealth of the Northern Mariana Islands](https://en.wikipedia.org/wiki/Northern_Mariana_Islands) | MNP |
| [The Kingdom of Norway](https://en.wikipedia.org/wiki/Norway) | NOR |
| [The Sultanate of Oman](https://en.wikipedia.org/wiki/Oman) | OMN |
| [The Islamic Republic of Pakistan](https://en.wikipedia.org/wiki/Pakistan) | PAK |
| [The Republic of Palau](https://en.wikipedia.org/wiki/Palau) | PLW |
| [The State of Palestine](https://en.wikipedia.org/wiki/State_of_Palestine) | PSE |
| [The Republic of Panamá](https://en.wikipedia.org/wiki/Panama) | PAN |
| [The Independent State of Papua New Guinea](https://en.wikipedia.org/wiki/Papua_New_Guinea) | PNG |
| [The Republic of Paraguay](https://en.wikipedia.org/wiki/Paraguay) | PRY |
| [The Republic of Perú](https://en.wikipedia.org/wiki/Peru) | PER |
| [The Republic of the Philippines](https://en.wikipedia.org/wiki/Philippines) | PHL |
| [The Pitcairn, Henderson, Ducie and Oeno Islands](https://en.wikipedia.org/wiki/Pitcairn_Islands) | PCN |
| [The Republic of Poland](https://en.wikipedia.org/wiki/Poland) | POL |
| [The Portuguese Republic](https://en.wikipedia.org/wiki/Portugal) | PRT |
| [The Commonwealth of Puerto Rico](https://en.wikipedia.org/wiki/Puerto_Rico) | PRI |
| [The State of Qatar](https://en.wikipedia.org/wiki/Qatar) | QAT |
| [Réunion](https://en.wikipedia.org/wiki/R%C3%A9union) | REU |
| [Romania](https://en.wikipedia.org/wiki/Romania) | ROU |
| [The Russian Federation](https://en.wikipedia.org/wiki/Russia) | RUS |
| [The Republic of Rwanda](https://en.wikipedia.org/wiki/Rwanda) | RWA |
| [The Collectivity of Saint-Barthélemy](https://en.wikipedia.org/wiki/Saint_Barth%C3%A9lemy) | BLM |
| [Saint Helena, Ascension and Tristan da Cunha](https://en.wikipedia.org/wiki/Saint_Helena,_Ascension_and_Tristan_da_Cunha) | SHN |
| [Saint Kitts and Nevis](https://en.wikipedia.org/wiki/Saint_Kitts_and_Nevis) | KNA |
| [Saint Lucia](https://en.wikipedia.org/wiki/Saint_Lucia) | LCA |
| [The Collectivity of Saint-Martin](https://en.wikipedia.org/wiki/Collectivity_of_Saint_Martin) | MAF |
| [The Overseas Collectivity of Saint-Pierre and Miquelon](https://en.wikipedia.org/wiki/Saint_Pierre_and_Miquelon) | SPM |
| [Saint Vincent and the Grenadines](https://en.wikipedia.org/wiki/Saint_Vincent_and_the_Grenadines) | VCT |
| [The Independent State of Samoa](https://en.wikipedia.org/wiki/Samoa) | WSM |
| [The Republic of San Marino](https://en.wikipedia.org/wiki/San_Marino) | SMR |
| [The Democratic Republic of São Tomé and Príncipe](https://en.wikipedia.org/wiki/S%C3%A3o_Tom%C3%A9_and_Pr%C3%ADncipe) | STP |
| [The Kingdom of Saudi Arabia](https://en.wikipedia.org/wiki/Saudi_Arabia) | SAU |
| [The Republic of Senegal](https://en.wikipedia.org/wiki/Senegal) | SEN |
| [The Republic of Serbia](https://en.wikipedia.org/wiki/Serbia) | SRB |
| [The Republic of Seychelles](https://en.wikipedia.org/wiki/Seychelles) | SYC |
| [The Republic of Sierra Leone](https://en.wikipedia.org/wiki/Sierra_Leone) | SLE |
| [The Republic of Singapore](https://en.wikipedia.org/wiki/Singapore) | SGP |
| [Sint Maarten](https://en.wikipedia.org/wiki/Sint_Maarten) | SXM |
| [The Slovak Republic](https://en.wikipedia.org/wiki/Slovakia) | SVK |
| [The Republic of Slovenia](https://en.wikipedia.org/wiki/Slovenia) | SVN |
| [The Solomon Islands](https://en.wikipedia.org/wiki/Solomon_Islands) | SLB |
| [The Federal Republic of Somalia](https://en.wikipedia.org/wiki/Somalia) | SOM |
| [The Republic of South Africa](https://en.wikipedia.org/wiki/South_Africa) | ZAF |
| [South Georgia and the South Sandwich Islands](https://en.wikipedia.org/wiki/South_Georgia_and_the_South_Sandwich_Islands) | SGS |
| [The Republic of South Sudan](https://en.wikipedia.org/wiki/South_Sudan) | SSD |
| [The Kingdom of Spain](https://en.wikipedia.org/wiki/Spain) | ESP |
| [The Democratic Socialist Republic of Sri Lanka](https://en.wikipedia.org/wiki/Sri_Lanka) | LKA |
| [The Republic of the Sudan](https://en.wikipedia.org/wiki/Sudan) | SDN |
| [The Republic of Suriname](https://en.wikipedia.org/wiki/Suriname) | SUR |
| [Svalbard and Jan Mayen](https://en.wikipedia.org/wiki/Svalbard_and_Jan_Mayen) | SJM |
| [The Kingdom of Sweden](https://en.wikipedia.org/wiki/Sweden) | SWE |
| [The Swiss Confederation](https://en.wikipedia.org/wiki/Switzerland) | CHE |
| [The Syrian Arab Republic](https://en.wikipedia.org/wiki/Syria) | SYR |
| [The Republic of China](https://en.wikipedia.org/wiki/Taiwan) | TWN |
| [The Republic of Tajikistan](https://en.wikipedia.org/wiki/Tajikistan) | TJK |
| [The United Republic of Tanzania](https://en.wikipedia.org/wiki/Tanzania) | TZA |
| [The Kingdom of Thailand](https://en.wikipedia.org/wiki/Thailand) | THA |
| [The Democratic Republic of Timor-Leste](https://en.wikipedia.org/wiki/East_Timor) | TLS |
| [The Togolese Republic](https://en.wikipedia.org/wiki/Togo) | TGO |
| [Tokelau](https://en.wikipedia.org/wiki/Tokelau) | TKL |
| [The Kingdom of Tonga](https://en.wikipedia.org/wiki/Tonga) | TON |
| [The Republic of Trinidad and Tobago](https://en.wikipedia.org/wiki/Trinidad_and_Tobago) | TTO |
| [The Republic of Tunisia](https://en.wikipedia.org/wiki/Tunisia) | TUN |
| [The Republic of Türkiye](https://en.wikipedia.org/wiki/Turkey) | TUR |
| [Turkmenistan](https://en.wikipedia.org/wiki/Turkmenistan) | TKM |
| [The Turks and Caicos Islands](https://en.wikipedia.org/wiki/Turks_and_Caicos_Islands) | TCA |
| [Tuvalu](https://en.wikipedia.org/wiki/Tuvalu) | TUV |
| [The Republic of Uganda](https://en.wikipedia.org/wiki/Uganda) | UGA |
| [Ukraine](https://en.wikipedia.org/wiki/Ukraine) | UKR |
| [The United Arab Emirates](https://en.wikipedia.org/wiki/United_Arab_Emirates) | ARE |
| [The United Kingdom of Great Britain and Northern Ireland](https://en.wikipedia.org/wiki/United_Kingdom) | GBR |
| [Baker Island](https://en.wikipedia.org/wiki/Baker_Island), [Howland Island](https://en.wikipedia.org/wiki/Howland_Island), [Jarvis Island](https://en.wikipedia.org/wiki/Jarvis_Island), [Johnston Atoll](https://en.wikipedia.org/wiki/Johnston_Atoll), [Kingman Reef](https://en.wikipedia.org/wiki/Kingman_Reef), [Midway Atoll](https://en.wikipedia.org/wiki/Midway_Atoll), [Navassa Island](https://en.wikipedia.org/wiki/Navassa_Island), [Palmyra Atoll](https://en.wikipedia.org/wiki/Palmyra_Atoll), and [Wake Island](https://en.wikipedia.org/wiki/Wake_Island) | UMI |
| [The United States of America](https://en.wikipedia.org/wiki/United_States) | USA |
| [The Oriental Republic of Uruguay](https://en.wikipedia.org/wiki/Uruguay) | URY |
| [The Republic of Uzbekistan](https://en.wikipedia.org/wiki/Uzbekistan) | UZB |
| [The Republic of Vanuatu](https://en.wikipedia.org/wiki/Vanuatu) | VUT |
| [The Bolivarian Republic of Venezuela](https://en.wikipedia.org/wiki/Venezuela) | VEN |
| [The Socialist Republic of Viet Nam](https://en.wikipedia.org/wiki/Vietnam) | VNM |
| [The Virgin Islands](https://en.wikipedia.org/wiki/British_Virgin_Islands) | VGB |
| [The Virgin Islands of the United States](https://en.wikipedia.org/wiki/United_States_Virgin_Islands) | VIR |
| [The Territory of the Wallis and Futuna Islands](https://en.wikipedia.org/wiki/Wallis_and_Futuna) | WLF |
| [The Sahrawi Arab Democratic Republic](https://en.wikipedia.org/wiki/Sahrawi_Arab_Democratic_Republic) | ESH |
| [The Republic of Yemen](https://en.wikipedia.org/wiki/Yemen) | YEM |
| [The Republic of Zambia](https://en.wikipedia.org/wiki/Zambia) | ZMB |
| [The Republic of Zimbabwe](https://en.wikipedia.org/wiki/Zimbabwe) | ZWE |

1. CSV files must be saved with UTF-8 encoding using a comma to separate values and quotes to denote strings. [↑](#footnote-ref-2)