

Accessibility: the ability to obtain and benefit from a map, with the goal of supporting the widest possible range of audiences

Accuracy: the correctness of the data

Adjacent maps: the representation of multiple attributes, data with its uncertainty, or a time series on separate maps. Also called **small multiples**

Aggregate: an increase in dimensionality. This is a **Generalization operator**

Analysis: the confirmation of hypotheses generated during exploration

Animation: the use of digital system time to update the map display

non-temporal animation: an animation with frames ordered to facilitate understanding of the map

temporal animation: an animation with display time representing real-world time

Arrange: an interactive change to the layout of maps and diagrams

Arrangement: the layout of graphic marks in the symbol

Aspect: orientation of the map surface to the globe

normal aspect: orientation of the map surface to the Earth's axis of rotation, resulting in standard parallels

oblique aspect: all aspects that are not normal or transverse

transverse aspect: orientation of the map surface 90° from the axis of rotation, resulting in standard meridians

Aspect ratio: horizontal versus vertical dimensions of the layout (e.g., portrait versus landscape)

Atlas: an intentional sequence of maps, text, and other graphic elements depicting different dimensions of geographic phenomena and processes

Attribute: the *what* or *who* of data

absolute attribute: an attribute measured or counted and reported without consideration of other attributes

enumerated attribute: an individual-level attribute that is aggregated or counted within a predefined space, or enumeration unit

individual-level attribute: unique conditions or qualities of a specific place

relative attribute: an attribute that is normalized based on one, two, or multiple other values

Audience: the intended users of the map

Bar chart: a univariate diagram using rectangular bars to depict the distribution of an attribute across different nominal categories

Binary map: a thematic map showing two categories such as presence/absence or yes/no

Bivariate map: a thematic map depicting two data attributes

configural bivariate map: a bivariate map that maintains reading of the original X and Y attributes while including a visual hint about the + relationship that can be used for visual correlation

integral bivariate map: a bivariate map that restricts reading of the original X and Y indicators but promotes reading of the + relationship between indicators

separable bivariate map: a bivariate map that preserves reading of both original X and Y indicators in the map

Bubble chart: a variant of a scatterplot that depicts a third attribute by resizing the point symbol

Calculate: an interactive derivation of new information from the map

Cartogram: a thematic map that scales the area of each enumeration unit by its attribute value

contiguous cartogram: a cartogram that maintains topology between enumeration units while compromising on shape

non-contiguous cartogram: a cartogram that maintains shape completely by scaling each enumeration unit within its boundary

Cartography: the art, science, and technology of making and using maps

Cartography Cube: a framework that organizes broad map use cases according to three axes: map users, map use tasks, and map interactivity

Cartographic scale: the ratio between a distance represented on a map and the corresponding distance in the real world

large cartographic scale: a representative fraction that computes to a relatively larger decimal number, resulting in a map depicting small geographic scale phenomenon

small cartographic scale: a representative fraction that computes to a small decimal number, resulting in a map depicting large geographic scale phenomenon

Change: a difference over time

attribute change: qualitative (e.g., same or different) or quantitative (e.g., increase or decrease) change over time

existential change: appearance and disappearance over time

location change: movement, expansion, or shrinking over time

Change blindness: a visual phenomenon in which the audience misses a large amount of the information in an animation due to the increased visual complexity

Change Map: a representation of time that calculates the difference between two data captures in the time series

Choropleth map: a thematic map that shades enumeration units by their attribute values, primarily relying on colour value

Class break: a division point between classes within a classification scheme

Classification: the process of organizing map features into groups to improve legibility in the representation

Classification scheme: the set of class breaks and their logic for organizing map features into groups

arithmetic classification scheme: a classification scheme with an increase or decrease in distances between class breaks in a regular progression

equal interval classification scheme: a classification scheme that places class breaks equidistant from each other

geometric classification scheme: a variant of the arithmetic classification scheme in which distances between class breaks increase or decrease geometrically (e.g., doubling, tripling, etc.)

mean & standard deviation classification scheme: a variant of the equal interval classification scheme in which the equal interval is in standard deviations from the mean

optimal breaks classification scheme: treatment of classes like clusters by minimizing differences within each class and maximizing differences among classes

quantile classification scheme: placement of the same number of features into each class

Client-side technologies: web technologies used to render data, such as maps and diagrams, in the browser for viewing and manipulation by the user

CMYK: a subtractive colour model (Cyan, Magenta, Yellow, and black) used for designing print maps and diagrams that reflect light

Coincident map: the representation of multiple attributes, data with its uncertainty, or a time series in a single map

Collapse: a decrease in dimensionality. This is a **generalization operator**

Colour: the electromagnetic spectrum perceived by the eye

Colour hue: the dominant wavelength of the symbol colour

Colour saturation: the spectral purity of the symbol colour

Colour scheme: the set of colour symbols and their logic for representing attributes in maps and diagrams

diverging colour scheme: a colour scheme combining two sequential schemes to create an apparent increase in two directions

qualitative colour scheme: a colour scheme with no apparent order

sequential colour scheme: a colour scheme with an apparent increase from low-to-high

spectral colour scheme: a rainbow scheme of red, orange, yellow, green, cyan, blue, indigo, and violet

Colour value: the spectral strength of the symbol colour

Column chart: a bar chart that is vertically oriented

Compilation: a visual storytelling genre that enforces continuity through the order of unfolding events (newer first)

Completeness: the amount of missing data value

Configure controls: the controls in interactive maps that set-up interaction for the map user before use of the map

Conflict: the middle of the three-act narrative containing the key problem motivating the story

Consistency: the uniformity in data collection

Context controls: the controls in interactive maps that allow adding contextual information after initial use of the map

Coordination: interaction across multiple maps and diagrams, with an interaction operator applied in one view also applied to all others

Creative Commons (CC): an open access license that may carry Attribution (BY), Share-Alike (SA), Non-Commercial (NC), or No Derivative works (ND) restrictions for use of the product

Credibility: the reliability of the data source

Crispness: the sharpness of symbol edges

Currency: the age of the data

Data transformation: statistical conversion of an attribute

Dashboard: a visual summary of data, often displayed as multiple maps and diagrams of different locations, attributes, or time periods on a single screen

analytical dashboard: a dashboard with extensive information and interactive functionality for generating and evaluating previously unknown insights into patterns, trends, and anomalies across a range of datasets

operational dashboard: a dashboard with relatively simple maps and diagrams depicting real-time data streams and alerts when thresholds are surpassed, requiring urgent response

strategic dashboard: a dashboard providing an overview of key data parameters that policy and decision-makers need to measure and monitor

Dasymeric map: a thematic map that leverages ancillary geospatial data to redraw borders of enumeration units, often at a finer spatial resolution, that better reflect the spatial distribution of the mapped phenomenon

Design: **1.** the process of planning, executing, and evaluating a map; **2.** individual decisions that a cartographer must make to represent the selected geospatial datasets visually; **3.** the final product of the cartographic design process

conceptual design: identification of the functional requirements of a map as informed by a needs assessment

inclusive design: design for the most marginalized users first, rather than an imagined “average” or “normal” audience

mobile-first design: design that is optimized for the technological constraints of mobile devices, which include small screen displays, reduced processing power and memory capacity, unreliable connectivity and reduced bandwidth, limited battery life, and multitouch interaction

responsive design: the design logic for changing the layout, content, and styling of digital maps between mobile and non-mobile devices

user-centred design: a design process that seeks feedback early and often from the intended audience

Diagram: a representation of non-geographic attribute and temporal data patterns

Digital divide: the divide between those who have access to the internet and its underlying computer technology and those who do not

Dimensionality: the minimum number of coordinates needed to specify an object's location

Direct manipulation: a visual interface style supporting probing, dragging, or adjusting of graphics through clicking (for non-mobile) or tapping (for mobile)

Displace: an adjustment to the location of a feature to avoid coalescence with adjacent features

Donut chart: a modified pie chart that removes the centre, emphasizing the relative size of the donut slice over the shape of the subdivisions

Dot density map: a thematic map using the composite visual variable numerosness to adjust the density of dots placed within enumeration units by their attribute values

Dot map: a nominal map in which each dot on the map corresponds to a single place

Dumbbell chart: a pairwise or temporal diagram depicting a pair of sub-categories or time stamps as a single-size interval

Dynamic slideshows: a visual storytelling genre that enforces continuity through the order of slides

Ecological fallacy: the same individual-level data enumerated at different boundary resolutions (i.e., geographic scales) results in different statistical relationships in the enumerated attributes

Efficiency: the speed a user can complete desired tasks with the map after learning how to use it

Endonym: a toponym originating from within the named place

Enhance: the addition of symbol embellishments around or within existing symbols to maintain or clarify relationships among symbols. This is a **generalization operator**

Entry point: the first click or tap upon entering an interactive map

Enumeration unit: a pre-defined space within which an individual-level attribute is aggregated or counted

Environment: the medium on and setting in which the map is used

Equalizing variable: an attribute that statistically or visually normalizes the variable of interest

Equator: the zero reference for north-south notations of latitude

Error frequency: the amount of mistakes users make with a map

Error recovery: the ease that users correct mistakes

Exaggerate: an amplification of a portion of the map feature to emphasize a characteristic aspect of it when changing cartographic scale. This is a generalization operator

Exonym: a toponym originating from outside of the named place

Exploration: specialized use of interactive maps and diagrams to generate previously unknown insights into geographic phenomena and processes

Extrinsic map: the representation of multiple attributes, data with its uncertainty, or a time series as separate data layers

Figure: the map features that rise to the foreground in the visual hierarchy

Filter: an interactive reduction of depicted map features by given criteria

Flow map: a thematic map of linear features that symbolizes attribute relationships between places rather than attribute values at places

Fly-through: an animation that changes the viewpoint perspective to the map

Form: the variable aspects of the geospatial linework, including its generalized detail and line weights, caps and joint styles, and tapering

Form fill-in: a visual interface style supporting the keying of characters to indicate parameters of the interaction

Frame: a single visual instance within an animation sequence

Free and Open Source Software (FOSS): the movement underpinning open web standards and popular web mapping libraries to democratize data collection and distribution, improve access to digital technologies, promote knowledge production and sharing, and encourage transparent governance to strengthen accountability, all ultimately to address persistent inequities within society

Functional requirements: the planned map features broken down by datasets, representation techniques, and interaction operators

General users: the public at large

Generalization: the process of meaningfully removing detail from the map to support the map's purpose, audience, and use environment

Generalization operator: a generic modification to map design made to reduce complexity and maintain legibility when changing cartographic scale

Geographic coordinates: absolute (X,Y) locations based on the Earth's geometry and measured in degrees latitude and longitude

Geographic scale: the size and extent of a geographic phenomenon

large geographic scale: national-level geographic phenomenon in coarser detail

small geographic scale: local-level geographic phenomenon in finer detail

Geospatial data: data describing aspects of the natural and built environments with the components of location, attribute(s), and time

exclusionary geographic data: data that defines locations where the mapped phenomenon cannot exist

inclusionary geographic data: data that defines locations where the mapped phenomenon can exist, often in different amounts

Geovisual analytics: the use of visual interfaces to computational processes in support of exploration and analysis

Global indicator framework: a framework for reporting the SDGs at global, regional, national, and local levels comprising 17 goals, 169 targets, and 231 indicators as of April 2020

Global Positioning System (GPS): the geospatial navigational system using satellite signals to capture location information in three-dimensions on the Earth's surface

Graduated symbol map: a proportional symbol map that has been classified or range-graded

Graphic association: a clear connection between map feature and label

Graticule: a network of latitude and longitude intervals that can be projected in the map as an indication of north

Gratis: open access products that are free of cost

Grid: a network of regular columns and/or rows to organize layout

Ground: the map features that recede to the background in the visual hierarchy

Gutter: a gap in the layout

Histogram: a univariate diagram that bins numerical data into mutually exclusive and exhaustive classes

Hypertext Markup Language (HTML): an open web standard used to structure the content of a web document

Icon: a map symbol that resembles prominent visual characteristics associated with the mapped category

Index: a relative attribute created from multiple values belonging to multiple attributes using a formula

Indicator: datasets used to measure and monitor progress towards each target, to inform policy, and to ensure accountability of all stakeholders, 231 in total as of April 2020

Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs): the group facilitated by the United Nations that is responsible for uniting the global community to develop and implement the global indicator framework

Interaction: a conversation or series of question-and-answer sequences between the user and map mediated by digital computing technology

Interactive map: a map that enables interaction

Interaction operator: generic interactive functionality that enables users to manipulate the map display

Interface: a digital tool used to manipulate onscreen elements

Internet: a series of interconnected computer networks that facilitate the transfer of files

Interrelatedness: the dependence of the data on the quality of other datasets

Interruption: a slice in the projection to reduce local distortions in each resulting map lobe

Intrinsic map: the representation of multiple attributes, data with its uncertainty, or a time series as a single data layer by modifying the applied symbolization

Interruption: a slice in the projection to reduce local distortions in each resulting map lobe

Isoline map: a thematic map that interpolates between sampled attribute values, using the visual variable location to represent the interpolated attribute gradient as a new geospatial data layer

JavaScript: a scripting language used to add interactive behaviours to elements in a web document

JavaScript Object Notation (JSON): an open web file format with GeoJSON and TopoJSON as geospatial variants

Label: map text

Latitude: location measured in degrees north and south of the equator

Layout: the placement of map elements on the map page or screen

Learnability: the ease with which a map is used for the first time

Legend: a description of each kind of symbol included in the map

Levels of measurement: the data scales on which attributes are collected or transformed

interval-level data: attribute data that is quantitative, but the zero value is arbitrary and, thus, limits estimation of relative magnitudes

nominal-level data: attribute data that is unranked categories

ordinal-level data: attribute data that is non-numerical and ranked

ratio-level data: attribute data that is quantitative values with a fixed zero

Libre: open access products free to use, modify, and redistribute

Line chart: a temporal diagram that weaves a line trace through multiple time stamps or periods of a single attribute

Line: an unenclosed set of nodes and arcs in a vector data model

Lineage: the data transformation process

Location: 1. the *where* of geospatial data

absolute location: spatial coordinates in a pre-defined reference system

relative location: directions from an arbitrary landmark or other location

Location-based services: web services that customize maps and information to the user's current location

Lollipop chart: a variant of the bar chart or histogram that uses a more minimal line anchored with a point symbol at the data value, taking up less overall space in the layout

Longform infographics: a visual storytelling genre that enforces continuity through vertical reading and browser scrolling

Longitude: location measured in degrees east and west of the prime meridian

M49 code: a three-digit numerical coding system for polygonal geographic regions used for statistical processing by the Statistics Division of the United Nations

M49 country: a sovereign political and territorial entity acknowledged in the M49 standard

M49 intermediate region: a division of a sub-region in the M49 standard for statistical purposes

M49 region: a major continental region in the M49 standard

M49 standard: a multi-level, global set of region, sub-region, and intermediate region groupings identified by the M49 codes

M49 sub-regions: a division of a continental region in the M49 standard for statistical purposes

Map: an abstracted and authored (often) visual representation of geographic phenomena or processes

Map element: an item placed in the map layout such as the title, legend, indications of scale and north, the map itself, and other text and annotation

Marimekko chart: a variant of a stacked bar chart that normalizes bar widths to compare both relative percentages and absolute totals

Mathematical scaling: proportional symbol scaling directly relating the area of the symbol to the attribute value

Mean: the sum of all values divided by total observations

Median: the middle observation when ordered

Memorability: the speed users can regain proficiency with the map after an extended period without use

Menu selection: a visual interface style supporting selection of one or more options from a visual list

Merge: a combination of multiple features into one feature while maintaining dimensionality. This is a **generalization operator**

Meridian: a line of equal longitude, produced by a plane passing through the North and South Poles

central meridian: the longitude along which the map surface of a projection is focused

prime meridian: the zero reference at Greenwich, United Kingdom, for east-west notations of longitude

Missing data: the absence of an attribute value for a particular location and year

Mobile device: a mobile or handheld portable computing system such as a smartphone, smartwatch, or tablet

Mobile map: a map accessed on a mobile device

Mode: the most common value

Modifiable areal unit problem (MAUP): a mapping issue in which the same individual-level data when enumerated to different sets of polygonal boundaries results in different visual patterns in the map

Multimedia visual experiences: a visual storytelling genre that enforces continuity through anchor tags and hyperlinks

Multivariate: a map or diagram depicting three or more attributes

Narrated animations: a visual storytelling genre that enforces continuity through the progression of display time

Narrative: the structure and presentation of story content shaping its meaning

three-act narrative: a narrative arc presented in three parts including the set-up, conflict, and resolution

Needs assessment: a study of user needs at the beginning of user-centred design to define intended user personas and use case scenarios

Negative space: unused layout space created by the shape of the mapped area and gaps between other

map elements

Nominal-level data

Nominal map: a thematic map that depicts categorical data and thus relies on unordered visual variables

Non-contiguous cartogram

Non-functional requirements: considerations for maps other than datasets, representation techniques, and interaction operators, which includes usability and accessibility

Non-temporal animation

Normal aspect

Normalization: the conversion of absolute attributes to relative attributes to mask privacy of individual-level data and to ensure visual comparability of enumerated data across enumeration units of varying arrangement, shape, and size

Numerical data: interval- and ratio-level data together

Numerousness: A composite visual variable including arrangement and size

Oblique aspect

Open access: products that are freely available for anyone to use or modify

Optimal breaks classification scheme

Ordered visual variable

Ordinal-level data

Orientation: the rotation of the symbol

Overlay: an interactive addition or removal of data layers atop the basemap or underlay of different basemaps

Overprinting: the overlap of labels on features or labels on labels

Pan: an interactive change to the projection centring

Parallel: a line of equal latitude, produced by a plane intersecting the globe parallel to or at the equator

Parallel coordinate plot: a multivariate diagram extending the spatial metaphor of a scatterplot to align three or more coordinate frames in a linear rather than orthogonal (right angle) layout

Perceptual scaling: proportional symbol scaling that accounts for systematic underestimation of 2D and 3D dimensions as symbols grow larger

Personalized story maps: a visual storytelling genre that enforces continuity through the order of user contributions (older first)

Pictorial unit chart: a variant of the unit chart that modifies the regular grid of the unit chart by stacking iconic point symbols

Pie chart: a comparative diagram showing relative proportions as slices in a circular pie

Planar projections

Point: a single node in a vector data model

Polygon: an enclosed set of nodes and arcs in a vector data model

Precision: the exactness of the data

Presentation: the effective and efficient visual communication from cartographer to a wider audience following cartographic design recommendations, resulting in a single map

Prime meridian

Project plan: the series of steps from conceptualization to final delivery during cartographic design

Projection: the process of transferring geospatial data from a three-dimensional model of the Earth to a two-dimensional or “flat” map

azimuthal projection: a projection that preserves directions from a single point to all other points on the map

compromise projection: a projection that balances distortion across all map properties

conformal projection: a projection that preserves angular relationships at local points, distorting areas at smaller cartographic scales

conic projection: a projection that wraps the map surface around one hemisphere of the globe, resulting in a semi-circular graticule

cylindrical projection: a projection that wraps the map surface completely around the globe, with the unfurled surface resulting in a rectangular graticule

equal-area / equivalent projection: a projection that preserves the relative areas of polygon features, often heavily distorting shape as a result

equidistant projection: a projection that preserves distance from one or two specific locations to all other locations on the map

planar projection: a projection that places the map surface on the globe, resulting in a circular graticule

secant projection: a projection that slices the globe with the map surface, producing two standard lines for conic and cylindrical projections and one standard line for planar projections

tangent projection: a projection that touches the map surface to the globe, producing one standard line for conic and cylindrical projections and one standard point for planar projections

Proportion: a relative attribute created from two values belonging to the same attribute

Proportional symbol map: a thematic map that uses the visual variable size to scale point symbols by their attribute values

Prototyping: the translation of functional requirements to rough proofs-of-concepts that propose alternative visual designs

Purpose: the overall goal in producing the map

Qualitative data

Qualitative colour scheme

Quantile classification scheme

Quantitative data

Quantitative visual variable

Radar chart: a multivariate diagram that arranges three or more coordinates circularly rather than linearly in the parallel coordinate plot, with a common base or zero coordinate. Also called a **Star plot**

Rainbow colour scheme

Range grading: the classification of proportional symbols, with the resulting map described as a graduated symbol map

Rate: a relative attribute created from two values belonging to two different attributes

Ratio-level data

Reexpress: an interactive change to a different thematic map type or diagram using the same data

Relative attribute

Relative location

Relative time

Representation: a thing (e.g., a map or diagram) that stands for another thing (e.g., real-world geographic phenomena and processes)

Representative fraction: a numerical indication of cartographic scale comprising the fraction between measurements in the map and the real-world

Reproject: an interactive change to the map projection distortions

Resolution: **1.** the level of detail of the symbol; **2.** the end of the three-act narrative containing the climatic issue facing the characters and one or several solutions for the narrative

Responsive design

Resymbolize: **1.** the visual styling of selected map features when changing cartographic scale; **2.** an interactive change to the design parameters of the map, such as the classification or colour scheme

Retrieve: an interactive acquisition of additional details on-demand for specific map features of interest

RGB: an additive colour model (*Red, Green, and Blue*) used for designing digital maps and diagrams that emit light

Sans serif typeface: a typeface without serif embellishments that evoke the clean lines of the built environment

Scalable vector graphics (SVG): an open image format for drawing vector data

Scale

Scale bar: a graphic indication of cartographic scale using a line to show a benchmark distance

Scatterplot: a bivariate diagram depicting data elements as point coordinates in a two-dimensional statistical space

Screen real estate: the proportion of the onscreen layout dedicated to the map, interface controls, etc.

Search: an interactive identification of specific map features of interest

Secant projection

Selection: the retention or removal of map features. This is a **generalization operator**

Separable bivariate map

Sequence: an interactive progression through an ordered set of maps, as with an animation

Sequential colour scheme

Serif typeface: a typeface with serif embellishments that mimic handwriting and the uneven edges of the natural environment

Server-side technologies: web technologies used to store data, including geospatial datasets

Set-up: the beginning of the three-act narrative containing background context such as the setting and key

characters

Shape: the external form of the symbol

Simplify: a reduction to the number of nodes that constitute a feature. This is a **generalization operator**

Simultaneous contrast: a visual phenomenon in which the appearance of one colour in the map may shift based on surrounding colours

Size: the amount of space occupied by the symbol

Slippy web map

Slope chart: a pairwise or temporal diagram that modifies the dumbbell chart to include an emergent orientation visual cue, suggesting an increase or decrease instead of a difference

Small cartographic scale

Small geographic scale

Small multiples

Smooth: a removal of small, jagged variations in the nodes and arcs. This is a **generalization operator**

Sorted stream graph

Spatial autocorrelation: near locations are more likely to be similar in attribute and time than distant locations

Specialist user: a cartographer, statistician, and other stakeholder with motivation, expertise, and interest relevant to the mapping context

Spectral colour scheme

Spread: a two-page layout for folded printing

Stacked area chart: a variant of the line chart that adds quantities on top of one another to combine towards the overall total

Stacked bar chart: a comparative variant of the bar chart that divides a bar chart to show relative contributions to the total from sub-categories

Standard Country or Area Codes for Statistical Use

Standard Line: a line in a projection where the map surface and globe conceptually touch or intersect and, therefore, a line on the project map where geographic scale is accurate

Standard Point: a point in the projection where the map surface and globe conceptually touch, only found on tangent planar projections

Star plot

Static visual stories: a visual storytelling genre that enforces continuity through layout partitioning and annotation

Story: information about specific events, places, and people combined into a narrative

Story map: a cartographic representation that exhibits narrative elements

Storytelling: a method of documenting or explaining a sequence of events

visual storytelling: a story communicated through maps, graphics, images, and videos along with other forms of oral, written, and audio storytelling

Strategic dashboard

Stream graph: a temporal diagram that resizes a “stream” or conceptual line symbol, with thickness of the line symbol encoding the data value at a given time stamp or interval

sorted stream graph: a variant of the stream graph that reorders line symbols vertically across the diagram so that the largest value always is at the top of the diagram

Subject: the *who, what, when, and where*, or the spatiotemporal context, for the map

Subjective satisfaction: the degree users like the map

Subjectivity: the degree of human interpretation during the data transformation process

Sustainable Development Goals (SDGs): the overarching blueprint to achieve a better and more sustainable future for all and to address global challenges, adopted in 2015 by the Member States of the United Nations

Symbolization: the graphic encoding of data in a map or diagram

Synthesis: the combination of evidence and findings from exploration and analysis to support subsequent presentation for visual communication

Tangent projection: see **Projection**

Target: the real and actionable outcomes for reaching the SDGs, 169 in total as of April 2020

Temporal animation

Temporal scale: the ratio between display time and real-world time

Texture: the coarseness of graphic marks in the symbol

Thematic map: a map that depicts the variation of one or sometimes several geographic phenomena

Three-act narrative

Tier: a classification of indicator data by the IAEG-SDGs based on methodological consistency in collection and global data availability

Tier I: an indicator that is conceptually clear, has an internationally established methodology, and standards are available; data are regularly produced by countries for at least 50 per cent of countries and 50 per cent of the population in every region where the indicator is relevant

Tier II: an indicator that is conceptually clear, has an internationally established methodology, and standards are available, but data are not regularly produced by countries

Tier Pending: an indicator that is awaiting a data availability review

Time: the *when* an event occurred at the specified location or *when* the data was collected

absolute time: time measured by calendars and clocks

cyclical time: sequences of events that repeat in perpetuity

linear time: events proceeding in a regular succession without repetition

relative time: an event or period described in comparison to others

Time series: geospatial data on the same attribute collected recurrently over a regular time stamp or time interval

Toponym: a geographic place name

Toponymy: the study of place names, their origins, meanings, and uses

Transition: the transfer and debugging of the final map release with target audiences in the intended map use environment

Transliteration: the conversion of toponyms to alternative languages and alphabets for global identification

Transparency: the graphic blending among symbol

Transverse aspect

Trustworthiness: the confidence in the data

Typography: the styling and placement of text

Uncertainty: the gap between the reality represented in the map and the understanding the audience derives from the map

Unit chart: a variant of the bar chart or histogram that adds the design embellishment of a regular grid to

enable counting of exact frequencies and easier comparison of distant bars

United Nations Group of Experts on Geographical Names (UNGEGN): a group that assists national place-name efforts and facilitates discussion of best practices on toponymy

Univariate: a map or diagram depicting one attribute

Unordered visual variable

Usability: the ease of using a product, map or otherwise

User experience: the process that leads to a successful and satisfying outcome for the map user

User-centred design

Utility: the usefulness of the product, map or otherwise, for its intended purpose

Variable of interest: the attribute that is statistically or visually normalized by the equalizing variable)

Vector data model: a data model describing locations as nodes comprising pairwise (X,Y) coordinates and arcs connecting nodes to form of points, lines, polygons, and volumes

Verbal statement: a plain language indication of cartographic scale that makes the relationship conceptually easier to understand

Visual affordances: the visual signals to the user about how to interact with the provided controls

Visual art: visual creative works that help humans share experiences of the world, promote empathy and compassion about uneven social and environmental conditions, and inform policy and politics for forging a sustainable future

Visual culture: visual cultural artefacts that reflect humanity's interests and values, confront its failures and prejudices, and reveal potential alternatives and opportunities

Visual feedback: the visual signals about what happened as a result of the interaction

Visual hierarchy: the order that map elements are perceived visually

Visual impairment: limitations in visual abilities including individuals who are low-sighted and require corrected vision, are colour vision deficient ("colour-blind"), or are non-sighted (i.e., blind)

Visual metaphor: a visual representation that evokes characteristics of the mapped phenomenon not explicitly expressed within the data

Visual storytelling

Visual storytelling genre: a category of visual stories, characterized by a specific way of enforcing continu-

ity across a narrative arc

Visual style: a cohesive set of design characteristics and qualities that reinforce the purpose of the map

Visual variable: a way that a symbol can be modified to convey information

ordered visual variable: a visual variable with an apparent ranking, including colour value, colour saturation, transparency, crispness, and resolution

quantitative visual variable: a visual variable with an apparent magnitude, including location and size

unordered visual variable: a visual variable without an apparent ranking, including shape, orientation, arrangement, texture, and colour hue

Volume: an enclosed, three-dimensional object in a vector data model

Waffle chart: a comparative diagram that infills a ten-by-ten-square grid, with each cell representing one per cent

Web

Web map: a map shared over the internet and rendered in a web browser

slippy web map: a tile-based web map that includes panning and zooming

Web stack: a compilation of multiple, specialized web tools and techniques for developing and hosting web maps

Working Group on Geospatial Information (WG-GI): a subgroup of the IAEG-SDGs that informs how geospatial data can contribute to SDG indicator development and improve national and sub-national reporting

World Wide Web: the interconnected documents shared over the internet and rendered in a web browser

Zero: the absence of a phenomenon within an enumeration unit

Zone of aggregation: the arrangement and shape of the polygonal boundaries used for enumerating individual-level data

Zoom: an interactive change to the cartographic scale