

Data planning, monitoring, & evaluation for cultural tourism

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Summary of previous session

Thinking about goals for pilot study...

- What is our unique selling point(s)?
- What tourist segments do we want to attract? Why?
- What are potential benefits and losses to our local community?
- What key performance indicators could be set up?

Potential concerns of pilot studies

- Why should we collect data?
- What will we use the data for?
- What data should we collect?
- How do we collect this data?
- How should we analyse it?
- How do we measure progress?
- **How can we show the value of the pilot projects to ensure their continued success after INCULTUM?**

Role of data in cultural tourism projects

Data planning as a part of project planning

	Stage	Actions
What data should we collect?	Pre-planning	Scope local tourism situation
How do we collect it?		
How should we analyse it?		
How do we measure progress?		
	Planning	Determine project goals, objectives, targets, actions, indicators
	Monitoring	Continuous tracking and measurement of progress Compare against what was planned
What will we use the data for?		
	Evaluation	Systematic review of performance Determine whether goals and objectives were met

Sources: [IOM Monitoring and Evaluation Guidelines](#) and [Tourism Guidebook for Local Governmental Units](#)

Stages of tourism planning

Stage	Steps	Ask yourself...
Pre-planning	Analyse the situation	What is the tourism situation at your pilot site / the wider region like now? How does the offering at your pilot site fit into the tourism offering in the wider region?
	Formulate goals and objectives	What do you want to achieve for tourism in the future? When do you want to achieve this?
Planning	Develop strategies	How will you get from the situation you are at now to where you want to be in the future?
	Identify policies, programs, projects and activities	What specific actions will you take to implement your strategies?
	Develop a monitoring and evaluation strategy	How will you measure progress?

Source: [Tourism Guidebook for Local Governmental Units](#), Table 1

Stages of tourism planning

Stage	Steps	Ask yourself...
Monitoring	Continuously track and measure progress	<p>Are the activities leading to the expected outputs?</p> <p>Are activities being implemented on schedule and within budget?</p> <p>What is causing delays or unexpected results?</p> <p>Is anything happened that should lead management to modify the implementation plan?</p> <p>How do stakeholders feel about the pilot?</p>
Evaluation	<p>Systematically review performance</p> <p>Determine if goals and objectives were met</p>	<p>Have the aims / objectives been achieved?</p> <p>How well were resources (time, money, staff) used?</p> <p>Are benefits associated with pilot project likely to last?</p> <p>Are the pilot project aims / objectives / actions responding to the needs of the local community?</p> <p>How well do the project actions fit the needs of the wider region, sector, country?</p>

Source: IOM Monitoring and Evaluation Guidelines

Data collection in project pre-planning

Develop profile of local tourism industry

- Tourism resources and assets
 - **List of attractions:** attraction name, type of attraction, location, activities available
 - **List of facilities:** transportation, accommodation, restaurants and dining, banks and forex
- Institutional elements
 - **List of stakeholders:** name of individual / organisation, type of stakeholder, role in local tourism, main contact / organisation head, contact information
 - **Overview of local tourism sector:** secondary data on labour force by tourism sector, tourism revenue, number of visitors, etc
 - **Local government capacity:** training, seminars, workshops, etc. related to tourism
 - **Infrastructure:** Condition and availability of modes of transportation to tourist site, visitor information centres, rest areas with bathrooms, signage and information points
- Tourist concerns
 - e.g., Lack of public transportation, disability access, language / communication barriers, theft / pickpocketing, hazards (flooding, wildfire)

Develop profile of tourists / visitors

- Visitor demographics
 - Age, gender, where are they from (local vs national vs international)
 - Who are they travelling with, how many people are travelling together, type of group (couple, family, school group)
- Characteristics of stay
 - Length of stay, do they stay overnight, do they travel as part of a package tour, do they visit other attractions, what is their estimated spending
- Site discovery
 - How did they hear about the site, what resources did they use to explore / learn before visiting
- Site-level information may not be available for sites that are still under development
 - Can profile visitors to wider area or region
 - Will be attracting new tourist segment(s) or draw part of existing tourist segment(s)

Data scoping in project planning

Steps of project planning

1. Set clear aim /goals
 - What you want to achieve in long term?
 - Can these aims be accomplished alone or do you need to work with partners?
2. Determine objectives
 - What you want to achieve in medium to short term?
 - SMART criteria
 - ▶ Specific – Explicitly states who, what, where, how
 - ▶ Measurable – Can be counted, observed, analysed, tested
 - ▶ Attainable – Specifies the amount or level that needs to be reached
 - ▶ Relevant – Is a valid measure of the expected outcome or result
 - ▶ Time-bound – Specifies a time frame for when the result or outcome should be achieved
3. Decide actions
 - Specific actions you will take to achieve aims and objectives
 - Include policies, programs, projects, activities done at site-level

Steps of project planning

4. Establish targets

- What *specifically* do you want to achieve? When will it be achieved?
- Should be definitive statements or specific values

5. Determine baseline

- Collect historical data for previous 3-5 years to understand current levels and recent trends
- Use to reflect on objectives, actions, targets (revise if needed)

6. Scenario planning

- Plan for 3-5 realistic positive and negative scenarios
- Include "continue as is" / "do nothing" scenario

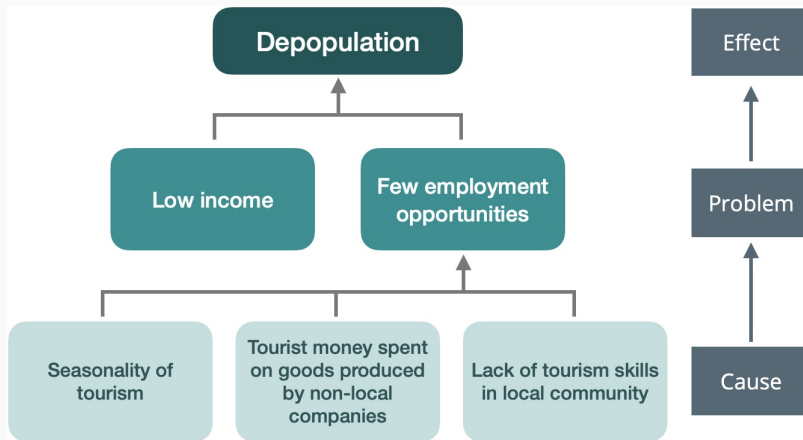
7. Develop monitoring and evaluation strategy

- Determine logistics of monitoring and evaluation

Barriers to effective project planning

- Biggest challenges:
 - Setting too many aims
 - Aims are not well defined / are too broad
 - Aims are not achievable in time frame
- Example from pilot studies: *Aim to reverse depopulation in locality*
- Problem of depopulation is too big, outside the scope of INCULTUM
 - Solution requires wider policy changes involving multiple actors
 - Not likely to be accomplished in INCULTUM time frame
 - Depopulation is an effect caused by multiple underlying problems
- Problem tree analysis can be helpful in these cases
 - Map out problem, causes, and effects
 - Break problem into smaller, well-defined parts
 - Aim to understand relevant stakeholders and processes involved, prioritise issues, define objectives, determine resources needed

Problem tree analysis



Using problem tree analysis to define goals

Problem: Few local employment opportunities



Goal: Increase local employment opportunities

Causes



Objectives

Objective	Action(s)	Indicator(s)	Target(s)
Improve tourism skills in local community	Offer a 4-week course on how to be tour guide	Number of trained tour guides	50% increase from 2020 baseline by 2024
		Number of training events	At least 4 events per year
Increase number of tourism-related businesses owned by local community	Offer workshop on how to produce local handicrafts	Number of educational events	At least 6 events per year
	Co-host workshop on starting a business	Number of educational events	At least 1 event per year

Examples from pilot studies

If aims / objectives / actions include...	Indicator(s) could include...
Developing tools for students	Age of visitor (age 5-18) Type of visitor (family, school group)
Increasing community engagement	Number of local volunteers Number of locals on mailings list
Promoting traditional practices / history / culture	Number of training workshops for locals Number of educational workshops for tourists
Promoting local products	Number of local farmers / businesses / others in partnership programme Number of promotional events Number of platforms ads are placed on
Developing a new digital tool	Number of downloads from app store Number of visits on website Number of active online users

Data collection and management

Monitoring and evaluation strategy

- The plan for data collection and management is outlined in the monitoring and evaluation (M&E) strategy
- M&E strategy should include:
 - Professional standards and ethical guidelines for monitoring and evaluation
 - ▶ Data protection and confidentiality, standards of conduct for staff, DI&E considerations
 - Methods, approaches, and tools for monitoring and evaluation
 - How data will be collected and managed
 - How data will be analysed
 - How findings will be presented
- These decisions should be made in planning stage
 - Do not collect data and then ask what you will do with it

Key considerations for data collection

- Purpose of data collection
 - What are objectives, activities, outcomes, etc. being measured?
 - Prioritise! Data needs vs data wants
 - Academic use vs practical use
- Methods of data collection
 - What type of data is needed? What data already exists? What data is missing?
 - Are the methods used to collect data valid and reliable?
- Resources for data collection
 - Who is responsible for collecting the data?
 - What are the additional costs for data collection?
- Timing of data collection
 - At what stages will data be collected? With what frequency?
 - How long is data collection expected to last?

Data management best practices

- Provide clear, detailed instructions for data collection
- Keep track of metadata in codebook
 - Contents, structure, layout of dataset, variable names, acronyms, definitions
 - Source, date of collection, hyperlink (if relevant), license
 - Data creator(s) / author(s), funding sources, other acknowledgements
 - Notes on processes used to generate data
- Use clear organisational system
 - Use a clear file structure
 - Develop file-naming conventions
- Save frequently, automate saving (if possible)
- Use a file versioning system
- Always keep a backup of raw data

Data management best practices

- Only include data in a data file
 - Figures and analysis should be done in a separate file
 - Be cautious about creating links between Excel files
- Keep datasets relatively small and easily manageable
 - Split large datasets into smaller, logical parts
 - Use data normalisation to avoid unnecessary repetition
 - Consider using a relational database
- Only include one data table per sheet
- Only use first row for column headings
 - See Appendix for reference vs presentation tables
- Be aware of common Excel errors
- Store in open format (e.g., CSV) for long-term access

Data clean-up: Errors in data

- Diagnosing errors
 - Identify suspicious data –data may be missing, extreme but plausible value, or an error
 - Double-check data, have a second person review (if possible)
 - Do random spot-checks for mistakes
 - Create summary tables (e.g., min, max, mean) and visualisations to check
 - Determine magnitude and source of error
- Treating errors
 - Do nothing: Most conservative option, good for big data with few errors
 - Correct the data: Only modify if correct answer or intention is obvious
 - Delete the data: May be a valid option if errors are not systematic, be careful of "cherry-picking", be transparent about exclusion criteria when discussing data
 - Re-measure: Ask again if time and resource allow

Data clean-up: Missing values

- Assess scale and scope of missing values
- Identify reason for missing value (if possible)
 - Was an option not available?
 - Did the respondent choose not to answer?
 - Good practice to include "I don't know", "I don't want to answer", "Not applicable", etc. as options
- Determine if missing data can be imputed based on other available information
- Determine whether certain observations or variables should be excluded from analysis
- Determine if data is missing at random or systematically
 - If systematic, must consider implications / potential bias

Other considerations: Respondent bias

- **Selection bias:** Certain groups may systematically agree or disagree to participate
- **Non-response bias:** Respondent refuses to or is not able to respond
- **Attrition bias:** Respondents drop out of a study mid-way through
- **Acquiescence bias:** Respondents have tendency to respond positively
- **Social desirability bias:** Respondents tend to give what they think is the socially acceptable answer
- **Anchoring bias:** Respondent's answer is influenced by a reference point
- **Recall bias:** Respondents may have difficulty remembering certain information

Other considerations: Researcher bias

- **Question-order bias:** The sequence of questions may influence the response
- **Leading questions / wording bias:** Wording may nudge the respondent to a particular answer
- **Confirmation bias:** Researcher focuses on information that reinforces or confirms their hypothesis / beliefs

Conclusion

Summary of presentation

- Why data is important in cultural tourism projects
- How data can be used in project pre-planning, planning, and M&E stages
- How to think about local problems and turn them into project aims / objectives
- How to develop indicators based on well-defined objectives and actions
- Overview of monitoring and evaluation strategy
- Data collection and management best practices

Any questions?

Sources and other resources

Sources and other resources

- Tourism Guidebook for Local Governmental Units
- IOM Monitoring and Evaluation Guidelines
- UNDP Handbook on Planning, Monitoring and Evaluating for Development Results
- UN Making Data Meaningful Series

Appendix

Summarising data with tables

Two main types of tables

- Presentation (demonstration) tables
 - Smaller tables that highlight key figures, support analysis
 - Concise and well-organised
 - Designed to be understood within or outside the original context
- Reference tables
 - Larger tables that present detailed data, exact values
 - Designed to serve as a reference tool rather than support/presentation tool
 - Used less frequently in academic writing (often give reference to online database rather than providing the entire dataset)

Source: [UNECE "Making Data Meaningful" Series](#)

Main components of tables

- **Table title** -- should give clear, accurate description of data
- **Column headers** -- should identify data presented in each column of the table and relevant metadata
- **Row stubs** -- should identify data presented in each row
- **Footnotes** -- should provide additional information needed to understand, interpret, and use the data
- **Source line** -- should provide the source of the data, including the organisation that produced the data and the data collection method (e.g., population census)

Source: [UNECE "Making Data Meaningful" Series](#)

Main components of tables

Table title	
Row stubs	Column headers
	Data
Footnotes	
Source	

Source: [UNECE "Making Data Meaningful" Series](#)

Guidelines for tables

- Avoid unnecessary text
- Display data using some standard classification (chronologically, alphabetically)
- Use a minimum of decimal places
- Use a thousand / million separator
 - If the work will be available in multiple languages, consider using a space instead of a symbol to avoid having to change , and .
- Align the numbers on the decimal point
 - Only centre align if all numbers are of the same magnitude
- Do not leave any data cell empty
 - Identify missing values as “not available” or “not applicable”, define any abbreviations

Source: [UNECE "Making Data Meaningful" Series](#)

Example 1: Bad table design

Final energy consumption by sector - Percentages

	1980	1985	1990	1995	2000	2002	2003
Transport	27.81	27.92	28.24	31.12	36.82	39.48	39.13
Residential	31.11	33.91	30.41	27.61	24.33	23.71	23.97
Industry	31.47	27.21	23.86	22.11	21.41	19.53	18.78
Agriculture	n/a	n/a	3.51	3.7	3.11	2.91	2.82
Services	9.61	10.96	13.98	15.46	14.33	14.37	15.3
Total	100	100	100	100	100	100	100

- No geographic area OR data source indicated
- Values are centred rather than right-aligned
- 2 decimal places is too many in this context
- All values should have the same number of decimal places
- "n/a" is not defined
- Grey shading and lines between each row and column do not help understand data
- Table is unnecessarily spread across the page

Source: [UNECE "Making Data Meaningful" Series](#)

Example 2: Good table design

Share of total energy consumption, by sector (in percent)

Ireland, 1980-2003

	1980	1985	1990	2000	1995	2002	2003
Transport	27.8	27.9	28.2	31.1	36.8	39.5	39.1
Residential	31.1	33.9	30.4	27.6	24.3	23.7	24.0
Industry	31.5	27.2	23.9	22.1	21.4	19.5	18.8
Agriculture	n/a ¹	n/a ¹	3.5	3.7	3.1	2.9	2.8
Services	9.6	11.0	14.0	15.5	14.4	14.4	15.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Data on energy consumption for the agricultural sector was not collected until 1990.

Source: Department of Public Enterprise, Ireland

- Title and subtitle provide all the information we need to understand the data
- Data source is clearly identified
- All values are right-aligned and displayed with 1 decimal place
- All abbreviations are explained in the footnote
- Only use lines to separate different components of the table (header, data, footer)
- Table is not wider than needed to clearly display all headings and data

Source: [UNECE "Making Data Meaningful" Series](#)

Visualising data with charts

Data visualisation

- Use a chart if you want to illustrate:
 - Comparison – which is larger or smaller?
 - Changes over time – how does the trend evolve?
 - Frequency distribution – How is the data distributed?
 - Correlation – Are two variables linked?
 - Relative share of whole – How does one item compare to the total?
- 3 guidelines for designing a good charts:
 - Define the target audience – What do they know? What should they know?
 - Determine the message you want to communicate – What does the data show?
 - Determine the nature of your message – Comparison? Show trends? Analyse relationships?

Source: [UNECE "Making Data Meaningful" Series](#)

Main components of charts

- 3 categories of chart components:
 - Data components -- represent data (bars, lines, area, points)
 - Support components -- assist in understand data (title, legend, data labels, etc.)
 - Decorative components -- anything not related to the data
- Cannot include data components without the following support components:
 - Chart title -- informative (who, where, when) or descriptive (highlights main pattern or trend)
 - Axis titles (identify the unit of measure) and axis labels (identify the values displayed)
 - Gridlines
 - Legend and data labels
 - Footnote and data source

Source: [UNECE "Making Data Meaningful" Series](#)

Guidelines for charts

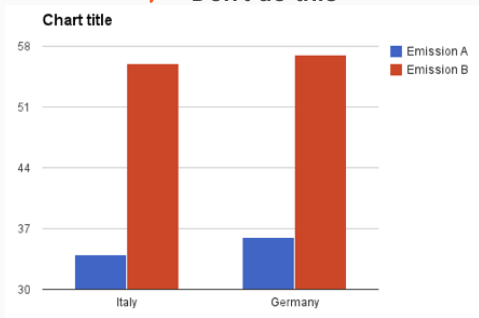
- Scale the axis to avoid distortion
- Use proper aspect ratio
- Use clear labels
- Use clear language
- Sort data for easier comparison
- Highlight what is important
- Be clear about "no data / missing data"
- Avoid misleading correlations
- Remove visual clutter
- Don't use 3D or blow apart effects
- Make it accessible
- Proofread

Source: [EEA "Charts Dos and Don'ts"](#)

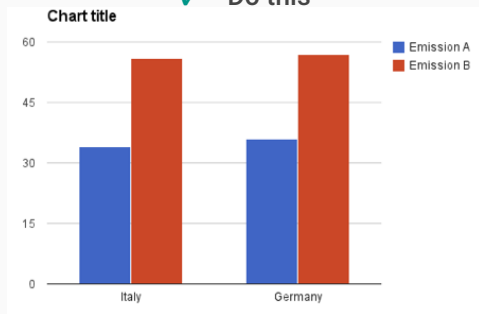
Scale the axis to avoid distortion

- Try to avoid truncating (cut off) the y-axis, as this will distort the data

✗ Don't do this



✓ Do this



Source: [EEA "Charts Dos and Don'ts"](#)

Scale the axis to avoid distortion

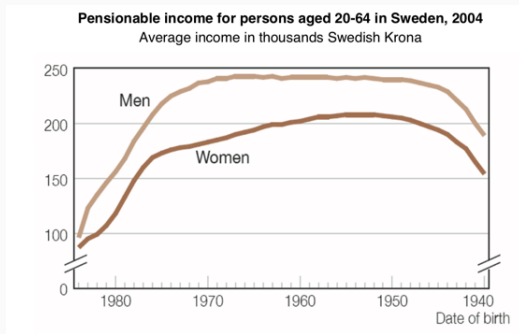
- If you need to show details that are not visible with the full axis, you can “break” the axis
 - Shows the small values in one section (below the break)
 - Another section show the large value (above the break)
- Limitation: not easy to compare large values and small values



Source: EEA "Charts Dos and Don'ts"

Scale the axis to avoid distortion

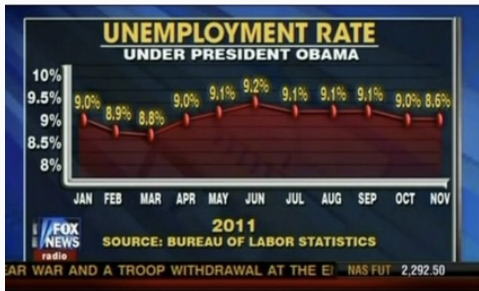
- In some circumstances, starting the y-axis at 0 will not allow the viewer to see small differences between large values
- If you do not start the y-axis at 0, this should be clearly indicated in your chart



Sources: EEA "Charts Dos and Don'ts" and UNECE "Making Data Meaningful" Series

Scale the axis to avoid distortion

- Real world examples of axis scales used to distort data



Drinking age will remain 19 in Saskatchewan

CBC News Posted: Mar 4, 2013 11:59 AM CST | Last Updated: Mar 4, 2013 11:55 AM CST 25



Canadian Centre on Substance Abuse

You have to be 19 in Saskatchewan to have a drink, while in Alberta and Manitoba, the drinking age is 18. (CBC)

The Saskatchewan Party government has ruled out lowering the drinking age, four months after party members put the issue in the public eye.

Sources: Business Insider "The 27 Worst Charts of All Time"

Use proper aspect ratio

- Use an aspect ratio that minimises dramatic slopes effects
- Rule of thumb: the slope of the line chart should be about 45 degrees unless important patterns are not visible at this aspect ratio

3 aspect ratios, 1 dataset



Source: EEA "Charts Dos and Don'ts"

Use clear labels

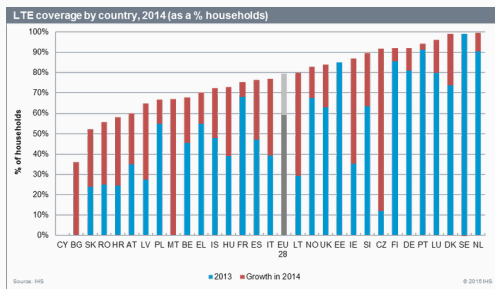
- Include a descriptive title
- Clearly label x-axis and y-axis with axis names and scale



Source: [Media Matters "The Worst Chart I've Seen All Day"](#)

Use clear language

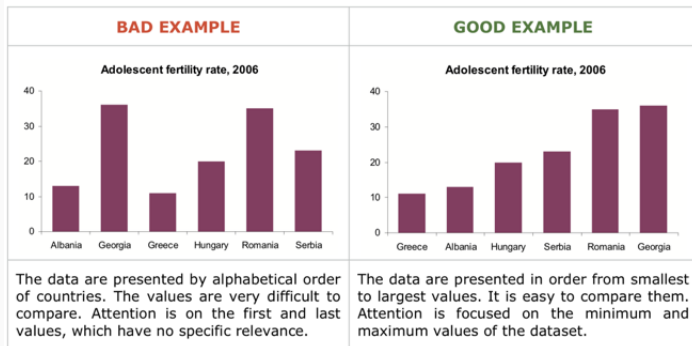
- Try to use a clear language in your chart title and descriptions
- Avoid acronyms unless they are well-known abbreviations or those your audience are familiar with



Sources: EEA "Charts Dos and Don'ts" and ZDNet "LTE Coverage by Country"

Sort data for easier comparison

- It is more important to give emphasis to the data itself than non-data attributes
- Sort the chart by the data attributes, rather than non-data attributes

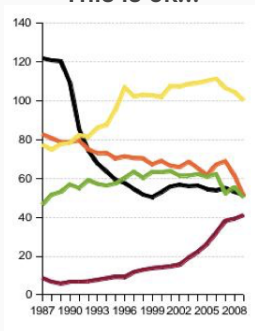


Sources: EEA "Charts Dos and Don'ts" and UNECE "Making Data Meaningful" Series

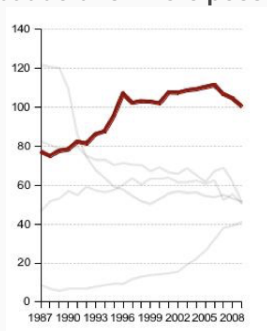
Highlight what is important

- It is possible to tell a lot of stories with a single line graph, so focus on telling one story
- If possible, highlight one or two important lines in the chart and keep the others as context in the background

This is ok...



...but do this where possible



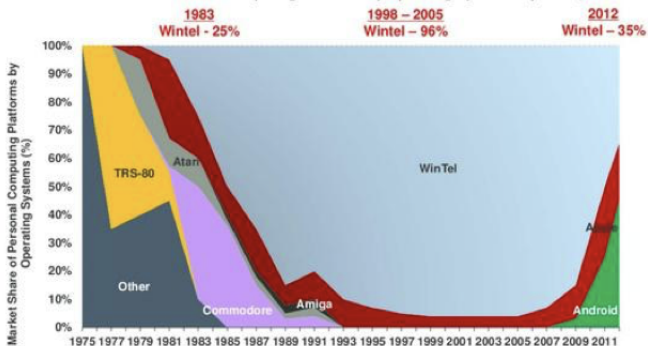
Source: EEA "Charts Dos and Don'ts"

Highlight what is important

- Real world example: Is it clear that this chart is showing the rise and fall of Microsoft?



Global Market Share of Personal Computing Platforms by Operating System Shipments, 1975 – 2012

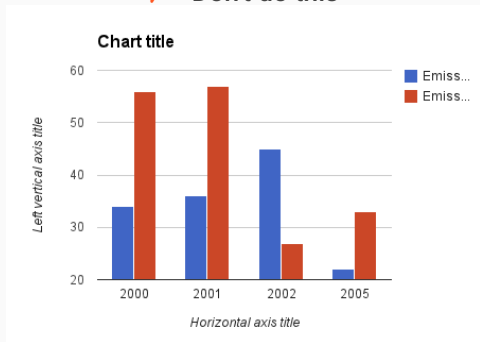


Source: EEA "Charts Dos and Don'ts"

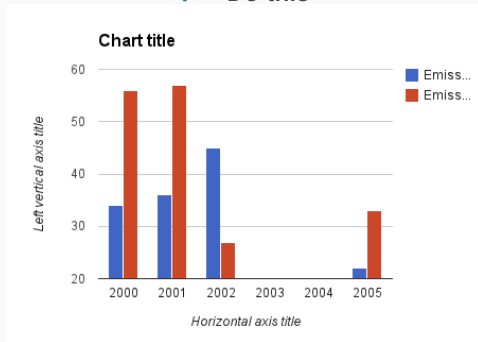
Be clear about "no data / missing data"

- Explain why the data is missing in a footnote and / or in the main text
- Use the full axis and do not skip the missing values OR visually indicate a break in the series

✗ Don't do this



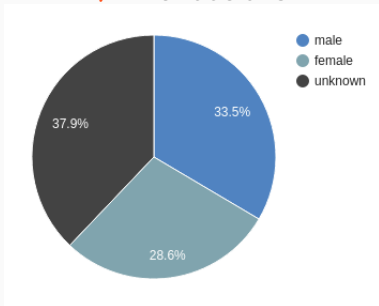
✓ Do this



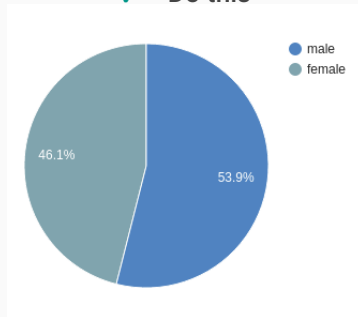
Be clear about "no data / missing data"

- When providing results of a survey, it is common practice to only include data on those who responded to a question
- Make this clear in the text by saying something like "Of those who responded, ..."

✗ Don't do this

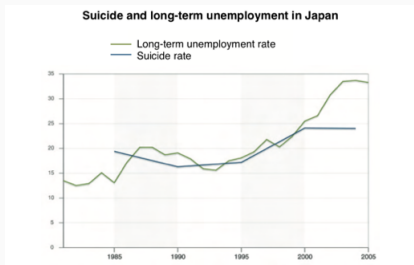


✓ Do this



Avoid misleading correlations

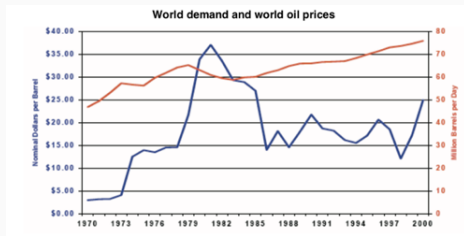
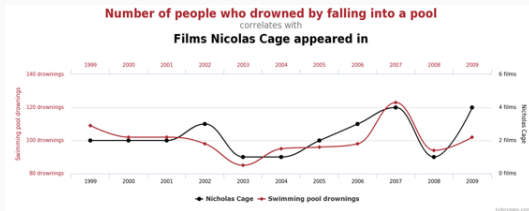
- Plotting variables with different scale on the same chart is likely to be misleading
- The viewer may draw erroneous conclusions about the relationships
- Use variables with the same scale
- Use two y-axes with caution



Curves appear to move together but the scales are different

- Number of suicides **per 100 000 population**
- Number of unemployed for 12+ months as a **percentage** of the total number of unemployed

Avoid misleading correlations



Sources: EEA "Charts Dos and Don'ts" and UNECE "Making Data Meaningful" Series
Visualising data with charts

Data planning, monitoring, & evaluation for cultural tourism

Remove visual clutter

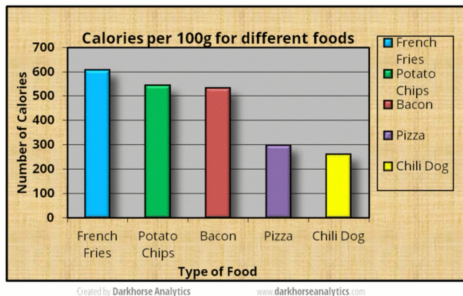
- Tufte's principles:
 - Above all else show the data
 - Maximise the data-ink ratio (data information part of the chart)
 - Erase non-data ink (non-essential visual elements such as dark backgrounds, dark grid, etc. that may distract the viewer or chartjunk)
 - Erase redundant data ink
 - Revise and edit
- Minimise the cognitive load
 - If a single chart contains several messages, consider dividing into separate charts

Sources: [EEA "Charts Dos and Don'ts"](#) and [James Bernhard "Principles of Data Visualisation"](#)

Remove visual clutter

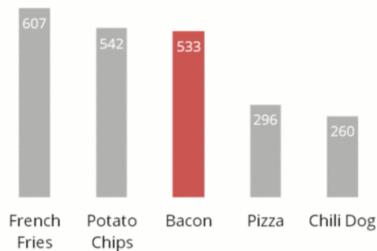
- A useful video from EEA "Charts Do's and Don'ts" ([link here](#))

Before



After

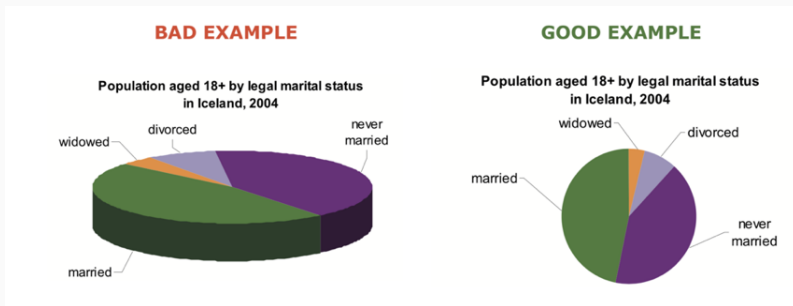
Calories per 100g



Source: [EEA "Charts Dos and Don'ts"](#)

Don't use 3D or blow apart effects

- Avoid using any unnecessary graphic features that may make the chart more difficult to understand
- 3D and blow apart effects distort the data, make it difficult to easily compare values, and confuse readers



Sources: EEA "Charts Dos and Don'ts" and UNECE "Making Data Meaningful" Series

Don't use 3D or blow apart effects

Figure 4: In which domains do happy people enjoy sufficiency?

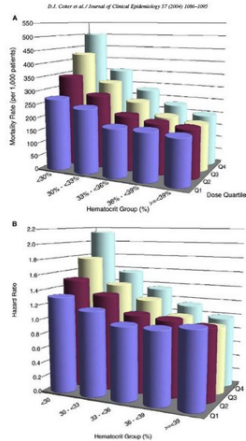
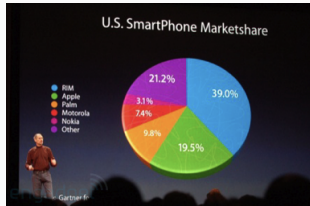
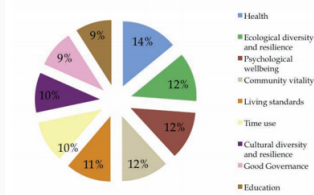
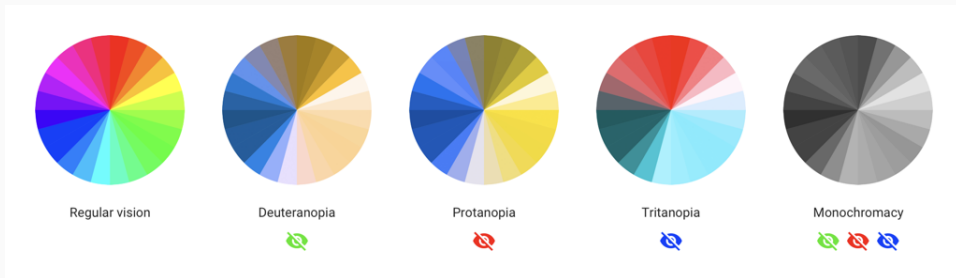


Fig. 2. (A) Unadjusted by epoetin dose a trend toward increased mortality rates, most notably there is a trend toward lower mortality within each observed (<30%) hemoglobin group, as toward higher relative epoetin dose increases range decreases. For the reference group, 1 specific hemoglobin group.

Sources: EEA "Charts Dos and Don'ts", Business Insider "The 27 Worst Charts of All Time", and Paragraf "The Chart-Junk of Steve Jobs"

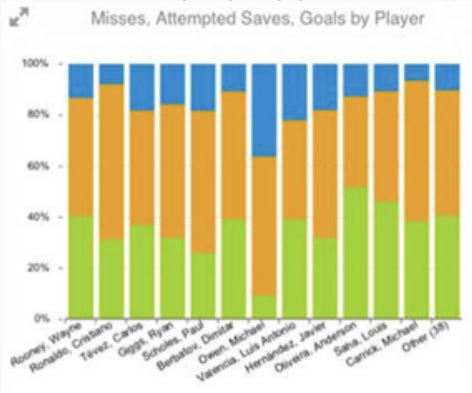
Make it accessible

- Consider whether you need to make your document accessible to individuals with visual impairments (e.g. colourblindness)
- You may need to change colours, contrast, font family/size/style/heaviness, letter spacing, descriptions, etc.
- The European Blind Union provide comprehensive guidelines on making information accessible for all

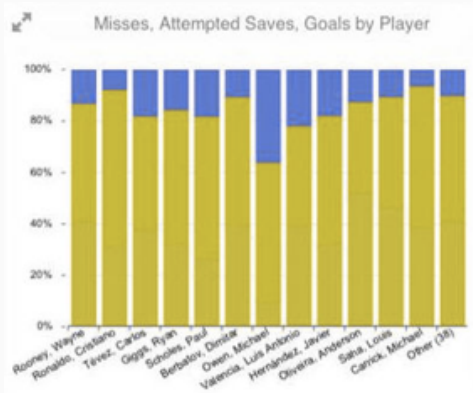


Make it accessible

Normal vision

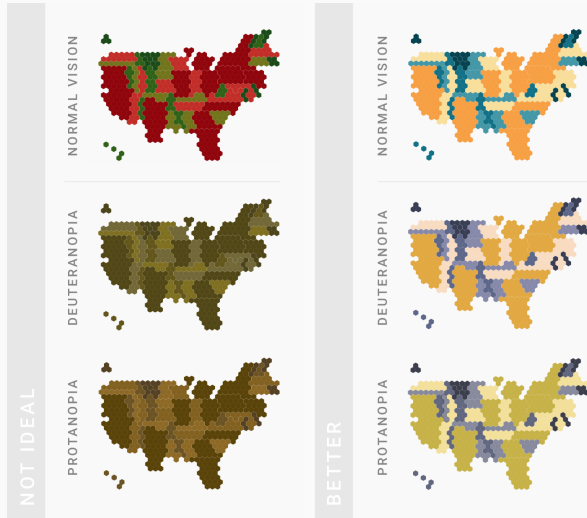


Deuteranopia



Source: EEA "Charts Dos and Don'ts"

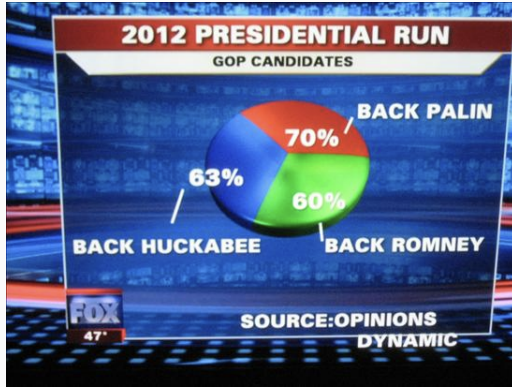
Make it accessible



Source: [Chartable "What to consider when choosing colors for data visualization"](#)

Proofread

- Double-check your work to ensure there are no mistakes



Source: [Simply Statistics](#) "The statisticians at Fox News use classic and novel graphical techniques to lead with data"

Proofread

- Double-check your work to ensure there are no mistakes



Source: [Washington Post](#)

Storytelling with data

Storytelling with data

- For data to be meaningful, we need to tell a story with data
- Telling a “story” does not mean embellishing data, inventing data, or misleading with data, INSTEAD:
 - Without a story, the discussion is just a description of numbers
 - When people cannot understand the data, they may distrust the data and it is misleading
- The discussion should:
 - Put the data in the context of short- and long-term trends
 - Explore relationships, causes, effects, and the degree to which they are supported by evidence
 - Based on sufficient knowledge and understanding of the data and the topic of study
 - Explain how the data is relevant to the audience
 - Be explained in terms the audience can understand

Source: [UNECE "Making Data Meaningful" Series](#)

Ethics of data storytelling

- To ensure ethical data storytelling, consider the UN Fundamental Principles of Official Statistics, which include:
 - Impartiality
 - Professionalism
 - Metadata (e.g., unit of measurement, time period, geographic area)
 - Comment on erroneous interpretation
 - Diverse sources
 - Confidentiality
 - Transparency
 - International standards

Source: [UNECE "Making Data Meaningful" Series](#)

How to present data

- The UNECE Guide recommends that you should think about the following when presenting data:
 - The target group
 - The role of the graphic in the overall presentation
 - How and where the message will be presented
 - Contextual issues that may distort understanding
 - Whether textual analysis or a data table is the better solution
 - Accessibility considerations
 - Consistency across data visualisations
 - Size, duration, and complexity
 - Possibility of misinterpretation

Source: [UNECE "Making Data Meaningful" Series](#)

Write in a journalistic style

- It can be useful to write about data in a journalistic style (inverted pyramid)
 - First, most important facts and information – “the lead”
 - Then, important details
 - Last, background information, general information
- The lead should summarise the story and set it in context
 - Concentrate on one message / topic
 - Use minimum amount of data
- Body of text should not include too many numbers
 - Refer to key figures in text, less important number should be presented in tables
 - Use rounded figures in the text (€4.3 million vs €4,321,985)
 - Don't just repeat values in tables – Discuss trends and context

Source: [UNECE "Making Data Meaningful" Series](#)

Guidelines for effective data storytelling

- Do use:
 - Clear, simple language in the active voice
 - Short sentences, short paragraphs, one main idea per paragraph
 - Bulleted lists for easy scanning
 - A good editor
 - Rounded numbers
- Do not use:
 - “Elevator statistics” - It went up, it went down, it went up again...
 - “Table reading” - describing every cell of a table in detail
 - Jargon, technical terms, acronyms

Source: [UNECE "Making Data Meaningful" Series](#)

Data storytelling: Example 1

Compare the following examples:

Working seniors were also somewhat more likely than younger people to report unpaid family work in 2004 (12% versus 4%).

✗ Poor

About 12% of working seniors reported unpaid family work in 2004, compared with 4% for younger people.

✓ Better

Source: [UNECE "Making Data Meaningful" Series](#)

Data storytelling: Example 2

Compare the following examples:

Two out of every five Canadians reported that they provided care for a senior in 2001, compared with one in seven in 1996, according to the census.

✗ Confusing

About 40% of Canadians reported that they provided care for a senior in 2001, up from 14% in 1996, according to the census.

✓ Clearer

Source: [UNECE "Making Data Meaningful" Series](#)

Data storytelling: Example 3

Compare the following examples:

Of the \$246.8 billion in retail spending last year, consumers spent \$86.4 billion on cards and parts and \$59.3 billion on food and beverages.

✗ Cumbersome

Of every \$100 spent in retail stores last year, consumers spent \$31 on cards and parts, compared with only \$23 on food and beverages.

✓ Easy to grasp

Source: [UNECE "Making Data Meaningful" Series](#)

Data storytelling: Example 4

Compare the following examples:

A new study probes the relationship between parental education and income and participation in post-secondary education from 1993 to 2001

✗ Lacks detail

Despite mounting financial challenges during the 1990s, young people from moderate and low-income families were no less likely to attend university in 2001 than they were in 1993, according to a new study

✓ Informative

Source: [UNECE "Making Data Meaningful" Series](#)

Summary

- Have a clear message
- Keep it simple
 - Eliminate unnecessary information
 - Use consistent style and format
- Don't be misleading
 - Explain missing values, abbreviations, definitions
 - Use clear labels, proper aspect ratio and axis scales, sort data
 - Avoid misleading correlations
- Keep your audience in mind
- Tell a story / avoid elevator statistics