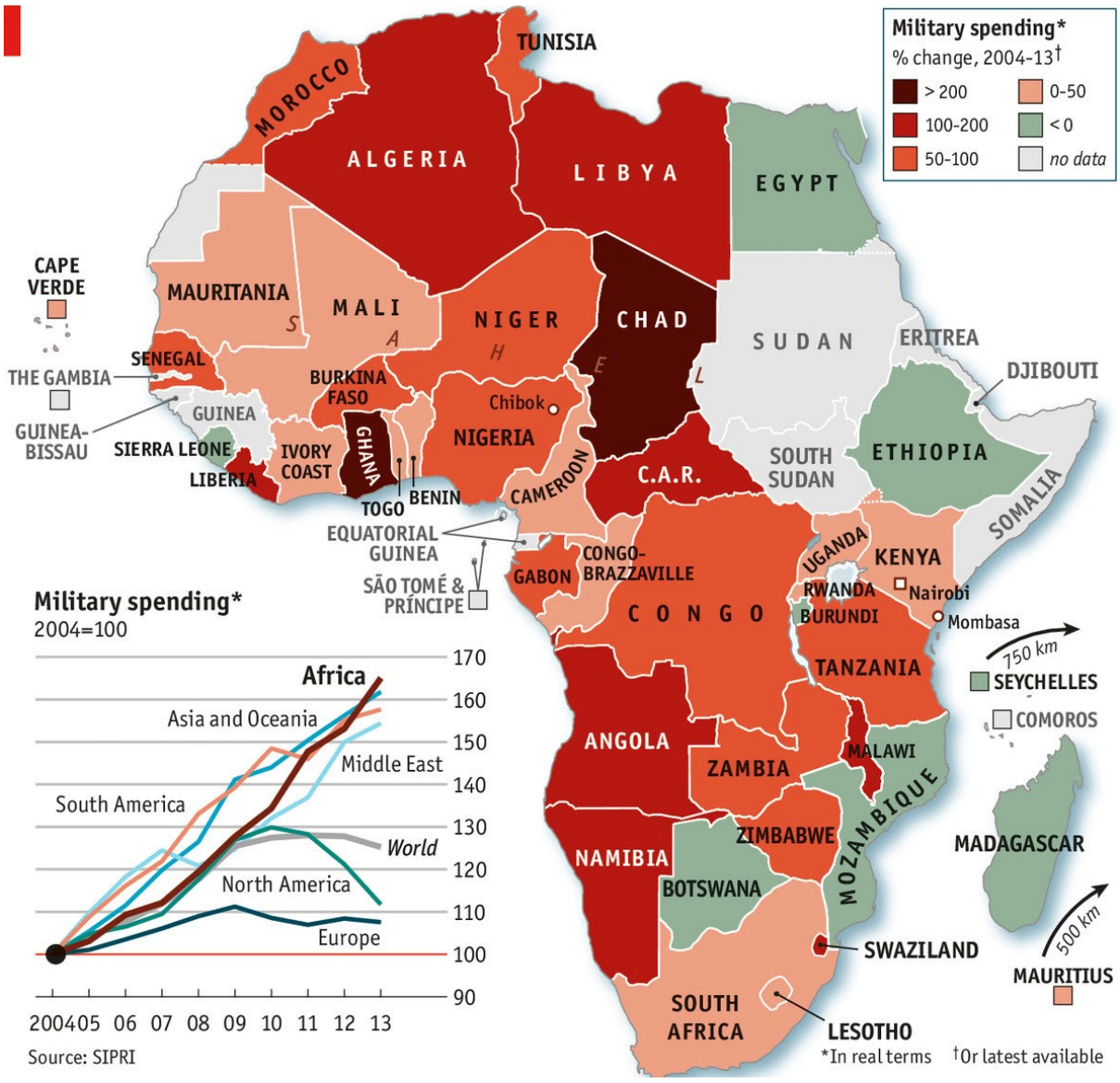
TW5211 Graphics Assignment:

Nicole Paterson-Jones, 22198644

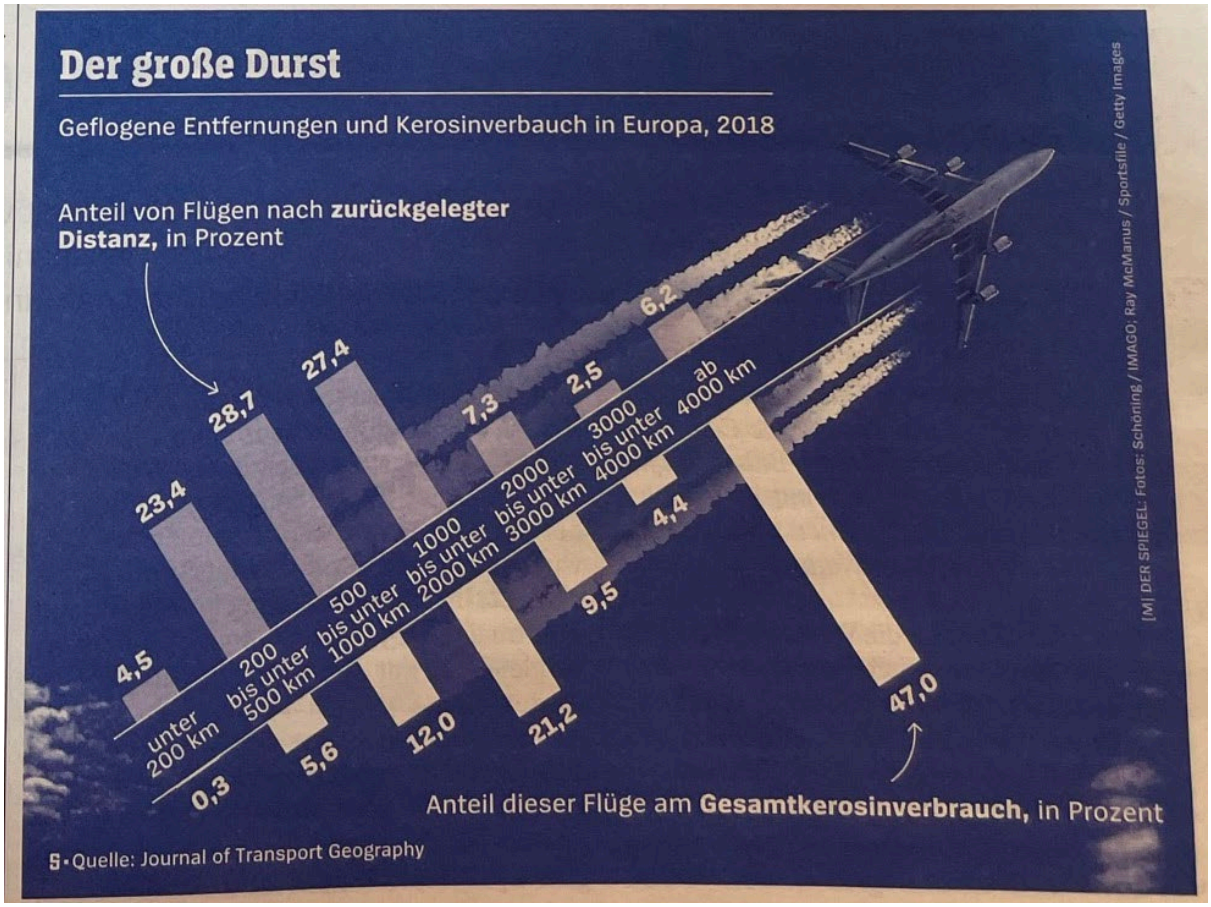
Graphic 1:



Title	**Arms and the African** **The continent's armies are going on a spending spree**
Source	https://www.economist.com/middle-east-and-africa/2014/11/20/arms-and-the-african (The Economist, 20 November 2014, online version)
Audience	General Public
Purpose	The map shows the increase in military spending in African countries from 2004 – 2013.
Analysis	**UDL Analysis,** (CAST 2014)**:** • There is no Alt text online - not readable for blind people. • The red and green colour combination - not readable with red-green colour blindness.

	Graphical Elements:
	• General:
	  ○ There is no title for the map, no information on location or direction, no compass, no reference to the map's relative location in the world.
	  ○ Most countries are labelled clearly, Western Sahara's label is missing.
	• Tables/ Keys:
	  ○ The label "% change 2004 to 13" on the colour description info box should also be on the line chart instead of "2004 = 100", otherwise 100 is meaningless.
	  ○ The star (*) and cross reference texts on this table are too far away from the table: hard to find, and the star looks like it refers to Lesotho (too close) **(**Lannon and Gurak 2016).
	  ○ The line graph has no legend, uses two colours that on the Africa map are used for a different meaning **(**Lannon and Gurak 2016.)
	  ○ The labels are confusing because the lines are so close together and it is not immediately clear which label refers to which line.
	  ○ The scales on the line chart are not labelled.
	Other Comments:
	• The purpose of using red = bad/ danger(?) and green = good/ safe(?) is unclear.
	• The information does not reveal a sufficient level of data and is not detailed enough to be useful (spending compared to what - population? / GDP? /or due to wars in or near country?) and what is it compared to the first world?
	(248 words)

Graphic 2 (translated below):



German Text	English Translation
Der große Durst Geflogene Entfernungen und Kerosinverbrauch in Europa, 2018	The big/ great Thirst Flight distances and kerosine consumption in Europe, 2018
Anteil von Flügen nach zurückgelegter Distanz, in Prozent	Percentage of total flights by distance category
Anteil dieser Flüge am Gesamtkerosinverbrauch, in Prozent	Percentage of total kerosine consumption per distance category

Title	**Der große Durst** Geflogene Entfernungen und Kerosinverbrauch in Europa, 2018 by Marco Evers
Source	Der Spiegel, No. 44, 29 November 2022, P107.
Audience	General Public
Purpose	The graphic shows the data in percentage, per distance category, on the number of flights within and from Europe in 201, and their relative total fuel consumption, indicating which distance category is the biggest polluter.
Analysis	**UDL:** • The shades of blue for the two sets of bars showing percentages are very similar so are difficult to distinguish (CAST 2014). **Graphical Elements:** • The graphic has a title and subtitle that relates well to the article. • The added exhaust graphical element interferes with reading the bar charts (chart junk) (Tufte 2001).

	• The bar charts and their distance categories are “unfriendly” (Tufte 2001): diagonal, not horizontal, and one bar data set is drawn negative although the data values are positive, so the purpose is of the graphic is more difficult to grasp (Markel and Selber 2021). • The bars are of equal width. • The graphic is in a suitable place in the text, easy to find, and is explained in the text (Markel and Selber 2021). **Other Comments:** • The graphic is immediately recognisable as being flight related. • In a line graph with a Y-axis showing percentage of flights and percentage of fuels consumption per category, and the X-axis: showing distance categories, it would be easier to illustrate the point that the longer the flight, the higher the fuel usage per km, as there is a corresponding increase in plane weight, capacity, and size and therefore fuel usage and pollution. (235 words)

Graphic 3:

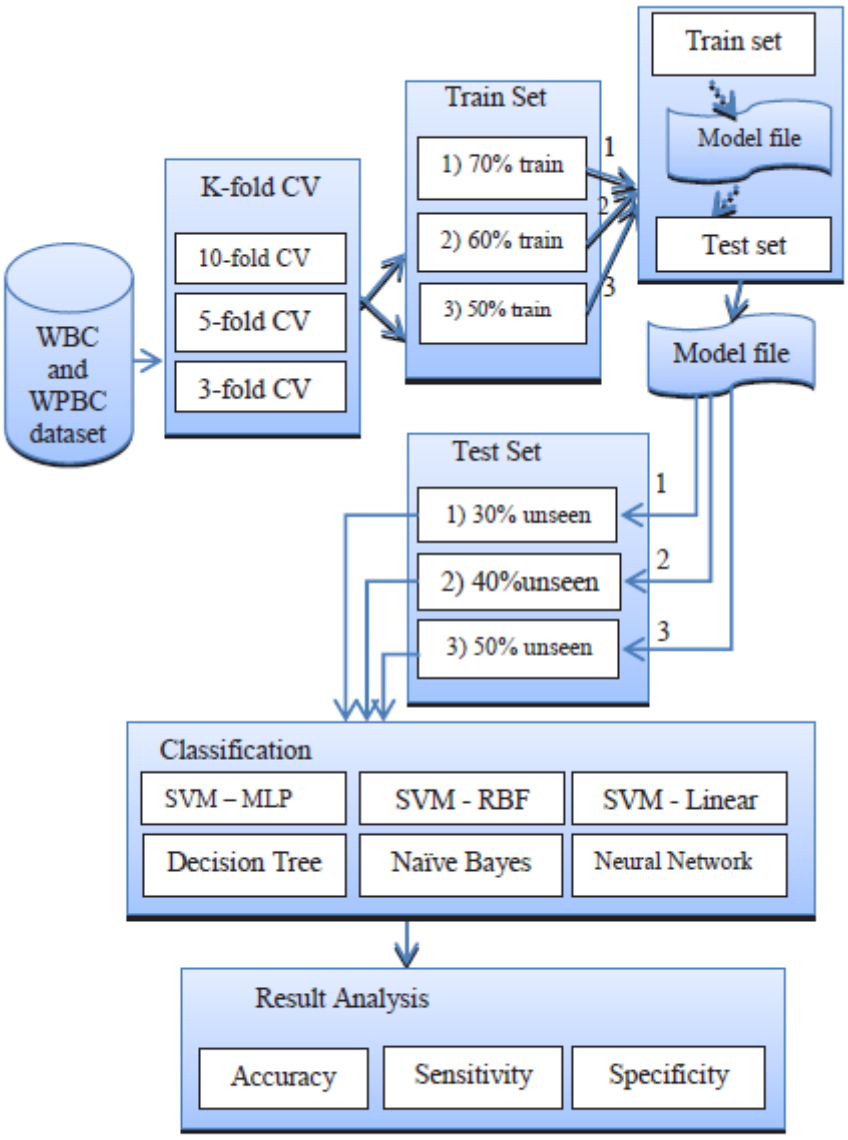
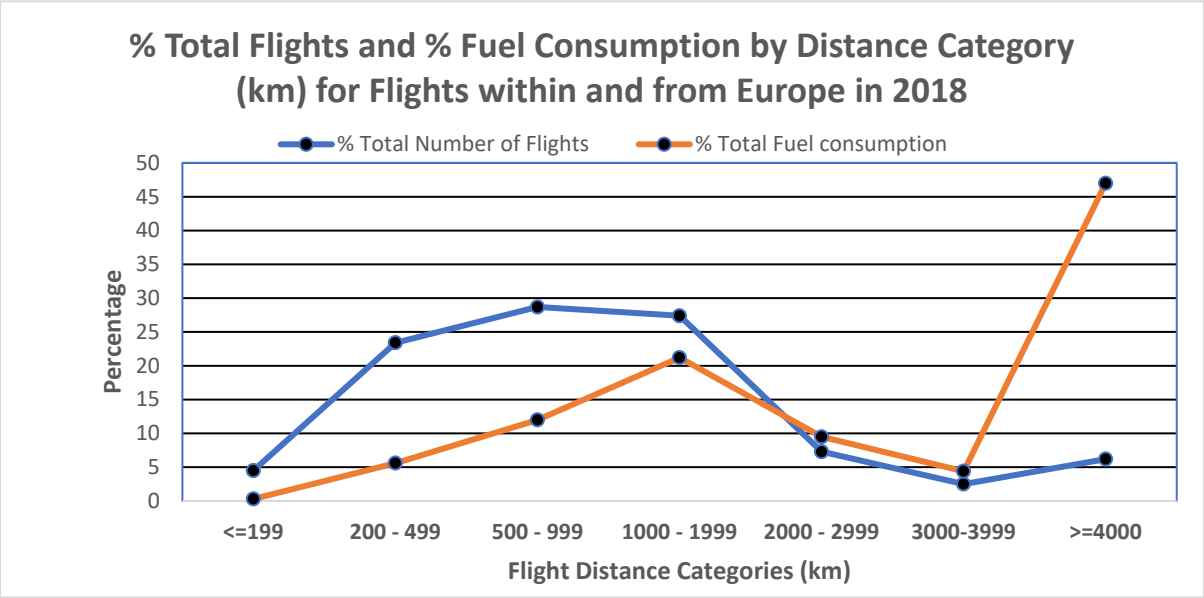


Fig.1. The architecture of the methodology

Title	**The architecture of the methodology**
Source	Conference Paper: "Comparative studies on breast cancer classifications with k-fold cross validations using machine learning techniques" by Zahra Nematzadeh, Roliana Ibrahim & Ali Selamat, 2015, 10th Asian Control Conference (ASCC), May 2015.
Audience	Academics or data scientists in the field of machine learning.
Purpose	The graphic illustrates the methodology used in a study comparing the value of "k" in the effectiveness of different machine learning algorithms, using k-fold validation, in categorising types of breast cancers. (k-fold validation is a resampling technique used to divide (typically small) datasets into subsets during the algorithm training stage).
Analysis	**UDL:** • The typography is small and serifed therefore difficult to read.

	Graphical Elements: • The graphic is confusing/ incomplete as it does not indicate events, activities, gateways (decisions), all or correct sequence flows, inputs, outputs, or actors as per a recognised standard e.g., BPMN 2.0. • It uses many abbreviations – unfriendly (Tufte 2001). • There is no legend - unfriendly (Tufte 2001). • One data set mentioned in the text is not shown in the graphic. • The first line of the graphic travels diagonally upwards and then flows in many directions including right to left (Tufte 2001). • The elements are crowded onto each other (Tufte 2001). • The graphic does not illustrate the complexity of the data handling and manipulation sufficiently and so the reader needs the text to clarify. • The graphic is not in the best place as abbreviations and explanations are introduced later in the text (Markel and Selber 2021). • **Other Comments:** • The graphic is less clear than the article text. • The graphic assumes subject expertise. (194 words)

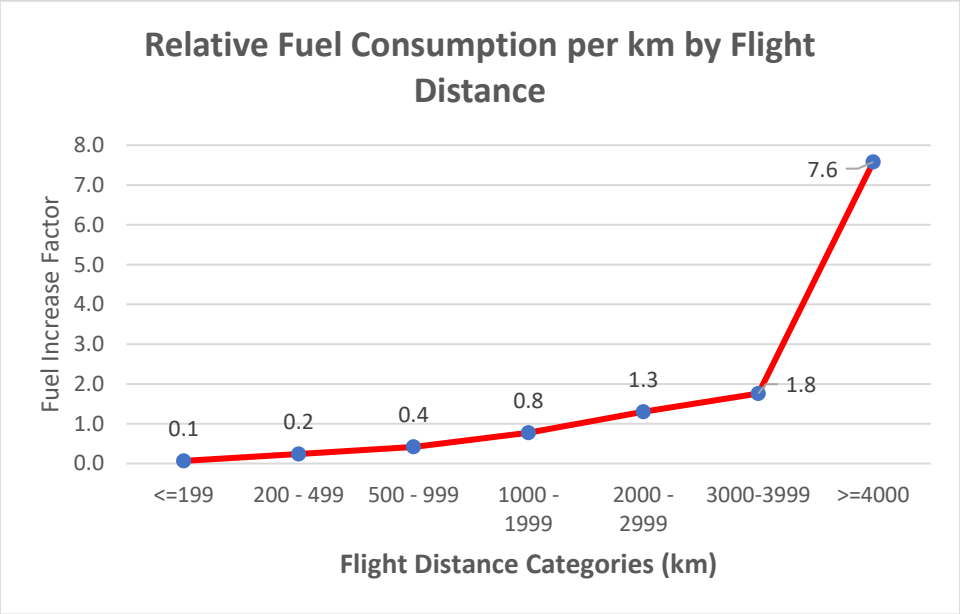
Graphic 2 Redrawn:



Flight distance (Km)	% Total Number of Flights	% Total Fuel consumption
<=199	4.5	0.3
200 - 499	23.4	5.6
500 - 999	28.7	12
1000 - 1999	27.4	21.2
2000 - 2999	7.3	9.5
3000-3999	2.5	4.4
>=4000	6.2	47

Title	**% Total Flights and % Fuel Consumption by Distance Category (km) for Flights within and from Europe in 2018**
Source	Original from Der Spiegel, No. 44, 29 November 2022, (Colour, high resolution magazine), redrawn using MS Excel
Audience	General Public
Purpose	The redrawn graphic shows the data in percentage, per distance category, of the number of flights, and the relative total fuel consumption for flights within and from Europe in 2018, in a line graph.
Justification of changes:	**Changes: (**Lannon and Gurak 2016 p.282-283**):** • The graph is now simpler and has distinct colours that should be readable for those with reduced sight or colour blindness. • The axes are clearly labelled. • All the text is horizonal and reads from left to right. • There are no unnecessary graphics that make the data harder to see or understand. • The correlation between flight distance and fuel consumption is clear as is the worst offending distance category. • A table of figures was provided. • A second graph that illustrates, clearly, the trend in increasing fuel usage per km as flight distance increases has been provided. (126 words)

From the limited data available, the following graph shows, more effectively, the upwards trend in fuel consumption per km as flight distance increases:



References:

CAST (2014). Universal design for learning guidelines version 2.1 [graphic organizer]. Wakefield, MA: Author.

Evers, M. (2022) ‚Der große Durst**:** Geflogene Entfernungen und Kerosinverbrauch in Europa 2018‘, *Der Spiegel No. 44*, 29 Nov 2022

IEC (2022) *ISO/IEC 19510:2013 Information technology — Object Management Group Business Process Model and Notation,* Geneva, Switzerland: ISO.

Lannon, J. and Gurak, L. (2016) Technical Communication, EBook, Global Edition, Harlow: Pearson Education, Limited.

Markel, Mike, and Stuart A. Selber. *Technical Communication (International Edition)*, Bedford/Saint Martin's, 2021. *ProQuest Ebook Central*, https://ebookcentral-proquest-com.proxy.lib.ul.ie/lib/univlime-ebooks/detail.action?docID=6562757

Nematzadeh, Z, Ibrahim, R and Selamat, A (2015) ‘Comparative studies on breast cancer classifications with k-fold cross validations using machine learning techniques’,*10th Asian Control Conference (ASCC), May 2015,* https://ieeexplore.ieee.org [accessed 7 Nov 2022]

Staff Reporter. (2014) ‘Arms and the African: The continent’s armies are going on a spending spree’ *The Economist*, 20 November 2014, available: https://www.economist.com/middle-east-and-africa/2014/11/20/arms-and-the-african [accessed 29 November 2022]

Tufte, E.R. (2001) *The visual display of Quantitative Information*, Second Edition, Cheshire, Connecticut: Graphics Press LLC.

.